Proceedings of GLOGIFT 08
June 14-16, 2008
Stevens Institute of Technology
Hoboken, NJ, pp. 840-851

IMPACT OF MERGERS AND ACQUISITIONS ON SHAREHOLDERS' WEALTH IN SHORT-RUN: AN EMPIRICAL STUDY OF INDIAN PHARMACEUTICAL INDUSTRY

Neelam Rani[*] , Surendra S. Yadav[**] and P. K. Jain[***]

ABSTRACT

Indian pharmaceutical industry has carved out a unique place on the global map, not only as a manufacturer of generic drugs but also of new formulations, with growing emphasis on research and development and new drug discovery. With annual turnover of over US $ 11 billion in 2006-07, Indian pharmaceutical industry is globally ranked 4th, in terms of volume, with a share of 8% in world pharmaceutical market. The present paper examines the short-run abnormal returns to India based mergers and acquisitions focusing on the pharmaceutical industry during 2001-2007 by using event study methodology. Short-term effects are of interests for immediate trading opportunities they create. We find that acquisitions of foreign companies significantly create short-term wealth on the announcement day to the shareholders of acquiring companies. Cumulative abnormal return (CAR) for Indian companies' acquisitions activities aimed at foreign-based targets is positive over event window. It seems market perceives the deals of acquisitions of foreign targets by Indian pharmaceutical companies as efficiency enhancing.

Keywords: *Mergers, Acquisitions, Event Methodology, Abnormal Returns, Cumulative Abnormal Returns (CAR), Pharmaceuticals, Event Window, Synergy.*

Introduction

Mergers and acquisitions are used as instruments of momentous growth and are increasingly getting accepted by Indian businesses as critical tool of business strategy. They are widely used in a wide array of fields such as information technology, pharmaceuticals, telecommunications, business process outsourcing as well as in traditional business to gain strength, expand the customer base, reduce competition or enter into a new market or product segment. Mergers and acquisitions may be undertaken as a flexible strategy to access the market through an established brand, *inter-alia*, to get a market share, to eliminate competition, to reduce tax liabilities or to acquire competence or to set off accumulated losses of one entity against the profits of other entity.

The motives for acquirers engaging in merger and acquisitions are well documented in the literature with the synergy motive associated with positive wealth effects for acquirers while zero/negative wealth effects said to be driven by hubris and/or managerialism (Berkovitch and Narayanan, 1993). Synergy results when the value of the combined firm is greater than the

[*] Research Scholar, Department of Management Studies, Indian Institute of Technology Delhi.
[**] Professor & Head, Department of Management Studies, Indian Institute of Technology Delhi.
[***] Professor, Department of Management Studies, Indian Institute of Technology Delhi.

sum of the acquirer and target as individual firms and can be achieved from combining firms in the same industry sector (operational synergy), when firms have different financial resources (financial synergy) or different managerial resources (managerial synergy). Whether acquiring company shareholders experience any effect on their wealth from mergers and acquisitions or not has been a matter of ongoing debate among academic researchers. Jensen (1986) stated that availability of free cash flow results to value – reducing mergers. Shleifer and Vishney (1989) argue that managers might make investments that increase managerial value to shareholders but do not improve shareholders' returns.

For the better exposition, the paper is organised into 7 sections including this section. A profile of the pharmaceutical industry and strategies adopted by it constitute the subject matter of section II. Section III reviews the previous empirical research work related to mergers and acquisitions as well as pharmaceutical industry. Section IV explains the objective of the present work and methodology used. Data collection and sample selection related issues have been delineated in section V. The major findings and concluding observations are contained in section VI and VII respectively.

II

Indian Pharmaceutical Industry: Some Facts and Strategies Adopted

Indian pharmaceutical industry has carved out a unique place on the global map, not only as a manufacturer of generic drugs but also of new formulations, with growing emphasis on research and development and new drug discovery. The annual turnover of the Indian pharmaceutical industry is over US $ 11 billion[1]; globally it ranks 4th in terms of volume with a share of 8 per cent in the world pharmaceutical market in 2006-2007. In terms of value, it ranks 14th.

Indian pharmaceutical is one among the fastest growing manufacturing segment with a growth rate of 22.78 per cent in 2006-07[2]; it is adopting various strategies to surge as a global player. The select significant strategies adopted by Indian pharmaceutical industry are listed as follows:

- Increasing research and development (R &D) activities;
- Filing of Drug Master Files (DMF) and Abbreviated New Drug Applications (ANDA) with United States- Food and Drug Authority (US-FDA); India possesses the highest number of US FDA approved manufacturing facilities outside the USA and currently tops in filing the drug master files (DMF) with the US FDA (Jha, 2007);
- Leveraging bio-technology;
- Specializing in contract research;
- Contract manufacturing and co-marketing alliances;
- Diversification of markets; and
- Inorganic growth through mergers and acquisitions.

Inorganic Growth Strategy of Indian Pharmaceutical Industry: Though the trend of acquisitions by Indian pharmaceutical firms has started in 1995, the aggressive acquisitions of foreign targets took place in 2002 only. Most of the acquisitions by Indian pharmaceutical companies are in developed markets such as USA and Europe. Table 1 shows the major foreign-based acquisitions

1 Indian Pharmaceutical Industry: Surging Globally, Occasional Paper 119, Export-Import Bank of India, August 2007.

2 Center for Monitoring Indian Economy (CMIE) Industry Analysis Services Database, Mumbai.

Table 1: **Descriptive statistics of top transactions of foreign acquisitions by India- based acquirers from 2005-2007**

(US $ Million)					
Sr. No.	Acquirer	Target	Target Country	Announcement Dates	Value
1	Dr. Reddy's Laboratory	Beltapharma Arzneimittel GmbH	Germany	2006	582
2	Ranbaxy	Terapia	South Africa	2006	324
3	Matrix Laboratory	Docpharma, NV	Belgium	2005	263
4	Dr. Reddy's Laboratory	Roche's API Facility	Mexico	2005	59
5	Jubilant Organosys Ltd.	Target Research Associates	USA	2005	33.5
6	Torrent Pharmaceutical	Heumann Pharma GmbH and Co generica KG	Germany	2005	30
7	Wockhardt	Negma Laboratories	France	2007	265
8	Ranbaxy	Betabs Pharma	Sounth Africa	2007	70
9	Wanbury	Industrial FC	Spain	2006	42
10	Sun Pharma	Taro Pharma	Israel	2007	454
11	Jubilant Organosys Ltd.	Hollister Laboratory	USA	2007	122.5

by Indian companies.

The increasing presence in high-value markets like the USA and Europe has strongly boosted the overall growth of the Indian pharmaceutical industry. However, with competition getting stiffer in the regulated markets and the consequent pressure on margins, Indian players are also expanding their geographical reach to high-growth regions such as the Commonwealth of Independent States and Latin American countries. Although considered as low-value markets, these markets are witnessing impressive growth and, therefore, it provides great opportunity for Indian players. Indian companies (strategically) are buying out products from foreign companies to enter into target markets. Indian pharmaceutical companies are acquiring proprietary drug development capabilities/ facilities that only focus one therapeutic segment with intend to

i. To gain access to distribution network abroad by acquiring foreign companies;

ii. To gain new products and brands; and

iii. To gain access to Active Pharmaceutical Ingredient (API) production through vertical integration by companies specialized in generic production

III

Literature Review

Numerous research studies have been conducted to measure market response to announcement of acquisition and have analyzed acquisition value creation globally. In other words, market response in terms of abnormal stock returns earned by the acquirers' shareholders after the acquisition announcement has been extensively used in literature to study the motives for mergers and acquisitions. Abnormal stock returns generally reflect the value that a transaction potentially creates for the shareholders.

Travols (1987) finds an average bidder return of -1.6 per cent in stock transactions and -0.13 per cent in cash deals for 167 mergers and acquisitions transactions from 1972 to 1981 in US. Firth (1980) finds an insignificant abnormal return of 0.01 per cent over the 36 months following the bid announcement by examining 434 successful bids and 129 unsuccessful bids in the UK over the period 1965-1975 using market model with a moving average method for beta estimation. Moeller, Schlingemann and Stulz (2004) examined the effect of firm size on abnormal returns from acquisitions for 12023 acquisitions by public companies from 1980 to

2001 in USA and found that acquisitions by smaller companies lead to statistically significant higher abnormal returns than acquisitions by larger companies. Huang and Walking (1987) show a return of 14.4 per cent for stock offers and 29.3 per cent for cash offers to the shareholders of target firm for their event window of (-50, 50) days for 204 US companies from 1977 to 1982.

Kale and Singh (2005) studied the value creation from mergers in the post liberalization period in India. The study divides the period in two phases 1992-1997 and 1998-2002. They notice important difference in the two segments. During the phase of 1992-1997, acquirers in India earned significant positive returns. They found +5 per cent mean abnormal returns. MNCs acquirer during this phase earned significantly greater stock market return to their acquisitions than their local Indian counterparts. There was no significant difference between related and unrelated acquisitions. Average acquisition returns were much lower during the period 1998-2002 *vis-à-vis* 1992-1997 periods. The study also concluded that Indian acquisitions have managed to develop their acquisition capabilities over time. During this phase, they found a distinct difference in acquisition value creation between related and unrelated acquisition. The stock returns pursuant to acquisition announcements were more favourable for related acquisitions (+3.5 per cent) than for unrelated acquisition (+1 per cent). Fee and Thomas (2004) detected a positive return of 3.06 per cent over a three day window for a sample of 554 horizontal deals in US over the period of 1980-1997.

Cakici, Hessel and Tandon(1996) examined shareholder wealth gains for 195 foreign firms that acquired U.S. target firms and 112 US firms that acquired non-US target firms during 1983-92. They compared the shareholder wealth effects of acquisitions of US firms by non-US bidders and the opposite- acquisitions of non- US companies by US bidders. They found that foreign acquirers obtained positive and significant abnormal returns of nearly two per cent over days (- 10, + 10) when they acquired targets in the United States; however, U.S. acquiring firms do not gain at all from their purchases of foreign firms over the same period. On the basis of analysis of abnormal returns, they revealed that Japanese, British, Australian and Dutch acquirers gained significantly from purchases of U.S. firms. Bidder abnormal returns were not related to relative size of target to bidder, or to the extent of their overseas exposure, or to the target's R and D intensity; they do not exhibit an industry factor nor are they affected by the value of foreign currency. They supported the hypothesis that competition among bidding firms for the same target decreased the returns to the acquirers; they also found that the 1986 Tax Act has led to no gains to foreign buyers of U.S. firms.

Markides and Oyon (1988) compared a sample of 236 acquisition by US firms of 189 European and 47 Canadian acquisitions. They found positive announcement effects for acquisitions of Continental European targets but not for British or Canadian target firms. Eckbo and Thorburn (2000) also found negative shareholder wealth effects for a sample of 390 deals involving Canadian companies over the period 1962-1983. Shahrur (2005) examined the returns that occurred around the announcement of 463 horizontal mergers and tender offers over the period 1987-1999. He found positive combined bidder and target returns and interpreted these findings to imply that market perceived these deals as efficiency enhancing.

A very few studies have investigated various effects of mergers and acquisitions in the pharmaceutical industry. Hassan, Patro, Tuckman and Wang (2007) investigated that US- based acquisition by US-based acquirers have a positive impact on shareholders wealth on the basis of study of US Pharmaceutical industry in the period 1981-2004. In a comprehensive study, Jha (2007) investigated the strategies adopted by top 15 companies since 1995 with respect to their export orientation, import dependence, investment, options of manufacturing versus

marketing and stimulus to research and development.

However, to the best of our knowledge, an in-depth research related to the impact of mergers and acquisitions on the shareholders wealth in short-run in India has not been observed. This paper is a modest attempt to investigate the impact of mergers and acquisitions on shareholders wealth in short-run.

IV

Objective, Rationale and Methodology

The objective of the present paper is to examine short-term abnormal returns to the shareholders of acquiring companies separately for mergers and acquisition; the disaggregate analysis for such returns has also been attempted for domestic and foreign-based targets. The study also explores the determinants of theses abnormal returns along with strategies adopted by major companies in the pharmaceutical industry. The focus of this paper is on mergers and acquisitions activities in the pharmaceutical industry as this industry is likely to experience abnormal returns in short-term. The industry is also different from other industries because of high cost of bringing a drug to market and the documented low rate of success for drugs coming through pipeline. There is an inherent incentive for a company to use mergers and acquisitions activities either to supplement or to substitute for early stage research, so the potential abnormal returns to blockbuster drugs are substantial. The industry is chosen because of its global nature, extensive involvement in mergers and acquisition activities and is likely to gain abnormal returns in the short-run. The period of the study is 2001-07.

The event study methodology is used to examine short-term stock price reaction to mergers and acquisitions announcements. The traditional market model with value weighted market index (BSE SENSEX)[3] has been used to estimate abnormal return. The traditional market model to estimate abnormal returns as per equation (1) is:

$$R_{i,t} = \hat{\alpha}_i + \hat{\beta}_i R_{m,t} + \varepsilon_{i,t} \qquad (1)$$

Where $R_{i,t}$ is its return for firm i on day t;

$R_{m,t}$ is the corresponding return on the Bombay stock Exchange (BSE) index SENSEX .

The abnormal return (AR) for each day for each firm is then obtained as per equation (2)

$$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i R_{m,t}) \qquad (2)$$

Where $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from (1) using data from the appropriate estimation window.

Abnormal returns are averaged for each event day across firms (where t=0 is the announcement day when it is first time announced in the public news paper) and Cumulative Abnormal Returns (CARs) are computed by summing average abnormal returns for the window of interest.

The estimation period for the parameter estimation is constructed in the following manner. We start with an announcement date such as t=0. An estimation period window is then constructed for a defined period such as the pre-merger period trading day -280 to -30; it

3 BSE SENSEX is a “Market Capitalization- Weighted” Index of 30 component stocks representing a sample of large, well –established and financially sound companies. It is the benchmark index of the Indian capital market.

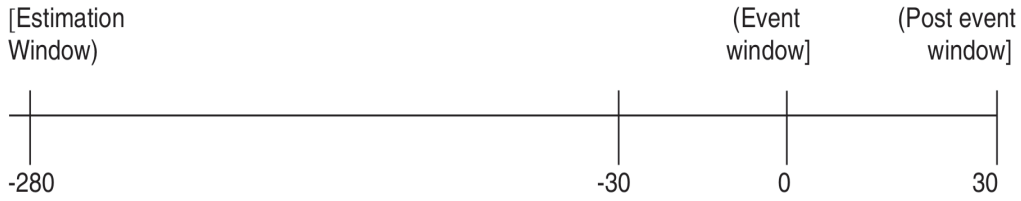


Figure 1: Time line for an event study

implies 280 trading days prior to announcement date ending 30 trading days before announcement date as shown in the Figure 1. In order to remain in the sample, the shares of acquiring company must have been traded for at least 185 days.

Null Hypotheses and Tests: The study tests the following hypotheses to investigate the average effect of the announcements of mergers and acquisitions on the shareholders wealth of pharmaceutical industry

H1: *There is no average abnormal return on the announcement day due to the announcements of mergers and acquisitions to the shareholders of pharmaceutical industry.*

The procedure outlined in Brown and Warner (1985) has been used in order to test the significance of an overall effect of acquisition announcements.

The test statistics is the ratio of the average abnormal returns to shareholders on day '0' to its estimated standard deviation (SD).

The overall abnormal return for announcement day is calculated as follows:

$$\overline{AR_t} = \frac{1}{N}\sum_{j=1}^{N} AR_{jt} \qquad (3)$$

The test statistic is then:

$$T = \frac{AR_t}{\hat{S}(\overline{AR})} \qquad (4)$$

2

Where

$$\hat{S}^2(\overline{AR_t}) = \sum_{t=-280}^{-30}(\overline{AR_t} - \overline{\overline{AR}}) \Big/ 249 \qquad (5)$$

and

$$\overline{\overline{AR}} = \frac{1}{250}\sum_{t=-250}^{-30}\overline{AR_t} \qquad (6)$$

H2: there is no cumulative average abnormal return for the event window period due to announcements of mergers and acquisitions to the shareholders of pharmaceutical industry.

In order to make inferences about the effect of the announcement, the abnormal returns have been cumulated across time for each security (if the event window covers more than one period) and across securities. The measure of abnormal returns in this paper uses windows for varied sets of time period (in days), namely, (-30, -1), (-1, 0), (-1,1), (1,0), (1,30) period. The larger window pre merger 30 days of (-30, -1) includes the effect of possible leakage of the information and also captures any adjustment to the share price (if any) following the announcement. The cumulative abnormal return for a given security is simply the sum of daily abnormal returns over the event window. For event window of (τ_1, τ_2) period CAR for security j is;

$$CAR_{j\ (\tau_1 \tau_2)} = \sum_{t=\tau_1}^{\tau_2} AR_{jt} \qquad (7)$$

The corresponding test statistics for event window is the ratio of the cumulative mean abnormal returns to its estimated standard deviation as outlined in Brown and Warner (1985) and Mackinlay (1997).

The Test statistic is given by equation (8):

$$CAR \Big/ \hat{S}(CAR) = \sum_{t=\tau_1}^{\tau_2} AR_t \Big/ \sum_{t=\tau_1}^{\tau_2} \hat{S}(\overline{AR_t}) = \sum_{t=\tau_1}^{\tau_2} AR_t \Big/ \sqrt{(\tau_2 - \tau_1 + 1)}\hat{S}\left(\overline{AR_t}\right) \qquad (8)$$

Where $\hat{S}$ is calculated as in equation (5).

Brown and Warner (1985), Boehmer, Musumeci and Paulsen (1991) note that an increase in variance around the event window may cause error in rejection of null hypothesis, so the study calculates 'Test statistics ' by using both estimation- period residual variance as well as cross sectional variance in the event period as in Rosenstein and Wyatt (1990) and reports both.

V

Data Collection and Sample Selection

The mergers and acquisitions database for this study is constructed from monthly review of mergers and acquisitions by *Center for Monitoring Indian Economy (CMIE)* for the 2001-2007 periods. It focuses on Indian acquirer companies making mergers and acquisitions[4] activities both domestic and foreign. Announcement dates and dates of High Court approval of mergers of the complete transactions are based on information from *CMIE* data base Prowess and news paper *The Hindu BusinessLine*, Websites of *National Stock Exchange (NSE)* and Websites of *Bombay Stock Exchange (BSE)*. Table 2 presents the number of mergers and acquisitions in pharmaceutical industry announced in each year and in different categories as per CMIE database. Table 3 provides the sample selection summary. The final database consists of 76 mergers and acquisitions, of which 35 are India-based targets (26 Mergers and 9 Acquisitions) and 41 (7 Mergers and 34 Acquisitions) are foreign-based targets. Of the total events, 33 (43%) relate to mergers and 43 (57%) acquisitions while all the 9 acquisitions pertaining to India based targets are completed through open offer transactions, 23 mergers transactions of India based targets

4 While merger implies formation of a new entity by combining the existing ones, acquisition implies taking over of the existing firm, which ceases to exist subsequent to absorption.

Table 2: Frequency Distribution of Announcements of Mergers and Acquisitions in Pharmaceutical Industry by Year

Year	Number of Mergers	Numbers of Acquisitions	Total
2001	11	51	62
2002	13	55	68
2003	12	36	48
2004	16	37	53
2005	3	17	20
2006	11	32	43
2007	3	22	25
Total	69	250	319

Compiled from CMIE database on mergers and acquisitions (2001-2007).

Table 3: Sample Selection Summary

Total number of mergers and acquisitions announced from 2001 - 2007 as per CMIE database	319
Less [Announcements of assets/ stake acquisitions	60
Acquisitions by private companies	72
Open offers for acquisitions not completed	23
Acquired by foreign companies	12
Brand acquisitions	26
No. of mergers and acquisitions announced in one announcement	27
Acquiring firm had prior acquisition in one year	19
Confounding Statements during event window]	18
Sample selected	76

* Note: Companies in respect of which data are not available have been excluded.

are stock based and 3 are cash based. All the acquisitions transactions of foreign-based targets are through cash but 4 acquisitions of foreign-based targets are stock based and 3 are through open offers.

VI

Results for Short- Horizon Event Study

Table 4 reports results for short- horizon event study. It is evident from Table 4 that null

Table 4: Abnormal Returns to the Shareholders of Acquiring Companies in Pharmaceutical Industry on Announcement day

Category	Sample size (N)	Abnormal Returns (AR)	Standard Deviation (SD)	Test Statistics
Whole Sample	76	0.65	0.33	1.99*
Foreign -Based Acquisitions	34	1.62	0.3	6.4**
Mergers	7	0.36	0.8	0.49
Indian - Based Acquisitions	9	-1.66	1.03	-1.61
Mergers	26	0.15	0.5	0.298

* Significant at 5 per cent level.
**Significant at 5 per cent as well as 1 per cent level.

hypothesis, namely, there are no abnormal returns to the shareholders of pharmaceutical companies on the announcement day is rejected at 5 per cent level. In operational terms, it implies that there are significantly different announcement effects on the stock prices mergers and acquisitions groups.

Based on statistics contained in Table 4, it is reasonable to conclude that acquisitions of foreign companies significantly create short-term wealth on the announcement day to the shareholders. It seems market perceives the deals of acquisitions of foreign targets by Indian pharmaceutical companies as efficiency enhancing.

However**,** null hypothesis is accepted in the case of mergers with foreign-based targets as well as mergers and acquisitions of Indian- based companies. Mergers with foreign-based targets as well as India-based targets do not create short-term wealth on the day of announcement.

Table 5 reports results for short-term event study of cumulative abnormal returns for different event windows; it also contains the t test statistics calculated with standard errors from estimation window as well as cross-sectional event window.

The most significant finding of our research is that acquisitions of foreign -based targets are appreciated by market. Indian companies acquisitions activities aimed at foreign-based targets have a positive effect on the shareholders wealth. Panel B of Table 5 presents the results of different event windows for acquisitions of foreign-based targets; it appears that the market perceives normally the acquisitions positive and responds accordingly. The CAR for windows (–30, –1), (-1,0), (–1, +1), (0, +1) is positive for acquisition groups and statistically significant at 5 per cent level. Measured sequentially for event windows (–30, –1), (-1, 0), (–1, +1), (0, +1) for acquisitions, the mean values are very impressive 3.161, 2.81 per cent, 1.911 per cent, 0.721 per cent. Over these windows 50 to 80 per cent companies have positive CAR. While the mean CAR values for mergers are 1.63 per cent, 0.183 per cent, –1.09 per cent and 0.40 per cent and, most of the results are statistically significant. It may be noted that the CAR of the mergers group for window (–1, 0), (–1, 1) is positive but not very significant while the CAR of acquisition group for window (–30, –1) is significantly positive. This is consistent with the information leakage argument and with our previous finding that markets view acquisitions as more favorable than “mergers” with foreign- based targets.

When the mergers and acquisition groups are combined (as shown in the panel E), window (-1, 0), (–1, +1), (0, +1) has an insignificant mean CAR of 1.28, 0.128 and 0.291 per cent. For event window (-1, 0), the results are very significant. The results for window (1, 30) become negative and are also very significant.

It is clear from Panels C and D that there are almost similar announcement effects on the stock prices of the mergers and acquisitions groups for India- based targets. Consider the window of –1 to +1 days, the value of CAR for mergers group is negative (mean of -0.42 per cent). Likewise, the CAR for the acquisition group is also negative (mean of -0.9 per cent) and not statistically very significant for the t test .A similar conclusion holds when we explore the results for other event windows such as (–1, 0) and (0, 1). When we define the window as (+1, +30), mean CAR for merger group is negative (-3.96 per cent) and becomes significant at 10 per cent level while the CAR for acquisition group is (mean is -14.16 per cent) but is also significant at 5 per cent. It is evident that the results do not suggest abnormal profits for mergers as well as acquisition of India-based targets; on the contrary, there are losses in the short run at –5.516 per cent. Figures 2 and 3 show the trend of CAR over time for mergers and acquisition groups separately, and provide support for our findings.

VII

Concluding Observations

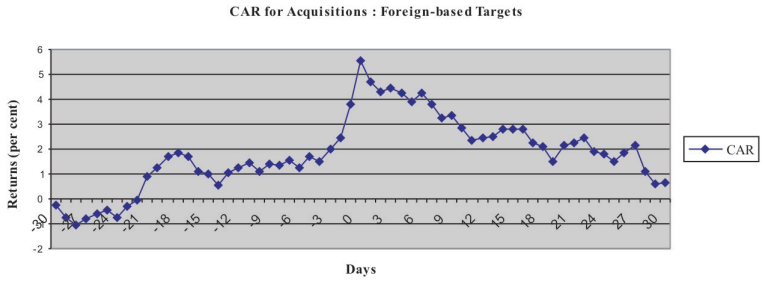
The most significant finding of our research is that there are significant positive abnormal returns to shareholders of Indian pharmaceutical companies on their acquisitions of foreign

Table 5: Short-term event Study of Cumulative Abnormal Returns for Mergers and Acquisitions of Pharmaceutical Companies

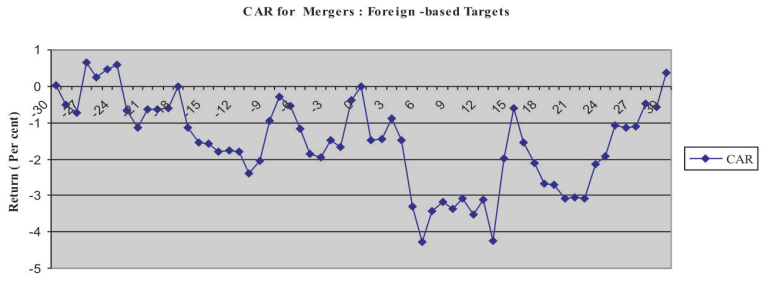
Event window	N	Mean of CAR (per cent)	Median of CAR (per cent)	Positive: Negative	With cross-sectional standard deviation from event window		With estimation – period residual standard deviation	
					SD	T	SD	T
Panel A: Mergers: Foreign- based Targets								
(-30, -1)	7	-0.381	-2.305	3:4	3.224	-0.118	4.112	-0.0926
(-1,0)	7	1.639	0.831	5:2	1.374	1.193	1.062	1.544
(-1,1)	7	0.183	0.0493	4:3	1.861	0.098	1.3	0.141
(0,1)	7	-1.091	-2.245	3:4	1.288	-0.847	1.062	-1.028
(1,30)	7	0.398	0.533	4:3	4.078	0.098	4.112	0.097
(-30,30)	7	0.382	0.027	4:3	5.203	0.073	5.863	0.065
Panel B: Acquisitions: Foreign – based Targets								
(-30,-1)	34	3.161	1.359	17:17	2.427	1.303	1.386	2.280**
(-1,0)	34	2.811	2.130	28:6	0.638	4.408***	0.358	7.86***
(-1,1)	34	1.911	1.548	24:10	0.909	2.104**	0.438	4.36***
(0,1)	34	0.721	1.088	19:15	0.810	0.890	0.358	2.014*
(1,30)	34	0.206	-4.28	12:22	2.133	0.097	1.386	0.149
(-30,30)	34	0.634	1.721	18:16	3.28	0.199	1.977	0.331
Panel C: Mergers: India- based Targets								
(-30,-1)	26	-3.709	-3.080	9:17	2.754	-1.347	2.841	-1.306
(-1,0)	26	-0.334	-0.226	9:17	0.701	-0.476	0.733	-0.455
(-1,1)	26	-0.415	-1.003	11:15	0.896	-0.463	0.898	-0.462
(0,1)	26	0.074	-0.287	13:13	0.781	0.094	0.733	0.100
(1,30)	26	-3.959	-3.215	10:16	2.983	-1.327	2.841	-1.394
(-30,30)	26	-7.150	-3.220	8:18	4.102	-1.743*	4.0505	-1.765*
Panel D: Acquisitions: India- based Targets								
(-30,-1)	9	-0.910	0.941	6:3	7.527	-0.121	5.642	-0.161
(-1,0)	9	-0.323	-0.712	3:6	2.357	-0.137	1.457	-0.222
(-1,1)	9	-0.896	-1.098	4:5	2.244	-0.399	1.784	-0.502
(0,1)	9	-2.235	-5.038	3:6	1.296	-1.724	1.457	-1.534
(1,30)	9	-14.156	-10.453	0:9	6.879	-2.058*	5.642	-2.51**
(-30,30)	9	-16.728	-9.533	1:8	10.249	-1.632	8.045	-2.079*
Panel E: Whole Sample								
(-30, -1)	76	-0.164	-0.268	42:34	1.714	-0.096	1.800	-0.091
(-1,0)	76	1.278	0.232	40:36	0.481	2.659***	0.465	2.750***
(-1,1)	76	0.128	-6.802	35:41	0.444	0.287	0.569	0.224
(0,1)	76	0.291	-3.886	34:42	0.299	0.975	0.465	0.627
(1,30)	76	-5.478	-5.486	23:53	1.669	-3.28***	1.800	-3.11***
(-30,30)	76	-5.171	-8.165	29:47	2.419	-2.134*	2.567	-2.015*

* Significant at 10 per cent level.
** Significant at 5 per cent level.
*** Significant at 1 per cent level.

a



b



c

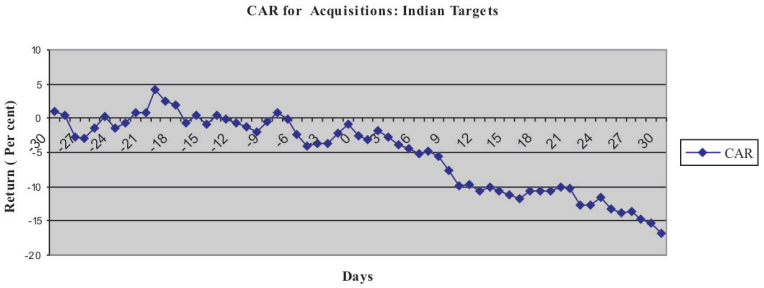
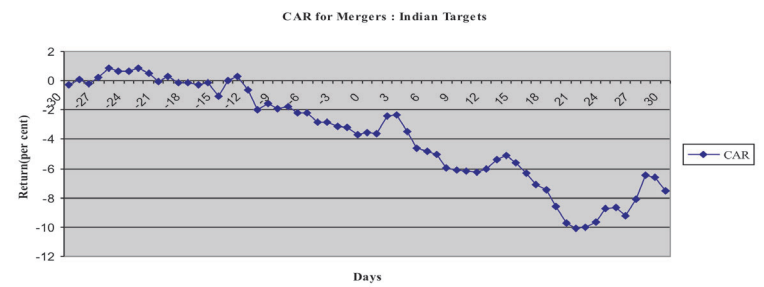


Figure 2: The trend in CAR over event window (-30, 30) for mergers and acquisitions for foreign-based targets and acquisitions of Indian targets

a



b

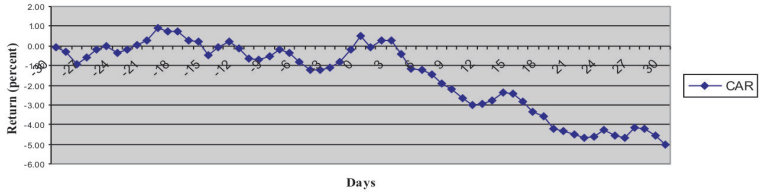


Figure 3: The trend in CAR over event window (-30, 30) for mergers of Indian targets and whole sample.

targets. This may be perhaps due to the reason that bigger pharmaceutical companies acquire a patent, division, or a smaller biotech company for strategic reasons and the market responds positively if the acquisition is considered value-adding to the existing product portfolio of the acquiring company. Further, merger and acquisition activities in pharmaceutical industry, involving India based targets do not create short-term wealth.

References:

- Berkovitch, E., and Narayanan, M. (1993), Motives for Takeovers: An Empirical Investigation, *Journal of Financial and Quantitative Analysis*, 28 (3), 347-62.
- Brown, S., and Warner, J. (1985), Using Daily Stock Returns: The Case of Event Studies, *Journal of Financial Economics*, 14(1), 3-31.
- Boehmer, E., Musumeci, J. and Poulsen, A.B. (1991), Event Study Methodology under Conditions of Event-Induced Variance, *Journal of Financial Economics*, 30(2), 253-72.
- Cakici N., Hessel C. and Tandon, K. (1996), Foreign Acquisitions in the United States: Effect on Shareholder Wealth of Foreign Acquiring Firms, *Journal of Banking and Finance*, 20(2), 307-329.
- Eckbo, E. and Thornburn, K.S. (2000), Gains to Bidder Firms Revisited: Domestic and foreign Acquisitions in Canada, *Journal of Financial and Quantitative Analysis*, 35(1), 1-25.
- Fee, C. E. and Thomas, S. (2004), Sources of Gains in Horizontal Mergers: Evidence from Customer, Supplier, and Rival Firms. *Journal of Financial Economics*, 74(3), 423- 460.
- Firth, M., (1980), Takeovers, Shareholder Returns, and the Theory of the Firm, *Quarterly Journal of Economics*, 94(2), 235-260.
- Hassan, M., Patro, D.K., Tuckman, H. and Wang, X.(2007), Do Mergers and Acquisitions Create Shareholders Wealth in the Pharmaceutical Industry, *International Journal of Pharmaceutical and Healthcare Marketing*, 1(1), 58-78.
- Huang, Y., and Walkling, R. (1987), Target Abnormal Returns Associated with Acquisition Announcements: Payment, Acquisition Form, and Managerial Resistance, *Journal of Financial Economics*, 19(2), 29-349.
- Jensen, M. C., (1986), Agency Costs of Free Cash Flow: Corporate Finance, and Takeovers, *American Economic Review,* 76(2), 323-329.
- Jha, Ravinder(2007), Options for Indian Pharmaceutical Industry in the Changing Environment, *Economic and Political weekly,* September 29, 3958-66.
- Kale, P., and Singh, H. (2005), Acquisitions and Alliances: Indian Companies and Value Creation, *TMTC Journal of Management*, January, 13-18.
- Mackinlay, A.C. (1997), Event Studies in Economics and Finance, *Journal of Economic Literature.* 35(1), 13-39.
- Markides, C., and Oyon, D. (1998), International Acquisitions: Do They Create Value for Shareholders?, *European Management Journal*, 16(2)125-135.
- Moeller, S. B., Schlingemann, F. P. and Stulz, R. M., (2004), Firm Size and the Gains from Acquisitions, *Journal of Financial Economics,* 73(2), 201-228.
- Rosenstian, S. and Wyatt, J.(1990), Outside Directors, Board Independence and Shareholder Wealth. *Journal of Financial Economics*, 26(2), 175-91.
- Shahrur, H.(2005), Industry Structure And Horizontal Takeovers: Analysis Of Wealth Effects on Rivals, Suppliers, and Corporate Customers, *Journal of Financial Economics*, 76(1), 61-98.
- Shleifer, A. and Vishny, R. M. (1989), Management Entrenchment: The Case of Manager-Specific Investment, *Journal of Financial Economics,* 25(1), 123-139.
- Travlos, N. G., (1987), Corporate Takeover Bids, Methods of Payment, and Bidding Firms' Stock Returns, *Journal of Finance*, 42 (4), 943-963.