Type of Merger and Impact on Operating Performance: The Indian Experience

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Mergers and acquisitions are being increasingly used the world over as a strategy for achieving larger size, faster growth in market share and reach, and for becoming more competitive through economies of scale. This paper has attempted to study the impact of different types of mergers on the operating performance of acquiring/merging corporates in India in the post-economic reforms period of 1991-2003, by examining some pre- and post-merger financial ratios, in the sample of firms involving all mergers by public limited and traded companies in the period. The results suggest that there are minor variations in terms of the impact on operating performance following mergers of different kinds.

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In today's globalised economy, competitiveness and competitive advantage have become the buzzwords for corporates around the world. Corporates worldwide have been aggressively trying to build new competencies and capabilities, to remain competitive and to grow profitably. Globally, companies are increasingly using mergers and acquisitions for one or more of the following reasons: (1) As an opportunity to attain greater market share and higher revenue growth. (2) Access to greater amounts of capital through expanding debt capacity or gaining financial advantage through tax credits. (3) Gaining complementary strengths and enhancing managerial skill sets and competencies. (4) Acquiring new customers or expanding the customer/market/product/service portfolio. (5) Enhancing infrastructure base through acquisition of under-valued infrastructural assets or brands or additional manufacturing capacities from weaker competitors. (6) Creating new synergies through product market efficiencies and/or economies of scale. (7) Globalising in a short span of time.

1 Introduction

Mergers and acquisitions (M&As) deals worldwide reached an all-time high in 2006, with a total value of $ 3.7 trillion, surpassing the 2000 high of $ 3.4 trillion [Dobbs, Goedhart and Suonio 2007]. The numbers indicated that the United States (US) was the most targeted country for acquisitions, representing over 40 per cent of global M&A activity, while the United Kingdom (UK) was the most targeted European country for acquisitions, with $ 339 billion of cross-border and domestic transactions.

M&As in Indian Industry

The Indian economy has undergone a major transformation and structural change following the economic reforms introduced by the government of India in 1991. Since then, the pace for M&As activity in India has picked up. In the liberalised economic and business environment, "size and competence" have become the focus of every business enterprise in India, as companies realised the need to grow and expand in businesses that they understand well, to face growing competition. Indian corporates have undertaken restructuring exercises to sell off non-core businesses, and to create stronger presence in their core areas of business interest. M&As emerged as one of the most effective methods of such corporate restructuring, and have therefore, become an integral part of the long-term business strategy of corporates in India.

Three distinct trends could be seen in the M&As activity in India after the reforms in 1991. In the initial period, there was intense investment activity, a wave of consolidation within the

Indian industry, as companies tried to prepare for the potential aggressive competition in the domestic and overseas markets, through acquisitions and mergers, to achieve economies of scale and scope.

In the second significant trend, visible since 1995, there was increased activity in consolidation of subsidiaries by multinational companies operating in India, followed by entry of several multinational companies into Indian markets, through the acquisition route, with liberalised norms in place for foreign direct investments (FDI) [Beena 2000]. Indian companies focused on capital and business restructuring, and cleaned up their balance sheets. There was consolidation in the domestic industries like steel, cement and telecom.

The third wave of M&As in India, which is evident since 2002, is that of Indian companies venturing abroad, and making acquisitions in developed markets, for gaining entry into international markets. The opening up of the Indian economy and the financial sector, huge cash reserves following some years of great profits, and enhanced competitiveness in the global markets, have given greater confidence for big Indian companies to venture abroad for market expansion. Surge in economic growth and fall in interest rates have made financing such deals cheaper. Changes made in regulations made by the finance ministry in India pertaining to overseas investments by Indian companies have also made it easier for the companies to make international acquisitions.

Rationale for Mergers and Acquisitions

A survey among Indian corporate managers across various industry sectors in 2006 by Grant Thornton (2006) found that M&As are a significant form of business strategy today for Indian corporates. The three main objectives (Table 1) behind any M&A transaction, for corporates were found to be: (1) improving revenues and profitability, (2) faster growth in scale and quicker time to market, and (3) acquisition of new technology or competence.

Table 1: Objectives of Indian Corporates for M&As
(in %)

Objective behind the M&A Transaction	Responses
To improve revenues and profitability	33
Faster growth in scale and quicker time to market	28
Acquisition of new technology or competence	22
To eliminate competition and increase market share	11
Tax shields and investment savings	3
Any other reason	3

Source: Grant Thornton (India), The M&A and Private Equity Scenario, 2006.

Given this background, this study has been undertaken to see if the mergers in the post-reforms period in Indian industry have contributed to improvement of operating performance of merging firms involved in the deals, since improving revenues and profitability has been stated as a major objective for mergers, by Indian companies.

2 Literature Review

Mergers and acquisitions have received considerable attention from researchers across the world, over the last four decades. Studies on the long-term impact of mergers, have measured the failure or success of mergers according to various financial criteria. Some of the key determinants considered for failure or success of merging companies are growth and profitability ratios, returns ratios, cash flows, and market share estimates relative to industry peers during the post-acquisition period.

2.1 Studies in the US

Joseph P H Fan and Vidhan K Goyal (2002) used industry commodity flows information to measure vertical relations for completed mergers from 1962 to 1996 in the US, and the wealth effects of mergers of different types. The study examined the cross sectional variation in the wealth effects of mergers by merger type, and if there was a time-series relation between vertical merger activity and wealth effects, using standard event study methodology. The study found that vertical mergers generated positive wealth effects that were significantly larger compared with those for diversifying mergers; and that the wealth effects in vertical mergers were comparable to those in pure horizontal mergers. Even in a sub-sample of mergers between bidders and targets in different industries, the study found that vertically related mergers generated significantly greater positive wealth effects compared to vertically unrelated mergers.

Healy, Palepu and Ruback (1992) examined post-merger cash flow performance for 50 largest US mergers and concluded that operating performance of merging firms improved significantly following acquisitions, in comparison with their industries, in the five years following mergers. The study observed that the improvement in post-merger cash flows was not achieved at the expense of the merging firms' long-term viability, since the sample firms maintained their capital expenditure and research and development (R&D) rates in relation to their industries. The study also suggested that the increase in industry-adjusted operating returns could be attributable to an increase in asset turnover, rather than an increase in operating margins.

Weston and Mansinghka (1971) compared the profitability of a sample of 63 conglomerates of the 1960s, to that of a randomly selected sample of industrials, and a combined industrial and non-industrial sample, using a set of financial ratios.[1] The study found that for the year following merger, earnings rates of companies in control group were significantly higher than the earnings rates of the conglomerate firms. Even after 10 years, there were no significant differences observed in performance between the two groups. The improvement in earnings performance of the conglomerate firms was explained as evidence for successful achievement of defensive diversification, undertaken to avoid business and financial risks associated with their industries.

Aloke Ghosh (2001) compared the post- and pre-acquisition operating cash flow performance of merging firms for three years after merger, with control firms based on pre-acquisition performance and size of merging firms. Pro forma performance was computed by aggregating performance data of target and acquiring firms for pre-acquisition years. The study found that merging firms had systematically outperformed industry-median firms over pre-acquisition years, and once the superior pre-acquisition performance was accounted for, there was no evidence of improvement in the operating performance of acquiring firms following acquisitions.

Malcolm Salter and Wolf Weinhold (1979) studied a sample of 36 companies and compared their operating returns with those of other stocks listed on the New York Stock Exchange (NYSE). The study found that the average return on equity (ROE) for the sample of merging firms was 44 per cent lower than average NYSE-listed firm levels, and their average return on assets (ROA) was 75 per cent lower than average NYSE-listed firm levels. The results suggested that acquiring firms underperformed other listed companies. The study however did not consider firm characteristics or business similarities between sample and control firms.

John B Kusewitt (1985) investigated the relationship of some common factors of acquisition strategy to the long-run financial performance of acquiring firms, using a database of 138 active acquiring firms, which had accomplished some 3,500 acquisitions during 1967-76 period. Using the measure of accounting return on assets and market return, the study found that industry commonality between acquirers and acquired firms was linked with superior performance, and that unrelated acquisitions seemed to entail greater risks to performance on average.

Heron and Lie (2002) investigated the relation between method of payment in acquisitions, earnings management and operating performance for a large sample of firms that conducted acquisitions between 1985 and 1997, and found that even though acquiring firms exhibited superior operating performance relative to their industry counterparts prior to acquisitions, there was no evidence of earnings management. Post-acquisitions, acquiring firms continued to exhibit operating performance levels in excess of their respective industries and significantly outperformed control firms with similar pre-event operating performance. Method of payment did not convey any information about the acquirer's future operating performance.

2.2 Studies in Europe

Geoffrey Meeks (1977) explored the gains from merger for a sample of 233 transactions in the UK between 1964 and 1971 by studying the change in ROA[2] compared to the change in ROA for the buyer's industry. The study showed a decline in ROA for acquirers following the transaction, with performance dropping to further lower levels five years after the merger. For nearly two-thirds of acquirers, performance was below the standard of the industry. The study concluded that the mergers in the sample suffered a "mild decline in profitability".

Bild, Guest, Cosh and Runsten (2002) studied value creation in takeovers by UK firms completed during 1985-96. The study used a methodology of employing the residual income approach to valuation, and comparing the present value of the acquirer's future earnings before the acquisition, with those that actually result following takeover. The study also accounted for the cost of the acquisition, the acquirer's cost of capital, and the earnings which are created beyond the sample period. The study found that by using the traditional accounting method, acquisitions resulted in a significant improvement in profitability. However, the residual income approach revealed that on average, acquisitions destroyed roughly 30 per cent of the acquirer's pre-acquisition value.

Mueller (1980) edited a collection of studies of M&A profitability (measured by (a) return on equity, (b) return on assets, and (c) net profit margin) across seven nations in Europe and the US and found that acquiring firms reported worse returns in the five years after acquisition than their non-acquiring counterparts, but not significantly. No consistent pattern of either improved or deteriorated profitability could therefore be claimed across the seven countries.

Marina Martynova, Sjoerd Oosting and Luc Renneboog (2006) investigated the long-term profitability of corporate takeovers in UK, using four different measures of operating performance based on earnings before interest taxes depreciation and amortisation (EBITDA), and found that both acquiring and target companies significantly outperformed the median peers in their industry prior to the takeovers, but the raw profitability of the combined firm decreased significantly following the takeover. Factors such as means of payment, geographical scope, and industry-relatedness did not explain the post-acquisition operating performance.

Dickerson, Gibson and Tsakalotos (1997) investigated the impact of acquisitions on company performance using a large panel of UK companies during 1948-77 and found that in both the short-run and the long-run, acquisitions had a negative net impact on company profitability as measured by the rate of ROA. Acquisitions also had a detrimental impact on company growth measured by rate of return, compared to growth through internal investment.

Pazarskis, Vogiatzogloy, Christodoulou and Drogalas (2006) empirically examined the operating performance for three years before and after merger, for acquiring firms in Greece, in the period 1998 to 2002, using selected accounting variables,[3] and using t-statistic. The study found that post-merger, for the firms in the sample, gross profit margin decreased slightly, while the liquidity ratios – quick ratio and current ratio did not show a decrease. Solvency ratios – net worth/total assets, and total debt/net worth also decreased slightly in values. Also, profitability and returns on assets decreased in value after merger.

2.3 Studies in Asia

Divesh S Sharma and Jonathan Ho (2002) used accrual and cash flow performance measures (for three years after merger and for three years before merger), and found that corporate acquisitions did not lead to significant post-acquisition improvements in operating performance of acquiring Australian firms during 1986-91. The study also found that the type of acquisition (conglomerate versus non-conglomerate) and the form of acquisition financing (cash, share or a combination) did not significantly influence post-acquisition performance. Similarly, the size of the acquisition and the payment of a premium (goodwill) did not seem to influence post-acquisition performance.

Timothy Kruse, Hun Park, Kwangwoo Park and Kazunori Suzuki (2003) examined the long-term operating performance of Japanese companies in a sample of 56 mergers of manufacturing firms, during 1969-97. On comparison of the operating returns and operating margin in the five-year period following mergers, with a control sample to account for changes in performance attributable to industry or economy-wide factors, the study found evidence of improvements in operating performance of merging companies, and also that the pre- and post-merger performance was highly correlated. Long-term performance was also seen to be significantly greater following diversifying mergers, particularly for those that acquired their sales or trading company affiliates.

Abdul Rahman and Limmack (2004) examined financial performance of a sample of 94 Malaysian companies that made acquisitions during 1988-92, using operating cash flow returns and found that financial performance improved significantly following acquisitions; improvement was driven both by an increase in asset productivity and by higher levels of operating cash flow generated per unit of sales. Increases in capital expenditure in post-acquisition period suggested that companies had not sacrificed long-term investments for the sake of short-term profitability.

2.4 Post-Merger Performance

The studies done on operating performance of acquiring firms, thus far, in different countries, have shown mixed results, in terms of impact on operating performance. While some concluded that the acquiring firms experienced significantly negative profitability and returns on investment over one to three years after the merger, others have suggested that methodological problems of some studies had given incorrect interpretation of the actual effects on operating performance, and that mergers have indeed improved performance of acquiring firms.

2.4.1 Post-Merger Performance in India

Surjit Kaur (2002) compared the pre- and post-takeover performance of a sample of 20 merging firms, using a set of eight financial ratios, for a period of three years each immediately preceding and succeeding the merger. The study found that gross profit margin (earnings before interest and taxes (EBIT)/sales), return on capital employed (ROCE) and asset turnover ratio declined significantly in the post-takeover period, suggesting that both profitability and efficiency of merging companies declined in post-takeover period. However, the change in post-takeover performance was statistically not significant when "t" test was used.

Beena (2004) analysed the performance of 84 domestic acquiring firms and 31 foreign-owned acquiring firms, in the manufacturing sector in India, during 1995-2000. The study used some financial ratios[4] to test for difference of means between pre- and post-merger phase, using t-statistic and could not find any evidence of improvement in the chosen financial ratios of the acquiring firms in the sample, during the post-merger period, as compared to the pre-merger period. However, the profitability ratios were seen to be relatively better when compared to the overall manufacturing average, and foreign-owned acquiring firms seemed to perform relatively better, compared to Indian-owned acquiring firms.

Sudha Swaminathan (2002) studied a sample of five mergers during 1995-96, and found that four of the five acquiring firms improved operating and financial synergies (measured through certain financial ratios)[5] three years after the merger. While net profit margin significantly improved post-merger, the asset turnover did not show significant change – the study concluded that shareholder value improved for the mergers of smaller companies, but not for mergers of large companies.

Pawaskar (2001) analysed pre- and post-merger operating performance of 36 acquiring firms during 1992-95, using financial ratios of profitability, growth, leverage, liquidity and tax provisions,[6] and found that acquiring firms performed better than industry in terms of profitability, and that the mergers led to financial synergies and a one-time growth of the acquiring firm's asset base. The study also inferred that type of merger, whether the board for industrial and financial reconstruction (BIFR) – revival or those between group companies/subsidiaries did not affect the post-merger performance.

Empirical testing of operating performance following mergers of Indian companies has thus been quite limited so far, and focused specifically on manufacturing sector, using small samples or individual cases, and over limited periods of time

3 Research Objectives and Methodology

This section lists the objectives of this study and the methodology followed.

Objectives

The objective of the present research study was to analyse post-merger operating performance for acquiring firms in Indian industry during the post-reforms period of 1991-2003, which were involved in different types of mergers, to see if merger type makes an impact on the performance outcomes, as compared to general results of post-merger performance studies. In specific, the study was aimed to understand which type of mergers have been more successful in improving the performance of merging firms, among: (a) horizontal mergers, (b) vertical mergers, and (c) conglomerate mergers.

Methodology

The research study adopted the methodology of comparing pre- and post-merger performance of merging companies, by using the following financial ratios:

– Operating profit margin (profit before depreciation, interest and tax/net sales)[7]
– Gross profit margin (profit before interest and tax/net sales)
– Net profit margin (profit after tax/net sales)
– Return on net worth (profit after tax/net worth)[8]
– Return on capital employed (profit before interest and tax/capital employed)[9] and
– Debt-equity ratio (book value of debt/book value of equity).

Testing Performance for Each Merger Type

The pre-merger (for three years prior to merger) and post-merger (for five years after the merger) averages of above financial ratios were compared, and tested for differences, using paired "t" test for two samples. The observations of each pair of firms in the sample are not independent, since the merging firm retains its identity before and after merger. Therefore "paired two-sample t-test for means" was considered appropriate to measure merger induced operating performance changes. Year of completion of merger, denoted as year 0, was excluded from estimation. For the years prior to a merger, the operating ratios of the merging firm alone are considered. Post the merger, the operating ratios for the combined firm were used for analysis.

Comparison of Merger Types

To compare the relative impact of different types of mergers, the mean differences in post- and pre-merger ratios for the sample firms was compared for three different combinations:

(1) horizontal vs vertical, (2) vertical vs conglomerate, and (3) conglomerate vs horizontal.

The statistical significance of the differences was tested using paired two-sample "t" test for means.

Sample Selection

The sample for the study primarily included mergers by public limited companies listed on BSE/National Stock Exchange (NSE), during the period of study. Cross-border mergers were excluded from the sample, as were BIFR-registered sick companies acquired by other companies for gaining tax benefits. Only stock-for-stock mergers are included in the sample. Merger cases where less than 10 per cent of merging firm's equity (by value) was issued to target firm shareholders are removed from the sample (to eliminate cases where merging firm was too big compared to target firm in market value, thereby effect of merger was likely to be negligible). Further, companies in the sample were also screened to ensure that they had not engaged in further mergers/acquisitions within four years after the merger under study.

List of companies involved in mergers during 1991-2003 were compiled from several sources like newspapers, magazines, investment web sites, web sites of BSE and NSE (for names of delisted companies), Securities and Exchange Board of India's (SEBI) web site (for details of companies making open offers for takeovers), and databases of Capitaline and Prowess. To such list, the screening criteria described earlier were applied, to arrive at the final sample. Merger cases where at least two years of data was not available for pre-merger period and at least four years data for post-merger period were removed from the study sample. The final sample of firms in the study is in Table 2.

Table 2: Break-up of Sample of Mergers

Merger Type	Number of Mergers	% of Total Sample
Horizontal	64	67
Vertical	8	8
Horizontal	24	25
Total	96	

Number of same group company mergers in the sample was 60.

Hypotheses

To test the objective mentioned above, the following hypotheses were formulated:

– H1: In general, mergers have not improved operating performance of merging firms in India.

– H2: Horizontal mergers are more effective in improving operating performance of firms than vertical mergers.

– H3: Vertical mergers are more effective in improving operating performance of firms than conglomerate mergers.

– H4: Horizontal mergers are more effective in improving operating performance of firms than conglomerate mergers.

4 Data Collection and Analysis

Data of operating performance ratios for up to three years prior to merger, and five years after the merger year for each merging company was extracted from Prowess database of CMIE.

Data Analysis

(a) Post-merger operating performance (all mergers): Pre- and post-merger operating performance ratios were estimated and compared for the entire set of sample firms, which have gone through mergers during the period 1991 to 2003.

(b) Post-merger performance of firms (for different merger types): The sample list of firms engaged in mergers was divided into three groups, based on type of merger (horizontal, vertical and conglomerate), and pre- and post-merger performance was compared.

(c) Relative Post-merger performance of firms (for different combinations of merger types): The different combinations of merger types were compared (horizontal, vertical and conglomerate), to test for relative effects in post- vs pre-merger performance.

5 Results

An interesting characteristic of the sample of mergers in the study was the dominance of mergers between firms belonging to same promoter group. There were 60 mergers representing 63 per cent of the total sample that involved mergers between companies under the same management (same group mergers). The dominance of mergers between same group firms was a striking indication of the wave of consolidation in the Indian industry during the 1990s, as firms tried to merge different businesses of the group to emerge with larger asset base.

Table 3: All Mergers Mean Pre- and Post-Merger Ratios for Merging Firms

	Pre-Merger (Three Years Avg)	Post-Merger (Five Years Avg)	t-Statistic (0.05 Significance)	t-Critical (Two Tail)
Operating profit margin	19.847	19.336	0.193	1.973
Gross profit margin	15.993	14.321	0.718	-do-
Net profit margin	6.555	2.755	2.121	-do-
Return on net worth	15.749	9.327	1.523	-do-
Return on capital employed	24.291	18.182	3.090	-do-
Debt-equity ratio	1.258	1.610	-1.677	-do-

5.1 Analysis of All Mergers

The comparison of the pre- and post-merger operating performance ratios for the entire sample set of mergers showed that there was a marginal decline in the mean operating profit margin (19.847 per cent to 19.336 per cent) and mean gross profit margin (15.993 per cent to 14.321 per cent), during the pre- and post-merger period. However, the declines are not statistically significant (t-statistic values of 0.193 and 0.718). However, the mean net profit margin ratio showed a significant decline (6.555 per cent to 2.755 per cent), and the decline was statistically significant, as confirmed by the t-value of 2.121.

Mean return on net worth (15.749 per cent to 9.327 per cent) had declined in the post-merger period, but the decline was not statistically significant (t-value of 1.530). However, mean return on capital employed (24.291 per cent to 18.182 per cent) had declined significantly in the post-merger period, and the decline was statistically significant (t-value of 3.090). There was an increase in the mean debt-equity ratio before and after the merger (1.258 to 1.610) but the increase was not statistically significant (t-value of -1.677).

The above results suggest that mergers in India have caused a decline in the net profitability, return on net worth and return on capital employed. The results that mergers had not yielded improvements in operating performance (by way of profitability and returns) in the Indian context seem in agreement with earlier studies on post-merger operating performance. Based on the results, the hypothesis H1 is being accepted, that in general, mergers have not improved operating performance of merging firms.

5.2 Analysis of Different Types of Mergers

Horizontal Mergers: Comparative mean pre- and post-merger operating performance ratios and results from tests for statistical significance for horizontal mergers have been summarised in Table 4.

Comparison of the pre- and post-merger operating performance ratios for horizontal mergers showed that there was a marginal rise in the mean operating profit margin (20.549 per cent to 20.784 per cent) and a marginal decline in the mean gross profit margin ratios (16.419 per cent to 15.843 per cent) during the post-merger period, but the declines are not statistically significant (t-values of -0.185 and 0.429, respectively). There was a marginal decline in the mean net profit margin (6.884 per cent to 4.170 per cent) during post-merger period, but the decline was also not statistically significant (t-value of 1.668).

In contrast, mean return on net worth (16.835 per cent to 8.929 per cent) and mean return on capital employed (24.172 per cent to 17.017 per cent) showed a significant decline during the post-merger period, and the declines are statistically significant (t-values of 2.335 and 3.913, respectively). There was a statistically significant increase in the mean debt-equity ratio after the merger (1.173 to 1.554), confirmed by the t-value of -1.956.

The results indicated that in case of horizontal mergers in Indian industry, while profitability margins had declined marginally following mergers, the return on net worth and return on capital employed had significantly declined in post-merger period.

Table 4: Horizontal Mergers Mean Pre- and Post-Merger Ratios for Merging Firms

	Pre-Merger (Three Years before)	Post-Merger (Five Years after)	t-Value (0.05 Significance)	t-Critical (Two Tail)
Operating profit margin	20.549	20.784	-0.185	1.998
Gross profit margin	16.419	15.843	0.429	-do-
Net profit margin	6.884	4.170	1.668	-do-
Return on net worth	16.835	8.929	2.335	-do-
Return on capital employed	24.172	17.017	3.913	-do-
Debt-equity ratio	1.173	1.554	-1.956	-do-

Table 5: Vertical Mergers Mean Pre- and Post-Merger Ratios for Merging Firms

	Pre-Merger (Three Years before)	Post-Merger (Five Years after)	t-Value (0.05 Significance)	t-Critical (Two Tail)
Operating profit margin	23.362	21.934	0.587	2.365
Gross profit margin	19.808	16.866	0.949	-do-
Net profit margin	5.712	2.740	0.856	-do-
Return on net worth	11.284	-1.231	0.934	-do-
Return on capital employed	27.697	26.846	0.609	-do-
Debt-equity ratio	1.551	1.834	-0.396	-do-

Table 6: Conglomerate Mergers Mean Pre- and Post-Merger Ratios for Merging Firms

	Pre-Merger (Three Years before)	Post-Merger (Five Years after)	t-Value (0.05 Significance)	t-Critical (Two Tail)
Operating profit margin	16.804	14.607	0.984	2.069
Gross profit margin	13.585	9.416	1.342	-do-
Net profit margin	5.958	-1.012	2.016	-do-
Return on net worth	14.341	13.908	0.033	-do-
Return on capital employed	23.473	18.401	1.475	-do-
Debt-equity ratio	1.386	1.684	-1.160	-do-

Vertical Mergers: Comparative mean pre- and post-merger operating performance ratios and results from tests for statistical significance for vertical mergers have been summarised in Table 5.

The comparison of the pre- and post-merger operating performance ratios showed that there was a marginal decline in the mean operating profit margin (23.362 per cent to 21.934 per cent), mean gross profit margin (19.808 per cent to 16.866 per cent), and mean net profit margin (5.712 per cent to 2.740 per cent) from the pre- to the post-merger period. However, the declines are not statistically significant (very low t-values 0.587, 0.949 and 0.856, respectively).

Likewise, mean return on net worth (11.284 per cent to -1.231 per cent) and mean return on capital employed (27.697 per cent to 26.846 per cent) also showed a decline from pre- to post-merger period, but the declines are again not statistically significant (low t-values of 0.934 and 0.609). The mean debt-equity ratio had increased marginally from pre- to post-merger period (1.551 to 1.834), but the increase was not statistically significant (low t-statistic value of -0.396).

From above results, in case of vertical mergers in Indian industry, mergers had a marginal negative (but not statistically significant) impact on the operating performance of the merging company, as measured by profitability margins and returns on net worth and capital employed.

Conglomerate Mergers: Comparative mean pre- and post-merger operating performance ratios and results from tests for statistical significance for conglomerate mergers have been summarised in Table 6.

The comparison of the mean pre- and post-merger operating performance ratios showed that there was a marginal decrease in the mean operating profit margin (16.804 per cent to 14.607 per cent) and gross profit margin (13.585 per cent to 9.416 per cent) during the post-merger period. However, the declines are not statistically significant (t-values of 0.984 and 1.342). However, mean net profit margin had declined significantly (5.958 per cent to -1.012 per cent) during the post-merger period, and the decline was also statistically significant (t-value of 2.016).

Mean return on net worth (14.341 per cent to 13.908 per cent) and mean return on capital employed (23.473 per cent to 18.401 per cent) had both declined marginally in the post-merger period, but the declines are not statistically significant (t-values of 0.033 and 1.475). There was a marginal rise in the mean debt-equity ratio (1.386 to 1.684) during post-merger period, but the rise was not statistically significant (t-value of -1.160).

From above results, it appears that for merging firms involved in conglomerate mergers in Indian industry, there was a marginal decline in profitability margins (not statistically significant), and an increase in leverage causing significant decline at the net profit level. The returns on net worth and capital employed were however not affected to a significant extent in the post-merger period. These results contrast with those of Weston and Mansinghka (1971), who found an improvement in earnings performance of the conglomerate firms following mergers as evidence for successful achievement of defensive diversification. The results also contrast with the findings of Kruse, Park, Kwangwoo and Suzuki (2003) who found evidence of improvements in operating performance following diversifying mergers of Japanese companies.

Comparison of pre- and post-merger operating ratios data for all the three types of mergers showed that horizontal mergers had caused the highest decline in the operating performance of the merging companies, followed by conglomerate and vertical mergers, in that order. The declines are more prominent in terms of returns on net worth and capital employed, and to a lesser extent on net profit margin (primarily because of an increase in leverage, and consequently, interest costs after merger). The declines in profitability margins at the operating and gross level were not significant.

5.3 Same Group Company Mergers

Comparative mean pre- and post-merger operating performance ratios and results from tests for statistical significance, for same group company mergers have been summarised in Table 8.

The comparison of the pre- and post-merger operating performance ratios showed that there was a marginal decline in the mean operating profit margin (20.024 per cent to 19.004 per cent) and mean gross profit margin (16.268 per cent to 13.851 per cent), during post-merger period. However, the declines are not statistically significant (t-statistic values of 0.821 and 1.506, respectively). However, the mean net profit margin ratio showed a significant decline (6.412 per cent to 0.943 per cent) in the post-merger period, and the decline was statistically significant (high t-value of 2.916). Mean return on net worth (17.454 per cent to 2.779 per cent) and return on capital employed (25.306 per cent to 18.296 per cent) had both declined significantly after the merger, and the declines are statistically significant (t-values of 3.855 and 3.574 respectively). There was a marginal increase in mean debt-equity ratio after the merger (1.413 to 1.623), but the increase was not statistically significant (t-value of -1.322).

The above results suggested that following mergers between same group companies in Indian industry, the operating performance had deteriorated significantly in post-merger period, as measured by profitability margins (and gross and net levels), and returns on net worth and capital employed. The results corroborate the findings of Pawaskar (2001) who found that mergers in India between group companies or subsidiary firms as a part of restructuring had not improved the profitability of merging firms in the post-merger period. The results however contrast the findings of Myron and Marie (1998) who concluded that parent-subsidiary mergers are value enhancing for both parties, foster an efficient reallocation of resources toward higher valued uses, and facilitate corporate restructuring.

Based on above results, the hypothesis H5 that mergers between same group companies does not have any impact on operating performance of merging companies had been rejected.

Table 7: Summary of Different Types of Mergers and Operating Performance Mean Pre- and Post-Merger Ratios for Merging Firms

	Horizontal Mergers			Vertical Mergers			Conglomerate Mergers		
	Pre-Merger	Post-Merger	t-Value	Pre-Merger	Post-Merger	t-Value	Pre-Merger	Post-Merger	t-Value
OPM (%)	20.549	20.784	–0.19	23.362	21.934	0.587	16.804	14.607	0.984
GPM (%)	16.419	15.843	0.429	19.808	16.866	0.949	13.585	9.416	1.342
NPM (%)	6.884	4.170	1.668	5.712	2.740	0.856	5.958	–1.012	2.016
RONW	16.835	8.929	2.335	11.284	–1.231	0.934	14.341	13.908	0.033
ROCE	24.172	17.017	3.913	27.697	26.846	0.609	23.473	18.401	1.475
D/E ratio	1.173	1.554	–1.96	1.551	1.834	–0.40	1.386	1.684	-1.160

Table 8: Same Group Company Mergers Mean Pre- and Post-Merger Ratios for Merging Firms

	Pre-Merger (Three Years before)	Post-Merger (Five Years after)	t-Value (0.05 Significance)	t-Critical (Two Tail)
Operating profit margin	20.024	19.004	0.821	2.000
Gross profit margin	16.268	13.851	1.506	-do-
Net profit margin	6.412	0.943	2.916	-do-
Return on net worth	17.454	2.779	3.855	-do-
Return on capital employed	25.306	18.296	3.574	-do-
Debt-equity ratio	1.413	1.623	-1.322	-do-

Table 9: Comparison between Horizontal vs Vertical Mergers (Differences in mean pre- and post-merger operating ratios for merging firms
Calculated as five-year post-merger average minus three-year pre-merger average)

	Horizontal Mergers	Vertical Mergers	t (0.05 Significance)	t-Critical (Two Tail)
Operating profit margin	0.236	-1.428	0.606	2.228
Gross profit margin	–0.576	-2.941	0.700	-do-
Net profit margin	-2.714	-2.972	0.067	-do-
Return on net worth	-7.906	-12.515	0.334	-do-
Return on capital employed	-7.156	–0.851	-2.740	-do-
Debt-equity ratio	0.380	0.283	0.132	-do-

5.4 Comparison of Results

The differences in average pre- and post-merger operating performance ratios for each combination of merger types were estimated and statistically tested for differences using paired two-sample t-test for means.

Horizontal vs Vertical Mergers: Comparative differences in mean pre- and post-merger operating performance ratios for horizontal and vertical mergers, and results from tests for statistical significance have been summarised in Table 9.

The comparison of the differences in mean pre- and post-merger operating ratios showed that the decline in the mean operating profit margin was marginally higher for vertical mergers (-1.428 per cent) than for horizontal mergers (0.236 per cent). The same trend was seen in case of declines in mean gross profit margin (-2.941 per cent for vertical mergers and -0.576 per cent for horizontal mergers) and mean net profit margin (-2.972 per cent for vertical mergers and -2.714 per cent for horizontal mergers). However, the declines are not statistically significant (low t-values of 0.606, 0.700 and 0.067, respectively).

Decline in mean return on net worth (post-merger average minus pre-merger average) was higher in vertical mergers (-12.515 per cent) than horizontal mergers (-7.906 per cent) but the difference was not statistically significant (low "t"-value of 0.334). In contrast, decline in mean return on capital employed was higher for horizontal mergers (-7.156 per cent) than for vertical mergers (-0.851 per cent), and it was also statistically significant (high t-value of -2.740). The increase in mean debt-equity ratio was marginally higher for horizontal mergers (0.380) than vertical mergers (0.283), but the difference was not statistically significant (low t-value of 0.132).

In summary, except for return on capital employed, there are no significant differences in the degree of change of all other operating ratios for the two types of mergers. Based on the above results the hypothesis H2 that horizontal mergers are more effective in improving operating performance of firms than vertical mergers was rejected.

Vertical vs Conglomerate Mergers: Comparative differences in mean pre- and post-merger operating performance ratios for vertical and conglomerate mergers, and results from tests for statistical significance have been summarised in Table 10.

The comparison of the differences in mean pre- and post-merger operating performance ratios showed that the declines in mean operating profit margin (mean of post-merger period minus mean of pre-merger period) are lower for vertical mergers (-1.428 per cent) than for conglomerate mergers (-2.197 per cent) but the decline was not statistically significant (t-value of -0.947). Likewise, the declines in mean gross profit margin (-2.941 per cent for vertical mergers and -4.169 per cent for conglomerate mergers) and mean net profit margin are lower for vertical mergers (-2.972 per cent) than for conglomerate mergers (-6.969 per cent). Again, the declines are not statistically significant (t-values of -0.280 and -0.816).

The decline in mean return on net worth was significantly higher for vertical mergers (-12.515 per cent) than for conglomerate mergers (-0.433 per cent) but the decline was not statistically significant (t-value of 0.646). In contrast, decline in mean return on capital employed was lower for vertical mergers (-0.851 per cent) than conglomerate mergers (-5.072 per cent), but it was also not statistically significant, with t-value of -1.137. There was no significant difference in the increases in mean debt-equity ratio in case of conglomerate (0.298) and vertical mergers (0.283), as confirmed by the low t-value of 0.020.

Table 10: Comparison between Conglomerate vs Vertical Mergers (Differences in mean pre- and post-merger operating ratios for merging firms
Calculated as five-year post-merger average minus three-year pre-merger average)

	Conglomerate Mergers	Vertical Mergers	t (0.05 Significance)	t-Critical (Two Tail)
Operating profit margin	-2.197	-1.428	-0.947	2.023
Gross profit margin	-4.169	-2.941	-0.280	-do-
Net profit margin	-6.969	-2.972	-0.816	-do-
Return on net worth	-0.433	-12.515	0.646	-do-
Return on capital employed	-5.072	-0.851	-1.137	-do-
Debt-equity ratio	0.298	0.283	0.020	-do-

Table 11: Comparison between Horizontal vs Conglomerate Types of Mergers
(Differences in mean pre- and post-merger operating ratios for merging firms
Calculated as five-year post-merger average minus three-year pre-merger average)

	Horizontal Mergers	Conglomerate Mergers	t (0.05 Significance)	t-Critical (Two Tail)
Operating profit margin	0.236	-2.197	-0.947	2.037
Gross profit margin	-0.576	-4.169	-1.062	-do-
Net profit margin	-2.714	-6.970	-1.114	-do-
Return on net worth	-7.906	-0.433	0.555	-do-
Return on capital employed	-7.156	-5.072	0.535	-do-
Debt-equity ratio	0.380	0.298	-0.256	-do-

In summary, there are no significant differences in the degree of change of operating ratios between the two types of mergers: some few ratios were relatively higher for vertical type and few others in case of conglomerate type (but statistically not significant). Based on the above results, the hypothesis H3 that vertical mergers are more effective in improving operating performance of firms than conglomerate mergers was rejected.

Horizontal vs Conglomerate Mergers: Comparative differences in mean pre- and post-merger operating performance ratios for horizontal and conglomerate mergers, and results from tests for statistical significance have been summarised in Table 11.

The comparison of the differences between mean pre- and post-merger operating performance ratios for the two sets of samples representing horizontal and conglomerate mergers, showed that the extent of decrease in the mean operating profit margin (post-merger average minus pre-merger average) for conglomerate mergers (-2.197 per cent) was more than the decrease seen for horizontal mergers (-0.236 per cent). However, the difference was not statistically significant, with a t-value of -0.947. Likewise, the decrease in mean gross profit margin was more for conglomerate mergers (-4.169 per cent) than for horizontal mergers (-0.576 per cent) but again the difference was not statistically significant (t-value of -1.062). Similar trend was also seen in the differences in mean net profit margin ratios (-2.714 per cent for horizontal mergers and -6.970 per cent for conglomerate mergers) but this was again not statistically significant, with t-value of -1.114.

However, decline in mean return on net worth was lower for conglomerate mergers (-0.433 per cent) than for horizontal mergers (-7.906 per cent), but this was not statistically significant (t-value of 0.555). Decline in mean return on capital employed was also less for conglomerate mergers (-5.072 per cent) than for horizontal type (-7.156 per cent). The difference was again not statistically significant (t-value of 0.535). The increase in mean debt-equity ratio for horizontal type (0.380) was higher than that of conglomerate type (0.298) but this was also not statistically significant (low t-value of -0.256).

While horizontal mergers seemed to have done better in improving profitability ratios, conglomerate mergers seemed to have done better on the returns ratios. However, none of the differences between the two types of mergers was statistically significant. Based on the above results, the hypothesis H4: that horizontal mergers are more effective in improving operating performance of firms than conglomerate mergers was rejected.

6 Conclusions and Recommendations

Analysis of pre- and post-merger operating performance ratios for the entire sample set of mergers shows that while there was no change in the mean operating profit margin and gross profit margin ratios, there was significant decline in the net profit margin, return on net worth and return on capital employed, in the post-merger period. These results corroborate the general research results on post-merger operating performance in other countries, which suggested that the operating performance either stagnates or declines after mergers, for merging firms.

For mergers between same group companies, there was a significant decline in net profit margin due to likely increase in interest costs, while other profitability ratios, remained unchanged. The significant declines in returns on net worth and capital employed suggest that the mergers were not motivated by efficiency enhancement possibilities, but were aimed at consolidating the asset base by merging assets of various group companies to emerge larger.

Comparison of post- vs pre-merger operating ratios, for the different types of mergers suggested that horizontal mergers had caused the highest decline in the operating performance of the merging companies, followed by conglomerate and vertical mergers, in that order. The declines were more prominent in terms of returns on net worth and capital employed, and to a lesser extent on net profit margin, among all types of mergers. The declines in profitability margins at the operating and gross level were not significant among the various types. The differences between different combinations of mergers however, were not statistically significant, leading to the conclusion that merger outcomes were similar for all merger types.

Future research in this area could be an extension of the present study, by estimating and comparing with industry averages, and the differences, if any could be probed further to derive further insights. Researchers could also analyse the returns to shareholders of merging firms involved in mergers in India, to check the correlation with findings of studies indicating poor post-merger performance.

Limitations

One of the limitations in establishing statistical significance for the differences between the merger types could have been the small sample size of vertical mergers, in the overall sample. The study also ignored the impact of possible differences in the accounting methods adopted by different companies in the sample. The present study also did not use any control groups (industry average or firms with similar characteristics, as was done in some studies). A sample spanning a longer period was considered adequate to arrive at unbiased results, and account for cross sectional dependence. The above differences in methodology could likely have affected the outcomes reported.

NOTES

1 The ratios which were used for the study were operating profit margin (EBIAT/total assets), gross profit margin (EBIT/total assets), net income/net worth, and debt/net worth.

2 Meeks defines return on assets as pre-tax profits (after depreciation, but before tax) divided by the average of beginning and ending assets for the year. The key metric was $R_{change} = R_{After} - R_{Before}$ where R_{After} and R_{Before} were measures of performance relative to the weighted average of returns of the buyer's and target's industries.

3 Financial variables included profitability (earnings before taxes/net worth), returns on assets, gross profit margin, liquidity (quick ratio), current ratio, solvency (net worth/total assets and total debt/net worth).

4 Price-cost margin (profit after tax/net sales), rate of return (profit before tax/total capital employed), shareholders' profit (profit after tax/net worth), dividend per equity (dividend per share/earnings per share), debt-equity ratio, export intensity (export/gross sales), R&D intensity (R&D expenditure/gross sales) and capacity utilisation (net sales/total assets).

5 Ratios used were net profit margin (PAT/sales), operating profit margin, return on capital employed, cost of production/sales, debt equity ratio and operating cash flow.

6 Ratios used were: Operating return on assets (PBIDT/net assets), growth rate (average growth rate in total assets), leverage (total debt/(total debt + equity capital)), tax provision (tax/operating profit) and liquidity ((current assets – inventory)/current liabilities).

7 Net sales reflect the actual sales proceeds received by the company from its business.

8 Net worth = sum of book value of equity and free reserves.

9 Capital Employed = total asset base.

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