Do Acquirers Gain Real Wealth? : A Long Term Study in India

** Ketan C. Limaye*
*** Achut P. Pednekar*

Abstract

The present paper analyzed long term performance of M&A deals in India in terms of growth in shareholder value of acquirers in real terms and compared it with growth in nominal terms. It tried to understand whether M&A deals contribute to shareholder wealth of acquirers in real terms in comparison to nominal terms. We performed sectoral as well as overall analysis of a sample of 174 deals. We analyzed performance in three ways; in the form of growth of shareholder wealth of acquirers in nominal terms, growth of shareholder wealth of acquirers in real terms, and finally, a one on one comparison of performance in nominal terms vis a vis real terms. The study covered domestic M&A deals in India over a period of 1989 to 2014 involving Bombay Stock Exchange (BSE) listed acquirers. The model used for study is *BHAR* (Buy and Hold Abnormal Return) and a modification of *BHAR*, that is, *RBHAR* (Real Buy and Hold Abnormal Return). We did not find any significant difference between the test results of *BHAR* and *RBHAR* on a standalone basis. However, when we compared the performance of *BHAR* and *RBHAR* on a one to one basis, we found that the performance of M&A deals in auto and IT sectors in real terms was better than in nominal terms. Overall, M&A performance in real terms was also better than that in nominal terms.

Key words : **mergers, acquisitions, *BHAR*, inflation, real returns, real wealth, India, event study, acquirer's returns, acquirer's wealth, shareholder wealth**

JEL Classification : G30, G31, G32, G34, E30, E31

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Mergers and acquisitions has been the buzzword in the corporate sector both internationally and domestically for decades. Mergers and acquisitions, referred to in short as M&As, are considered as one of the most complex corporate restructuring processes companies undertake. There is no major economy in the world, both developed as well as developing, which has been untouched by M&A activity. Participants invest billions of dollars in M&A deals with various motives which may be strategic as well as tactical. There are various motives for M&As such as organizational growth, diversification, integration, financial synergy, operational synergy, market leadership, technology acquisition, takeover defense, etc., but they are mostly directed towards achieving the main objective of growth in shareholder value as the shareholder interest is paramount to any company.

M&A activity in an economy is experienced in the form of waves more commonly called as merger waves. These waves are mostly centered around some theme depending on types of merger, types of entities involved, domestic or cross border deals, etc. The U.S. has witnessed a large amount of M&A activity. It has experienced five waves of merger activities beginning with the first wave of 1897 - 1904, second wave of 1916 - 1929, the

* *Research Scholar,* Dnyanprassarak Mandal's College and Research Centre, Assagao, Bardez, Goa.
E-mail: ketan.limaye@yahoo.com
** *Assistant Professor,* Department of Commerce at Dnyanprassarak Mandal's College and Research Centre, Assagao, Bardez, Goa. E-mail: atchutpednekar@yahoo.com

1940s, third wave of 1965 - 1969, fourth wave of 1981 - 1989, and the fifth wave of 1992 - 2000. In India, the merger waves have been split into two parts, the pre-liberalization era (up to 1990) and the post-liberalization era (1990 onwards). The second wave witnessed an increase in M&A deals due to opening up of the economy and various other changes in policies and reforms of 1991. Liberalization and recession in the country created new opportunities and challenges for the Indian corporates and the resultant surge in M&A deals (FedUni, 2005). From the above discussion, it can be understood that M&As have, over the course of the century, transformed the corporate landscape.

Table 1. Merger Activity in India (Recent Trends)

Type of Deals	No of Deals									
	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Domestic	151	214	321	172	174	373	216	233	218	253
Cross border	192	266	355	282	156	289	288	262	221	283
Mergers and internal restructuring	--	--	--	--	--	--	140	100	58	37
Total M&A	**343**	**480**	**676**	**454**	**330**	**662**	**644**	**595**	**497**	**573**
Cross border includes										
Inbound	56	76	112	86	74	91	142	140	139	166
Outbound	136	190	243	196	82	198	146	122	82	117
Total Value in USD Billions	**11.20**	**16.30**	**20.30**	**51.11**	**11.96**	**49.78**	**44.61**	**35.39**	**28.16**	**38.12**

Source: Compiled from Grant Thornton (2011) and Kumar (2011)

The Table 1 gives a brief overview of the M&A activities in India in the period from 2005 - 2014. It can be seen that M&As witnessed a fluctuating trend both in volume and value. A glance at these figures reveals the huge amount of money involved in these deals. Such is the quantum of wealth at stake that the fate of M&A deals can have enormous impact on stakeholders.

The importance of M&A deals for the economy, industry, and the company is well known. The number of underperforming deals is a cause of serious concern which causes destruction of shareholder wealth. Though studies in the field of performance of M&A deals have been done, there is not much research on long term performance measurement in real terms for shareholder wealth growth, especially in the Indian context. Companies mainly go for M&As to increase shareholder value or wealth. However, in many cases, they fail to gain wealth and instead lose wealth. This causes huge losses to the country and the stakeholders, negatively affecting the economy, industry, and the corporate environment.

Though we find from the available literature that wealth creation due to M&A deals is measured in nominal terms, no such effort is made to understand their performance in real terms. If such performance is measured in real terms, it is likely to bring out new facts and a better picture of deal outcome. The effects of inflation on security prices and returns distort their actual value which necessitates measurement in real terms. It may happen that though M&A deals underperform in nominal terms, they may have performed well in real terms. The results of such a study is likely to reveal startling facts about M&A performance from a hitherto untouched aspect. Hence, it is felt that a comprehensive and well thought research should be done on the long term performance of M&A deals in terms of growth in shareholder value of acquirers in real terms in India.

This paper analyzes long term performance of M&A deals in India in three ways. The first in the form of growth of shareholder wealth of acquirers in nominal terms, second as growth of shareholder wealth of acquirers in real terms, and finally the third is a comparison of performance in nominal terms vis a vis real terms. It should be noted that our research focuses on the returns from the perspective of investors who hold investments for a longer period of time, that is, for 1 year to 3 years.

This paper analyzed long term performance for various sectors as well as overall M&A deals in India for the period from 1989 to 2014. By performance, we mean the performance of acquirers only in which the investor is going to invest his/her money as per our study. We considered only those deals in which the acquirer was listed on the Bombay Stock Exchange. We excluded deals which were conglomerate deals, technical nature, etc. We used GDP deflator for the purpose of arriving at real values. Detailed criteria adopted for selection of deals, calculations, model specifications etc. are mentioned in the subsequent sections of this paper.

Review of Literature

Various studies with respect to long term performance in terms of shareholder wealth, of major corporate events which includes M&A deals have yielded different results. These studies have used different methods to evaluate performance and have found varying results. Lubatkin (1987) concluded that in general, related mergers (product concentric and horizontal/market concentric) do not create more value for stockholders of acquiring firms than do unrelated and vertical mergers. Loderer and Martin (1992) found that on an average, acquiring firms do not underperform a control portfolio during the first 5 years following the acquisition. Mitchell and Stafford (2000) found virtually no evidence of reliable abnormal performance.

Francoeur (2007) found that on the whole, cross border M&As do not create or destroy abnormal value during post acquisition period and also support internalization theory. They generate sufficient value to keep up with the requirement of the stock market. A study conducted by Dutta and Jog (2009) did not find any significant negative long-term abnormal returns for Canadian acquirers, once methodological discrepancies are accounted. Kot (2011) in the study related to Hong Kong stock market concluded that name changes have short term stock price effects but no long term relationship with stock price or operating performance. Agrawal, Jaffe, and Mandelker (1992) in their study found that over a period of 5 years following the merger completion, stockholders of acquiring firms suffer significant loss of wealth.

Gregory (1997) concluded that takeovers were, on an average, wealth reducing events for acquiring companies. Rau and Vermaelen (1998) observed that acquirers in mergers underperform in the 3 years after the acquisition while acquirers in tender offers earn a small but statistically significant positive abnormal returns. However, the long-term underperformance of acquiring firms in mergers is not uniform across firms. André, Kooli, and L'Her (2004) concluded that cross-border deals perform poorly in the long run in the Canadian stock market. Wang, Shih, and Lin (2014) found that the long run stock performance of Asian Commercial Bank merger and acquisition were negative.

Kyriazopoulos and Drymbetas (2015) found negative performance throughout all post merger time horizons, using *BHAR* as well as *CAR* for acquirers involved in domestic bank M&As in Europe. Bhabra and Huang (2013), in their study of mergers and acquisitions by Chinese listed companies, found overwhelming evidence of positive wealth gains for acquirer shareholders over the 3-year post-acquisition period. Verma, Nair, and Maji (2013) (using EVA) witnessed a positive effect of M&As in respect of Indian banks. Barai and Mohanty (2014) discovered that both related and non related mergers created value in the short run and over the first 2 years post merger in respect of Indian acquirers.

Stock returns and inflation have been found to be related in several studies over decades over short as well as long term. Bodie (1975) found that real return on equity is negatively related to both anticipated and unanticipated inflation, at least in the short run. According to Mayya (1977), investment in equities generally failed to act as a reliable hedge against inflation. Kaul (1987) provided evidence to show that stock return - inflation relations are dependent on the equilibrium process in the monetary sector, and they vary if the underlying money demand and supply factors undergo a systematic change. Prabhakaran (1989) found that in general, equities have failed to provide a hedge against inflation. Rao and Bhole (1990) said that over long periods of time, positive real rate of return was being provided by equities, but in the short run, the real return was often negative in India.

Balduzzi (1994) found that inflation itself is responsible for most of the dynamic interaction with stock returns. Shanmugam and Misra (2008), in their study on stock returns and inflation relation in India, found that the negative stock returns-inflation relation emerges from the unexpected component of the inflation and this negative relation vanishes when for the inflation-real activity relation is controlled. Geetha, Mohidin, Chandran, and Chong (2011) found mixed results for Malaysia, United States, and China. Ibrahim and Agbaje (2013) concluded that inflation has a positive and significant effect on stock returns in Nigeria.

Many studies have evaluated the relation between stock returns/prices and macroeconomic factors touching upon the inflation angle or real returns. In one of the earliest such efforts, Fama (1981) attempted to explain the anomalous stock return-inflation relations which show negative relations between stock returns and both the expected and unexpected components of inflation. He found that the positive relations between stock returns and real activity that come from the real sector combine with the negative relations between inflation and real activity from the monetary sector to induce spurious negative relations between stock returns and inflation. Schwert (1990) observed strong positive relation between real stock returns and future production growth rates. James, Koreisha, and Partch (1985) found evidence of linkages between real activity and stock returns, as well as between real activity and inflation. Rao and Bhole (1990) concluded that the real return on equity has been negatively related to inflation throughout all periods from 1953 - 1987.

It can be observed from literature that whenever performance of M&A deals has been analyzed, it was in nominal terms and not in real terms. In fact real wealth has never found any place in the studies conducted for such deals. It is well known that inflation affects all the assets in varying magnitude and shareholder wealth is not an exception. The aspect of real returns and inflation have been studied in other areas while the same has not been done in case of M&A deals. It is ,therefore, felt that a study of M&A deals in terms of growth in real terms and comparison with growth in nominal terms is necessary. We believed that such a study would reveal new facts and may give an altogether different direction to M&A analysis. It will enable us to understand whether M&A deals contributed to shareholder wealth of acquirers in real terms and its performance against growth in wealth in nominal terms.

Methodology

(1) Buy and Hold Abnormal Return *(BHAR)* Model : Buy and hold abnormal return model *(BHAR)* measures the difference between buy and hold returns for event firms, that is, M&A acquirer in this case and peer firms also called control firms. *BHAR* has been favored over cumulative abnormal returns on conceptual grounds by Barber and Lyon (1997). Their study supported the *BHAR* methodology using reference portfolio or control firm. Barber and Lyon (1997) argued that the *BHAR* is the appropriate estimator because it "precisely measures investor experience." *BHAR* as a measure of long term stock performance in respect of major corporate events has been extensively used in a large number of studies, a few notable being by Barber and Lyon (1997) ; Lyon, Barber, and Tsai (1999) ; Mitchell and Stafford (2000) ; Megginson, Morgan, and Nail (2004) ; and Dube, Gladney, Romero, and Langdon (2007).

Barber and Lyon (1997) found that misspecification in BHAR is caused to due to three biases, that is, new listing bias, rebalancing bias, and skewness bias. Our model calculations were not affected by these biases as we had used control firms consisting of sector peers instead of any stock indices as benchmark for measuring performance. Further, Barber and Lyon (1997) had also argued that researchers should calculate abnormal returns as the simple buy-and-hold return on sample firm less the simple buy-and-hold return on a reference portfolio or control firm. We adopted the control firm approach matched by the sector of acquirer.

Equation of *BHAR* :

$$BHAR_{eT} = \prod_{t=1}^{T}(1+r_{et}) - \prod_{t=1}^{T}(1+r_{mt}) \quad \text{..... (1)}$$

Equation 1 is the most commonly used *BHAR* equation. Where, *t* refers to the time period for which the return is being calculated. *r* refers to the return for time *t*. *e* refers to expected return to the acquirer, and *m* refers to the market portfolio. However, we used a slightly modified and detailed version which gives results similar to the above equation. This equation is discussed below :

Equation of *BHAR* used in this study (Annualized):

$$BHAR_i = [[\sqrt[n]{\Pi^{n}_{t=1}(1+BHR_{it})} - 1] \times 100] - \frac{1}{z}\Sigma^{z}_{j=1}[[\sqrt[n]{\Pi^{n}_{t=1}(1+BHR_{peer_{jt}})} - 1] \times 100] \quad \text{..... (2)}$$

Equation 2 is of annualized *BHAR* which we have used in this study, where *t* refers to the time period for which the return is being calculated. *BHR* refers to buy and hold return. *n* is the holding period of investment. *i* refers to the acquirer for whom *BHAR* is being calculated, *j* indicates the number of the peer, and *z* indicates the total number of peers. The returns are annualized.

Equation of *BHR* :

$$BHAR_{t0\text{-}n} = [[\sqrt[n]{\Pi^{n}_{t=1}(1+BHR_{t})} - 1] \times 100] \quad \text{..... (3)}$$

In the equation of buy and hold return *(BHR)* above, *t* refers to the time period for which the return is being calculated. *n* is the holding period of investment.

(2) Real Buy and Hold Abnormal Return *(RBHAR)* Model : Real buy and hold abnormal return *(RBHAR)* model is a modified version of *BHAR*. In this model, we have used real buy and hold return which uses real values, that is, deflated values of share prices and dividend. The purpose of this model is to find performance of acquirers in real terms.

The model details of *RBHAR* are given below :

Equation of *RBHAR* (Annualized):

$$BHAR_i = [[\sqrt[n]{\Pi^{n}_{t=1}(1+RBHR_{it})} - 1] \times 100] - \frac{1}{z}\Sigma^{z}_{j=1}[[\sqrt[n]{\Pi^{n}_{t=1}(1+RBHR_{peer_{jt}})} - 1] \times 100] \quad \text{.....(4)}$$

The equation of *RBHAR* is similar to *BHAR* with the exception that the returns are measured in real terms in the form of *RBHR*, where,

t refers to the time period for which the return is being calculated. *RBHR* refers to real buy and hold return.
n is the holding period of investment.
i is the acquirer for whom *RBHAR* is being calculated.
j is the number of the peer and *z* indicates the total number of peers.
The returns are annualized.

Equation of *RBHR* :

$$RBHAR_{t0\text{-}n} = [[\sqrt[n]{\Pi_{t=1}^{n}(1+RBHR_t)} - 1] \times 100] \quad \text{..... (5)}$$

In the equation of real buy and hold return *(RBHR)* above, *t* refers to the time period for which the return is being calculated and *n* is the holding period of investment.

Calculation of RBHR

Data requirement:

- GDP at current price and constant price to calculate GDP deflator.
- Adjusted closing share prices of acquirer as of end of March.
- Equity dividend of acquirer for the year ending March.

Steps for Calculation of *RBHR* :

Step 1: Calculation of GDP deflator ratio *(DR)*:

GDP deflator ratio for time *t*, DR_t :

$$Dr_t = \frac{Nominal\ GDP_t}{Real\ GDP_t}$$

where, *t* means the year for which GDP deflator ratio *DR* is being calculated.

Step 2: Calculation of real values of adjusted closing price of shares *(RADJCL)*;
Real adjusted closing price of shares of a company for time *t*, $RADJCL_t$;

$$RADJCL_t = ADJCL_t \times 1/DR_t$$

where, t means the year for which *RADJCL* is being calculated. *ADJCL* means adjusted closing price of shares.

Step 3: Calculation of real values of dividend per share *(RDIV)*;

Real dividend per share for a company for time *t*, $RDIV_t$;

$$RDIV_t = DPS_t \times 1/DR_t$$

where, t means the year for which *RDIV* is being calculated. *DPS* means dividend per share.

Step 4 : Calculation of real buy and hold return of a company *(RBHR):*
Real buy and hold return of a company, $RBHR_t$;

$$RBHR_t = \left(\frac{RDIV_t + [RADJCL_t - RADJCL_{t\text{-}1}]}{RADJCL_{t\text{-}1}} \right)$$

Step 5 : Geometric summation and averaging of real buy and hold return of a company (*RBHR*)
Returns are geometrically summed and averaged, $RBHR_{t0\text{-}n}$;

$$RBHR_{t1\text{-}n} = [\sqrt[n]{[(1+RBHR_{t1}) \times [(1+RBHR_{t2}) \times [(1+RBHR_{t....n})]} - 1] \times 100$$

$$RBHR_{t1\text{-}n} = [\sqrt[n]{[(\Pi^{n}_{t=1}(1+RBHR_{t}) - 1] \times 100$$

BHR is calculated in a similar manner but with nominal values.

(3) Incremental *BHAR* and *RBHAR* : Though we measure *BHAR* and *RBHAR*, it alone was not be sufficient to conduct any meaningful performance analysis. For this, we had to compute the change in *BHAR/RBHAR* pre and post M&A. We achieved this using the concept of incremental *BHAR/RBHAR*. Incremental *BHAR* was measured as:

Incremental *BHAR* 3 years pre and 1 year post M&A = (Post $BHAR_{y0-y1}$ – pre $BHAR_{y\text{-}3\text{-}y0)}$)
Incremental *BHAR* 3 years pre and 2 years post M&A = (Post $BHAR_{y0-y2}$ – pre $BHAR_{y\text{-}3\text{-}y0)}$)
Incremental *BHAR* 3 years pre and 3 years post M&A = (Post $BHAR_{y0-y3}$ – Pre $BHAR_{y\text{-}3\text{-}y0)}$)
Incremental *BHAR* 1 is referred to as incremental *BHAR* Post Year 1 and so on.

where *y0 – y1* refers to returns for year 0 to year 1 post M&A deal and so on. Similarly *y-3 - y0* refers to returns for year 3 to year 0 pre M&A deal. For instance, if the M&A deal has taken place in 1999 - 2000, year 0 for pre M&A performance is 1998 - 1999 and year 3 is 1996 - 1997. For post M&A performance , year 0 is 2000 - 2001 and year 1 is 2001 -2002, and so on.

Similarly, we also calculated incremental *RBHAR* values. Incremental *BHAR/RBHAR* are denoted as *INCBHAR/INCRBHAR* in this paper as a variable. These measures enabled us to compare performance before and after M&A deal.

(4) Differential *BHAR* : For comparing long-term M&A performance without inflation adjustment *(BHAR)* with performance in real terms *(RBHAR)*, we calculated differential *BHAR* using post year 3 performance. This allowed us to evaluate how M&As performed in real terms in comparison to nominal terms.

Differential *BHAR (DIFFBHAR)* is measured as:

Differential *BHAR* = (*INCRBHAR* 3 – *INCBHAR* 3)

where, *INCRBHAR* 3 means *INCRBHAR* post year 3 and *INCBHAR* 3 means *INCBHAR* post year 3.

(5) Experimental Design : This concept of Incremental *BHAR/RBHAR* closely resembles the before and after with control design though not exactly. Before and after with control design is an experimental design in which the treatment effect is determined by subtracting the change in the dependent variable in the control area from the change in the dependent variable in the test area. In this study, the treatment is the M&A deal activity, control area is represented by peer performance, test area with the M&A acquirer, and the treatment effect by the incremental *BHAR/RBHAR*. Before and after period will be the three financial years pre and post M&A deal.

(6) Statistical Tests : The significance test used is one sample Wilcoxon signed rank test which is a non parametric test. Since the maximum number of deals in a sector is 29 and the lowest being four deals and that the distribution of *BHAR* and *RBHAR* were non normal, it was decided to use this distribution free test. Wilcoxon signed - rank test is a non parametric alternative to *t* - test. We have used significance at the 5% level in a one tailed test.

Data, Sample Selection, and Major Considerations

(1) Data : We collected the M&A data from CMIE Prowess database. The period of the study is from 1989 - 1990 to 2013 - 2014 (25 years). However, the period for selection of M&A deals is from 1992 - 1993 to 2010 - 2011 (19 years). This is due to a gap of 3 years maintained on both the sides of the period to measure performance 3 years pre and post M&A. Share prices of companies and equity dividend data were also obtained from CMIE Prowess database. The GDP data were taken from Planning Commission (2014). Calculation of GDP Deflator based on GDP data for F.Y. 1989 - 1990 to 2013 - 2014 is presented in the Table 2. Industry classification for acquirers, target as well as peers was obtained from the website of the BSE. In addition, data from Internet such as BSE website, news websites, business websites, websites of companies, websites of securities firms, directory listings etc. were also used.

Table 2 . Calculation of GDP Deflator from F.Y. 1989 - 1990 to 2013 - 2014

Base : 2004 - 2005 Prices			(Amount in ₹ Crores)
F.Y.	GDP Current Prices	GDP Constant Prices	GDP Deflator Ratio
A	*B*	*C*	*D = B/C*
1989-1990	501,928	1,409,615	0.3561
1990-1991	586,212	1,487,615	0.3941
1991-1992	673,875	1,503,337	0.4483
1992-1993	774,545	1,585,755	0.4884
1993-1994	891,355	1,661,091	0.5366
1994-1995	1,045,590	1,771,702	0.5902
1995-1996	1,226,725	1,905,899	0.6436
1996-1997	1,419,277	2,049,786	0.6924
1997-1998	1,572,394	2,132,798	0.7372
1998-1999	1,803,378	2,264,699	0.7963
1999-2000	2,023,130	2,465,029	0.8207
2000-2001	2,177,413	2,559,711	0.8506
2001-2002	2,355,845	2,683,190	0.8780
2002-2003	2,536,327	2,785,258	0.9106
2003-2004	2,841,503	3,004,190	0.9458
2004-2005	3,242,209	3,242,209	1.0000
2005-2006	3,693,369	3,543,244	1.0424
2006-2007	4,294,706	3,871,489	1.1093
2007-2008	4,987,090	4,250,947	1.1732
2008-2009	5,630,063	4,416,350	1.2748
2009-2010	6,477,827	4,790,847	1.3521
2010-2011	7,784,115	5,282,386	1.4736
2011-2012	9,009,722	5,633,050	1.5994
2012-2013	10,113,281	5,899,847	1.7142
2013-2014	11,355,073	6,195,842	1.8327

Source of GDP Data : Planning Commission (2014)

(2) Sample Selection : For selection of sample of the study, all M&A deals between the years 1989 - 1990 to 2013 - 2014 were considered. Acquirers must be BSE listed companies. Acquirer, in the capacity of an acquirer, must not have undergone any M&A in the three financial years immediately preceding and succeeding the exclusion period, that is, the financial year of the M&A deal. The study excludes conglomerates, cross border, and technical M&A deals, that is, deals which are purely of technical nature such as change in name which are included in the CMIE database. Deals where industry of target was not found were excluded. Deals where share prices and dividend values for the period of study were not available were excluded. In order to facilitate comparison, three

Table 3. Details of Sectors, Industries, and Deals Selected for the Study

S. No.	Sector	BSE industry	M&A deals per industry	M&A deals per sector
1	AUTO	2/3 wheelers	2	21
	AUTO	Auto parts equipment	13	
	AUTO	Cars utility vehicles	1	
	AUTO	Commercial vehicles	5	
2	BANKS	Banks	4	4
3	CAPITAL GOODS	Construction engineering	6	27
	CAPITAL GOODS	Heavy electrical equipment	2	
	CAPITAL GOODS	Industrial machinery	6	
	CAPITAL GOODS	Other electrical equipment/products	9	
	CAPITAL GOODS	Other industrial goods	3	
	CAPITAL GOODS	Other industrial products	1	
4	CHEMICALS	Agrochemicals	1	18
	CHEMICALS	Commodity chemicals	10	
	CHEMICALS	Fertilizers	3	
	CHEMICALS	Specialty chemicals	4	
5	FINANCIALS	Finance (including NBFCs)	6	15
	FINANCIALS	Other financial services	9	
6	HEALTHCARE	Pharmaceuticals	18	18
7	IT	BPO/KPO	1	17
	IT	Computer hardware	2	
	IT	Internet software services	1	
	IT	IT consulting, software	2	
	IT	IT Networking Equipment	1	
	IT	IT Software Products	10	
8	METALS & MINERALS	Aluminium	2	17
	METALS & MINERALS	Cement, cement products	5	
	METALS & MINERALS	Copper	1	
	METALS & MINERALS	Iron steel products	3	
	METALS & MINERALS	Iron steel/interim products	6	
10	REALTY AND INFRA	Realty	9	9
11	TEXTILES	Textiles	28	28
TOTAL OF ABOVE SECTORS (ALL M&A DEALS)		174		

years pre and post M&A, the final sample of deals has been restricted to the period from 1992 - 1993 to 2010 - 2011.

(3) Major Considerations in the Study

- Shareholder wealth is measured in terms of share prices and equity dividend of a company.
- Performance measurement of acquirers only was considered.
- Industry classification used by BSE.
- BSE sectoral themes and customized themes for grouping of M&A deals, targets, and peers.
- The period of exclusion for performance measurement of M&A deal will be the financial year in which the M&A deal took place.
- The performance has been studied for a period of 3 years pre and post M&A deal.

After applying the above criteria and process, from the gross sample of 420 M&A deals, the initial sample consisted of 257 M&A deals.

(4) Selection of Sectors and Industries for the Study : Finally, few sectors and industries were selected for study on the basis of adequacy of number of deals in the sector, industry, and their importance (Table 3). Thus, our final sample selected for sectoral as well as overall study is of 174 M&A deals.

(5) Reasons for Excluding Certain Industries and Sectors for Sectoral Analysis : While excluding industries and sectors from the gross sample for the final sample for sectoral analysis, a few aspects were considered. Sectors with highest number of deals were considered. The only exception were banks which were included due to the relative importance of the sector. Some sectors were excluded despite having high number of deals because they had very diverse industries. This could have made it difficult for us to draw any meaningful analysis. Such sectors are consumer durables, FMCG, oil and gas, and others. In addition to making industries in a sector more homogeneous, we excluded such industries from the selected sectors which are very remotely related/ dissimilar to the remaining group of industries in the sector, e.g. auto tyre rubber products were excluded from the auto sector, defense was excluded from capital goods, construction materials from realty and infra etc.

Empirical Results

(1) Performance Analysis of M&A Deals in Terms of BHAR

Hypothesis : This part of the study finds out whether M&A deals affect real wealth of shareholders of acquirers in terms of *BHAR*. Accordingly, we have formulated the following hypotheses :

- **Null Hypothesis :** M&A deals do not affect real wealth of shareholders of acquirers in terms of *BHAR*.

H_0 : Median population incremental *BHAR* (*INCBHAR*) = 0.

- **Alternative Hypothesis :** M&A deals increase/decrease real wealth of shareholders of acquirers in terms of *BHAR*.

Table 4. Test Statistics of Incremental Buy and Hold Abnormal Return *(INCBHAR)* Post Year 1

SECTOR	No. of Deals	SECTOR Incremental Buy and Hold Abnormal Return *(INCBHAR)* ($BHAR_{t0-1}$) - ($BHAR_{t-3-0}$) Post Year 1							
		Mean	Median	*p* - value (2 - tailed)	*p* - value (1 - tailed)	H_o	H_1	Null Hypothesis	Result
AUTO	21	-36.23	-40.46	0.014	0.007	M = 0	M < 0	Reject	**Reducing**
BANKS	4	-15.93	-37.36	0.715	0.358	M = 0	M < 0	Retain	Insignificant
CAPITAL GOODS	27	40.52	9.02	0.186	0.093	M = 0	M > 0	Retain	Insignificant
CHEMICALS	18	-5.17	-23.02	0.777	0.389	M = 0	M < 0	Retain	Insignificant
FINANCIALS	15	-15.10	-37.58	0.496	0.248	M = 0	M < 0	Retain	Insignificant
HEALTHCARE	18	23.36	-5.79	0.811	0.406	M = 0	M < 0	Retain	Insignificant
IT	17	-91.59	-75.82	0.006	0.003	M = 0	M < 0	Reject	**Reducing**
METALS & MINERALS	17	3.70	11.22	0.906	0.453	M = 0	M > 0	Retain	Insignificant
REALTY AND INFRA	9	54.23	37.73	0.594	0.297	M = 0	M > 0	Retain	Insignificant
TEXTILES	28	-5.69	-14.76	0.393	0.197	M = 0	M < 0	Retain	Insignificant
ALL M&A DEALS	174	-4.57	-16.10	0.052	0.026	M = 0	M < 0	Reject	**Reducing**

Test used: One sample Wilcoxon Signed Rank Test
Test Type : One Tailed
Significance Level : 5%
Confidence Level : 95%
p - value of 1 tailed test = 1/2 (*p* - value of 2 tailed test)

Table 5. Test Statistics of Incremental Buy and Hold Abnormal Return *(INCBHAR)* Post Year 2

SECTOR	No of Deals	Incremental Buy and Hold Abnormal Return *(INCBHAR)* ($BHAR_{t0-2}$) - ($BHAR_{t-3-0}$) Post Year 2							
		Mean	Median	*p* - value (2 - tailed)	*p* - value (1 - tailed)	H_o	H_1	Null Hypothesis	Result
AUTO	21	-28.77	-31.07	0.046	0.023	M = 0	M < 0	Reject	**Reducing**
BANKS	4	-27.59	-35.13	0.273	0.137	M = 0	M < 0	Retain	Insignificant
CAPITAL GOODS	27	22.70	7.93	0.249	0.125	M = 0	M > 0	Retain	Insignificant
CHEMICALS	18	-4.58	-0.35	0.711	0.356	M = 0	M < 0	Retain	Insignificant
FINANCIALS	15	-28.29	-31.04	0.334	0.167	M = 0	M < 0	Retain	Insignificant
HEALTHCARE	18	-8.51	-4.87	0.372	0.186	M = 0	M < 0	Retain	Insignificant
IT	17	-85.51	-45.95	0.003	0.002	M = 0	M < 0	Reject	**Reducing**
METALS & MINERALS	17	6.57	-4.40	0.868	0.434	M = 0	M < 0	Retain	Insignificant
REALTY AND INFRA	9	46.38	8.08	0.441	0.221	M = 0	M > 0	Retain	Insignificant
TEXTILES	28	8.24	4.33	0.699	0.350	M = 0	M > 0	Retain	Insignificant
ALL M&A DEALS	174	-8.37	-8.23	0.057	0.029	M = 0	M < 0	Reject	**Reducing**

Test used: One sample Wilcoxon Signed Rank Test
Test Type : One Tailed
Significance Level : 5%
Confidence Level : 95%
p- value of 1 tailed test = 1/2 (*p* - value of 2 tailed test)

Table 6. Test Statistics of Incremental Buy and Hold Abnormal Return *(INCBHAR)* Post Year 3

SECTOR	No. of Deals	Incremental Buy and Hold Abnormal Return *(INCBHAR)* ($BHAR_{t\ 0-3}$) - ($BHAR_{t\ -3-0}$) Post Year 3							
		Mean	Median	*p* - value (2 - tailed)	*p* - value (1 - tailed)	H_o	H_1	Null Hypothesis	Result
AUTO	21	-27.30	-19.84	0.063	0.032	M = 0	M < 0	Reject	**Reducing**
BANKS	4	-22.33	-26.87	0.273	0.137	M = 0	M < 0	Retain	Insignificant
CAPITAL GOODS	27	15.00	3.67	0.501	0.251	M = 0	M > 0	Retain	Insignificant
CHEMICALS	18	0.26	-4.53	0.948	0.474	M = 0	M < 0	Retain	Insignificant
FINANCIALS	15	-26.59	-9.36	0.211	0.106	M = 0	M < 0	Retain	Insignificant
HEALTHCARE	18	-4.58	4.05	0.948	0.474	M = 0	M > 0	Retain	Insignificant
IT	17	-74.45	-30.99	0.017	0.009	M = 0	M < 0	Reject	**Reducing**
METALS & MINERALS	17	2.38	-16.40	0.906	0.453	M = 0	M < 0	Retain	Insignificant
REALTY AND INFRA	9	54.80	3.96	0.441	0.221	M = 0	M > 0	Retain	Insignificant
TEXTILES	28	3.60	2.41	0.785	0.393	M = 0	M > 0	Retain	Insignificant
ALL M&A DEALS	174	-7.85	-4.96	0.127	0.064	M = 0	M < 0	Retain	Insignificant

Test used: One sample Wilcoxon Signed Rank Test
Test Type : One Tailed
Significance Level : 5%
Confidence Level : 95%
p - value of 1 tailed test = 1/2 (*p* - value of 2 tailed test)

H_1 : Median population incremental *BHAR (INCBHAR)* > 0 (1 tailed test).
or
H_1 : Median population incremental *BHAR (INCBHAR)* < 0 (1 tailed test).

Observations

We have tested at 5% significance, the effects of M&A deals on shareholder wealth of acquirers in terms of incremental *BHAR* using one sample Wilcoxon signed rank test. The test results are presented in Tables 4, 5, and 6 for post year 1, 2, and 3 performance, respectively.

Accordingly, the following observations are made :

↳ **Auto Sector :** Mean and median *INCBHAR* is negative for all three observation periods, that is, post year 1, post year 2, and post year 3. Mean *INCBHAR* is maximum post year 3 at 27.30 % and minimum post year 1 at -36.23 %. Median *INCBHAR* is maximum post year 3 at 19.84 % and minimum post year 1 at - 40.46 %. It is observed that M&A deals in the auto sector reduced shareholder wealth of acquirers during all observation periods. The results are significant for all observation periods.

↳ **Banking Sector :** Mean and median *INCBHAR* is negative for all observation periods. Mean *INCBHAR* is maximum post year 1 at -15.93 % and minimum post year 2 at -27.59 %. Median *INCBHAR* is maximum post year 3 at -26.87 % and minimum post year 1 at -37.36 %. It is observed that M&A deals in the banking sector reduced shareholder wealth of acquirers during all observation periods. The results are insignificant.

Capital Goods Sector : Mean and median *INCBHAR* is positive for all observation periods. Mean *INCBHAR* is maximum post year 1 at 40.52 % and minimum post year 3 at 15.00 %. Median *INCBHAR* is maximum post year 1 at 9.02 % and minimum post year 3 at 3.67 %. It is observed that M&A deals in the capital goods sector created shareholder wealth of acquirers during all observation periods. The results are insignificant.

Chemicals Sector : Mean and median *INCBHAR* is negative for all observation periods except mean *INCBHAR* post year 3, which is positive. Mean *INCBHAR* is maximum post year 3 at 0.26 % and minimum post year 1 at -5.17 %. Median *INCBHAR* is maximum post year 2 at -0.35 % and minimum post year 1 at -23.02 %. It is observed that M&A deals in the chemicals sector reduced shareholder wealth of acquirers during all observation periods. The results are insignificant.

Financials Sector : Mean and median *INCBHAR* is negative for all observation periods. Mean *INCBHAR* is maximum post year 1 at -15.10 % and minimum post year 2 at -28.29 %. Median *INCBHAR* is maximum post year 3 at -9.36 % and minimum post year 1 at -37.58 %. It is observed that M&A deals in the financial sector reduced shareholder wealth of acquirers during all observation periods. The results are insignificant.

Healthcare Sector : Mean and median *INCBHAR* is negative for all observation periods except mean *INCBHAR* post year 1 and median *INCBHAR* post year 3, which are positive. Mean *INCBHAR* is maximum post year 1 at 23.36 % and minimum in post year 2 at -8.51 %. Median *INCBHAR* is maximum post year 3 at 4.05 % and minimum post year 1 at -5.79 %. It is observed that M&A deals in healthcare sector reduced shareholder wealth of acquirers during all observation periods except during post year 3 where it was created. The results are insignificant.

IT Sector : Mean and median *INCBHAR* is negative for all observation periods. Mean *INCBHAR* is maximum post year 3 at -74.45% and minimum post year 1 at -91.59%. Median *INCBHAR* is maximum post year 3 at -30.99 % and minimum post year 1 at -75.82 %. It is observed that M&A deals in the IT sector reduced shareholder wealth of acquirers during all observation periods. The results are significant for all observation periods.

Metals & Minerals Sector : Mean *INCBHAR* is positive for all observation periods and median *INCBHAR* is negative for all observation periods except post year 1, which is positive. Mean *INCBHAR* is maximum post year 2 at 6.57% and minimum post year 3 at 2.38%. Median *INCBHAR* is maximum post year 1 at 11.22% and minimum post year 3 at -16.40%. It is observed that M&A deals in metals and minerals sector reduced shareholder wealth of acquirers during all observation periods except during post year 1 period , when it was created. The results are insignificant.

Realty and Infra Sector : Mean and median *INCBHAR* is positive for all observation periods. Mean *INCBHAR* is maximum post year 3 at 54.80 % and minimum post year 2 at 46.38 %. Median *INCBHAR* is maximum post year 1 at 37.73 % and minimum post year 3 at 3.96 %. It is observed that M&A deals in realty and infra sector created shareholder wealth of acquirers during all observation periods. The results are insignificant.

Textiles Sector : Mean and median *INCBHAR* is positive for all observation periods except mean *INCBHAR* post year 1 and median *INCBHAR* post year 1 which are negative. Mean *INCBHAR* is maximum post year 2 at 8.24 % and minimum post year 1 at -5.69 %. Median *INCBHAR* is maximum post year 2 at 4.33 % and minimum in post year 1 at -14.76 %. It is observed that M&A deals in the textiles sector created shareholder wealth of acquirers during all observation periods except during post year 1, when it decreased. The results are insignificant.

↳ **All M&A Deals :** Mean and median *INCBHAR* is negative for all observation periods. Mean *INCBHAR* is maximum post year 1 at - 4.57 % and minimum post year 2 at -8.37 %. Median *INCBHAR* is maximum post year 3 at -4.96 % and minimum post year 1 at -16.10 %. It is observed that M&A deals overall reduced shareholder wealth of acquirers during all observation periods. The results are significant for post year 1 and post year 2.

(2) Performance Analysis of M&A Deals in Terms of RBHAR

Hypothesis : This part of the study finds out whether M&A deals affect real wealth of shareholders of acquirers in terms of *RBHAR*. Accordingly, we formulated the following hypotheses:

↳ **Null Hypothesis :** M&A deals do not affect real wealth of shareholders of acquirers in terms of *RBHAR*.

H_0 : Median population incremental *RBHAR* (*INCRBHAR*) = 0.

↳ **Alternative Hypothesis :** M&A deals increase/decrease real wealth of shareholders of acquirers in terms of *RBHAR*.

H_1 : Median population incremental *RBHAR (INCRBHAR)* > 0 (1 tailed test).
Or
H_1 : Median population incremental *RBHAR (INCRBHAR)* < 0 (1 tailed test).

Observations

We tested at the 5% significance, the effects of M&A deals on shareholder wealth of acquirers in terms of incremental *RBHAR* using one sample Wilcoxon signed - rank test. The test results are presented in Tables 7, 8, and 9 for post year 1, 2, and 3 performance, respectively.

Accordingly, the following observations are made :

↳ **Auto Sector :** Mean and median *INCRBHAR* are negative for all three observation periods, that is, post year 1, post year 2, and post year 3. Mean *INCRBHAR* is maximum post year 3 at -26.13 % and minimum post year 1 at -34.53 %. Median *INCRBHAR* is maximum post year 3 at -18.99 % and minimum post year 1 at -37.68 %. It is observed that M&A deals in the auto sector reduced shareholder wealth of acquirers during all observation periods. The results are significant for all observation periods.

↳ **Banking Sector :** Mean and median *INCRBHAR* are negative for all observation periods. Mean *INCRBHAR* is maximum post year 1 at -14.71 % and minimum post year 2 at -25.72 %. Median *INCRBHAR* is maximum post year 3 at -25.24 % and minimum post year 1 at -34.82 %. It is observed that M&A deals in the banking sector reduced shareholder wealth of acquirers during all observation periods. The results are insignificant.

↳ **Capital Goods Sector :** Mean and median *INCRBHAR* are positive for all observation periods. Mean *INCRBHAR* is maximum post year 1 at 38.60 % and minimum post year 3 at 14.53 %. Median *INCRBHAR* is maximum post year 1 at 8.45 % and minimum post year 3 at 3.82 %. It was observed that M&A deals in the capital goods sector created shareholder wealth of acquirers during all observation periods. The results are insignificant.

↳ **Chemicals Sector :** Mean and median *INCRBHAR* are negative for all observation periods except mean

Table 7. Test Statistics of Incremental Real Buy and Hold Abnormal Return *(INCRBHAR)* Post Year 1

SECTOR	No of Deals	Incremental Real Buy and Hold Abnormal Return *(INCRBHAR)* ($RBHAR_{t\,0-1}$) - ($RBHAR_{t\,-3-0}$) Post Year 1							
		Mean	Median	*p* - value (2 - tailed)	*p*- value (1 - tailed)	H_o	H_1	Null Hypothesis	Result
AUTO	21	-34.53	-37.68	0.017	0.009	M = 0	M < 0	Reject	**Reducing**
BANKS	4	-14.71	-34.82	0.715	0.358	M = 0	M < 0	Retain	Insignificant
CAPITAL GOODS	27	38.60	8.45	0.195	0.098	M = 0	M > 0	Retain	Insignificant
CHEMICALS	18	-5.14	-21.31	0.777	0.389	M = 0	M < 0	Retain	Insignificant
FINANCIALS	15	-14.60	-35.19	0.496	0.248	M = 0	M < 0	Retain	Insignificant
HEALTHCARE	18	22.11	-4.97	0.879	0.440	M = 0	M < 0	Retain	Insignificant
IT	17	-86.52	-71.82	0.006	0.003	M = 0	M < 0	Reject	**Reducing**
METALS & MINERALS	17	3.37	11.03	0.906	0.453	M = 0	M > 0	Retain	Insignificant
REALTY AND INFRA	9	51.55	34.83	0.594	0.297	M = 0	M > 0	Retain	Insignificant
TEXTILES	28	-4.92	-14.16	0.387	0.194	M = 0	M < 0	Retain	Insignificant
ALL M&A DEALS	174	-4.27	-15.42	0.052	0.026	M = 0	M < 0	Reject	**Reducing**

Test used: One sample Wilcoxon Signed Rank Test
Test Type : One Tailed
Significance Level : 5%
Confidence Level : 95%
p - value of 1 tailed test = 1/2 (*p* - value of 2 tailed test)

Table 8. Test Statistics of Incremental Real Buy and Hold Abnormal Return *(INCRBHAR)* Post Year 2

SECTOR	No of Deals	Incremental Real Buy and Hold Abnormal Return *(INCRBHAR)* ($RBHAR_{t\,0-2}$) - ($RBHAR_{t\,-3-0}$) Post Year 2							
		Mean	Median	*p* - value (2 - tailed)	*p* - value (1 - tailed)	H_o	H_1	Null Hypothesis	Result
AUTO	21	-27.47	-31.24	0.046	0.023	M = 0	M < 0	Reject	**Reducing**
BANKS	4	-25.72	-33.20	0.273	0.137	M = 0	M < 0	Retain	Insignificant
CAPITAL GOODS	27	21.85	8.25	0.249	0.125	M = 0	M > 0	Retain	Insignificant
CHEMICALS	18	-4.48	-0.60	0.711	0.356	M = 0	M < 0	Retain	Insignificant
FINANCIALS	15	-26.41	-28.06	0.334	0.167	M = 0	M < 0	Retain	Insignificant
HEALTHCARE	18	-7.79	-4.88	0.396	0.198	M = 0	M < 0	Retain	Insignificant
IT	17	-80.63	-43.38	0.003	0.002	M = 0	M < 0	Reject	**Reducing**
METALS & MINERALS	17	6.12	-5.18	0.868	0.434	M = 0	M < 0	Retain	Insignificant
REALTY AND INFRA	9	44.24	7.27	0.441	0.221	M = 0	M > 0	Retain	Insignificant
TEXTILES	28	7.99	4.25	0.699	0.350	M = 0	M > 0	Retain	Insignificant
ALL M&A DEALS	174	-7.77	-8.70	0.057	0.029	M = 0	M < 0	Reject	**Reducing**

Test used: One sample Wilcoxon Signed Rank Test
Test Type : One Tailed
Significance Level : 5%
Confidence Level : 95%
p - value of 1 tailed test = 1/2 (*p* - value of 2 tailed test)

Table 9. Test Statistics of Incremental Real Buy and Hold Abnormal Return *(INCRBHAR)* Post Year 3

SECTOR	No of Deals	Incremental Real Buy and Hold Abnormal Return *(INCRBHAR)* $(RBHAR_{t\ 0-3}) - (RBHAR_{t\ -3-0})$ Post Year 3							
		Mean	Median	*p* - value (2 - tailed)	*p* - value (1 - tailed)	H_0	H_1	Null Hypothesis	Result
AUTO	21	-26.13	-18.99	0.058	0.029	M = 0	M < 0	Reject	**Reducing**
BANKS	4	-20.63	-25.24	0.273	0.137	M = 0	M < 0	Retain	Insignificant
CAPITAL GOODS	27	14.53	3.82	0.501	0.251	M = 0	M > 0	Retain	Insignificant
CHEMICALS	18	0.23	-3.66	0.948	0.474	M = 0	M < 0	Retain	Insignificant
FINANCIALS	15	-24.80	-8.31	0.233	0.117	M = 0	M < 0	Retain	Insignificant
HEALTHCARE	18	-4.03	4.25	0.983	0.492	M = 0	M > 0	Retain	Insignificant
IT	17	-70.15	-29.70	0.017	0.009	M = 0	M < 0	Reject	**Reducing**
METALS & MINERALS	17	2.09	-15.06	0.943	0.472	M = 0	M < 0	Retain	Insignificant
REALTY AND INFRA	9	52.11	3.53	0.441	0.221	M = 0	M > 0	Retain	Insignificant
TEXTILES	28	3.45	2.47	0.785	0.393	M = 0	M > 0	Retain	Insignificant
ALL M&A DEALS	174	-7.30	-4.73	0.131	0.066	M = 0	M < 0	Retain	Insignificant

Test used: One sample Wilcoxon Signed Rank Test
Test Type : One Tailed
Significance Level : 5%
Confidence Level : 95%
p - value of 1 tailed test = 1/2 (*p* - value of 2 tailed test)

INCRBHAR post year 3 which is positive. Mean *INCRBHAR* is maximum post year 3 at 0.23 % and minimum post year 1 at -5.14 %. Median *INCRBHAR* is maximum post year 2 at -0.60 % and minimum post year 1 at -21.31 %. It is observed that M&A deals in the chemicals sector reduced shareholder wealth of acquirers during all observation periods. The results are insignificant.

↳ **Financials Sector :** Mean and median *INCRBHAR* are negative for all observation periods. Mean *INCRBHAR* is maximum post year 1 at -14.60 % and minimum post year 2 at -26.41 %. Median *INCRBHAR* is maximum post year 3 at -8.31 % and minimum post year 1 at -35.19 %. It is observed that M&A deals in the financials sector reduced shareholder wealth of acquirers during all observation periods. The results are insignificant.

↳ **Healthcare Sector:** Mean and median *INCRBHAR* are negative for all observation periods except mean *INCRBHAR* post year 1 and median *INCRBHAR* post year 3 which are positive. Mean *INCRBHAR* is maximum post year 1 at 22.11% and minimum post year 2 at -7.79 %. Median *INCRBHAR* is maximum post year 3 at 4.25 % and minimum post year 1 at - 4.97 %. It is observed that M&A deals in the healthcare sector reduced shareholder wealth of acquirers during all observation periods except post year 3, when it was created. The results are insignificant.

↳ **IT Sector :** Mean and median *INCRBHAR* are negative for all observation periods. Mean *INCRBHAR* is maximum post year 3 at -70.15 % and minimum post year 1 at -86.52 %. Median *INCRBHAR* is maximum post year 3 at -29.70 % and minimum post year 1 at -71.82 %. It is observed that M&A deals in the IT sector reduced shareholder wealth of acquirers during all observation periods. The results are significant for all observation periods.

↳ **Metals & Minerals Sector :** Mean *INCRBHAR* is positive for all observation periods and median *INCRBHAR* is negative for all observation periods except post year 1, which is positive. Mean *INCRBHAR* is maximum post year 2 at 6.12 % and minimum post year 3 at 2.09 %. Median *INCRBHAR* is maximum post year 1 at 11.03 % and minimum post year 3 at -15.06 %. It is observed that M&A deals in metals & minerals sector reduced shareholder wealth of acquirers during all observation periods except during post year 1, where it was created. The results are insignificant.

↳ **Realty and Infra Sector :** Mean and median *INCRBHAR* are positive for all observation periods. Mean *INCRBHAR* is maximum post year 3 at 52.11 % and minimum post year 2 at 44.24 %. Median *INCRBHAR* is maximum post year 1 at 34.83 % and minimum post year 3 at 3.53 %. It is observed that M&A deals in realty and infra sectors created shareholder wealth of acquirers during all observation periods. The results are insignificant.

↳ **Textiles Sector:** Mean and median *INCRBHAR* are positive for all observation periods except mean *INCRBHAR* post year 1 and median *INCRBHAR* post year 1, which are negative. Mean *INCRBHAR* is maximum post year 2 at 7.99 % and minimum in post year 1 at -4.92 %. Median *INCRBHAR* is maximum post year 2 at 4.25 % and minimum post year 1 at -14.16 %. It is observed that M&A deals in the textiles sector created shareholder wealth of acquirers during all observation periods except during post year 1, where it reduced. The results are insignificant.

↳ **All M&A Deals :** Mean and median *INCRBHAR* is negative for all observation periods. Mean *INCRBHAR* was maximum post year 1 at - 4.27 % and minimum post year 2 at -7.77 %. Median *INCRBHAR* was maximum post year 3 at -4.73 % and minimum post year 1 at -15.42 %. It was observed that M&A deals overall reduced shareholder wealth of acquirers during all observation periods. The results are significant for post year 1 and post year 2.

(3) Comparison of Long - Term Performance of M&A Deals in Real Terms Against Nominal Terms

In this section, we compare long-term M&A performance without inflation adjustment *(BHAR)* with performance in real terms *(RBHAR)*. The purpose is to evaluate how M&A performs in real terms in comparison to nominal terms. We measure the real returns of M&A deals with nominal returns.

Hypothesis : The hypothesis of the objective has been set in terms of difference between *INCRBHAR* 3 and *INCBHAR* 3 termed *DIFFBHAR* as under :

(i) There is no difference in long-term M&A performance with and without inflation.

(ii) M&A deals perform better / worse in real terms in long term.

Difference between *INCRBHAR* 3 and *INCBHAR* 3 enables us to capture performance of M&A deals against inflation.

↳ **Null Hypothesis :** There is no difference in long-term M&A performance with and without inflation.

H_0 : Median population differential *BHAR (DIFFBHAR)* = 0.

↳ **Alternative Hypothesis :** M&A deals perform better / worse in real terms in the long - term.

H_1 : Median population differential *BHAR (DIFFBHAR)* > 0 (1 tailed test).
Or
H_1 : Median population differential BHAR (DIFFBHAR) < 0 (1 tailed test).

Observations

We have analyzed all the sectors to assess long term performance of M&A deals against inflation. We have also analyzed all the M&A deals together. The measure used is *DIFFBHAR* which means differential incremental buy and hold abnormal return. *DIFFBHAR* is derived by subtracting *INCBHAR* 3 from *INCRBHAR* 3. This enables us to capture long term performance of M&A deals against inflation. The results generated were tested using one sample Wilcoxon signed - rank test at 5% significance. The test results are presented in the Table 10.

It is found that median *DIFFBHAR* is positive for all sectors except capital goods, textiles, metals & minerals, and realty & infra sectors. Maximum value of median *DIFFBHAR* is observed for IT sector at 2.42 % and minimum is observed for realty and infra at - 0.29 %. The results are significant for Auto and IT sectors. M&A deals overall witnessed median *DIFFBHAR* of 0.40 %. The results are significant.

In terms of mean *DIFFBHAR*, it is positive for all sectors except capital goods, chemicals, metals & minerals, realty and infra, and textiles sectors. Mean *DIFFBHAR* is positive for M&A deals overall at 0.54 %. Maximum value of mean *DIFFBHAR* is observed for IT sector at 4.31 % and minimum is observed for realty and infra sector at -2.69 %. However, as we had used one sample Wilcoxon signed rank in the study, we considered median values only.

Discussion and Conclusion

The goal of this paper was to analyze long term performance of M&A deals in terms of growth in shareholder value of acquirers in real terms in India and compare it with growth in nominal terms. We wanted to understand whether M&A deals contributed to shareholder wealth of acquirers in real terms in comparison to nominal terms. From this study, we expected to reveal new facts and possibly give an altogether different direction to M&A analysis.

We analyzed all the sectors in our sample of 174 deals as well as all M&A deals together. Our paper analyzed long term performance of M&A deals in India in three ways, in the form of growth of shareholder wealth of acquirers in nominal terms, growth of shareholder wealth of acquirers in real terms, and finally, a one on one comparison of performance in nominal terms vis a vis real terms.

We covered M&A deals in India from 1989 to 2014. We considered only those deals in which the acquirer is listed on the Bombay Stock Exchange. Deals such as conglomerate deals, technical nature etc. were excluded. We used GDP deflator for the purpose of arriving at real values. The model used for study was *BHAR* and a modification of *BHAR*, that is, *RBHAR*. We used one sample Wilcoxon signed - rank test which is a non parametric test with significance of 5% in a one tailed test. Our research focused on the returns from the perspective of investors who hold investments for a longer period of time, that is, for 1 year to 3 years.

In this first section, we determined the wealth creating/reducing effect of M&A deals in terms of *BHAR* on shareholder wealth of acquirers using median *INCBHAR*, that is, incremental *BHAR*. It is found that M&A deals reduced shareholder wealth in terms of *BHAR* for all three observation periods for auto, banks, chemicals, financials, and IT sectors. The results are significant for all periods for IT and auto sectors. Healthcare sector reduced shareholder wealth during all observation periods except during post year 3 when it was created. The results are insignificant. Metals and minerals sector reduced shareholder wealth during all observation periods except during post year 1 when it was created. The results are insignificant. Capital goods sector created shareholder wealth during all observation periods. The results are insignificant. Realty and infra sector created

Table 10. Test Statistics of Differential *BHAR*

Sector	No of Deals	Incremental Buy and Hold Return *(INCBHAR)* ($BHAR_{t0-1}$) - ($BHAR_{t-3-0}$)		Incremental Real Buy and Hold Return *(INCBHAR)* ($RBHAR_{t0-1}$) - ($RBHAR_{t-3-1}$)		Difference in *INCBHAR* vis a vis *INCRBHAR (INCRBHAR3)* - *(INCBHAR3)*		*p*-value (2-tailed)	*p*-value (1-tailed)	H_0	H_1	Nail Hypothesis	Result
No of Deals		**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**						
AUTO	21	-27.30	-19.84	-26.13	-18.99	1.17	1.09	0.085	0.043	M = 0	M > 0	Reject	
BANKS	4	-22.33	-26.87	-20.63	-25.24	1.70	1.63	0.144	0.072	M = 0	M > 0	Reject	Insignificant
CAPITAL GOODS	27	15.00	3.67	14.53	3.82	-0.47	-0.15	0.589	0.295	M = 0	M > 0	Reject	Insignificant
CHEMICALS	18	0.26	-4.53	0.23	-3.66	-0.04	0.34	0.845	0.423	M = 0	M > 0	Reject	Insignificant
FINANCIALS	15	-26.59	-9.36	-24.80	-8.31	1.79	1.25	0.293	0.147	M = 0	M > 0	Reject	Insignificant
HEALTHCARE	18	-4.58	4.05	-4.03	4.25	0.55	0.06	0.879	0.440	M = 0	M > 0	Reject	Insignificant
IT	17	-74.45	-30.99	-70.15	-29.70	4.31	2.42	0.017	0.009	M = 0	M > 0	Reject	Insignificant
METALS & MINERALS	17	2.38	-16.40	2.09	-15.06	-0.29	-0.26	0.943	0.472	M = 0	M > 0	Reject	Insignificant
REALTY AND INFRA	9	54.80	3.96	52.11	3.53	-2.69	-0.29	0.441	0.221	M = 0	M > 0	Reject	Insignificant
TEXTILES	28	3.60	2.41	3.45	2.47	-0.15	-0.16	0.733	0.367	M = 0	M > 0	Reject	Insignificant
ALL M & A DEALS	174	-7.85	-4.96	-7.30	-4.73	0.54	0.40	0.083	0.042	M = 0	M > 0	Reject	Insignificant

Test used: Wilcoxon Signed Rank Test for Single Sample
Test Type : One Tailed
Significance Level : 5%
Confidence Level : 95%
p - value of 1 tailed test = 1/2 (*p* - value of 2 tailed test)

shareholder wealth during all observation periods. The results are insignificant. Textiles sector created shareholder wealth during all observation periods except during post year 1, where it reduced. The results are insignificant. M&A deals overall reduced shareholder wealth during all observation periods. The results are significant for post year 1 and post year 2.

In the second section, we determined the wealth creating/reducing effect of M&A deals in terms of real buy and hold abnormal return *(RBHAR)* on shareholder wealth of acquirers using median *INCRBHAR*, that is, incremental *RBHAR*. It is found that M&A deals reduced shareholder wealth in terms of *RBHAR* for all three observation periods for auto, banks, chemicals, financials, and IT sectors. The results are significant for all periods for IT sector and auto sector. The healthcare sector reduced shareholder wealth during all observation periods except during post year 3, where it was created. The results are insignificant. Metals and minerals sector reduced shareholder wealth during all observation periods except during post year 1 where it was created. The results are insignificant. The capital goods sector created shareholder wealth during all observation periods. The results are insignificant. Realty and infra sectors created shareholder wealth during all observation periods. The results are insignificant. Textiles sector created shareholder wealth during all observation periods except during post year 1 where it decreased. The results are insignificant. M&A deals overall reduced shareholder wealth during all observation periods. The results are significant for post year 1 and post year 2.

Finally, we analyzed long term performance of M&A deals against inflation. We found that median *DIFFBHAR*, that is, difference between *RBHAR* and *BHAR* is positive for all sectors except capital goods, textiles, metals & minerals, and realty & infra sectors. Maximum value of median *DIFFBHAR* is observed for the IT sector at 2.42 % and minimum is observed for realty and infra at -0.29 %. The results are significant for auto and IT sectors. M&A deals overall witnessed median *DIFFBHAR* of 0.40 %. The results are significant.

To conclude, we did not find any significant difference between the test results of *BHAR* and *RBHAR* on a standalone basis. However, when we compare the performance of *BHAR* and *RBHAR* on a one to one basis, we found that the performance of M&A deals in auto and IT sector in real terms was better than in nominal terms. Overall M&A performance in real terms was also better than in nominal terms.

Research Implications

The present study was conducted with the objective of analyzing long term performance of M&A deals in terms of growth in shareholder value of acquirers in real terms in India and compare it with growth in nominal terms. This study further attempted to find out whether M&A deals contributed to shareholder wealth of acquirers in real terms in comparison to nominal terms. We did not find any significant difference between growth in shareholder value of acquirers on a standalone basis as can be seen from the results of *BHAR* and *RBHAR*. However, when we compared the performance on a one to one basis using *DIFFBHAR* as the difference between *RBHAR* and *BHAR*, we found that the performance of M&A deals in auto and IT sectors in real terms was better than in nominal terms. Overall, M&A performance in real terms was also better than in nominal terms. These findings will be beneficial to those investors who are interested in knowing the possibility of earning real gains from investments in Indian acquirers.

Limitations of the Study and Scope for Further Research

One of the major limitations of this study is the low number of deals available for analysis. Large number for deals would mean more robust and accurate results and resultant conclusions. There is further scope for research by adopting more innovative methods of analysis.

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