
Do Target Firms Gain on M&A Announcement ? Evidence from Indian IT&ITeS Sector

Smita Kashiramka[#] and N.V.Muralidhar Rao^{##}

[#]Management and Economic & Finance Department, Birla Institute of Technology and Science, Pilani, Rajasthan, India.
Ph:+91 1596245635.

^{##}Management and Economic & Finance Department, Birla Institute of Technology and Science, Pilani, Rajasthan, India.
Ph: +91 1596245073 Extn:389.

ABSTRACT

The papers seeks to evaluate the target firms shareholders wealth effects of Mergers and Acquisitions (M&A) announcements made between 1999 to 2009 in the Indian IT and ITeS sector assuming that the Indian capital markets are efficient in the semi-strong form .The standard event study methodology was employed to estimate the cumulative average abnormal returns using single factor market model and multiple factor market model. Along with the non-standardized parametric tests, standardized parametric tests were also used. The nonparametric sign test was also used to corroborate the findings of the parametric tests. The results indicate that the target firms on an average gain significantly on the announcement of an acquisition; in case of mergers, positive wealth gains are made but they dissipate in post announcement period. Both the regression models yield the same result. The standardized parametric tests tend to give better results than the non standardized parametric tests. Finally, both the magnitude and direction of abnormal returns gets affected by the capital market movements at the time of deal announcement. The semi-strong form of efficient market hypothesis also gets tested in this paper.

Key Words: Mergers and Acquisitions, Target Firm Shareholders Wealth, India, Event Study Methodology.

Corresponding Author: Smita Kashiramka

INTRODUCTION

Indian M&A landscape boasts of steep rise in corporate restructuring via this route, especially post liberalization. Not only has the volume of domestic deals increased significantly, cross border deals have broken all previous records with Indian cash rich firms shopping abroad to capture new markets, new technology and become global conglomerates (Nayyar, 2008). M&A are said to occur in a wave like fashion with certain sector specific or economy wide factors initiating such waves. Literature indicates existence of six merger waves; the first wave started way back in 1897 with Industrial Revolution. The present merger wave is the sixth one with deregulation, privatization and globalization as the root cause of this wave (Sinha, 2009).

M&A have been well researched in the American and European context covering nearly all aspects related to name that include synergy effects, financial performance analysis, operating

performance analysis, merger motives, legal aspects, shareholders wealth, post merger integration issues, etc. to name a few. Both domestic and cross border deals have been evaluated on the above mentioned aspects of M&A. However, the Indian literature on M&A is gaining momentum as the M&A deals have been on a steep rise in the last decade. The focus is shifting from operating performance analysis (Pawaskar: 2001, Mantravadi and Reddy: 2008) , legal aspects (Mehta and Samanta: 1997) , patterns and motives(Venkiteswaran, 1997) to efficiency gains (Kaur and Kaur, 2010), shareholders wealth effects(Anand and Singh: 2008, Kohli and Mann:2009) and human resource issues (Basu *et al*, 2012) to name a few.

The Indian IT&ITeS sector has been a key contributor to the GDP contributing nearly 7.5% in 2011-2012. It has also been one of the most active sectors in M&A transactions, both domestic and cross border with United States being the most favored destination for Indian enterprises. However, the research related to this sector remains largely untouched. This paper seeks to evaluate the announcement effects of M&A transactions on the wealth of target firm shareholders in the IT&ITeS sector. This paper also evidences the form of efficiency for the Indian capital market.

LITERATURE REVIEW

Every corporate action should result in maximization of shareholders wealth and the same applies to M&A as well. Literature presents several findings on the announcement effect of M&A on the wealth of the shareholders of target as well as bidder firms. The results of these studies remain mostly in consensus when wealth effects of target firm shareholders is concerned as most of them indicate that the target firms gain on M&A announcement irrespective of the classification of the deals. The following paragraphs enumerate some of the findings in literature.

Clark and Elgers, 1980, studied the long term impact of merger announcement in US on the basis of type of deal. They found that substantial gains were made by targets against moderate gains by bidders. They also found that conglomerate mergers indicated superior wealth effects for both acquiring and target firms compared to non-conglomerate mergers. Franks, Harris and Titman, 1991, examined 399 takeovers in U.S. between 1975 and 1984 and reported significant wealth gains of around 28% for the targets. Jensen and Ruback, 1983, reviewed 13 research papers and reported that in successful takeover attempts, targets gained with 34% maximum gains reported in one month of deal announcement.

Guo *et al*, 1995, found significant wealth gains for both acquiring and target firms on merger announcements by Japanese firms of US domestic firms. They included variables like exchange rate, free cash flow, sales growth rate, asset growth level, premium paid to target firm and relative size of acquiring firm to find out the reason for premium paid by Japanese acquiring firms. Chavaltanpipat *et al*, 1997, studied banking sector acquisitions in US between 1994 and 1995 sub grouping the sample into small to medium acquisitions that were worth less than \$1 billion and large acquisitions that were more than \$ 1 billion They found significant positive gains to targets irrespective of their sizes whereas significant negative returns for larger acquirers that were worth more than \$1 billion and insignificant negative to other acquisitions. Kargin, 2001, conducted a review of literature to enumerate the findings of other researchers in mergers, tenders offers and acquisitions. As per his findings, in most of the cases, target firms experienced significant positive returns in mergers as against acquiring firms shareholders that experienced negative abnormal returns. Forming several categories of the M &A deals such as that on friendly versus hostile, mode of payment, failed or successful bids and type of industry, divesting firms and takeover motives, Goergen and Reneboog,2004, conducted a study of large European

takeover bids using event study methodology. They found large significant positive gains for the target firms. The bidder firms also observed statistically significant positive returns but they were as low as 0.7%. The hostile acquisitions had larger price reaction than friendly takeovers. Deals with UK based bidders or targets generated twice as high as abnormal returns as with continental Europe based firms. Cash deals generated larger reaction than other types of deals. Lepetit, *et al*, 2004, found that the targets gained significantly on an average when they examined the stock market reaction to cross border bank mergers in 13 European markets using GARCH model. They also found that cross product diversification and geographical specialization based mergers led to more positive reaction. Campa and Hernado, 2004 examined M&A announcements of 262 deals in the European Union and found that the targets gained significantly around 9% in one month event window whereas the acquirers gains were insignificant. The results were also lower for mergers in industries that were highly regulated due to factors like cultural differences, legal barriers, etc. Diz and Silva, 2005 examined deals from Portuguese banking industry and found that the targets gained significantly whereas acquiring banks lost significantly. However, the combined effect of deal announcement was insignificant indicating the Hubris hypothesis of M&A announcements. Kirchhoff *et al*, 2006, examined the M&A of real estate finance institutions in US between 1995 and 2002 and found significant wealth gains for target firm shareholders in real estate finance deals for both domestic and cross border deals. As against this, insignificant returns for the bidders were measured. Manasakis, 2009 found that the target firm shareholders gained significantly in case of horizontal and diversifying deals when they examined the shareholder wealth effect of M&As in the Greek banking sector that took place between 1995 and 2001. He also found that the bidding firms experienced significant negative abnormal returns in case of horizontal deals and no effect in case of diversifying deals.

In the Indian context, the findings indicate the similar results as above. Anand and Singh, 2008 analyzed the shareholders wealth effect in banking sector comprising of five mergers. Their results indicate significant wealth gains for both acquirers and targets except for one deal where both parties lost significantly. Kumar and Panneerselvam, 2009, calculated the shareholders wealth effect of mergers and acquisitions with a sample of 165 acquirers and 18 targets in mergers and 252 acquirers and 58 targets in acquisitions. Their results indicated gains for both targets and acquirers for both mergers as well as acquisitions. In case of acquisitions, acquirers gained more than targets and the reverse was true for mergers. Bennet *et al*, 2010, examined the wealth effects of M&A announcement on deals in the Indian manufacturing sector and tried to determine the factors affecting shareholders wealth. Their findings indicated that targets gained but lesser returns occurred to the shareholders of acquiring firms. They identified factors like event period market volatility, liquidity, cash position and financial leverage of the firms including profitability, growth and firm size that may affect the magnitude of abnormal returns on event announcement. Kohli and Mann, 2011, evaluated the target firms shareholders wealth effects in domestic and cross border deals. They found that the targets gained on an average in both domestic and cross border deals; however the gains were more in domestic deals than cross border deals as bid specific factors influenced the returns in such deals.

However, some papers also evidenced negative wealth effects of M&A announcements on target firms. Gregory and MacCorrison, 2002, used bootstrap method to find out the wealth effect in the long run of UK acquirers acquiring firms within European Union, United States and rest of the world. Using a data set of 365 acquisitions between the period 1985 to 1994. Their results for 1, 3 and 5 years indicated negative but statistically insignificant result for acquisitions made in EU but statistically significant negative returns for target firms from US. Related industry

acquisitions showed positive significant returns for acquirers. They also identified exchange rate, location of target firms, R&D intensity etc to be main motives for deals. Bashir *et al*, 2011, studied the effect of M&A announcement on shareholders wealth in Pakistan and found insignificant positive abnormal returns to the shareholders of acquiring firms but wealth losses for the targets.

The above review of literature indicates that the target firm shareholders have, on an average gained or their wealth results have been insignificant. Hence irrespective of the fact whether the deals have been in developed economies of United States or European countries or developing nations like India and China; or the deals have been domestic or cross border, horizontal or diversifying, hostile or friendly, or whether the shareholders wealth has been studied in short run or long run, the results seem to be in consensus indicating wealth gains to targets. With this theoretical base in mind, this paper investigates the target firms shareholders wealth effects in domestic deals in the Indian IT&ITeS sector using the short term event study methodology.

METHODOLOGY AND DATA

To measure the impact of M&A announcements on the wealth of the target firms in Indian IT and ITeS sector, standard event study methodology was used to measure the short run wealth effects of M&A announcement on target firms.

Event Study Methodology

Event Study Methodology (ESM) is a method for testing the impact that an unanticipated, new corporate event on the wealth of the shareholders of that firm (Fama, 1969). For implementing this methodology, it is assumed that the markets are efficient (either in the weak form, semi-strong form or strong form, Cox and Portes, 1998). In efficient markets, the stock prices reflect all the information of a firm (Alexakis *et al*, 2008). It was assumed that the Indian capital market is efficient in semi-strong form. As per this form, the stock prices reflect all the past publicly available information as well as any new information that is released in the market quickly and without bias to new information (Cornell and Morgan, 1990). This paper employs ESM as suggested by Mackinlay, 1997. ESM involves identifying the event of interest, defining the event date, event windows, estimation period, choosing a model for calculating abnormal returns, aggregation of abnormal returns, applying statistical tests and testing significance of results and drawing conclusions based on the significance and overall findings.

Null and alternate hypothesis

When markets are efficient, there should not be any abnormal returns accruing from the announcement of an unanticipated event. Hence the null hypothesis was defined as: H_0 : M&A announcement do not have any significant impact on the shareholders wealth of target firms and the alternate hypothesis was defined as H_1 : M&A announcement have significant impact on the shareholders wealth of target firms..

The Event of Interest and Sample Size

The event of interest were all M&A announced in the IT&ITeS sector between 1999 to 2009. The sample size comprised of a total of 58 targets out of which 52 comprised of targets from Acquisitions and 6 from Mergers. The list of deals was drawn from Centre for Monitoring Indian Economy (CMIE) Prowess Database between the period 1999 to 2009. The list of deals and

their date of first media announcement were verified from Lexis Nexis database, Venture Intelligence database and financial dailies. The firms included in the sample size were listed on either BSE or NSE.

Event Date, Event Windows and Estimation Period

The event date is the date of first media announcement of the deal and is defined as day '0'. When the first media announcement date was a holiday, the next working day was considered as day '0'. For measuring the stock price reaction, an event window of two months, i.e., 121 days surrounding the M&A announcement date was considered. News about an impending M&A usually travels to the market much before they are officially announced and the market keeps adjusting as additional news keeps coming to the market even after the first media announcement date (McWilliams and Siegel, 1998). Hence the choice of an event window of two months surrounding M&A announcement date. 21 event windows ranging between (-60,+60) days to day '0' were constructed. A clean period of 180 days prior to the event window, i.e., -61 to -240 days was taken for estimating the parameters of the market model for calculating expected return on a security. The OLS based regression model is widely used for estimating abnormal returns due to its simplicity and robustness over other models like capital asset pricing model, constant mean return model, Fama-French 3 factor model, etc (Mackinlay, 1997 and Brown and Warner, 1985).

Estimating the Market Model Residuals

The event study measures the impact of M&A announcement by estimating the abnormal returns. These abnormal returns are then cumulated across firms and across different event windows to derive CAAR that indicates the overall behavior of stock prices to announcement of merger or acquisition. Single factor market model (SFM) is the most widely used model for estimating abnormal returns as is considered to be simple yet robust under various circumstances (Brown and Warner, 1985). Since the sample was drawn from IT sector, hence a second explanatory variable measuring the returns in IT sector was also used where S&P C&N IT index was used as a proxy for measuring the same. The single factor market (SFM) model was defined as :

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

with $E(\varepsilon_{it}) = 0$, $\text{var}(\varepsilon_{it}) = \sigma^2_{\varepsilon_i}$

Where,

$E(R_{it})$ = Expected return on firm i at time t

α_i = Ordinary Least Square (OLS) estimate of the Intercept of straight line or alpha coefficient of security 'i'

β_i = Ordinary Least Square (OLS) estimate of the coefficient of BSE Sensex (BSE Sensex was used as a measure of market return) in the market model

R_{mt} = Actual return on the market index, BSE Sensex

ε_{it} = Error term with mean zero and constant variance σ_i^2 at time t..

The Multiple Factor Regression Model (MFM) was constructed as follows:

$$E(R_{it}) = \alpha_i + \beta_1 R_{mt} + \beta_2 R_{mit} + \varepsilon_{it} \dots\dots\dots(ii)$$

with

$E(\varepsilon_{it}) = 0$, $\text{var}(\varepsilon_{it}) = \sigma^2_{\varepsilon_i}$

Where,

$E(R_{it})$ = Expected return on firm i at time t

α_i = Ordinary Least Square (OLS) estimate of the Intercept of straight line or alpha coefficient of security 'i'

β_1 = Ordinary Least Square (OLS) estimate of the coefficient of BSE Sensex in the multiple factor market model

β_2 = Ordinary Least Square (OLS) estimate of the coefficient of CNX IT index in the multiple factor market model

R_{mt} = Actual return on the market index, BSE Sensex was used as a measure of market return at time t

R_{mit} = Actual return on the market index, CNX IT index was used as a measure of market return at time t

ε_{it} = Error term with mean zero and constant variance σ_i^2 at time t.

The Abnormal Return (AR_{it}) for stock 'i' on day 't' is defined as the disturbance term of the SFM and MFM is given as:

$$AR_{it} = R_{it} - E(R_{it}) \dots\dots\dots(iii)$$

where R_{it} was the actual return of stock i on day t.

Statistical Tests

To test for the significance of the residuals, both parametric and nonparametric tests were employed that include the non standardized parametric t-test and standardized parametric Patell test, 1976 and Boehmer, Musumeci and Poulson test, 1991. The nonparametric test sign test was also used to corroborate the findings of the parametric tests.

t-test

T first parametric test was the non standardized t-test which is considered to be well specified under different conditions (Brown and Warner, 1980; Henderson, 1990). The test statistic is given as follows:

$$t = \frac{CAAR_{(t_1,t_2)}}{\sigma(CAAR)} \dots\dots\dots(iv)$$

Where,

$$CAAR_{(t_1,t_2)} = \sum_{t=t_1}^{t_2} AAR_t \dots\dots\dots(v)$$

where, $AAR_t = \frac{1}{N} \sum_{i=1}^N AR_{it} \dots\dots\dots(vi)$ and $T_1 \leq t_1 \leq t_2 \leq T_2$

Patell Test, 1976

The abnormal returns as estimated above are assumed to be homoscedastic which may not always be true resulting in Type I error too often(Kolari and Pynnonen: 1998, McWilliams and McWilliams: 2000). Patell, 1976, introduced the standardized abnormal return test to take care of this assumption and modified the t-test statistics so that the firms with higher variance do not over influence the results.

The test statistics, t_p , for this test is given as:

$$t_p = \sqrt{\frac{n*(L_1-4)}{L_1-2}} * \overline{CSAR}_t \dots\dots\dots(vii)$$

Where,

n= number of cross sectional observations

L₁= Length of estimation period, 180 days.

CSAR_t= Cumulative Standardized Average Abnormal Return in the event window

The CSAR_t were estimated as follows:

$$SAR_{it} = \frac{AR_{it}}{S_i} \dots\dots\dots(viii)$$

Where SAR_{it} is the standardized residual of stock i on day t estimated by dividing the AR_{it} by estimation period standard deviation.

$$ASAR_t = \frac{1}{N} \sum_{i=1}^N SAR_{it} \dots\dots\dots(ix)$$

Where N= number of firms in the sample size

$$CSAR_{t_1,t_2} = \sum_{t=t_1}^{t_2} ASAR_{it} \dots\dots\dots(x)$$

Boehmer, Musumeci and Poulson (BMP) Test, 1991

Cross sectional contemporaneous correlation does exist between the returns of firms belonging to the same industry which is called ‘industry clustering’. This correlation does not get eliminated by controlling the market return since the correlation within the same industry is generally over and above that of the market (Malhotra and Malhotra, 2007; Corrado, 2011). Hence BMP test, 1991, was conducted to take care of serial as well as contemporaneous correlation . The test statistics for BMP test is given as follows:

$$t_{bmp} = \frac{\frac{1}{N} \sum_{i=1}^N SCAR_{it}}{\sqrt{\frac{1}{N(N-1)} \sum_{i=1}^N (SCAR_{it} - \overline{SCAR})^2}} \dots\dots\dots (xi)$$

Sign Test

The nonparametric sign test based on the signs of AAR in an event window. If the null hypothesis holds true, there will be no significant difference between the proportion of positive and negative AAR in all the event windows. The test statistics is given as:

$$Z_S = \left[\frac{N^+}{N} - 0.5 \right] * \frac{\sqrt{N}}{0.5} \sim (0,1) \dots\dots\dots(xii)$$

Where, N= total number of days in the event window

N⁺= number of positive AARs in the given event window

P= N⁺/N = Proportion of positive AARs in the event window

RESULTS AND FINDINGS

The summary statistics are presented below. The cumulated non standardized and standardized residuals were tested at 95% level of confidence to see if the announcement of M&A had any significant impact on wealth of the shareholders of target firms on an overall basis.

ACQUISITIONS: Shareholders wealth effects with Single Factor Model and Multiple Factor Model

Table 1 presents the findings of the CAAR obtained using single factor market model and multiple factor model.

Table 1. CAAR with SFM and MFM

Acquisitions - Targets					
Single Factor Model			Multiple Factor Model		
Event Windows	CAAR	t	Event Windows	CAAR	t
(-60,+60)	32.87	23.54*	(-60,+60)	0.07	0.10
(-55,+55)	20.99	15.93*	(-55,+55)	2.9	3.92*
(-50,+50)	18.96	14.37*	(-50,+50)	1.17	1.56
(-45,+45)	15.76	11.67*	(-45,+45)	2.25	2.93*
(-40,+40)	16.18	11.58*	(-40,+40)	4.05	5.40*
(-35,+35)	9.29	7.48*	(-35,+35)	1.62	2.36*
(-30,+30)	9.89	8.60*	(-30,+30)	0.29	0.43
(-25,+25)	15.99	14.55*	(-25,+25)	4.50	6.82*
(-20,+20)	12.44	10.65*	(-20,+20)	5.73	8.60*
(-15,+15)	9.94	8.10*	(-15,+15)	3.54	5.45*
(-10,+10)	4.70	3.55*	(-10,+10)	2.03	2.86*
(-9,+9)	3.10	2.55*	(-9,+9)	1.40	1.95
(-8,+8)	-1.06	-0.99	(-8,+8)	-0.80	-1.24
(-7,+7)	-3.58	-3.70*	(-7,+7)	-2.35	-4.18*
(-6,+6)	-2.58	-2.55*	(-6,+6)	-2.46	-4.10*
(-5,+5)	-1.10	-1.02	(-5,+5)	-1.11	-1.89
(-4,+4)	-1.14	-0.95	(-4,+4)	-1.34	-2.08*
(-3,+3)	1.12	1.00	(-3,+3)	1.03	1.38
(-2,+2)	1.53	1.17	(-2,+2)	0.60	0.69
(-1,+1)	1.79	1.10	(-1,+1)	0.30	0.24
(0,0)	0.54	0.40	(0,0)	1.10	0.91

* Significant at 5% (Critical values: SFM 2.0105 & MFM: 2.0105)

The results obtained from the single factor model for target firm shareholders exhibited mixed results. For the event windows ranging from (-60,+60) to (-9,+9) days, the target firms experienced significant positive abnormal returns registering a high of 32.87% in the two month event window. However in the shorter event windows, from 8 days to 4 days, the returns became negative although they remained statistically insignificant. In the event windows immediately surrounding the event announcement, i.e., between 3 days to event announcement date, the CAAR were positive but insignificant. Hence, these results indicate no abnormal performance in the five day event period surrounding the acquisition announcement. The positive wealth gains experienced by target firms shareholders in the longer event windows tend to confirm the findings of other studies that target firm shareholders experience significant positive abnormal returns around event announcement date (Chavaltanpipat *et al*, 1997, Jensen and Ruback, 1983, Pandey, 2001, Kumar and Paneerselvam, 2010, etc to name a few, both in the Indian and international context). However, no conclusion could be made from the above mixed reaction.

The results with multiple factor model indicated similar result as for single factor model with respect to the direction of CAAR(either positive or negative) and also in terms of significance of the results in almost all windows.. The target firms experienced significant positive CAAR for the longer event windows event windows of (-10,+10 days) to (-55, +55) days. These shareholders experienced mixed reaction in the shorter event windows; significant negative CAAR in the event window ranging from (-7,+7) to (-4,+4) days and insignificant positive CAAR between 0 to 3 days of event announcement.

ACQUISITIONS: Comparison of results with Standardized and Non-Standardized Residuals

Since both the models indicated similar results, hence SFM was used for calculating CSAR. The following table presents the results obtained with standardized cumulative returns (CSAR) and non standardized cumulative returns (CAAR) with SFM.

Table 2. CAAR and CSAR of Target Firms

Acquisitions-Targets							
Event Windows	Cumulative Average Abnormal Return (CAAR)	Cumulative Standardized Abnormal Return (CSAR)	t	t _p	t _{bmp}	p	Z _s
(-60,+60)	32.87	2.29	23.54*	16.52*	15.04*	0.57	1.55
(-55, +55)	20.99	1.83	15.93*	13.17*	11.72*	0.57	1.42
(-50,+50)	18.96	2.03	14.37*	14.67*	13.05*	0.56	1.29
(-45,+45)	15.76	1.51	11.67*	10.86*	9.55*	0.56	1.15
(-40,+40)	16.18	1.52	11.58*	10.99*	10.27*	0.57	1.22
(-35,+35)	9.29	1.78	7.48*	12.85*	13.28*	0.55	0.83
(-30,+30)	9.89	1.31	8.60*	9.44*	9.69*	0.54	0.64
(-25,+25)	15.99	1.88	14.55*	13.52*	13.96*	0.55	0.7
(-20,+20)	12.44	1.76	10.65*	12.68*	12.59*	0.54	0.47
(-15,+15)	9.94	0.89	8.10*	6.45*	6.32*	0.55	0.54
(-10,+10)	4.70	0.54	3.55*	3.91*	3.55*	0.52	0.22
(-9,+9)	3.10	0.44	2.55*	3.19*	3.17*	0.53	0.23
(-8,+8)	-1.06	0.04	-0.99	0.31	0.35	0.47	-0.24
(-7, +7)	-3.58	-0.38	-3.70*	-2.77*	-3.57*	0.4	-0.77
(-6,+6)	-2.58	-0.31	-2.55*	-2.26*	-2.73*	0.38	-0.83
(-5, +5)	-1.1	-0.07	-1.02	-0.5	-0.59	0.45	-0.3
(-4,+4)	-1.14	-0.17	-0.95	-1.24	-1.36	0.44	-0.33
(-3,+3)	1.12	-0.10	1.00	-0.68	-0.66	0.57	0.38
(-2,+2)	1.53	-0.10	1.17	-0.71	-0.59	0.6	0.45
(-1,+1)	1.79	0.010	1.10	0.02	0.01	0.67	0.58
(0,0)	0.54	0.20	0.40	1.46	0.18	1.00	1.00

* Significant at 5%. Critical value:2.0105

The CAAR for target firm shareholders showed significant positive CAAR for all the event windows between 60 to 9 days, except between 8 to 4 days window when they are negative and statistically significant in the 6 and 7 days event windows (for CSAR, negative returns were

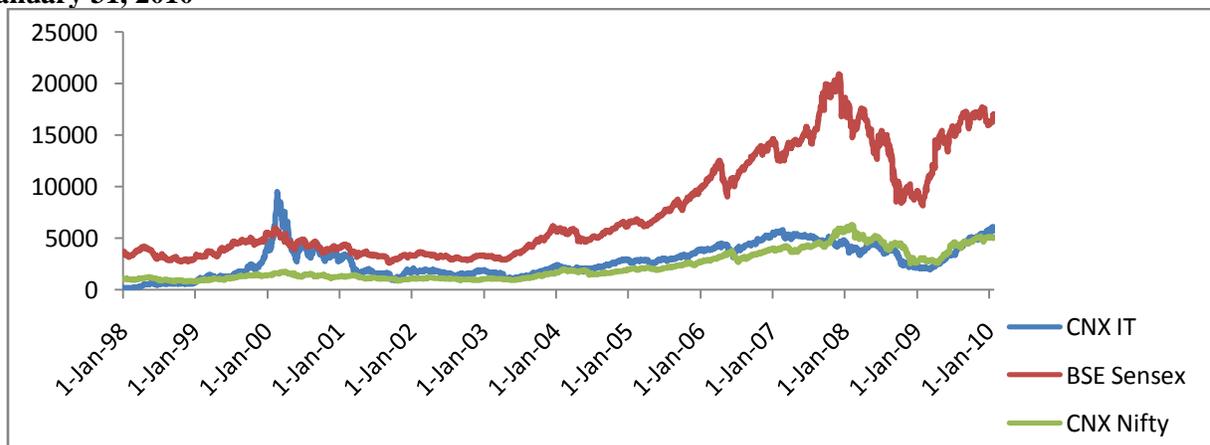
observed between 7 to 2 days event windows and statistically significant CSAR in 6 and 7 days event windows).

The CSAR were positive and statistically significant at 95% between 60 to 9 days event windows. In the one day event window and event announcement date, the CSAR remained positive but insignificant. The absolute values of CSAR declined from a high of 32.87% CAAR to 2.29% in the (-60, +60) days event window to a minimum of 0.01% in (+1,-1) days event window as against a minimum of 0.54% CAAR on event announcement date.

Although the CAAR turned positive from 3 day event window to event announcement date (for CSAR, positive returns in one day and event announcement date), but remained statistically insignificant. Overall the CAAR and CSAR behaved in a similar manner across most of the windows, the overall trend from significant positive to significant negative and then finally to insignificant positive remained the same.

As the results showed mixed behavior for this category of firms, the sample data was re-examined to look for the causes behind such mixed results. It was observed that out of the 52 firms in the sample, 12 announcements (that made up twenty percent of this category), were made in the year 2000,2001, 2002 and 2008 when the Indian capital markets were falling. When these deals were segregated and CAAR and CSAR calculated for these 12 firms and remaining 40 firms separately, the results indicated a clear picture of the 40 targets experiencing significant wealth gains in periods of risings capital markets and 12 targets experiencing significant wealth loss when capital markets were falling.

Chart 1. Movement in BSE Sensex, CNX Nifty and CNX IT indexes between January 1, 1998 to January 31, 2010



Source: www.nse-india.com/ and www.bse-india.com/

The chart above depicts the movement in the Indian capital market indicators, BSE Sensex, S&P CNX NIFY and CNX IT indexes. The stock market bubble burst in 2000 saw the indexes falling down. With the revival of the global economies, the indexes started rising post 1993. The period of sharp rise in the indexes as seen in the years 2005, 2006 and 2007 were also the periods of rising M&A activity in Indian context including the IT &ITeS sector. This rise continued till the beginning of 2008 when the US subprime crisis shook the world economies and Indian capital markets did not remain un-touched by .

Re-examination of Target firm shareholder wealth effects

The results obtained from the above categorization of the deals gives a clear and consistent picture of the shareholders wealth effects of target firms in acquisitions in the Indian IT and ITeS sector. The periods associated with positively moving Indian capital markets observed significant wealth gains to the target firm shareholders as against significant wealth losses for the four year, i.e., 2000, 2001, 2002 and 2008 that witnessed significant downward movements in the capital market. Hence the existence of mixed reaction of acquisition announcement for target firm shareholders can be identified due to the fact that when the capital markets were falling, the β values that measure the relationship of the stock return to market return was quite high compared to other periods. As a result of this, the expected return in these four years was much higher than other years resulting in significant negative CAAR and CSAR.

The following Table presents the findings of the re-examined data. The target firms experienced negative CAAR of -4.45% , -3.88% and -9.24% and CSAR of -3.5%, -3.84% and -6.71% in 10 days, one month and two months event windows respectively. Both the non standardized t- test and standardized t_p and t_{bmp} test statistics indicate significant wealth losses in all the event windows.

Table 3. Acquisitions: CAAR and CSAR of target firms in different periods of Indian capital market movements

Acquisitions: CAAR of targets in different periods of Capital market movements											
Results for 1999, 2003-2007, and 2009						Results for 2000, 2001, 2002 and 2008					
Event Windows	CAAR	t	CSAR	t_p	t_{bmp}	Event Windows	CAAR	t	CSAR	t_p	t_{bmp}
(-60,+60)	42.11	31.18*	5.32	33.62*	29.77*	(-60,+60)	-9.24	-20.44*	-6.71	-23.23*	-18.15*
(-55,+55)	29.83	23.47*	4.46	28.19*	24.21*	(-55,+55)	-8.83	-19.49*	-6.53	-22.62*	-17.58*
(-50,+50)	22.91	18.03*	3.42	21.61*	18.29*	(-50,+50)	-3.95	-8.95*	-2.66	-9.21*	-7.36*
(-45,+45)	20.75	16.04*	2.97	18.76*	15.62*	(-45,+45)	-4.99	-11.15*	-3.15	-10.90*	-8.60*
(-40,+40)	23.10	17.39*	3.40	21.51*	19.11*	(-40,+40)	-6.90	-15.43*	-4.36	-15.10*	-11.70*
(-35,+35)	15.03	12.94*	3.74	23.61*	23.87*	(-35,+35)	-5.75	-12.24*	-4.98	-17.25*	-13.00*
(-30,+30)	13.77	12.50*	2.71	17.10*	17.08*	(-30,+30)	-3.88	-8.10*	-3.84	-13.30*	-9.99*
(-25,+25)	18.26	17.82*	3.14	19.84*	20.39*	(-25,+25)	-2.26	-5.35*	-2.56	-8.87*	-7.46*
(-20,+20)	16.34	15.01*	3.37	21.27*	21.24*	(-20,+20)	-3.90	-9.37*	-3.75	-12.99*	-10.83*
(-15,+15)	13.58	11.59*	2.16	13.63*	13.10*	(-15,+15)	-3.63	-8.90*	-2.83	-9.80*	-8.05*
(-10,+10)	9.14	6.95*	1.74	11.02*	9.87*	(-10,+10)	-4.45	-10.19*	-3.50	-12.12*	-9.61*
(-9,+9)	7.22	5.92*	1.52	9.61*	9.69*	(-9,+9)	-4.11	-8.94*	-3.28	-11.37*	-8.66*
(-8,+8)	3.34	2.90*	1.00	6.31*	6.57*	(-8,+8)	-4.40	-9.43*	-3.81	-13.21*	-10.67*
(-7,+7)	0.92	0.89	0.61	3.84*	4.08*	(-7,+7)	-4.50	-10.54*	-3.99	-13.82*	-11.99*
(-6,+6)	1.84	1.68	0.76	4.79*	5.15*	(-6,+6)	-4.42	-11.24*	-3.99	-13.84*	-14.05*
(-5,+5)	2.60	2.22*	0.86	5.43*	5.66*	(-5,+5)	-3.65	-8.55*	-3.30	-11.42*	-10.63*
(-4,+4)	2.30	1.76	0.60	3.76*	3.58*	(-4,+4)	-3.44	-7.47*	-2.81	-9.72*	-8.25*
(-3,+3)	4.22	3.35*	0.61	3.88*	3.32*	(-3,+3)	-3.10	-6.68*	-2.58	-8.92*	-7.52*
(-2,+2)	3.96	2.70*	0.42	2.67*	1.93	(-2,+2)	-2.43	-4.33*	-1.91	-6.63*	-4.64*
(-1,+1)	3.64	1.93	0.41	2.56*	1.38	(-1,+1)	-1.85	-2.89*	-1.22	-4.24*	-2.45*
(0,0)	0.43	0.31	0.22	1.40	0.21	(0,0)	0.11	0.08	-0.17	-0.58	-0.11
<i>Significant at 5%, Critical value:2.021</i>						<i>Significant at 5%, Critical value:2.201</i>					

On the contrary, the rest of the years exhibit significant positive returns to the target firm shareholders in nearly all the event windows. The target firms experienced significant CAAR of 9.14%, 13.77% and 42.11% and CSAR of 1.74%, 2.71% and 5.32% in ten days, one month and two month event windows respectively. Thus it can be concluded that as evidenced in literature, target firms make significant gains on deal announcement. However, the overall movement in the capital market does effect the extent of abnormal returns for the shareholders of target firms.

MERGERS: Target Firms shareholders wealth effects with Single Factor Market Model and Multiple Factor Regression Model

The following table presents the findings of the target firms shareholders wealth effects with single factor market model and multiple factor market model.

Table 4.CAAR with SFM and MFM

Mergers- Targets					
Event Windows	Single Factor Model		Event Windows	Multiple Factor Model	
	CAAR	t		CAAR	t
(-60,+60)	-11.36	-4.15*	(-60,+60)	-8.3	-3.18*
(-55, +55)	-5.34	-1.89	(-55, +55)	0.53	0.20
(-50,+50)	3.25	1.16	(-50,+50)	8.61	3.26*
(-45,+45)	4.41	1.54	(-45,+45)	12.92	4.77*
(-40,+40)	-13.58	-4.68*	(-40,+40)	-4.52	-1.67
(-35,+35)	-8.85	-3.44*	(-35,+35)	-1.50	-0.65
(-30,+30)	-6.79	-2.58*	(-30,+30)	-2.72	-1.14
(-25,+25)	-12.09	-4.61*	(-25,+25)	-8.64	-3.66*
(-20,+20)	1.06	0.42	(-20,+20)	6.04	2.64
(-15,+15)	14.86	6.00*	(-15,+15)	17.05	7.31*
(-10,+10)	14.51	5.41*	(-10,+10)	16.04	6.17*
(-9,+9)	16.74	6.12*	(-9,+9)	17.79	6.68*
(-8,+8)	13.66	4.81*	(-8,+8)	13.92	5.07*
(-7, +7)	10.7	3.72*	(-7, +7)	10.89	3.86*
(-6,+6)	9.36	3.10*	(-6,+6)	9.16	3.10*
(-5, +5)	6.70	2.09	(-5, +5)	6.41	2.05
(-4,+4)	7.18	2.11	(-4,+4)	6.86	2.05
(-3,+3)	6.01	1.55	(-3,+3)	5.88	1.55
(-2,+2)	5.79	1.33	(-2,+2)	5.70	1.33
(-1,+1)	0.21	0.04	(-1,+1)	0.09	0.02
(0,0)	0.35	0.12	(0,0)	0.51	0.77

* Significant at 5% (Critical values: SFM 2.571 & MFM: 2.776)

The single factor market model indicates that target firms experienced wealth gains in the shorter event windows; these gains were statistically significant between (-6,+6) days window to (-15, +15)days window registering a high of 16.74% in the (-9,+9) days event window However the longer event windows indicate significant negative returns to the targets between (-25,+25) days windows to (-40,+40) days windows. During this period, the target firm shareholders

experienced maximum wealth loss of -13.58% in the (-40,+40) days window. The CAAR remained positive although insignificant for the period immediately surrounding the event announcement date up to (-5,+5) days window.

Similar to the single factor model, the CAAR experienced by target firms indicate significant positive abnormal returns from (-15,+15) to (-6,+6) event windows. However the CAAR remained positive but statistically insignificant for event windows of five days to one day. In other cases, except for event windows of 50, 45 and 25 days, the results were statistically insignificant. The significant positive returns peaked to 17.79% around 9 days of event announcement which supports targets anticipation of positive gains from merger. Hence both the models yield the same results across most of the event windows.

MERGERS: Comparison of results with Standardized and Non-Standardized Residuals

The following results were obtained with standardized cumulative returns (CSAR) and non standardized cumulative returns (CAAR) using SFM.

Table 5. CAAR and CSAR of Target Firms

Mergers- Targets							
Event Windows	Cumulative Average Abnormal Return (CAAR)	Cumulative Standardized Abnormal Return (CSAR)	t	t _p	t _{bmp}	p	Z _s
(-60,+60)	-11.36	-0.05	-4.15*	-0.13	-0.14	0.50	-0.09
(-55,+55)	-5.34	0.9	-1.89	2.21	2.31	0.50	-0.09
(-50,+50)	3.25	0.81	1.16	1.99	2.13	0.50	0.10
(-45,+45)	4.41	0.39	1.54	0.97	1.01	0.51	0.10
(-40,+40)	-13.58	-1.36	-4.68*	-3.34*	-3.47*	0.46	-0.78
(-35,+35)	-8.85	-0.79	-3.44*	-1.94	-2.03	0.42	-1.31
(-30,+30)	-6.79	-0.19	-2.58*	-0.47	-0.48	0.43	-1.15
(-25,+25)	-12.09	-0.76	-4.61*	-1.87	-1.88	0.37	-1.82
(-20,+20)	1.06	0.63	0.42	1.54	1.65	0.39	-1.41
(-15,+15)	14.86	1.86	6.00*	4.55*	5.25*	0.45	-0.54
(-10,+10)	14.51	1.93	5.41*	4.72*	5.12*	0.48	-0.22
(-9,+9)	16.74	2.18	6.12*	5.34*	5.73*	0.53	0.23
(-8,+8)	13.66	1.56	4.81*	3.83*	3.94*	0.47	-0.24
(-7,+7)	10.70	1.47	3.72*	3.60*	3.62*	0.47	-0.26
(-6,+6)	9.36	1.76	3.10*	4.32*	4.15*	0.46	-0.28
(-5,+5)	6.70	1.70	2.09	4.16*	3.67*	0.45	-0.30
(-4,+4)	7.18	1.69	2.11	4.13*	3.34*	0.44	-0.33
(-3,+3)	6.01	1.71	1.55	4.18*	3.02*	0.43	-0.38
(-2,+2)	5.79	1.61	1.33	3.95*	2.54	0.4	-0.45
(-1,+1)	0.21	0.48	0.04	1.19	0.73	0.33	-0.58
(0,0)	0.35	0.38	0.12	0.93	0.74	0.00	-1.00

* Significant at 5%. Critical value: 2.571

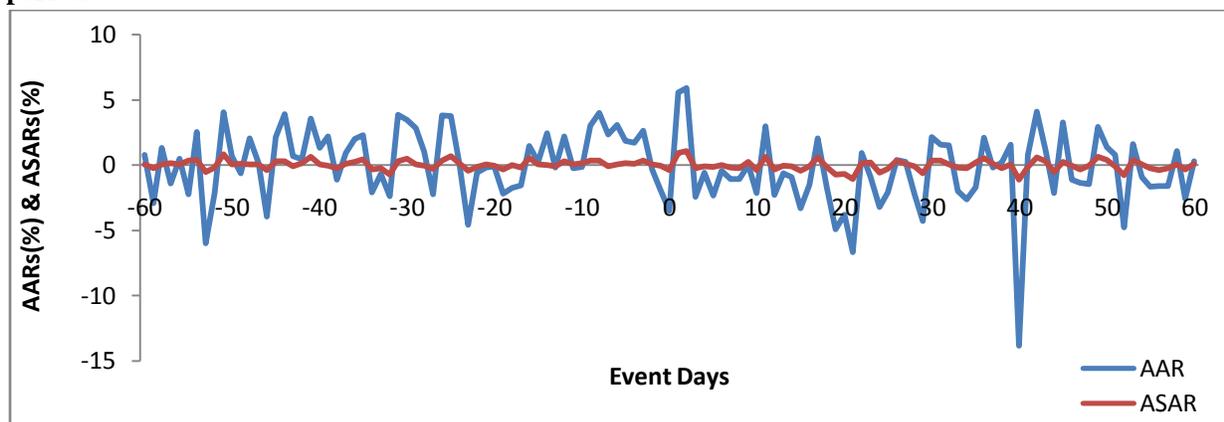
The CAAR did not follow any pattern between (-60,+60) and (-25,+25) day event window and after that, they became positive except for the event announcement date. These positive CAAR were statistically significant at 95% confidence level from 15 days event window up to the 6 day

event window and remained positive but insignificant between 5 days event window to event announcement date.

With the standardized Patell test, the CSAR values show the same trend as CAAR for the respective event windows but were statistically significant for a larger number of event windows (from 15 days to 2 day event window instead of 15 to 6 days event window in t_{bw} test). Hence the t_p test statistic strongly confirmed the findings of literature that the target firm shareholders experience significant positive abnormal returns around the event announcement date. With the t_{bmp} test, similar results are obtained as t_p that indicate significant positive abnormal returns between (-15,+15) days to (-3,+3) days event announcement. The standardized residuals also indicate that the negative CAAR experienced between (-40,+40) to (-25,+25) days event windows were not statistically significant except for (-40,+40) days event window.

The sign test results showed that the proportion of positive AAR was near 0.5 in the longer event windows; this proportion declined towards the event announcement date (from 0.46 in 40 days event window to 0.33 in the 1 day event window with increase in this proportion around 15 days event window). However, in none of the cases, the difference between the number of positive and negative AAR was significant. Also unlike the standardized test results that indicate significant wealth gains for the targets in the 15 days surrounding the merger announcement, the sign test indicated insignificant wealth losses on merger announcement. Since the CAAR and CSAR showed mixed reaction, the reason for the same was identified by plotting the AAR and ASAR in the 121 days of event period.

Chart 2. The AAR and ASAR plot for Target firms in the pre and post merger announcement period



It was found from the plots that the targets received positive wealth reaction in the entire pre-announcement period; however these gains did not sustain in the post announcement period. As a result of this, the CAAR and CSAR turn negative in the longer event windows. Hence it was concluded that the target firms in mergers did make significant wealth gains before the announcement of a merger but these gains dissipate in post announcement period. Since the sign test is based on the signs and ignores the absolute values of abnormal returns, the discrepancy in results from parametric and non parametric tests was obtained.

CONCLUSION

In terms of the shareholders wealth effects of M&A announcements, it can be concluded that the target firms made significant wealth gains on acquisition announcements when the deals were announced in positively moving capital markets. However, those for those deals that were announced during negatively moving capital markets experienced significant wealth loss. As against this, in case of mergers, the targets experienced significant wealth gains in the entire pre announcement period but these gains do not sustain in post announcement period. These findings also indicate that the target firms gain more when the deal is structured as an acquisition. This further gets evidenced from the fact that number of merger announcements are much less as compared to acquisition announcements.

Both the models used for estimating the abnormal returns give similar result in terms of positive/negative wealth effects as well as acceptance/ rejection of null hypothesis. Thus as indicated by Brown and Warner, 1980, the single factor market model produces reliable results across various situations; this further gets confirmed in the findings. The standardized tests are an improvement over the non standardized tests as they account for factors like heteroscedasticity and cross sectional correlation. Thus standardized tests tend to give robust results. The sign test results indicate similar results on an overall basis. Since the sign test completely ignores the magnitude of abnormal returns, differences in the results are obtained. Hence it is suggested that nonparametric tests should be used along with parametric tests.

On the basis of the significant results obtained for targets in mergers as well as acquisitions, the null hypothesis of no abnormal performance stands rejected. This further gives evidence that the semi strong form of EMH does not hold true in the Indian context.

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