A STUDY ON MERGERS AND ACQUISITIONS IN
THE INDIAN PHARMACEUTICAL INDUSTRY
SINCE 1991

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INTRODUCTION

The Indian corporate sector has experienced a major restructuring through mergers and acquisitions with the changes brought about by the Industrial Policy Resolution of June 1991. The deregulation of Indian economy provides the corporate sector with numerous opportunities to exploit the emerging demands in this huge market. Industries are moving from fragmented phases to consolidated ones. Mergers and acquisitions have become major means of industry consolidation.

The pharmaceutical industry has been undergoing a profound restructuring since the mod-1990s. The restructuring has been driven by substantial changes in regulatory, financial and economic forces surrounding the industry. The shift from process patent to product patent in India from 2005 has accentuated the phenomenon. Pharmaceutical industry has become been increasingly concentrated over the past decade. Much of this consolidation stems from mergers and acquisition activity in the pharmaceutical industry.

The study attempts to identify the different financial variables that have an impact on the likelihood a company becoming an acquisition target. It also develops a logistic regression model that estimates the likelihood of a company in the Indian pharmaceutical industry becoming an acquisition target. The study has makes important contributions to management practice, the body of knowledge on mergers and acquisitions and policy formulation by the Government.

OBJECTIVES OF THE STUDY

A number of mergers and acquisitions have taken place in the pharmaceutical industry. The spate of mergers and acquisitions in the pharmaceutical industry during the post liberalisation period gives rise to several questions:

1. What are the motives behind these mergers and acquisitions?
2. Is it possible to identify the companies that are likely targets of acquisitions?

3. Have the mergers and acquisitions undertaken by Indian pharmaceutical companies affected their performance?

Out of the research questions, the questions relating to the motives behind acquisitions, the performance impact of mergers and acquisitions and the benefits that accrue to shareholders in respect of mergers in general have been by and large addressed by previous research work. This study proposes to address the issue of identifying the companies that become acquisition targets. The objectives can thus be stated as follows:

1. To identify the companies in the pharmaceutical sector that are likely targets of acquisitions

2. To develop a model that would predict the probability of a company pharmaceutical industry being acquired

**HYPOTHESIS**

H1: The takeover firms and non-takeover firms significantly differ in each of the firms’ characteristics variables.

A model is proposed in the following form:

\[
\text{Logit} (\mathbf{Y}) = f(\text{SIZE, RD, BV, MBCE, PE, FCOTA, MEFV, DIVIDENDYIELD, GROWTH, LIQUIDITY, LEVERAGE, AGE, EXRETURN, ROWNW}) \ldots (M1) 
\]

**NEED FOR THE STUDY**

Mergers and acquisitions continue to a highly popular form of corporate development. In 2004, about 30,000 acquisitions were completed globally. The total value of these transactions was $1900 billions.

The Indian corporate sector has experienced a major restructuring through mergers and acquisitions with the changes brought about by the liberalisation process since 1991. In the post 1991 period, there has been a sharp increase in the number of mergers and acquisitions. The total value of the deals also increased considerably. It
doubled from Rs 513 billions in 2004 to Rs 1042.02 in 2005. This shows the importance of mergers and acquisitions as a field of study.

The spurt in the volume of mergers after 1991 gives rise to certain issues such as:

- What drives these mergers and acquisitions?
- How do mergers and acquisitions affect the performance of companies?
- Are mergers and acquisitions used as a strategy to survive the onslaught of competition or as means of growth?
- Once a company decides to go for mergers and acquisitions, is there a way to identify the acquisition targets?

A number of studies on mergers and acquisitions have been conducted in the West. The studies on mergers and acquisitions in India are very few. Hence, there is a need for more research on mergers and acquisitions in India.

Despite the consolidation, much of the industry remains fragmented. This is especially true in the Indian Pharmaceutical Industry. With the need for increased expenditure on research and development that requires huge size of companies, there is scope for further consolidation in the Indian Pharmaceutical industry. Hence, there is a need to study the mergers and acquisitions in the pharmaceuticals industry. The number of research studies mergers and acquisitions in the pharmaceutical industry is quite a few both in India and abroad. So, there is a need for further research in this field.

**AREA OF THE STUDY**

The area of the study is mergers and acquisitions in the pharmaceutical industry in India. The study covers the period from 1991-2006.

**METHOD OF SAMPLING ADOPTED**
Judgement sampling has been used. Financial data relating to the companies under study have mainly been gathered from PROWESS, a financial database of CMIE and the annual reports and websites of these companies.

The list of companies that have become acquisition targets was prepared using the data sources mentioned supra. The companies that were not listed in the stock exchange and companies for which the required data were not available were eliminated from the list. Finally, we were left with 23 companies. This was the sample for companies that became acquisition targets. A list of pharmaceutical companies was obtained from the PROWESS database. From this list, all companies that have become acquisition targets were eliminated first and those companies in respect of which full data was not available on March 31, 2006 were eliminated. Finally, we were left with 58 companies. This was used as the sample for companies that were not the targets of acquisition.

TOOLS USED FOR THE STUDY

Financial and stock market data were collected from PROWESS database of CMIE. The SPSS package was used to develop a logistic regression model that would predict the probability of a company becoming an acquisition target. Additionally, ANOVA was used to countercheck the results shown by the model.

FINDINGS OF THE STUDY

The variables (firm characteristics) identified from previous research, which were used in the present study include: Size of the firm, Research and Development, Book Value, Market to Book Ratio of Common Equity, Price Earnings Ratio, Free Cash flow over Total Assets, Market Value of Equity by Firm Value, Dividend Yield ratio, Percentage growth in sales, Average quick ratio, Average Leverage Ratio, Age of the firm, Average Excess Returns over BSE Sensex, Average return on net worth.
The final model that was developed using a stepwise procedure contained the variables Size, Market to Book Ratio of Common Equity, Free Cash flow over Total Assets, Market Value of Equity by Firm Value, Average Excess Returns over BSE Sense, Research and Development and Percentage growth in sales).

The fitted model is as follows:

\[
\text{Logit}(Y) = 1.479 - 0.001 \text{SIZE} - 102.428 \text{RD}^2 + 0.106 \text{MBCE} - 9.938 \text{FCOTA} - 2.896 \text{MEFV} + 1.992 \text{GROWTH}^2 + 0.015 \text{EXRETURN}
\]

The overall prediction accuracy of the model was found to be very high (87.3%); in the case of non takeover targets, the model is in a position to correctly classify as high as 98.3% of the companies and in the case of takeover targets, nearly 58% of the companies were predicted correctly by the above model.

The variables that have positive signs are Market to Book Ratio of Common Equity, Growth and Average Excess Returns over BSE Sensex. Higher the values of these variables higher is the probability of a company becoming an acquisition target. The other variables namely, SIZE, Research and Development, Free Cash flow over Total Assets and Market Value of Equity by Firm Value have negative signs in the fitted model. It implies that higher the value of these variables, lower is the possibility of a company becoming an acquisition target.

However, of the seven variables contained in the model, the variables that are statistically significant are Free Cash flow over Total Assets, Market Value of Equity by Firm Value and Average Excess Returns over BSE Sensex) and Percentage growth in sale.

CONTRIBUTIONS OF THE STUDY

Mergers and acquisitions research has now been ongoing for over 30 years. Each disciplinary approach has made significant advances in our understanding of the mergers
and acquisitions phenomenon. However, despite the robust academic interest, empirical
data reveal that there has been little change in the acquisition failure rate over this period.
An examination of the returns to acquiring shareholder firms reveals that acquisitions
continue to produce negative average returns. Hence the correct identification of
acquisition targets assumes significance for practitioners. Results of our study and the
model developed represent significant contributions to management practice, policy
development by government and the body of knowledge on mergers and acquisitions.

The model developed will enable the policy makers in corporate organisations in the
pharmaceuticals sector to correctly identify the possible targets of acquisition. The
findings of the study are relevant to pharmaceutical industry mainly for the following
reasons:

(1) The industry is global in nature and engages in mergers and acquisition activities
extensively.

(2) The industry is different from many other industries because of the high cost of
bringing a new drug to market and the documented low rate of success for drugs
coming through the pipeline. There is an inherent incentive for a pharmaceutical
company to use mergers and acquisition activity either to supplement or substitute
for early stage research.

(3) The companies in the industry have a well-known propensity to seek merger with/
acquisition of the companies that has so called “blockbuster drugs” with the
potential to produce billions in revenue.

(4) Finally, the monopoly or oligopoly structures that exist in several pharmaceutical
markets support the expectations of abnormal returns from M&A at least while
patent protection is in effect (Bottazzi 2001). Since, over 80% of revenue is lost at
the time of patent expiry and the patent period is relatively short, the window for abnormal returns may be limited (Berndt 2001).

Hence there is a need to identify the acquisition targets at the right time. The model developed by us will be very much useful to the decision makers in this regard.

The results of the study will be very much useful to policy makers in Government. The results of the study indicate the need for evolving a proper competition policy, developing a proper database of mergers and acquisitions in India like Merger and Acquisition Statistics of USA and Dealogic of Europe, issuing guidelines to companies to make the information on shareholding patterns and acquisition of shares more transparent and developing a reporting mechanism on mergers and acquisitions involving unlisted which do not come under the purview of takeover code at present.

The study makes significant contribution to the body of knowledge on mergers and acquisitions in that it attempts to identify the variables that affect the likelihood of a company in the pharmaceutical sector becoming an acquisition target.

CONCLUSION

Mergers and acquisitions have emerged as a natural process of business restructuring throughout the world. Since 1991, Indian industries have been increasingly exposed to both domestic and international competition. This has forced Indian companies to restructure in order to be competitive. Many companies have resorted mergers and acquisitions as strategic choice to restructure their businesses. Pharmaceutical companies are no exception to this trend. Many mergers and acquisitions have taken place in the pharmaceutical industry since 1991. A comprehensive database of pharmaceutical companies that have undergone mergers and acquisitions between 1991 and 2006 was prepared from various sources. A database of pharmaceutical companies
that did not undergo mergers and acquisitions during this period was also prepared. Data was collected in respect of fourteen variables for these companies. A logistic regression model was derived using the financial information on target companies. Even though the final model included seven variables, only four variables, namely, *Free Cash flow over Total Assets*, *Market Value of Equity by Firm Value* and *Percentage growth in sales* were found to be significant in determining the likelihood of a company in the pharmaceutical sector becoming an acquisition target. The study culminated in the development of a prediction model that estimates the likelihood of a company in the pharmaceutical sector becoming an acquisition target. The prediction accuracy of the develop model in non-targets is as high as 98% and in the case of takeover targets it was 58%. Overall accuracy of the model was found to be 87%, which is fairly very high. The unique feature of the model is that it is the first attempt to build a logistic model that is specific to the pharmaceutical industry as against the earlier models which covered companies across several industries.

Even though size has merged as a significant variable in several studies, our study shows that size is not a significant variable in selecting acquisition targets in the Indian Pharmaceutical sector.