

# EFFECTS OF CROSS-BORDER ACQUISITIONS ON PERFORMANCE OF INDIAN ACQUIRERS: A LOST ODYSSEY?

Lalitagauri Kulkarni\*

**Abstract:** *The present study examines the short run and long run effects of cross-border acquisitions by Indian firms on the shareholder wealth and the acquiring firms' financial performance. The literature on cross-border acquisitions by Indian corporate acquirers has not addressed this issue as it mainly focuses on the domestic mergers and acquisitions and the immediate impact of acquisitions on market return. The present study tries to bridge this gap in the literature by providing analysis of the short-term effect on share price of the acquirer along with the long term effect on the financial performance of the firm for India. The study also contributes by examining the Altman Z scores for the cross- border acquiring firms. This analysis is not found in the extant literature on the subject. The short term analysis with the event study method shows that the outbound cross border acquisitions by Indian firms have a positive but statistically weak effect on market value of the acquirer firms reflecting market efficiency of Indian stock market. The evidence from comparison of pre-acquisition and post-acquisition Altman z model as well as the profitability ratio shows the deteriorated financial performance of the Indian acquirer firms in the post-merger years.*

**Keywords:** *Cross-border acquisitions, Event study Altman Z, Mergers and Acquisitions.*

## 1. INTRODUCTION

Each cross-border acquisition by an Indian firm has a glamour quotient and fetches media attention. Any merger or acquisition is like an Indian Marriage, in the sense that each of these events has some effect on various parties like shareholders, investors, managers and the peer firms or competitors in the industry. Since liberalization, the magnitude of outbound cross-border acquisitions by Indian firms has increased tremendously. Most of these acquisitions are high-value deals.

The announcement of an acquisition of a foreign firm by an Indian firm generates a positive impression in the public eye about the acquirer firm's financial strength and a euphoric anticipation about its financial prowess. In contrast to this public perception, the international literature on post-merger effects on the acquirer firms

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\* Assistant Professor, Gokhale Institute of Politics and Economics, Gokhale Institute of Politics and Economics, BMCC Road, Deccan Gymkhana, Pune-410004. Email: lalitagulkarni@gmail.com

mostly dissents on the effects of cross-border acquisitions on the performance of the acquirer firm. It needs to be examined whether such outbound acquisitions by Indian firms result in increased financial strength and shareholder benefit in reality.

The present study examines whether the large-scale cross-border acquisitions by Indian firms have resulted into creating shareholder wealth and improving the acquiring firms' financial performance. The literature on effects of mergers in Indian firms has analyzed the short-term effects on the share price with the help of the event study analysis (Rani 2012, Pawaskar 2008). The long run equity investment decisions over three to five years require an analysis of fundamental financial performance of the firm. Hence, long term effect of cross-border acquisition is important for the stock market investor with an investment horizon of three to five years. The literature on cross-border acquisitions by Indian corporate acquirers has not addressed this need as it mainly focuses on the domestic mergers and acquisitions and the immediate impact of acquisitions on market return. The present study tries to bridge this gap in the literature by providing analysis of the short-term effect on share price of the acquirer along with the long term effect on the financial performance of the firm for India. The study also contributes by examining the Altman Z scores for the cross-border acquiring firms. This analysis is not found in the extant literature on the subject. The short term analysis with the event study method shows that the outbound cross border acquisitions by Indian firms have a positive but statistically weak effect on market value of the acquirer firms reflecting market efficiency of Indian stock market. The evidence from comparison of pre-acquisition and post-acquisition Altman Z model as well as the profitability ratio shows the deteriorated financial performance of the Indian acquirer firms in the post-merger years.

The study examines the impact of outbound cross-border acquisitions, by the large scale Indian acquirer firms, on shareholder wealth. The data used for the study is of thirteen successfully completed cross-border acquisitions by Indian firms having large market capitalization during 2000 to 2013. The number of firms in the sample is limited because the study focuses on the large firms and only cross-border acquisitions; Nevertheless these firms represent a major share of the respective industry in terms of total assets and total sales. The objective is to examine whether the acquirer firm achieves increased profitability, improved financial ratios and higher returns for its shareholders both in the short run as well as in the long run.

For the purpose of this analysis, the short run implies a ten-day window after an announcement of an acquisition. The event study methodology is used for the short-term analysis. The long run implies a five-year period because a long run for an equity investor is 3- 5 year period. The long run post-acquisition effect on acquiring firms is examined with profitability ratios. The Altman Z-score for the sample firms is calculated for pre-acquisition and post-acquisition period, to capture the change in financial viability.

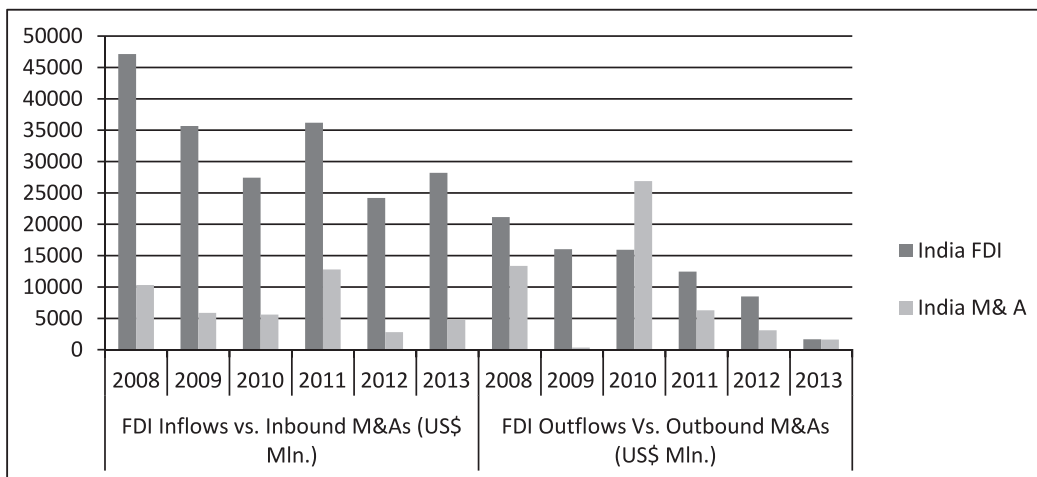
The paper is divided into five sections. The introductory first section discusses the growth of cross-border acquisitions in India, Section 2 provides the review of the literature. Section 3 explains the data and methodology. Section 4 examines the results for the short-term event studies and the long-term performance in terms of Altman Z model and various profitability criteria. Section 5 concludes this study.

### 1.1. Growth of Mergers and Acquisitions in India

In this study, the terms mergers, acquisitions, henceforth, are used interchangeably to indicate outbound cross-border acquisitions by Indian firms.

Mergers are regarded as a part of the foreign direct investment. The main difference between these two investments is that in a merger or acquisition, “control of assets and operations is transferred from a local to a foreign company, the former becoming an affiliate of the latter” (UNCTAD, 2000, p. 99).

**Chart 1**  
Cross Border Acquisitions as compared to FDI Inflows or Outflows (Million US\$)



(Source: Derived from UNCTAD World Investment Report 2014, Annex. Table No. 2 & 3)

Chart 1 shows that during the period 2008 to 2013, the share of mergers and acquisitions in total FDI flows was significant. Comparing the FDI inflows to FDI outflows, The inflows are conspicuously greater than the FDI outflows. But if we compare the in bound cross border acquisitions to out bound cross border acquisitions for India over the period 2008 to 2013, the outbound acquisitions are higher than the inbound acquisitions for 2008, 2010 and 2012.

The value of outbound mergers and acquisitions in 2010 is US \$ 26886 Million which is considerably higher than the total FDI outflows for that year.

From the above data, the large value of cross-border acquisitions by Indian firms or the out bound acquisitions demands the study of various effects of these acquisitions on shareholder wealth as they are the stakeholders in these firms.

## 2. LITERATURE REVIEW

The literature survey on cross-border acquisitions shows that wide-ranging methodologies are used for estimating the short run and long run performance of acquirers viz. short-run and long-run event study methods, calendar time studies, financial performance based comparisons of pre-merger and post-merger value of the acquirer firm. One of the basic issues that remain unclear in finance is the poor long-term performance of acquiring firms (Gugler et al. 2003). The existing literature on the post-merger performance of acquiring firms is divided in terms of methodology of measuring the post-merger performance. The literature survey also reflects different results on the benefits of cross-border acquisitions and post-merger value of the acquirer firms.

(Tichy, 2001) provides a detailed survey of 80 empirical studies on mergers and acquisitions. This survey shows that not more than quarter of the cases shown increase in consumer welfare, another quarter increase profits at the cost of the customers and half of the cases reduce the value of the firm.

**International literature and cross country studies –Short term and Long term effects on acquirer firms:** Short term impact on shareholder wealth is estimated in terms of short-term fluctuations in abnormal return. Event study methodology is used commonly to examine the short-run impact of acquisitions. Empirical studies have documented positive return. Andrade et al. (2001) found that targets earn an average three-day abnormal return (one day before to one day after the announcement date) of 16 per cent, which is quite stable during the three sub-periods in their sample. Firth (1980) found an insignificant abnormal return of 0.01 per cent over the 36 months following the bid announcement by examining 434 mergers and acquisitions announcements than do large acquirers.

Agarwal et al. (1992) states that neither the firm size effect, nor the beta estimation problems, nor a gradual adjustment of the market to the merger event is the cause of the negative post-merger returns. Gugler et al. (2003) analyze the effects of mergers around the world over the past 15 years. The effects of the mergers are examined by comparing the performance of the merging firms with control groups of non-merging firms based on profitability and sales. The results show that mergers result in significant increases in profits.

Francoeur (2004) examines the post-merger stock market response to 598 companies in Canada. He finds 1.96% abnormal returns from the day of acquisition

to up to two days. Aw & Chatterjee (2004), make a three-way comparison between the post-takeover performance of UK acquirers of domestic UK, US, and Continental European targets between 1991 and 1996. This study finds that UK firms acquiring large takeover targets experience negative cumulative abnormal returns over the period examined, at various significance levels. Furthermore, the study finds that the post-takeover performance of UK firms acquiring UK targets is superior to that of UK firms acquiring US targets. In turn, the performance of UK firms acquiring US targets is better than that of UK firms acquiring Continental European targets.

Duso et al. (2010) use event study methodology and accounting data to measure the profitability in post-merger period. King et al. (2004) find robust results indicating that acquiring firms' performance does not positively change as a function of their acquisition activity, and is negatively affected to a modest extent.

Conn et al. (2005) conclude that cross-border acquisitions result in the lower announcement and long-run returns than domestic acquisitions. In cross-border acquisitions involving high-tech firms both the announcement and long-run returns are positive, while non-high-tech cross-border acquisitions experience zero announcement returns followed by negative long-run performance.

Andre et al. (2014), find that acquirers significantly underperform over the three-year post-event period and state that glamour acquirers and equity-financed deals underperform. They also find that cross-border deals perform poorly in the long run.

Corhay & Rad (2000) find weak positive effect by Dutch acquisitions in the case of US acquisitions. Jong et al. (2007) examine the relation between corporate control and shareholder value after acquisition to find a 1.0% lower acquirer returns following acquisition announcements of firms that operate under the structured regime as compared to firms that do not operate under such a regime.

The literature shows that the glamour acquirers and equity-financed deals underperform and the cross-border deals perform poorly in the long run. Andre et al. 2004, (Andrad et al. 2001), (Danbolt, 1995) and (McCann, 2000).

Kramer, Poirson, & Prasad (2008) points out the fact that the US companies acquiring foreign companies have a low average price to earnings ratio (*PE*). This may be interpreted as a move by the management of these US companies to try to maximize its shareholder's wealth by signalling to the market that the increase in globalization of the company's operations is a risk reduction event due to diversification.

Lubatkin, (1983) asks why firms merge if the research findings of a negative drift in acquiring firm stock prices following merger transactions, which would imply that the gains from mergers are overstated or non-existent. The only significant gains to the acquired Reddys, were an increased leverage. The analysis further shows that mergers did not lead to excess profits for the acquiring firm. (Malmendier and Malmendier, 2002) test this idea empirically against patterns of corporate M&A behaviour. Corporate imperialism is an agency cost problem arising from the fact that executive compensation and perquisites are more closely tied to size than efficiency (Vincent, Lys, 1995; Andrade et al. 2001)

Rau, P. and Vermaelen, (1998) uses a methodology robust to recent criticisms of standard long-horizon event study tests, to show that bidders in mergers underperform while bidders in tender offers over perform in the three years after the acquisition. However, the long-term underperformance of acquiring firms in mergers is predominantly caused by the poor post-acquisition performance of low book-to-market glamour firms.

Thus the literature fails to arrive at a consensus on the ideal methodology to estimate the impact of cross-border acquisitions on acquirer. According to Tichy (2001), empirical studies on effects of mergers are divided into 'studies by specialists in finance and studies by industrial organisation economists'.

Finance studies concentrate on the abnormal returns of share prices around the announcement of an acquisition e.g. event study methodology by Fama et al. (1969) while studies in industrial economics, 'outcome studies', focus on investigating the firm's economic performance and balance sheets before and after the acquisition. Most of the short-term empirical studies use the market return based approach adopted by event study methodology which presumes that the market prices will efficiently reflect the information about the firm value and performance post event. An alternative approach is to examine the long-term effect, with outcome approach focusing on the performance in terms of valuation of the firms with financial and profitability parameters.

**Empirical studies on effects of cross-border acquisitions by Indian corporate firms:** As compared to the plethora of literature on international cross-border mergers, we find few studies on the post-merger effects on Indian acquiring firms.

Gupta,(2008) provides an overview of the cross-border mergers and acquisitions in India focussing on the procedural aspects, recommends the reforms and deals with the mode of acquisition and the various transactional issues required for finalizing an acquisition. Some studies emphasize the operational, legal and regulatory aspects of outbound acquisitions by Indian firms.(Afsharipour, 2011; Desai, 2011; Rani et al. 2014) compare the impact of domestic acquisitions with cross-border

acquisitions. Another set of empirical studies focus on the determinants of cross-border acquisitions by Indian firms and examine various factors responsible for the cross-border mergers in India. Agrawal & Jaffe (1999), examine the bulk of the research on the financial performance of mergers and acquisitions that has focused on stock returns around the merger announcement

Rani et al. (2014), examine the short-term impact of domestic as well as cross-border acquisitions on the shareholder wealth based event study methodology. Their results indicate that the shareholders of Indian acquirer corporates involved in cross-border acquisitions experience a positive abnormal return of 1.56 percent (significant at 1 per cent) on the announcement day. The results indicate that cross-border acquisitions generate higher returns than domestic acquisitions. The study observes that the shareholders of acquiring firms of complete cross-border acquisitions earn higher abnormal returns (significant at 5 per cent). The abnormal returns are higher (though statistically insignificant) for partial/majority control domestic acquisitions.

Literature Survey reveals that most of the international studies examining long-run stock returns following acquisitions, conclude that long-run performance is negative following mergers. But no study on long run performance of Indian cross-border acquirers is found in the literature survey.

Inspite of the spur in the cross border acquisitions by Indian corporate firms in the last decade, the literature examining the effects on acquirer financial performance is mostly limited to domestic acquisitions. The studies on Indian acquirer firms primarily address factors determining the acquisitions and short term market impact rather than a long run effect on firm performance. The present study tries to bridge this gap by adopting a combination of methods to capture the impact on acquirer firms' performance over the short-term as well as long-term. It uses the event study method to examine the short-term effects on share market returns and efficiency of Indian stock market. To arrive at the long term effects of cross-border M&A transactions on firms' value, it uses a fundamental valuation approach consisting of, Altman Z model and change in profitability ratios.

Based on the literature survey the current study formulates two hypotheses:

**Hypothesis 1:** The cross-border acquisitions by Indian acquirer firms result in the negative post-acquisition impact on market return of the acquirer firm.

**Hypothesis 2:** The cross-border acquisitions by Indian acquirer firms result in negative post acquisition effect on financial performance in terms of profitability and financial sustainability of the acquirer.

The data and methodology used for testing of the above hypotheses is described in the following section.

### 3. DATA AND METHODOLOGY:

#### 3.1. Data

The cross-border acquisitions by Indian acquirers increased significantly in the decade of 2000 to 2010. Most of these deals were struck by large Indian conglomerates like Tata Group of Companies, Piramal Group. These large-scale companies consist of a major share of the total volume of cross-border acquisitions by Indian corporates, so the present study uses on the representative sample of firms with large market capitalization.

The sample of cross-border acquirer firms is selected based on the following criteria:

1. The cross-border acquisitions by Indian firms during 2000 to 2013 are considered.
2. Only the deals which are completed are considered.
3. Deals are cross-border acquisitions by Indian companies of the foreign companies.
4. Only transactions by large firms with turnover greater than Rs. 100 Crores are included.

The listed companies are required to report to the exchanges the details of the substantial acquisition of shares of the target company. The cross-border acquisitions by 13 large cap Indian firms selected for the purpose of the event study according to the above criteria are Tata tea, Reliance Communications, Piramal Healthcare, Tata Steel, Hindalco, United Spirits, Tata Motors, Sterlite Industries, Bharti Airtel, Shree Renuka Sugar Mills, Tata Chemicals, Dr Reddy's Laboratories and Suzlon Energy. The details of the acquisitions are given in the following table no. 1. This sample though small in size, constitutes major share of the total assets and total income of the respective industries and also represents most of the acquisitions with largest deal values during this period. Hence, the analysis is based on a reasonably representative sample of the cross-border acquisition by Indian firms.

The data on financial variables of the firms is drawn from the balance sheets and profit and loss statements of the sample firms from CMIE Prowess database. The data on returns on stocks of the firms and the Nifty Index returns is calculated from the daily adjusted closing prices and CNX Nifty daily close values from National Stock Exchange. The announcement date is the date of the first press release regarding an acquisition. These dates are sourced from the capital market regulator Securities and Exchange Board of India (SEBI).

#### 3.2. Methodology

The study aims to capture the impact on acquirer firms' performance over the short-term as well as over the long-term, consequently, the study is divided into two parts.



In Part, (I) the event study methodology is used to examine the short-term impact.

The literature reveals that the event-based approach is appropriate to examine the short-term impact on shareholder wealth. The event study approach is used to examine whether the shareholder return in post-acquisition period shows statistically significant positive or negative change in terms of abnormal returns to the shareholders. The abnormal returns are calculated based on the market model as explained below in section 4.

The long-term effect of the acquisition, on acquiring firms' shareholder value cannot be examined with event study methodology. The long-term returns include the effects of many other macroeconomic factors or confounding factors. The effect of the acquisition on firm valuation is important in the longer run as it will reflect the financial wellbeing of the acquirer and in turn, will be reflected in the share prices. Hence long term effect of cross-border acquisition is significant for the investor with a long-term investment horizon.

Part II of the study examines the financial performance of the acquirer firms in the sample. The Altman z model is used to observe the overall financial performance in the pre-merger and post-merger periods. These results are reinforced by comparing the pre-merger and post-merger profitability ratios after applying the Wilcoxon sign rank test to remove the effect of the confounding factors. (Tichy, 2004)

#### **4. ANALYSIS OF THE SHORT RUN IMPACT OF MERGERS ON THE ACQUIRER FIRM**

The most commonly used event-study methodology is the market model suggested by Fama (1976). The model predicts a firm's "normal or expected" returns given the market return and the firm's historical relationship to the market. Event study methodology is adopted to examine the short-run impact on shareholder wealth. To quote Muller (2015), "Finance theory suggests that stock prices reflect all available information and expectations about the prospects of firms. Given this basic premise, one can investigate the relevance of a particular event for a firm's prospects by examining its impact on the firm's stock price. 'Event study analysis' is the statistical method for making such an assessment/analysis."

In event study analysis we try to assume a situation where the event has not occurred and try to estimate the expected return or normal return. Then we calculate the difference between this normal expected return and the actual return. This difference is the abnormal return caused by the particular event in question. The challenging part in this method is to estimate the normal return. Various models are used to estimate the normal return. The 'market model' is one of the most common models used. It builds on the actual observed returns of a reference market and the correlation of the firm's stock with the reference market.

To measure the total impact of an event over a particular period (termed the 'event window'), one can add up individual abnormal returns to create a 'cumulative abnormal return'.

This model postulates that the stock prices reflect the expectations about the expected future performance of the firm so that it can be used as a proxy for post-merger firm performance. If a merger is expected to create value, the merging companies' stocks should appreciate. If on the other hand, the market perceives a transaction to be value destroying, stock prices should fall.

The event study methodology assumes that the capital markets are efficient.

It assumes that given rational expectations and efficient markets stock prices reflect the discounted value of future profits, and adjust rapidly to reflect new public information. The assumption underpinning this methodology is that the capital markets are efficient (in semi-strong form), which implies that the price of any security incorporates all currently available public information and adjusts to the public release of new information instantaneously.

#### **4.1. Model specification for Event Study**

The study applies empirical analysis of the stock market data using the standard event-study methodology described below to assess the impact of acquisition announcements on shareholder wealth. Drawing from the literature, the event study analysis can be described in the following steps. (Mckinlay, 1997; Muller, 2015)

**Step 1. Definition of Event:** To observe the impact of the cross-border acquisitions on the share prices of the listed sample companies, the announcement date is taken as  $t = 0$ , and the event period is from 10 days before the announcement date and 10 days after the announcement date.

The announcement dates are the dates on which the acquisition was made public for the first time.

The event window captures the price effects of the event on the announcement/event day and its effects after the stock market closes on the event day. However, in some cases, the market may acquire information about the earnings before the actual announcement occurs (leakage of information). The above model incorporates the information leakage effect.

The estimation window is used to estimate the market returns in the normal market scenario i.e. the market returns if the event under consideration would not have occurred.. The length of the estimation window is important to get robust

results. If the estimation window is too small, then, parameters of the market model may not indicate the true stock price movements and thus, the relationship between the stock returns and the market returns. Estimation window is assumed to be free of any problems, i.e. the stock price movements in this period are assumed to be “normal.” As per the guidelines (Benninga, 2008), the minimum number of observations for the market model is 126 days before the event. The study uses Estimation window of 126 days before the event. The selection of the estimation window is random, although it is documented that an estimation window of greater than 110 days does not make a difference in results (Bruner, 2002).

**Step 2. Calculation of Normal Return:** Normal Return is estimated based on Market model.

The daily actual log return for each firm during the estimation period are calculated based on daily adjusted closing prices. The actual return rate of the  $i$  company for  $t$  day is defined as:  $R_{it} = \ln(P_{it}/P_{it-1})$ . The market return is calculated based on the National Stock Exchange of India (NSE) CNX Nifty index return.

The actual return rate for  $m$  market on  $t$  day is defined as:

$$R_{m,t} = \ln(P_{mt}/P_{mt-1})$$

$P_{i,t}$  &  $P_{i,t-1}$  refer to the closing price of the  $i$  share on trading day  $t$  and  $t - 1$ , respectively.

$P_{m,t}$  &  $P_{m,t-1}$  refer to the closing Nifty index on the trading day  $t$  and  $t - 1$ , respectively.

Thus, for each firm in the sample, the following regression model is estimated:

$$R_{it} = \alpha_i + \beta_i \times R_{mt} + \varepsilon_{it}$$

Where

$R_{it}$  = return on stock of firm  $i$  at time  $t$

$R_{mt}$  = return on market portfolio  $m$  at time  $t$ .

$\alpha_i + \beta_i \times R_{mt}$  = parameters of the relationship between the return on the individual security and that of the market; and

$\varepsilon_{it}$  = random error term

**Step 3. Calculation of Abnormal Returns:** The post-event window is used to investigate the performance of a company following the announcement. Given the market model results, we can measure the abnormal returns as

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

Where,

$E(R_{it})$  = Expected returns for day 't' in the event window.

$AR_{it}$  = Abnormal returns for firm  $i$  for time  $t$

Abnormal returns ( $AR_{it}$ ) for a particular day 't' in the event window is the difference between its actual returns ( $R_{it}$ ) and the return that would be predicted by using the stock's  $\alpha$  and  $\beta$  the market returns ( $R_{mt}$ ). Hence,  $AR_{it} = R_{it} - (\alpha_i + \beta_i \times R_{mt})$ .

The parameters alpha ( $\alpha_i$ ) and beta ( $\beta_i$ ) are estimated for each security  $i$  over the period 128 trading days before the announcement of the acquisition.

Abnormal returns need to be calculated for the evaluation of the event's impact.

Finally, the cumulative abnormal returns are calculated. It is the measure of the total abnormal returns during the event window. The variable  $CAR_t$  is equal to the sum of all abnormal returns from the start of the event window.

CAR is expressed as

$$CAR_t = \sum_{j=1}^t AR_{T1+i}$$

The average abnormal returns and the cumulative average abnormal returns are calculated as follows:

$$AAR_t = \frac{1}{N} \sum_{i=1 \text{ to } N} AR_{i,t}$$

$$CAR_{T1, T2} = \sum_{i=T1 \text{ to } T2} AR_{i,t}$$

$$CAAR_t = \frac{1}{N} \sum_{i=1 \text{ to } N} CAR_{it}$$

Where,

$AAR_t$  = Average Abnormal Returns for time  $t$

$CAR_{T1, T2}$  = Cumulative Abnormal Returns for firm I for time  $t_1$  to  $t_2$

$CAAR_t$  = Cumulative Average Abnormal Returns for time  $t$ .

The CAR, CAAR and AAR are used to further evaluate the persistence and robustness of the abnormal returns. As the cumulative and average abnormal returns average out, the effect of the extraneous events on the model.

## 4.2. Results of the Event Study Analysis

The results of empirical analysis of the daily and cumulative abnormal returns generated by the 12 acquisitions for the event window are presented in Table 2.

**Table 2**  
**Results of the Event study analysis**

Name of the Acquirer	Abnormal return Event Window (No. of Days)		
	$t + 2$	$t + 3$	$t + 10$
Bharati Airtel Pvt Ltd.	-5.20% (-1.88)	3.10% -1.14	0.80% -0.29
Dr Reddy's Laboratories	2.33% -1.27	3.56% -1.95	-1.50% (-0.82)
Hindalco	2.58% -1.73	1.20% -0.8	0.05% -0.03
Piramal Enterprises	0.35% -0.15	0.38% -0.16	2.02% -0.86
Relaince Communications	0.13% -0.1	-0.48% (-0.39)	0.60% -0.48
Shree Renuka Sugar Mills Ltd.	-1.23% (-0.49)	-4.11% (-1.63)	0.09% -0.04
Sterlite Industries	1.93% -0.55	0.18% -0.05	3.92% -1.13
Suzlon Energy	-1.31% (-0.49)	2.52% -0.94	2.18% -0.82
Tata Chemicals	3.64% -1.92	1.58% -0.84	2.32% -1.22
Tata Global Beverages	-7.26% (-2.35)	-7.14% (-2.31)	1.02% -0.33
Tata Motors	-2.98% (-1.74)	-0.60% (-0.35)	-0.15% (-0.09)
Tata Steel	0.07% -0.01	0.97% -0.09	1.76% -0.17
United Spirits	4.91% -1.95	9.50% -3.78	-1.33% (-0.53)

(Note: Figures in parentheses indicate  $t$ -statistic)

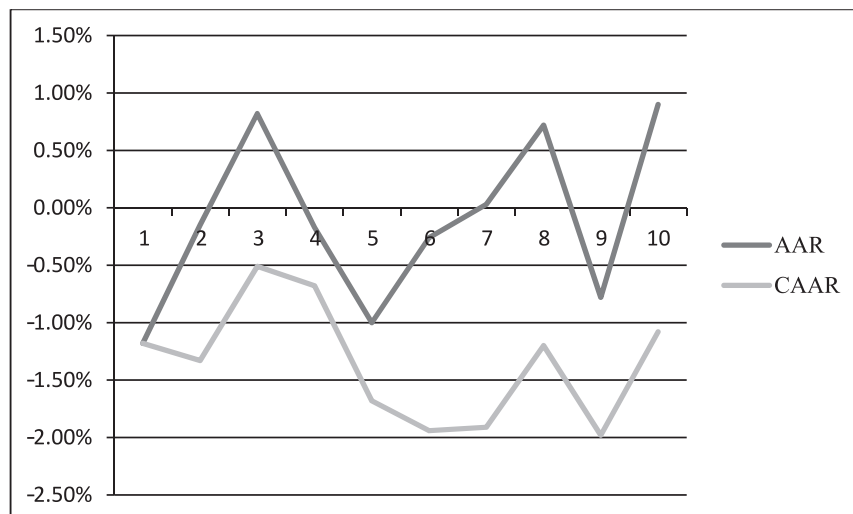
Table 2 shows the post-acquisition abnormal returns for each of the firms for 2 days, 3 days and 10 days after the announcement date. The average abnormal return for the sample firms is 0.96% for a two-day post-event window period and at 0.82% at a ten-day event window. This indicates positive abnormal returns for shareholders of the acquiring firms. It also shows that Indian stock market is efficient and the information is quickly incorporated into the stock prices of the firms.

**Table 3**  
Average Abnormal Returns and Cumulative Average Abnormal Returns

Event Window (Announcement Date $t+ Days$ )	AAR	CAAR
1	-1.18%	-1.18%
2	-0.15%	-1.33%
3	0.82%	-0.51%
4	-0.17%	-0.68%
5	-1.00%	-1.68%
6	-0.26%	-1.94%
7	0.03%	-1.91%
8	0.72%	-1.20%
9	-0.78%	-1.98%
10	0.90%	-1.08%

Table 3 presents the Average Abnormal Returns and Cumulative Average Abnormal Returns for the sample firms for  $t + 1$  to  $t + 10$  days. It shows that the Average Abnormal Returns are positive for  $t + 3$  and  $t + eight$  days while cumulative abnormal returns are negative for five firms in the sample and positive for the remaining eight firms. The Cumulative Average Abnormal Returns (CAAR) are positive for the sample at 2.98%. These findings suggest that CBM & As in India have a positive but statistically weak market wealth effect for investors in the short term for 10-day post-acquisition event window. The event study shows that there is evidence of positive returns on  $t + 3$ ,  $t + 7$  and  $t + 8$  day event windows. (Chart 2)

**Chart 2**  
AAR and CAAR



Based on the above results, the Hypothesis 1 that the cross-border acquisitions by Indian acquirer firms result in the negative post-acquisition impact on market return of the acquirer firm cannot be accepted for the selected firms in the sample.

## **5. LONG RUN EFFECT OF MERGERS ON ACQUIRER FIRM VALUE**

The literature on the long-term effect of acquisitions documents various methods to estimate the long-run impact. Some studies have used the median firm approach while others use the matching firm approach (Loughran & Vijh, 1997). At first, the median firm or matching firm analysis was applied to the firms in the sample. However, most of the firms in the sample have high brand value and very high market share. After examination of the data on market share, it was observed that the market share was so high that the median firm or even the matching firm financials were not comparable with the majority of the firms in the sample. For these reasons, the median firm or matching firm analysis cannot be used in the present study.

The share market return on a firm's equity depends on the fundamental financial ratios. The long run financial sustainability is measured by the Altman Z score.

### **5.1. Long Run Effect on Acquirer Firm's Value with Altman's Z Model:**

The long-term analysis aims at examining the effect of the acquisition on the acquirer firm over a few years after acquisition. The structural approach is adopted for this analysis. The long-term effect on the post-merger performance of the firms is measured with the help of Altman Z model and profitability ratio analysis. The sample of twelve large scale acquirer firms is same as used for the event study analysis except for Piramal Healthcare as it has undergone multiple acquisitions during the period under study and long-term effects include effects of these multiple acquisitions making the analysis unclear about any one event.

#### **5.1.1. Altman Z model**

The most widely used bankruptcy prediction model, Altman Z-score is based on simple formula combination of financial ratios to predict the financial strength of a company for the next two-year period. Studies measuring the effectiveness of the Z-score have shown that the model has 70%-80% reliability, (Pradhan, 2014). The Z-score model is based on five ratios representing liquidity, profitability, leverage, solvency and activity. (Altman, 1994)

The Altman Z-score formula for public companies is as follows:

$$Z = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$$

X1: Working Capital to Total Assets

X2: Retained earnings/total assets

X3: Earnings before Interest and Taxes /Total Assets

X4: Market Value of Equity to Book Value of total liabilities

X5: Sales to Total Assets

Connotation of the value Z:

Z score > 2.99 - Safe zone

2.99 > Z score > 1.23 - Grey area

Z-score -- < 1.23 - Distress

### 5.1.2. Results of Altman Z calculation

For the selected 12 companies in the sample, Altman Z-score is calculated for at least three years pre-acquisition and three years post-acquisition. The study postulates that the deterioration in the value of Altman’s Z indicates the deterioration in the financial strength of the firm even though the bankruptcy prediction zone is ignored. The data on the financial variables is used from the annual reports of the firms and is sourced from the CMIE Prowess database.

Chart 3  
Altman Z-Scores for the Acquirer Firms

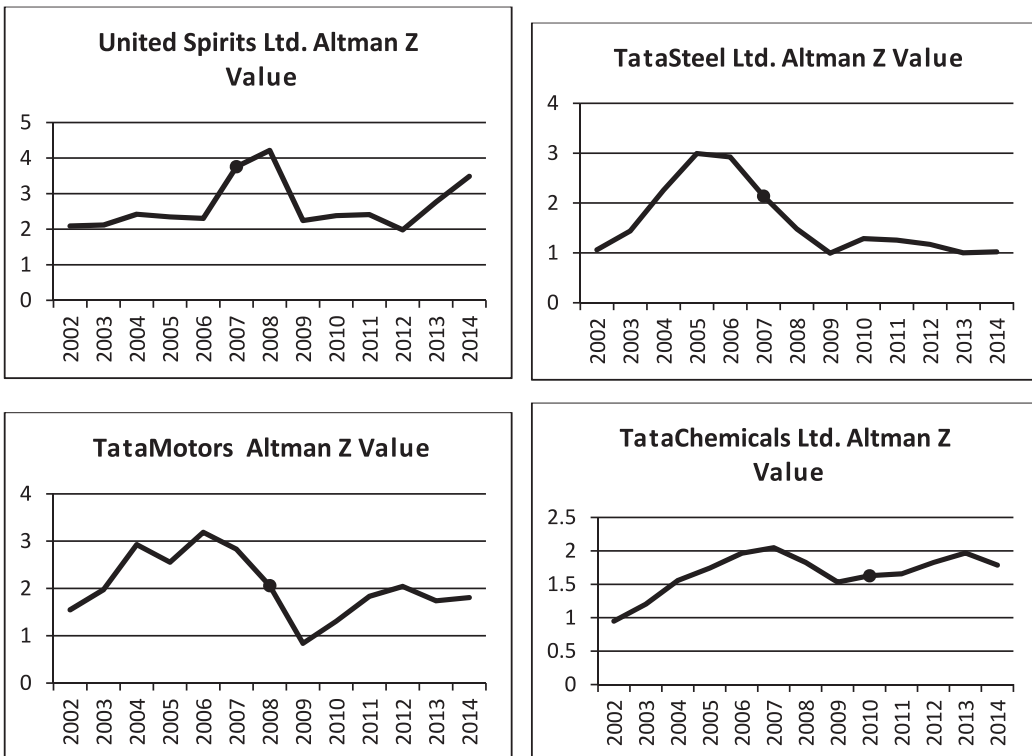
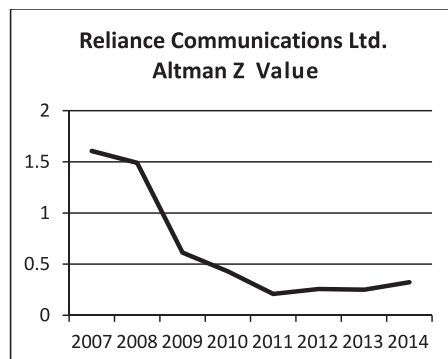
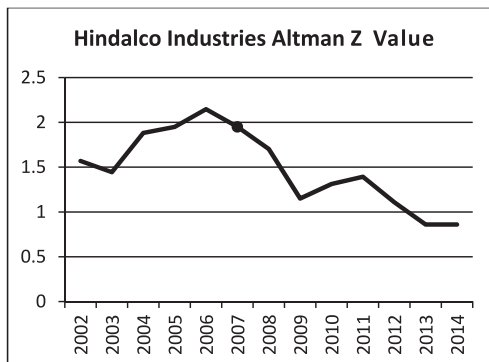
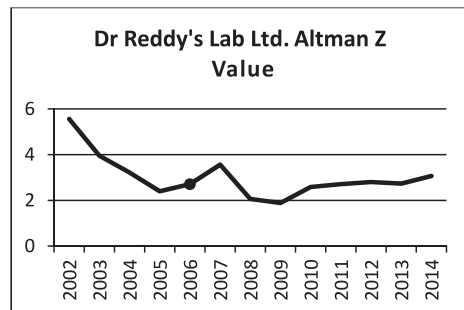
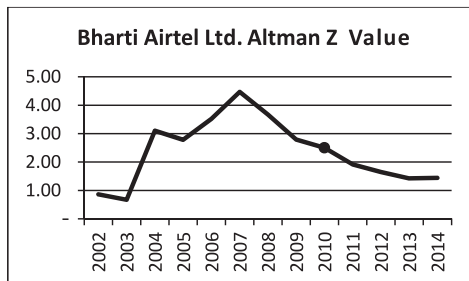
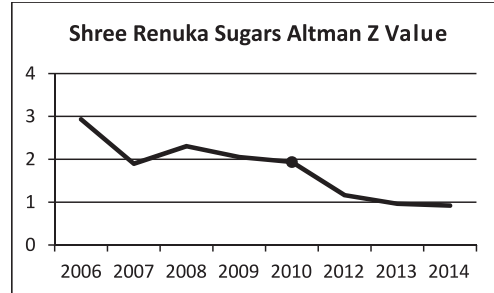
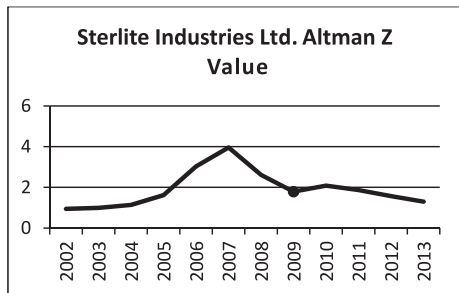
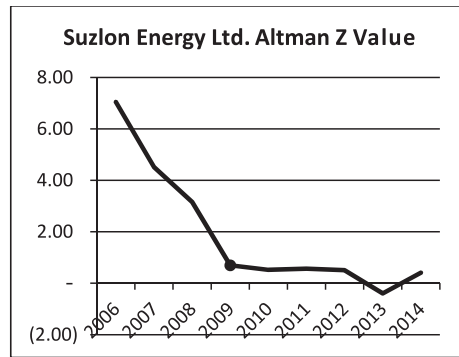
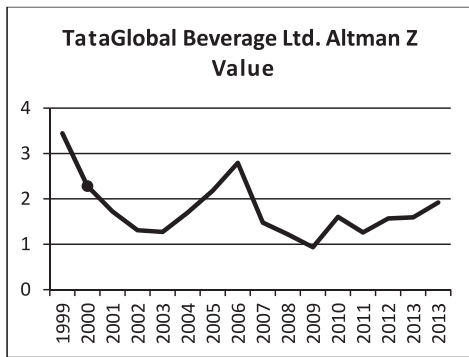




Chart 3  
Altman Z-Scores for the Acquirer Firms. (Continued)



(Note: Reliance Communications Acquisition Deal completed in 2000)

Above analysis shows that most firms have faced deteriorated financials and therefore deteriorated z scores during the first three-year post-merger.

However, it has to be noted that, the cross-border acquisition wave in India was during 2007 to 2008. Six of the companies in the sample have entered the acquisition deals during this period.

This period is characterised by the global recession and overall slump in many sectors in India so that the post-merger performance can be adversely affected by these factors. Nevertheless, even in the case of acquisitions in the comparatively normal period, the acquirers are facing lower post-merger Altman Z-score. For example, Bharti Airtel, Shree Renuka Sugar Mills, Tata Chemicals have entered into acquisition deals in 2010. According to the data, the synergy from acquisitions has not helped the acquirer firms to retain the financial health during the recession.

The next section examines the pre-merger to post-merger change in the profitability ratios with the help of Wilcoxon signed rank test. The purpose is to re-examine the long run effect on firm value by removing the effect of the confounding factors.

## **5.2. Long Run Effect on Acquirer Firm's Value Examined with the Change in Profitability Ratios**

In addition to the Altman's Z-score, the study also examines the post-acquisition change in profitability ratios of the acquirer firms as compared to the pre-acquisition period.

To reinforce the results of Altman z model, we examine the change in the pre-merger and post-merger profitability ratios of the acquirer firms. The long run effect across years also involves the confounding factors like overall economic environment, sectoral business cycles, etc. The Wilcoxon rank test is used to test for the significance of the effect of acquisitions amongst the other confounding factors.

While there are numerous ways to measure and compare profitability, the profitability ratios used in the present study are (a) profit divided by equity (Return on Net Worth); (b) profit divided by total assets, and (c) profit divided by sales. These ratios are considered to be sufficient as this analysis is used to reinforce the results of the Altman Z-score which is a comprehensive measure of the financial health of the firm.

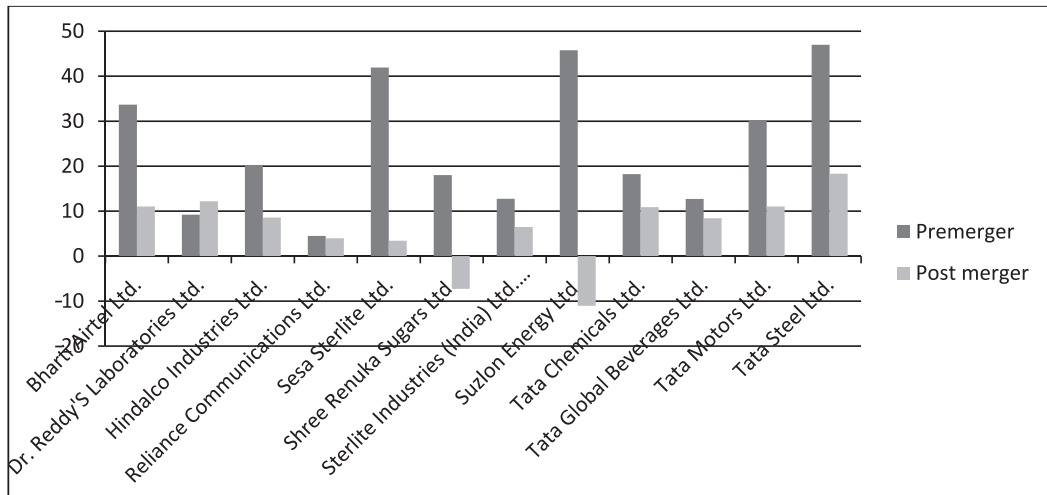
The above analysis (termed as change model or outcome model) calculates the change in profitability for each firm whereby the average profitability of the three years before the takeover is compared to the average profitability over the three years after the merger. The Wilcoxon signed rank test is used to verify whether the

post-acquisition performance is statistically significantly different from the pre-acquisition performance.

### 5.2.1. Results of the Comparison of the Pre-merger to Post-merger Return on Net Worth

The return on net worth represents the return to shareholders on their investment if the profit is passed over to them. The Return on Net Worth (RONW) for the three years post-merger is lower than pre-merger returns for all the firms except for the two acquirers Dr. Reddy's Laboratories Ltd. and Shree Renuka Sugar Mills Ltd. This difference is statistically significant at 95% confidence level by Wilcoxon signed rank test which removes the effects of confounding factors.

Chart 4  
Return on Net Worth Pre- merger vs. Post- merger

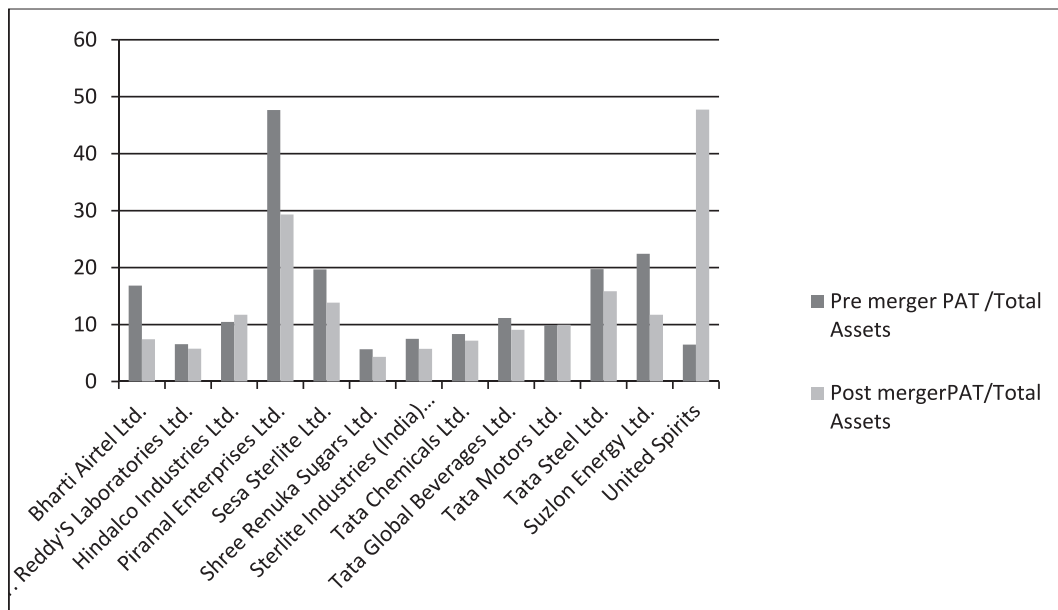


### 5.2.2. Results of the comparison of the Pre-merger to Post-merger Return on Total Assets

The return on assets ratio often called the return on total assets, is a profitability ratio that measures the net income produced by total assets during a period by comparing net income to the average total assets. In other words, the return on assets ratio or ROA measures how efficiently a company can manage its assets to produce profits during a period.

Since company assets' sole purpose is to generate revenues and produce profits, this ratio helps both management and investors see how well the company can convert its investments in assets into profits.

Chart 5  
Return on Total assets Pre- merger vs. Post- merger



The PAT to Total Assets ratios for the three years post-merger are lower than pre-merger ratios except for the two acquirers Hindalco and United Spirits, while this ratio is constant in the case of Tata Motors. There is sufficient evidence to suggest that there is a statistically significant difference between the pre-merger and post-merger profitability in terms of the PAT to total assets ratio.

### 5.2.3. Results of the Comparison of the Pre-merger to Post-merger PBIDTA to Sales

This ratio compares the revenue of the company to its sales earnings. It shows the revenue which remains after meeting the operating expenses of the firm or Profit Before Interest Depreciation and Taxes PBDITA).

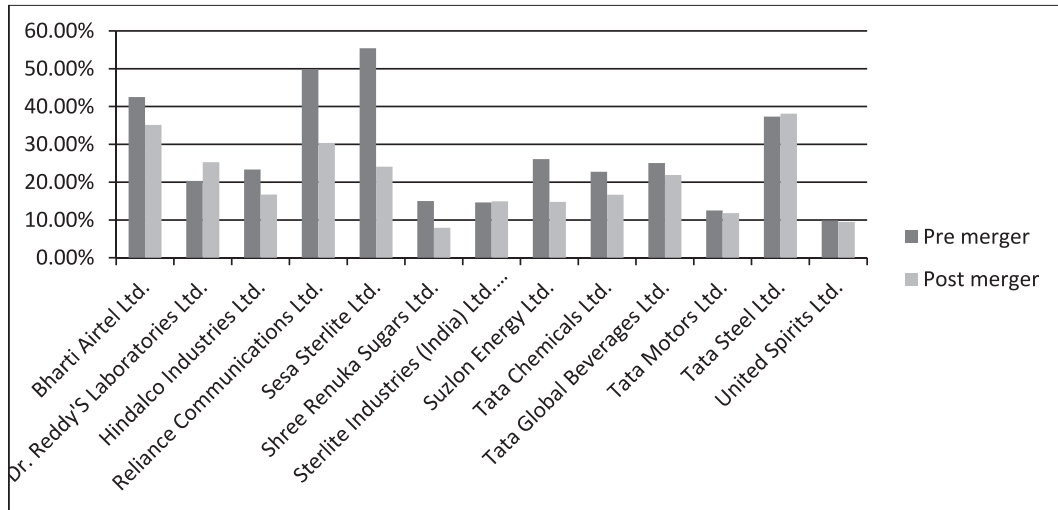
This ratio for the three years post-merger is lower than pre-merger returns except for Dr. Reddys , Shree Renuka Sugar, Tata Steel and Sterlite Industries. This difference is statistically significant at 95% confidence level by Wilcoxon signed rank test which removes the effects of confounding factors.

### 5.3. Summary of Results of Long-Term Effect of Cross Border Acquisition on Acquirer Firms:

Table no 4 summarizes the results of the Altman z model and the change in profitability ratios for each of the acquiring firms in the sample. The long run

performance of the acquirer firms has been measured in terms of post-acquisition changes in profitability ratios and Altman Z-score. The Altman Z-score for nine of the firms in the sample shows deterioration after the acquisition year.

Chart 6  
PBIDTA to Sales



Among the profitability ratios, Return on Total Assets shows increase only for Tata Motors and Hindalco, Return on Net Worth shows an increase in case of only Dr Reddy's Lab while Return on Sales shows a positive change in Tata Steel, Dr Reddy's Lab and Sterlite Industries. The Wilcoxon Sign Rank test shows that all these results are statistically significant.

The findings of both these methods suggest that the acquiring firms' performance in terms of profitability ratios and Altman Z-score has deteriorated during the post-merger period.

**Table 4**  
**Summary of Results of Long-Term Effects of Acquisitions on Acquirer Firm**

<i>Firm</i>	<i>Altman Z for Two Years Post Merger</i>	<i>RONW Change from Pre to Post Acquisition</i>	<i>ROA Change from Pre to Post Acquisition</i>	<i>ROS Change from Pre to Post Acquisition</i>
Tata Global Beverages	Falling then Rising	-	-	-
Tata Motors	Falling	-	=	-
Tata Chemicals	Moderate rise	-	-	-
Tata Steel	Falling	-	-	+
Hindalco	Falling	-	+	-
Dr. Reddys Lab	Rising	+	-	+
Piramal Enterprises	NA	-	-	-
Reliance Communications	Falling	-	-	-
Sesa Sterlite	Falling	-	-	-
Sterlite Industries	Rising	-	-	+
United Spirits	Moderate Rise	-	+	=
Suzlon Energy	Falling	-	-	-
Shree Renuka Sugar Mills	Falling	-	-	+

Both the findings of the profitability analysis and the Altman Z ratio show that the hypothesis 2 that, the cross-border acquisition by Indian acquirer firms results in negative post acquisition effect on financial performance in terms of profitability and financial sustainability of the acquirer ; cannot be rejected in case of the sample of the Indian acquirers under consideration.

## 6. CONCLUSIONS

The event study analysis of the firms in the sample shows that the short term effect of outbound acquisitions on acquirer firm is positive and statistically weak in case of India. The event study analysis for thirteen firms shows positive abnormal returns on the third day, eighth day and tenth day after the announcement date; however, the returns in some cases are not statistically significant. The event study also shows that the stock market is efficient in the dissemination of information. This finding is consistent with the findings of earlier studies on international acquisitions.

The evidence from Altman z model as well as the profitability ratio comparison shows the deteriorated financial performance of the Indian acquirer firms in the post-merger years. The analysis of longer-run effect of acquisitions on acquirer show statistically strong negative effects on acquirer firm in terms of Altman Z-score as well as profitability ratios. Thus, the study reveals that though the short term market return post acquisition is positive the long run financial performance of the acquiring firms deteriorated in case of the cross border acquisitions under study.

These findings are helpful for the investment decision making process of a long horizon investor as well as for the trader with a very short investment horizon.

The evidence of abnormal returns after the announcement of the acquisition shows that the Indian stock market responds efficiently to information.

On the backdrop of this analysis, the question remains as to why the firms engage in cross-border acquisitions? The answer to this question needs to be explored in the behavioural finance theory (Loubatkin, 1983; Brouthers et al., 1998). The examination of behavioural foundations of acquisition decision-making process is beyond the scope of this study. However, the study emphasises the need to further explore the motive behind the cross-border acquisitions by Indian firms. Due to a limited number of successful cross border acquisitions by large scale Indian corporates during the period under study, the sample size is limited. Nevertheless, the sample firms in the study are prominent firms with large market capitalization and major market share in the respective industry. The findings of the study can be tested further as the number of large value deals increase down the years. The findings of the study reveal that irrespective of the prominent market status, the acquirers under consideration show the long run adverse effect on the growth and financial sustainability and the resulting erosion of shareholder wealth.

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