

# Impact of Mergers and Acquisitions on Profitability: Evidence from Manufacturing Industry in India

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## Abstract

Corporate restructuring consists of any significant change in a firm's fiscal structure, or ownership, or control, or corporate portfolio that is planned to increase the value of the firm. There are instances where the mergers and acquisitions (*M&As*) impact the profitability (*P*). Hence, the present paper is to analyse the impact of *M&As* on *P* of manufacturing firms in India. For this purpose, 39 manufacturing firms are selected based on the adequacy of data in the data source for a period of 10 years on year to year basis from 2001–2002 to 2011–2012 considering the firms, which had gone into the *M&As* process during the financial year 2006–07. Paired samples t-test is applied to study the mean difference in the *P* of the firms in the pre-and post-merger periods. The study proves that the *M&As* has significant effect on *P* for 38 out of 39 manufacturing firms in India in the post-merger period and therefore it reveals that the acquiring manufacturing firms in India have utilized their combined resources well in accelerating profit and enhancing shareholders' wealth after merger

## Keywords:

Merger & acquisition, Profitability, post-merger profitability, profitability of Indian industry, long-run profitability

**JEL Classification:** G34 and L25

## Introduction

A variety of forces like *global competition, technological innovations, managerial innovations, regulatory changes, transformation of formerly centrally planned socialistic and communistic economies, and growth of international trade* have operated the *M&As* process. Corporate restructuring (*CR*) has been a dominant global corporate theme from the mid-seventies. By and large, *CR* has been a resounding success, which has led to remarkable improvement in corporate performance. Observers of *CR* believe that the gains are attributable to *synergetic benefits, sharper forces, better corporate governance, enhancement in managerial incentives and motivation, greater disciplining power of debt, and elimination of cross subsidies*.

That *CR* leads to improved performance is a debatable issue. Many studies have covered short-run as well as long-run profitability (*P*) of the acquiring firms after mergers and acquisitions (*M&As*). When post-merger *P* was compared with that of the pre-merger, no significant improvement in *P* was found (Pawaskar, 2001; Surjitkaur, 2002; and Coontz, 2004). However, there is a significant positive impact of *M&As* on the short-run post-merger *P* of acquiring firms in India (Gurusamy and Radhakirishnan, 2010;

Azhagaiah and Sathishkumar, 2011; and Indhumathi *et al.* 2011). The above literature provides an overview of the *P* of firms after the process of *M&As*. Hence, an attempt has been made in the present paper to analyse the impact of *M&As* considering the models used in the previous studies.

### Review of Literature

Ikedu and Do (1983) tested the operating performance (*OP*) on parameters such as *profitability, efficiency, growth, and research and development*, and found that the financial performance in respect of *P* was higher in the post-merger period. Scherer (1988) found that most of the firms did not show significant improvement in long-term *P* after acquisition. Franks and Harris (1989) showed that the target firms' shareholders benefit and the bidding firms' shareholders lose. Pawaskar (2001) found that the acquiring firms performed better than that of the industry average in terms of *P*. Martynova *et al.* (2007) concluded that the acquiring and target firms significantly outperformed the median peers in their industry prior to the takeovers, but the *P* of the combined firm after the merger decreased significantly following the takeover.

Mantravadi and Reddy (2008) found that the *M&As* seem to have had a slightly positive impact on the *P* of the acquiring firms in banking and financial service industry, the pharmaceuticals, textiles, and electrical equipment sectors. Mishra and Chandra (2010) found that the acquiring firms did not have any significant impact on *P* in the long-run. Further, in-house research and development and foreign technology purchase also did not have any significant impact on *P* of the acquiring firms. Ravichandran *et al.* (2010) inferred that the total advances-to-deposits and *P* are the two main parameters which are to be considered, since they are very much affected by *M&As*. Also, the *P* of the acquiring firms is significantly affected showing a negative impact on the returns.

Azhagaiah and Sathishkumar (2011a) found that the *M&As* process has significant impact on the *P* of acquiring firms in India after merger. Azhagaiah and Sathishkumar (2011b) also found that there was an increase in operating profit, gross profit, and net profit; there is a significant positive impact of *M&As* on the short-run post-merger *P* of acquiring firms of chemical industry in India. Venkatesha and Manjunatha (2013) found that *M&As* have positively affected the banks' financial performance. Despite the positive results by the *M&As*, banks have to prove consistent performance in general, and should give more importance on liquidation in particular.

The cited literature provides an overview of impact of *M&As* on *P* in the post-merger period. The previous studies, by and large, attempted to study the short-run impact say three years prior to merger and three years after the merger period. With these evidences and background an attempt has been made in the present paper, to study the impact of *M&As* on the *P* of Indian manufacturing firms in the long-run i.e., five years prior to merger year and five years after the merger year.

### Statement of the Problem and Significance of the Study

When a firm is merged with another or is acquired by the profit-making firm, it benefits both the firms; hence, it is the order of the day that all firms are interested in resorting to *CR* in the name of *M&As*. However, the question that often arises is whether all the firms those are merged / acquired end up with increase in *P*? Because, in some firms, there has been a negative performance

after *M&As*, say Scherer, 1988; Pawaskar, 2001; Surjitkaur, 2002; Coontz, 2004; and Mishra and Chandra, 2010 etc., therefore, the present paper is an attempt to seek answers to the stated question by analysing the impact of *M&As* on *P* by studying 39 selected manufacturing firms in India, which are listed in one of the leading Indian stock exchanges in India viz the *Bombay Stock Exchange*, and which have undergone *M&As* in the same (*related merger*) industry during the financial year 2006–2007

### Objectives and Hypotheses Developed for the Study

The paper is primarily designed to study the impact of *M&As* on *P* of manufacturing firms in India. The motives behind the *M&As*, in general, are shareholders' wealth maximization, profit maximization, and financial and operating risk minimisation. More specifically, the present paper proposes

- To study the effect of *M&As* on profitability in respect of *gross profit ratio, net profit ratio, operating profit ratio, return on investment ratio, return on net-worth ratio, return on equity ratio, return on assets ratio, return on long term fund ratio, sales to total assets ratio, and earnings per share ratio* of manufacturing firms in India after merger.

The present paper is aimed at to estimate the profitability of manufacturing firms in India in the post-merger period. Based on the objective, the following hypothesis is developed:

$H_0$ ' = "There is no significant mean difference between the profitability of manufacturing firms in India before and after the *M&As* process".

### Methodology of The Study

#### Data Source and Period of the Study

The study used secondary sources of data, which were collected from the capital market database called *Centre for Monitoring Indian Economy Private Limited (Prowess CMIE)*. Data on *P* for a period of five years prior to the merger year (2006–07) and five years after the merger year for each manufacturing firm were collected. The number of manufacturing firms went for *M&As* is highest during 2006–07 (*vide table 1*) in terms of *M&As* deal announcement (228) as well as *M&As* deal completed (179). Hence, the sample units (firms) are based on the list of firms that ventured into the *M&As* process during 2006–07 only and are considered for the study for want of analysing the long-run impact of *M&As* on *P*. The study period is restricted to 10 years ranging from 2001–2002 to 2011–2012 considering the year 2006–07 as the year of *M&As* deal.

**Sampling Design****Table 1: Number of Mergers and acquisitions of Manufacturing Firms during 2001-2002 – 2011-2012 in India**

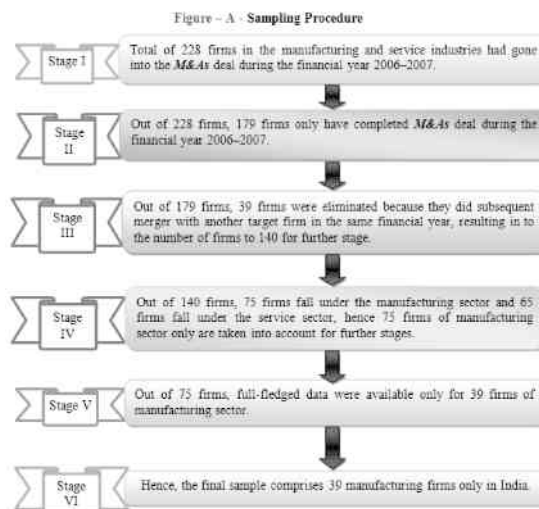
Year	Number of M&As Deal Announcement	M&As Deal Completed
2001-02	164	138
2002-03	133	114
2003-04	141	110
2004-05	147	113
2005-06	211	176
	228	179
2006-07	-After elimination of subsequent merger: (M (75) + S (65)) -Data availability for (M (39) + S (24)) -Final sample (manufacturing firms) for the study	
		140
		063
		039
2007-08	202	176
2008-09	131	108
2009-10	201	147
2010-11	170	109
2011-12	073	024

Source: Compiled Data from PROWESS Database Provided by CMIE.  
M-Manufacturing industry; S-Service industry

**Sampling Procedure and Technique**

Multi-stage sampling technique is used and the different stages

followed are shown in figure-A. The number of *M&As* held in the manufacturing industry in India during 2006–2007 is shown in table 2.

**Table 2: Sector-wise Number of M&As held in the Manufacturing Industry in India during 2006-2007**

Sl. No.	Sector	No. of mergers (before elimination of subsequent M&As)	No. of firms went for subsequent M&As	No. of mergers (after elimination of subsequent M&As)	Full-fledged data available in the data source
1.	Food and Beverage	17	04	13	07
2.	Machinery	16	04	12	06
3.	Non-metallic Mineral Products	10	01	09	05
4.	Chemicals	24	06	18	12
6.	Textiles	10	01	09	05
7.	Metals and Metal Products	08	01	07	01
8.	Transport Equipment	05	03	02	01
9.	Miscellaneous Manufacturing	05	00	05	02
Total Number of Firms		95	20	75	39

Source: Compiled Data from PROWESS Database Provided by CMIE.

### Research Methods For Analysis

In this paper, to what extent the P of the manufacturing firms was affected due to the M&As activities has been analyzed by comparing the mean P between the pre-merger and post-merger periods. The P measures considered for the analysis are Gross Profit Ratio (GPR), Net Profit Ratio (NPR), Operating Profit Ratio (OPR), Return on Investment Ratio (ROIR), Return on Net-worth Ratio (RONWR), Return on Equity Ratio (ROER), Return on Assets Ratio (ROAR), Return on Long Term Fund Ratio (ROLTFR), Sales to Total Assets Ratio (S\_TAR), and Earnings per

Share Ratio (EPSR). The results of the analysis are shown from tables 4 to 5.

### Paired Samples t-test

Paired samples t-test is used to study whether there is a significant difference between the mean values of the same measure (P) used in two different conditions. The measure is used on each unit, and the test is based on the paired differences between the two values. The null hypothesis is that the difference in the two mean values is zero. The paired samples t-test has been used by use of the following formula:

$$t = \frac{\bar{d}}{S / \sqrt{n}} \sim t_{n-1} \text{ df}$$

where,  $\bar{d} = \Sigma d / n$  and  $\bar{d} = x - y$  or  $y - x$   
 $S = \sqrt{\Sigma (d - \bar{d})^2 / (n - 1)}$

### Various Measures (Ratios)

Table 3: Description of Profitability Ratios Used to Study the Financial Performance of Acquiring Manufacturing Firms in India

Classification of Financial Ratios	Variables	Description	Inference
Profitability	1. Gross profit ratio	Gross profit / Net sales	The ratio measures business's financial health. A high gross profit margin indicates that the firm can make a reasonable profit, as long as it keeps the overhead cost under control. A low margin indicates that the business is unable to control its production cost.
	2. Net profit ratio	Net profit / Net sales	A higher NPR shows that a firm is more efficient in converting sales into actual profit and a low NPR indicates a low margin of safety; higher risk with a decline in sales will erase profits and result in a net loss.
	3. Operating profit ratio	Operating profit / Net sales	The ratio indicates the operating efficiency of the firm - how well the firm can convert its sales into profits. A high ratio is better because it indicates that the firm can keep its costs under control (with lower fixed cost).
	4. Return on investment ratio	Operating profit / Capital employed	The ratio is the best measure of profitability in order to assess the overall performance of the firms. As the primary objective of a firm is to earn profit, higher the return on capital employed, the more efficient the firm is in using its funds and will enable better payments to workers and to other factors of production.
	5. Return on net-worth ratio	Net profit (after interest & tax) / Shareholders' fund	The ratio measures the overall efficiency of a firm. It is very important from the owner's point of view as it helps the firm to know whether the firm has earned enough returns to repay its shareholders or not.
	6. Return on owner's equity ratio	Net profit (after interest, taxes and preference dividend) / Equity capital	The ratio measures how much profit the firm generates with the fund invested by common stock owners. The higher the ratio, the greater efficient the firm is in utilizing its equity base and the better return is to investors.
	7. Return on total assets ratio	Net profit (after taxes and interest) / Total assets - fictitious assets	The ROAR gives investors an idea as to how effectively the firm is converting the fund it has to invest into net income. The higher the ratio is, greater is the return on assets.
	8. Return on long term fund ratio	Operating profit (EBIT) / Long-term funds	The ratio shows both the estimated long-term return and estimated current return. The higher the ratio is, the more efficient the management is in utilizing its equity capital and the better return is to investors in the long-term.
	9. Sales to Total assets ratio	Cost of goods sold or sales / Total assets	The ratio is important to both the owners and the investors, as it indicates how effectively the firm's assets are being managed. In general, a firm with a high sales-to-total assets ratio is stronger than a firm with a low sales-to-total assets ratio.
	10. Earnings per share ratio	Net profit (after tax and preference dividend) / No. of equity shares	The ratio measures the return per share receivable by equity shareholders. It reflects upon the capacity of the firm to pay dividend to its equity shareholders.

### Impact of M&As on Profitability of Manufacturing Firms - Analysis

The main object of any business firm is to maximize profit, and therefore it should earn profits to survive and to grow over a long-run period. The operating efficiency (OE) of a firm is ultimately adjudged by the profits earned by it. Profitability (P) should be distinguished from profit. Profits refer to the absolute quantum of profit, whereas P refers to the ability of a firm to earn profits. In other words, an ability to earn maximum profit from maximum use of available resources by the firm is known as P. Hence, P reflects

the final result of a business operation.

P ratios are employed by the firms in order to assess how efficiently they carry on the business operations. P is the foundation for liquidity (L) as well as solvency. Creditors, banks, and financial institutions are interested in P ratios since they indicate L or capacity of the business to meet interest obligations and regular improved profits enhance the long-term solvency position of the business. Therefore, the shareholders are interested in maximizing the P as they focus growth (G) of a firm and also the rate of return on the investment (ROI).



Therefore, the study attempts to analyze the P in terms of sales, assets, and profits in the post-merger period. The P measures considered for the analysis are GPR, NPR, OPR, ROIR, RONWR, ROER, ROAR, ROLTFR, S\_TAR, and EPSR.

Gross Profit Ratio (GPR) shows how efficiently a firm is using its various resources in the production process. A high GPR indicates that the firm makes a reasonable profit, as long as it keeps the overhead cost under control, while a low margin indicates that the firm is unable to control its production cost. It is inferred (vide table 4) that the mean P in terms of GPR of ADF Foods Ltd, Ambuja Cements Ltd, Archies Ltd, Arvind Ltd, Chromatic India Ltd, Indian Oil Corpn. Ltd, Indo Rama Synthetics, Jain Irrigation Systems Ltd, JB Chemicals & Pharma, Motherson Sumi Systems, Novopan Industries Ltd, Reliance Industries Ltd, Sangam (India) Ltd, and United Spirits Ltd ( $t = -6.95, P < 0.01; 2.86, P < 0.05; 5.58, P < 0.01; 4.63, P < 0.05; 2.97, P < 0.05; 4.87, P < 0.01; 4.68, P < 0.01; -6.31, P < 0.01; 4.02, P < 0.05; 8.50, P < 0.01; 3.19, P < 0.05; 4.57, P < 0.05; 3.34, P < 0.05; \text{and } -8.15, P < 0.01$ ) is significant at 1% and 5% level respectively after the M&As process, implying that the mean GPR in the post-merger period is increased for 15 out of 39 manufacturing firms.

Net Profit Ratio (NPR) expresses the relationship between net profits after taxes to the net sales of a firm. A high NPR means that a firm is more efficient in converting sales into profit while a low NPR indicates a low margin of safety. It is inferred (vide table 4) that the mean P in terms of NPR of ADF Foods Ltd, Archies Ltd, Emami Ltd, NCL Industries Ltd, and United Spirits Ltd ( $t = -6.80, P < 0.01; 6.80, P < 0.01; -4.65, P < 0.05; -2.91, P < 0.05; \text{and } -5.25, P < 0.01$ ) is significant at 1% and 5% level respectively after the M&As process, implying that the mean NPR in the post-merger period is increased for 23 out of 39 acquiring manufacturing firms.

Operating Profit Ratio (OPR) measures the operating profit in relation to the net sales. A high OPR is preferred because it indicates that the firm can keep its costs under control (with lower fixed cost), while a low OPR indicates managerial inefficiency and excessive selling and distribution expenses. It is inferred (vide table 4) that the mean P in terms of OPR of ADF Foods Ltd, Archies Ltd, Arvind Ltd, Emami Ltd, Indian Oil Corpn. Ltd, Indo Rama Synthetics, Jain Irrigation Systems Ltd, Motherson Sumi Systems, Reliance Industries Ltd, and United Spirits Ltd ( $t = -7.51, P < 0.01; 3.63, P < 0.05; 7.10, P < 0.01; -3.15, P < 0.05; 3.22, P < 0.05; 2.80, P < 0.05; -6.44, P < 0.01; 5.29, P < 0.01; 3.24, P < 0.05; \text{and } -4.61, P < 0.05$ ) is significant at 1% and 5% level respectively after the M&As process, which implies that the mean OPR in the post-merger period is increased for 18 out of 39 acquiring manufacturing firms.

Return on Investment Ratio (ROIR) indicates how well the firm has used the investment made by owners and creditors into the firms; expresses the relationship between profit before interest and taxes divided by tangible capital employed. It is inferred (vide table 4) that the mean P in terms of ROIR of ACC Ltd, Chromatic India Ltd, Jain Irrigation Systems Ltd, JB Chemicals & Pharma, and Pfizer Ltd ( $t = -3.54, P < 0.05; 3.04, P < 0.05; -4.78, P < 0.01; 3.88, P < 0.05; \text{and } 9.11, P < 0.01$ ) is significant at 1% and 5% level respectively after the M&As process, therefore the mean ROIR in the post-merger period is increased for 24 out of 39 acquiring manufacturing firms.

Return on Net-worth Ratio (RONWR) measures the overall efficiency of a firm. It expresses the relationship between net profit and shareholders' fund. It is inferred (vide table 4) that the mean P in terms of RONWR of ADF Foods Ltd, Coromandel International, Emami

Table 4  
Impact of M&As on Profitability of Manufacturing Firms in India in the post-merger Period

Sl. No.	Name of the firms	GPR		NPR		OPR		ROIR		RONWR	
		t-value	p-value	t-value	p-value	t-value	p-value	t-value	p-value	t-value	p-value
1.	ACC Ltd.	-1.04	0.354	-1.51	0.205	-1.44	0.223	-3.54	0.024*	-0.16	0.879
2.	ADF Foods Ltd.	-6.95	0.002**	-6.80	0.002**	-7.51	0.002**	-2.06	0.08	-4.22	0.013*
3.	Ambuja Cements Ltd.	2.86	0.046*	0.07	0.947	2.67	0.055	-1.38	0.240	0.43	0.687
4.	Archies Ltd.	5.58	0.005**	0.80	0.002**	3.63	0.022*	1.50	0.207	-2.18	0.095
5.	Arvind Ltd.	4.63	0.010*	1.30	0.252	7.10	0.002**	0.02	0.978	0.37	0.726
6.	Aurobindo Pharma Ltd.	-1.87	0.134	-0.73	0.503	-2.09	0.104	-0.69	0.524	-0.57	0.594
7.	Balrathi Ltd.	-0.16	0.877	-0.01	0.995	-0.36	0.737	-0.21	0.842	0.08	0.938
8.	Bilpower Ltd.	0.10	0.919	0.93	0.402	0.29	0.710	1.06	0.346	0.92	0.408
9.	Blue Star Ltd.	0.22	0.832	-0.17	0.872	-0.50	0.638	-0.79	0.470	-0.47	0.661
10.	BSL Ltd.	2.14	0.099	0.56	0.601	0.57	0.599	-0.58	0.593	0.49	0.650
11.	Caplin Point Laboratories	-0.72	0.507	-0.97	0.385	-1.21	0.291	-2.26	0.086	-0.91	0.310
12.	Chromatic India Ltd.	-2.97	0.041*	-0.07	0.944	0.09	0.931	3.04	0.038*	0.26	0.805
13.	Coromandel International	-0.43	0.674	-1.86	0.136	-0.40	0.705	-2.18	0.094	-3.70	0.021*
14.	Dalmia Bharati Sugar & In.	-0.57	0.595	0.03	0.978	-1.11	0.329	-0.36	0.731	0.28	0.793
15.	FID-Pancy (India) Ltd.	2.41	0.074	-0.84	0.446	1.18	0.302	1.71	0.292	-0.34	0.745
16.	Emami Ltd.	0.07	0.946	-4.65	0.010*	-3.15	0.035*	-0.01	0.986	-4.13	0.014*
17.	India Cements Ltd.	-2.49	0.067	-2.62	0.058	-2.28	0.084	-2.59	0.060	-2.21	0.091
18.	Indian Oil Corpn. Ltd.	4.87	0.008**	2.66	0.056	3.22	0.032*	2.71	0.054	2.60	0.060
19.	Indo Rama Synthetics	4.68	0.009**	1.91	0.124	2.50	0.049*	1.51	0.206	1.47	0.215
20.	Indus Steel Ltd.	1.71	0.162	-0.74	0.496	1.54	0.197	-0.19	0.859	-1.53	0.199
21.	Jain Irrigation Systems Ltd.	-6.31	0.003**	-1.33	0.254	-6.44	0.003**	-4.78	0.009*	-1.70	0.163
22.	JB Chemicals & Pharma	4.02	0.016*	-0.76	0.488	2.51	0.065	3.68	0.018*	-0.36	0.732
23.	KIRF Ltd.	0.55	0.606	0.60	0.464	0.73	0.502	3.02	0.013	0.75	0.49
24.	Marksons Pharma Ltd.	1.03	0.357	1.49	0.209	1.20	0.293	-0.67	0.559	-1.36	0.244

25	Modi Naturalis Ltd.	-0.52	0.625	-0.79	0.472	-2.08	0.105	-0.18	0.861	-0.14	0.746
26	Matherson Sum Systems	8.50	<b>0.001**</b>	0.48	0.652	5.29	<b>0.006*</b>	1.68	0.07	0.77	0.481
27	NCL Industries Ltd.	-2.32	0.061	-2.91	<b>0.043*</b>	-2.39	0.074	-0.04	0.966	-3.53	<b>0.024*</b>
28	Novopar Industries Ltd.	3.19	<b>0.033*</b>	2.51	0.066	2.34	0.079	1.76	0.752	0.15	0.883
29	Permanent Magnets Ltd.	0.65	0.550	0.13	0.903	1.07	0.343	-0.12	0.903	0.05	0.959
30	Pfizer Ltd.	-2.55	0.065	-2.43	0.072	-1.55	0.135	9.11	<b>0.001*</b>	-1.20	0.296
31	Reliance Industries Ltd.	4.57	<b>0.010*</b>	0.09	0.929	3.24	0.032*	1.72	0.760	0.42	0.694
32	Sangam (India) Ltd.	3.34	<b>0.029*</b>	2.69	0.055	0.77	0.783	0.17	0.866	1.76	0.153
33	Spentex Industries Ltd.	0.28	0.787	-0.07	0.946	0.74	0.500	0.46	0.664	0.31	0.770
34	Sterlite Technologies Ltd.	-1.22	0.287	-1.21	0.292	-1.17	0.306	-1.29	0.263	-1.38	0.238
35	Thermax Ltd.	0.72	0.508	-0.09	0.932	-1.60	0.184	-2.51	0.066	-2.12	0.101
36	Uflex Ltd.	0.87	0.432	-1.35	0.248	0.35	0.740	-0.96	0.391	-1.14	0.518
37	United Breweries Ltd.	-1.53	0.254	-2.69	0.054	-2.08	0.105	-0.99	0.376	-1.55	0.194
38	United Spirits Ltd.	-8.15	<b>0.001**</b>	-5.25	<b>0.006*</b>	-4.61	<b>0.010*</b>	-1.79	0.147	-1.36	0.245
39	Visaka Industries Ltd.	2.08	0.105	0.62	0.567	2.09	0.104	0.37	0.750	0.64	0.554

Source: Computed results based on the compiled & edited data from the financial statements of selected firms listed CMIE process package.

\*Significant at 5% level; \*\*Significant at 1% level.

Ltd, and NCL Industries Ltd ( $t = -4.22$ ,  $P < 0.05$ ;  $-3.70$ ,  $P < 0.05$ ;  $4.13$ ,  $P < 0.05$ ; and  $-3.53$ ,  $P < 0.05$ ) is significant at 5% level after the M&As process, implying that the mean RONWR in post-merger period is increased for 20 out of 39 acquiring manufacturing firms.

Return on Equity Ratio (ROER) measures how much profit a firm generates with the money invested by common stock owners. The higher the ratio, the more efficiently the firm is in utilizing its equity base and better will be the return to the investors. It is inferred (vide table 5) that the mean P in terms of ROER of ADF Foods Ltd, Coromandel International, Emami Ltd, and NCL Industries Ltd ( $t = -4.23$ ,  $P < 0.05$ ;  $-3.71$ ,  $P < 0.05$ ;  $-19.35$ ,  $P < 0.01$ ; and  $-3.37$ ,  $P < 0.05$ ) is significant at 1% and 5% level respectively after the M&As process. The mean ROER in the post-merger period is increased for 21 out of 39 acquiring manufacturing firms.

Return on Assets Ratio (ROAR) expresses the relationship between net profit and assets. It gives investors an idea as to how effectively the firm is converting the fund it has to invest into net income. The higher the ratio, the greater is the return on assets. It is inferred (vide table 5) that the mean P in terms of ROAR of ACC Ltd, ADF Foods Ltd, Ambuja Cements Ltd, Archies Ltd, Arvind

Ltd, Aurobindo Pharma Ltd, Batliboi Ltd, Bilpower Ltd, Blue Star Ltd, BSL Ltd, Chromatic India Ltd, Coromandel International, Dalmia Bharat Sugar, EID-Parry (India) Ltd, Emami Ltd, India Cements Ltd, Indian Oil Corpn. Ltd, Indo Rama Synthetics, Inducto Steel Ltd, JB Chemicals & Pharma, KLRF Ltd, NCL Industries Ltd, Permanent Magnets Ltd, Pfizer Ltd, Reliance Industries Ltd, Sangam (India) Ltd, Sterlite Technologies Ltd, Thermax Ltd, Uflex Ltd, United Breweries Ltd, United Spirits Ltd, and Visaka Industries Ltd ( $t = -3.46$ ,  $P < 0.05$ ;  $-16.19$ ,  $P < 0.01$ ;  $-5.42$ ,  $P < 0.01$ ;  $-3.46$ ,  $P < 0.05$ ;  $-13.04$ ,  $P < 0.01$ ;  $-3.98$ ,  $P < 0.05$ ;  $-4.74$ ,  $P < 0.01$ ;  $-7.01$ ,  $P < 0.01$ ;  $-6.17$ ,  $P < 0.01$ ;  $-47.93$ ,  $P < 0.01$ ;  $-4.82$ ,  $P < 0.01$ ;  $-8.39$ ,  $P < 0.01$ ;  $-4.34$ ,  $P < 0.05$ ;  $-5.32$ ,  $P < 0.01$ ;  $-4.34$ ,  $P < 0.05$ ;  $-38.33$ ,  $P < 0.01$ ;  $-8.22$ ,  $P < 0.01$ ;  $-12.04$ ,  $P < 0.01$ ;  $-16.45$ ,  $P < 0.01$ ;  $-5.91$ ,  $P < 0.01$ ;  $-19.60$ ,  $P < 0.01$ ;  $-9.71$ ,  $P < 0.01$ ;  $-23.93$ ,  $P < 0.01$ ;  $-8.63$ ,  $P < 0.01$ ;  $-8.00$ ,  $P < 0.01$ ;  $-5.72$ ,  $P < 0.01$ ;  $-3.14$ ,  $P < 0.05$ ;  $-7.47$ ,  $P < 0.01$ ;  $-9.88$ ,  $P < 0.01$ ;  $-7.98$ ,  $P < 0.01$ ;  $-8.07$ ,  $P < 0.01$ ; and  $-9.22$ ,  $P < 0.01$ ) is significant at 1% and 5% level respectively after the M&As process. Therefore, the mean ROAR in the post-merger period is increased for 38 out of 39 acquiring manufacturing firms.

Table 5  
Impact of M&As on Profitability of Manufacturing Firms in India in the post-merger Period

Sl. No.	Name of the firms	ROER		ROAR		ROITFR		S TAR		EPSR	
		t-value	p-value	t-value	p-value	t-value	p-value	t-value	p-value	t-value	p-value
1.	ACC Ltd.	0.09	0.932	-3.46	<b>0.026*</b>	-2.89	<b>0.044*</b>	0.81	0.463	-3.94	<b>0.017*</b>
2.	ADF Foods Ltd.	-1.23	<b>0.013*</b>	-16.19	<b>0.000*</b>	-1.42	0.228	-2.62	<b>0.058*</b>	-6.89	<b>0.002*</b>
3.	Ambuja Cements Ltd.	0.54	0.614	-5.42	<b>0.006*</b>	-1.59	0.137	-0.22	0.835	-0.42	0.696
4.	Archies Ltd.	2.18	0.095	-3.46	<b>0.026*</b>	1.55	0.156	-0.61	0.571	1.28	0.269
5.	Arvind Ltd.	0.46	0.666	-13.04	<b>0.000*</b>	-0.44	0.681	-3.59	<b>0.023*</b>	0.08	0.936
6.	Aurobindo Pharma Ltd.	-0.54	0.613	-3.98	<b>0.016*</b>	-1.04	0.353	-0.66	0.545	-0.86	0.438
7.	Batliboi Ltd.	0.01	0.994	-4.74	<b>0.009*</b>	-0.27	0.799	1.99	0.117	0.35	0.744
8.	Bilpower Ltd.	0.93	0.404	-7.01	<b>0.002*</b>	0.36	0.744	1.73	0.157	-0.11	0.916
9.	Blue Star Ltd.	-0.68	0.533	-6.17	<b>0.003*</b>	-0.85	0.442	-0.40	0.708	0.70	0.522
10.	BSL Ltd.	0.39	0.713	-47.93	<b>0.000*</b>	-0.33	0.756	-0.25	0.813	0.48	0.655
11.	Caplin Point Laboratories	0.84	0.448	2.47	0.068	0.48	0.633	0.60	0.576	3.37	<b>0.028*</b>
12.	Chromatic India Inc.	0.25	0.809	-4.82	<b>0.008*</b>	3.06	<b>0.038*</b>	0.94	0.400	0.45	0.671
13.	Coromandel International	-3.71	<b>0.021*</b>	-8.39	<b>0.001*</b>	-3.79	<b>0.019*</b>	-0.88	0.427	-1.48	0.212
14.	Dalmia Bharat Sugar & In.	-0.13	0.902	-4.34	<b>0.012*</b>	-0.15	0.887	-0.31	0.772	1.82	0.143
15.	EID-Parry (India) Ltd.	-0.36	0.733	-5.32	<b>0.006*</b>	1.36	0.244	3.79	<b>0.019*</b>	0.15	0.892
16.	Emami Ltd.	-19.35	<b>0.000**</b>	-4.34	<b>0.012*</b>	0.03	0.974	-4.50	<b>0.011*</b>	-0.09	0.931
17.	India Cements Ltd.	-1.91	0.128	-38.33	<b>0.000*</b>	-2.57	0.062	-9.50	<b>0.001*</b>	-3.17	<b>0.034*</b>
18.	Indian Oil Corpn. Ltd.	2.61	0.059	-8.22	<b>0.001*</b>	1.82	0.141	-0.16	0.877	1.44	0.223

19.	Indo Rama Synthetics	1.29	0.265	-12.04	0.000 <sup>a</sup>	1.29	0.266	-6.08	0.004 <sup>a</sup>	1.56	0.192
20.	Inducto Steel Ltd.	-1.53	0.200	-16.45	0.000 <sup>a</sup>	-0.74	0.498	0.54	0.617	-7.72	0.002 <sup>a</sup>
21.	Jain Irrigation Systems Ltd.	0.34	0.745	-2.50	0.060	-5.19	0.007 <sup>a</sup>	-1.35	0.246	-1.89	0.131
22.	JB Chemicals & Pharma.	-0.36	0.732	-5.91	0.004 <sup>a</sup>	3.97	0.016 <sup>a</sup>	-4.10	0.015 <sup>a</sup>	-4.27	0.013 <sup>a</sup>
23.	KLR Ltd.	0.77	0.480	-19.60	0.000 <sup>a</sup>	2.35	0.078	0.24	0.818	0.92	0.410
24.	Marksans Pharma Ltd.	-1.56	0.243	0.21	0.838	2.03	0.111	3.08	0.037 <sup>a</sup>	1.23	0.284
25.	Modi Naturals Ltd.	-0.34	0.719	-2.38	0.076	-0.23	0.823	3.62	0.022 <sup>a</sup>	-0.25	0.811
26.	Motherson Sumi Systems	1.04	0.357	-2.06	0.108	1.40	0.232	1.23	0.285	0.23	0.828
27.	NCL Industries Ltd.	-3.37	0.028 <sup>a</sup>	-9.71	0.001 <sup>a</sup>	0.11	0.913	3.68	0.021 <sup>a</sup>	-1.97	0.008 <sup>a</sup>
28.	Novopan Industries Ltd.	1.78	0.149	-1.14	0.317	1.81	0.144	-0.61	0.570	-2.55	0.063
29.	Permanent Magnets Ltd.	-0.46	0.665	-23.93	0.000 <sup>a</sup>	0.73	0.504	-0.09	0.932	0.03	0.978
30.	Pfizer Ltd.	-1.19	0.298	-8.63	0.001 <sup>a</sup>	2.26	0.086	16.10	0.000 <sup>a</sup>	-4.32	0.012 <sup>a</sup>
31.	Reliance Industries Ltd.	0.19	0.855	-8.00	0.001 <sup>a</sup>	1.53	0.199	-0.91	0.413	-1.82	0.142
32.	Sangam (India) Ltd.	1.83	0.141	-5.72	0.005 <sup>a</sup>	-0.25	0.809	0.34	0.744	0.28	0.789
33.	Spentex Industries Ltd.	0.33	0.756	-1.75	0.155	0.78	0.477	-0.48	0.654	5.23	0.006 <sup>a</sup>
34.	Sterling Technologies Ltd.	-2.42	0.073	-3.14	0.036 <sup>a</sup>	-1.85	0.137	-2.98	0.040 <sup>a</sup>	-1.07	0.343
35.	Thermax Ltd.	-2.00	0.115	-7.47	0.002 <sup>a</sup>	-2.81	0.048 <sup>a</sup>	-2.88	0.045 <sup>a</sup>	-1.46	0.218
36.	Uflex Ltd.	-1.12	0.325	-9.88	0.001 <sup>a</sup>	-1.48	0.211	-1.06	0.549	-2.25	0.087
37.	United Breweries Ltd.	-0.92	0.410	-7.98	0.001 <sup>a</sup>	-2.01	0.114	-0.27	0.800	-1.09	0.333
38.	United Spirits Ltd.	-1.33	0.252	-8.07	0.001 <sup>a</sup>	-1.14	0.315	3.51	0.025 <sup>a</sup>	-16.41	0.000 <sup>a</sup>
39.	Visaka Industries Ltd.	0.70	0.520	-9.22	0.001 <sup>a</sup>	-1.67	0.169	-4.34	0.012 <sup>a</sup>	-2.38	0.075

Source: Computed results based on the compiled & edited data from the financial statements of selected firms listed -CMIE-providers package.

<sup>a</sup>Significant at 5% level; <sup>a</sup>Significant at 1% level.

**Return on Long Term Fund Ratio (ROLTFR)** expresses the relationship between net profit and long term funds. It shows both the estimated long-term return and the estimated short-term return. The higher the ratio, the more efficiently the firm is utilizing its equity capital and better will be the return to the investors in the long-term. It is inferred (vide table 5) that the mean P in terms of ROLTFR of ACC Ltd, Chromatic India Ltd, Coromandel International, Jain Irrigation Systems Ltd, JB Chemicals & Pharma, and Thermax Ltd ( $t = -2.89, P < 0.05; 3.06, P < 0.05; -3.79, P < 0.05; -5.19, P < 0.01; 3.97, P < 0.05; \text{and } -2.81, P < 0.05$ ) is significant at 1% and 5% level respectively after the M&As process, implying that the mean ROLTFR in the post-merger period is increased for 22 out of 39 acquiring manufacturing firms.

**Sales to Total Assets Ratio (S\_TAR)** measures how efficiently the firm's assets are being used. The higher the S\_TAR, the more efficiently the firm is run. It is inferred (vide table 3.B) that the mean P in terms of S\_TAR of Arvind Ltd, EID-Parry (India) Ltd, Emami Ltd, India Cements Ltd, Indo Rama Synthetics, JB Chemicals & Pharma, Marksans Pharma Ltd, Modi Naturals Ltd, NCL Industries Ltd, Pfizer Ltd, Sterlite Technologies Ltd, Thermax Ltd, United Spirits Ltd, and Visaka Industries Ltd ( $t = -3.59, P < 0.05; 3.79, P < 0.05; -4.50, P < 0.05; -9.50, P < 0.01; -6.08, P < 0.01; 4.10, P < 0.05; 3.08, P < 0.05; 3.62, P < 0.05; 3.68, P < 0.05; 16.10, P < 0.01; -2.98, P < 0.05; -2.88, P < 0.05; 3.51, P < 0.05; \text{and } -4.34, P < 0.05$ ) is significant at 1% and 5% level respectively after the M&As process. Therefore, the mean S\_TAR in the post-merger period is increased for 22 out of 39 acquiring manufacturing firms.

**Earnings per Share Ratio (EPSR)** measures the return per share receivable by equity / ordinary shareholders. It expresses the relationship between net profit and the number of equity shares. It is inferred (vide table 3.B) that the mean P in terms of EPSR of ACC Ltd, ADF Foods Ltd, Caplin Point Laboratories, India Cements Ltd, Inducto Steel Ltd, JB Chemicals & Pharma, NCL

Industries Ltd, Pfizer Ltd, Spentex Industries Ltd, and United Spirits Ltd ( $t = -3.94, P < 0.05; -6.89, P < 0.01; -3.37, P < 0.05; -3.17, P < 0.05; -7.72, P < 0.01; 4.27, P < 0.05; -4.97, P < 0.01; -4.32, P < 0.05; 5.23, P < 0.01; \text{and } -16.41, P < 0.01$ ) is significant at 1% and 5% level respectively after the M&As process. Hence, the mean EPSR in the post-merger period is increased for 21 out of 39 acquiring manufacturing firms.

### Summary of Findings

**Test of Hypothesis - Profitability Parameter:** The impact of M&As on the P of the manufacturing firms is tested by use of paired samples t-test, and the hypothesis developed is as follows:

**Null hypothesis-  $H_0^1$**  - "There is no significant mean difference between the profitability of manufacturing firms in India before and after the M&As process."

The result of the t-test reveals that the  **$H_0^1$**  "there is no significant mean difference between the profitability of manufacturing firms in India before and after the M&As process" is rejected for most of the manufacturing firms in India. Overall, it is inferred from the comparison of P ratios between the pre-and post-merger periods, that there is a significant difference in the P (shift positively) of 38 (ACC Ltd, ADF Foods Ltd, Ambuja Cements Ltd, Archies Ltd, Arvind Ltd, Aurobindo Pharma Ltd, Bilpower Ltd, Blue Star Ltd, BSL Ltd, Caplin Point Laboratories, Chromatic India Ltd, Coromandel International, Dalmia Bharat Sugar, EID-Parry (India) Ltd, Emami Ltd, India Cements Ltd, Indian Oil Corpn. Ltd, Indo Rama Synthetics, Inducto Steel Ltd, Jain Irrigation Systems, JB Chemicals & Pharma, KLR Ltd, Marksans Pharma Ltd, Modi Naturals Ltd, Motherson Sumi Systems, NCL Industries Ltd, Novopan Industries Ltd, Permanent Magnets Ltd, Pfizer Ltd, Reliance Industries Ltd, Sangam (India) Ltd, Spentex Industries Ltd, Sterlite Technologies Ltd, Thermax Ltd, Uflex Ltd, United Breweries Ltd, United Spirits Ltd, and Visaka Industries Ltd) out of 39 manufacturing firms at 1% and 5% level respectively after the M&As process.



### Concluding Remarks

The paper examined the impact of M&As on P of manufacturing firms in India, using paired samples 't' test to study if there is a significant difference in the P of manufacturing firms in the post-merger period when compared to that of in the pre-merger period based on the annual financial data spanning the years from 2001–2002 to 2011–2012, for a period of five years prior to the merger (2001–2002 to 2005–2006) and five years after the merger (2007–2008 to 2011–2012) for each of the manufacturing firms in India. The study has been carried out with a sample of 39 manufacturing firms, which had gone into the M&As process during the financial year 2006–2007, which are only considered for the study for the simple reason that the number of M&As was the highest in 2006–07 in the recent past decade, and also for want of analyzing the long-run effect of M&As on P.

The result of the t-test reveals that the H01 is rejected for most of the manufacturing firms in India. Overall, it is inferred from the comparison of P ratios between the pre-merger and post-merger periods, that there is a significant difference in the P (shift) of 38 out of 39 manufacturing firms at the 1% and 5% level respectively after the M&As process. Hence, the study concludes with supporting the findings of the existing research studies viz., Ikeda and Do, 1983; Pawaskar, 2001; Mantravadi and Reddy, 2008; and Venkatesha and Manjunatha, 2013 that most of the manufacturing firms in India are doing well in the post-merger period. In sum, the analysis reveals that there is a significant (shift) difference between the P of the manufacturing firms in India in periods before and after the M&As process.

### Limitations and Scope for Further Studies

- The study is mainly based on secondary data and is restricted to the acquiring manufacturing firms in India, that are categorized into *food & beverage, machinery, non-metallic mineral product, chemical, textiles, metals & metal product, transport equipment, and miscellaneous categories*.
- The firms which originally went in for the *M&As* process in 2006–07 and subsequently entered in to *M&As* process (re-merger) with some other firms are ignored in the study for simple reason that it requires a further attempt to explore the impact of series of *M&As* on *P*.
- The present study has been made comparing the *P* of manufacturing firms in the pre-merger period with that of in the post-merger period with help of *P* ratios viz *GPR, NPR, OPR, ROIR, RONWR, ROER, ROAR, ROLTR, S\_TAR*, and *EPSR*.

Further studies can be undertaken to analyze the *P* of banking and financial service industry in the post-merger period with help of the above mentioned parameters.

To study the performance and efficiency of banking and financial service industry in the post-merger period with help of *CRAMEL* and *CAMELS* models of research methods.

To study the impact of *M&As* on shareholders' wealth (*SW*) in the post-merger period with help of cumulative average abnormal return model (*CAAR*).

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Appendix A: List of Manufacturing Firms in India Selected for the Study

Sl. No.	Acquiring Firms Name	Target Firms Name	Date of Deal Completed	Industry
1.	ACC Ltd.	Tarmac (India) Pvt. Ltd.	05/11/2006	Non-metallic Mineral Product
2.	ADF Foods Ltd.	Lustre Investment Pvt. Ltd.	12/20/2006	Food and Beverage
3.	Ambuja Cements Ltd.	Indo Nippon Special Cements Ltd.	02/23/2007	Non-metallic Mineral Product
4.	Archies Ltd.	Archies Online.Com Ltd.	01/27/2007	Miscellaneous Manufacturing
5.	Arvind Ltd.	Arvind Fashions Ltd.	04/29/2006	Textiles
6.	Aurobindo Pharma Ltd.	API Life Sciences Ltd.	12/15/2006	Chemical
7.	Baliboi Ltd.	Baliboi SPM Pvt. Ltd.	10/17/2006	Machinery
8.	Bilpower Ltd.	Sun Transamp Pvt. Ltd.	01/24/2007	Machinery
9.	Blue Star Ltd.	Mohan T Advani Finance Pvt. Ltd.	03/29/2007	Machinery
10.	BSL Ltd.	BSL Wulfling Ltd.	05/18/2006	Textiles
11.	Caplin Point Laboratories Ltd.	May (India) Laboratories Pvt. Ltd.	11/07/2006	Chemical
12.	Chromatic India Ltd.	Blue Rock Dyes & Chemicals Ltd.	04/12/2006	Chemical
13.	Coromandel International Ltd.	Rasilah Investments Ltd.	10/19/2006	Chemical
14.	Dalmia Bharat Sugar & Inds. Ltd.	Dalmia Sugars Ltd.	01/15/2007	Food and Beverage
15.	EID-Parry (India) Ltd.	Parry Nutraceuticals Ltd.	10/26/2006	Food and Beverage
16.	Emami Ltd.	JB Marketing Pvt. Ltd.	03/05/2007	Chemical
17.	India Cements Ltd.	Visaka Cement Industry Ltd.	02/28/2007	Non-metallic Mineral Product
18.	Indian Oil Corpn. Ltd.	Bongaiaon Refinery & Petrochemicals Ltd.	11/29/2006	Chemical
19.	Indo Rama Synthetics (India) Ltd.	Indo Rama Petrochemicals Ltd.	11/24/2006	Textiles
20.	Inducto Steel Ltd.	Hariyana Industrial Gases Pvt. Ltd.	07/26/2006	Metals and Metal Product
21.	Jain Irrigation Systems Ltd.	Eurisko Agro Ltd.	12/29/2006	Chemical
22.	JB Chemicals & Pharmaceuticals Ltd.	Lekar Healthcare Ltd.	02/06/2007	Chemical
23.	KLRF Ltd.	Elltex Super Castings Ltd.	02/22/2007	Food and Beverage
24.	Marksans Pharma Ltd.	Mark Remedies Ltd.	07/05/2006	Chemical
25.	Modi Naturals Ltd.	JP Management Systems Pvt. Ltd.	10/19/2006	Food and Beverage
26.	Motherson Sumi Systems Ltd.	Motherson Advance Polymers Ltd.	05/24/2006	Transport Equipment
27.	NCL Industries Ltd.	NCL Energy Ltd.	07/25/2006	Non-metallic Mineral Product
28.	Novopan Industries Ltd.	Novofurniture Pvt. Ltd.	06/21/2006	Miscellaneous Manufacturing
29.	Permanent Magnets Ltd.	Taparia Magnetics Pvt. Ltd.	09/14/2006	Machinery
30.	Pfizer Ltd.	Duchem Laboratories Ltd.	04/24/2006	Chemical
31.	Reliance Industries Ltd.	Indian Petrochemicals Corpn. Ltd.	03/07/2007	Chemical
32.	Sangam (India) Ltd.	SPBL Ltd.	09/08/2006	Textiles
33.	Spentex Industries Ltd.	Indo Rama Textiles Ltd.	06/30/2006	Textiles
34.	Sterlite Technologies Ltd.	Sterlite Telelink Ltd.	11/02/2006	Machinery
35.	Thermax Ltd.	Winman Gas Ltd.	01/12/2007	Machinery
36.	Uflex Ltd.	Flex Engineering Ltd.	04/05/2006	Chemical
37.	United Breweries Ltd.	Karnataka Breweries & Distilleries Pvt. Ltd.	02/05/2007	Food and Beverage
38.	United Spirits Ltd.	McDowell International Brands Ltd.	07/31/2006	Food and Beverage
39.	Visaka Industries Ltd.	Shakti Roofings Pvt. Ltd.	05/17/2006	Non-metallic Mineral Product

Source: Centre for Monitoring Indian Economy Private Limited (Prowess CMIE).

## Appendix B (i)

## Descriptive Statistics of Profitability of Manufacturing Firms in India in Pre-and Post-Merger Periods

Sl. No.	Name of the firms	GPR				NPR				OPR			
		Pre-Merger		Post-Merger		Pre-Merger		Post-Merger		Pre-Merger		Post-Merger	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1.	ACC Ltd.	15.45	7.92	20.09	5.57	8.95	7.19	15.33	2.76	17.41	6.89	23.80	5.08
2.	ADF Foods Ltd.	7.32	1.97	14.53	1.94	3.03	1.01	11.98	3.14	6.79	2.16	18.64	1.95
3.	Ambuja Cements Ltd.	26.83	4.06	21.78	2.90	16.76	4.58	16.52	3.58	30.22	3.29	25.56	2.41
4.	Archies Ltd.	14.23	3.15	9.27	1.58	7.50	2.03	4.43	3.02	14.61	3.14	11.53	1.61
5.	Arvind Ltd.	17.23	2.80	7.70	2.87	6.77	2.30	3.68	5.26	24.31	2.75	12.58	2.03
6.	Aurobindo Pharma Ltd.	12.05	3.41	15.66	4.68	6.85	2.87	9.27	7.23	14.50	3.03	18.78	4.49
7.	Baliboi Ltd.	-0.05	12.70	1.228	6.56	0.86	9.89	0.90	4.94	0.61	9.73	2.81	6.32
8.	Bilpower Ltd.	6.21	3.51	5.88	3.58	5.14	3.12	2.01	4.55	7.40	3.38	6.17	3.62
9.	Blue Star Ltd.	7.30	0.32	6.81	4.72	4.71	0.56	5.05	4.79	6.77	0.51	7.93	4.71
10.	BSL Ltd.	9.18	1.54	6.12	2.39	0.54	0.47	0.04	2.26	12.30	2.60	11.23	2.26
11.	Caplin Point Laboratories	-7.50	42.19	5.76	5.81	-11.74	41.00	5.30	2.77	-6.14	12.97	0.84	0.43
12.	Chromatic India Ltd.	0.56	8.51	-9.15	10.32	-0.62	7.64	-0.38	3.28	-7.48	5.42	-7.95	9.59
13.	Coromandel International	9.80	2.72	10.56	1.73	4.72	1.74	6.75	1.54	10.63	3.42	11.41	1.76
14.	Dalmia Bharat Sugar	11.58	2.64	14.53	10.79	7.88	3.73	7.73	9.39	15.49	2.98	20.29	10.60
15.	EID-Parry (India) Ltd.	11.05	5.15	-0.12	8.87	7.56	5.43	20.39	31.01	11.08	3.25	5.85	8.67
16.	Emami Ltd.	13.73	3.18	13.57	2.07	11.61	3.03	15.90	2.58	14.67	2.14	20.36	2.97
17.	India Cements Ltd.	-3.68	12.27	17.28	10.51	-5.73	10.48	10.26	6.96	12.60	5.13	23.22	9.49
18.	Indian Oil Corpn. Ltd.	6.95	2.08	3.37	0.71	4.11	1.52	2.11	1.21	6.82	2.00	4.51	0.67
19.	Indo Rama Synthetics	12.66	4.69	2.52	3.91	5.22	3.31	0.49	3.17	15.06	5.31	8.20	3.99
20.	Inducto Steel Ltd.	9.36	13.06	-7.05	19.40	5.44	13.02	16.16	24.94	5.93	3.91	-5.83	16.99
21.	Jain Irrigation Systems	3.48	5.31	17.02	0.82	4.99	2.65	7.36	1.52	11.40	2.57	19.29	0.97
22.	JB Chemicals & Pharma.	21.62	3.13	14.27	5.74	1.61	0.07	2.85	3.59	21.80	2.72	17.37	5.55
23.	KLRF Ltd.	5.25	1.92	4.35	2.23	1.16	1.65	0.05	2.11	8.58	1.79	7.34	2.14
24.	Marksans Pharma Ltd.	7.97	8.61	-13.44	41.93	0.20	0.88	-4.96	7.15	15.06	6.21	-6.53	39.07
25.	Modi Naturals Ltd.	1.42	0.29	1.62	0.75	0.38	0.43	0.75	1.04	1.94	0.31	2.48	0.63
26.	Motherson Sumi Systems	18.93	1.54	12.16	0.95	9.31	2.18	8.72	7.04	19.53	1.60	15.73	0.72
27.	NCI Industries Ltd.	11.94	1.93	19.90	6.60	2.97	0.97	8.43	4.59	19.06	2.83	25.73	6.32
28.	Novopan Industries Ltd.	13.91	0.82	-9.79	16.01	5.72	1.92	-20.71	21.76	12.43	1.82	-5.57	16.38
29.	Permanent Magnets Ltd.	4.76	1.26	2.77	6.70	0.32	1.98	0.11	2.97	8.28	2.06	4.60	6.74
30.	Pfizer Ltd.	18.44	5.52	-41.77	18.22	9.56	3.65	25.81	13.75	19.07	4.50	22.94	0.87
31.	Reliance Industries Ltd.	14.41	1.88	10.63	2.70	9.70	1.57	9.50	3.22	18.58	0.63	14.97	2.74
32.	Sangam (India) Ltd.	12.29	2.43	6.86	3.43	4.50	1.70	1.32	2.47	14.55	1.92	13.19	3.05
33.	Spentex Industries Ltd.	1.56	6.29	0.53	6.83	-7.51	12.06	-7.05	9.13	7.36	2.16	4.99	6.69
34.	Sterlite Technologies Ltd.	-9.56	32.67	9.22	3.23	-12.58	33.23	5.52	3.14	-3.99	27.94	11.45	3.05
35.	Thermax Ltd.	12.36	2.16	11.29	2.17	7.41	1.79	7.53	1.82	9.78	2.44	12.26	2.16
36.	Uflex Ltd.	13.20	5.63	9.39	6.21	4.39	1.07	6.61	3.07	15.95	4.30	14.55	5.56
37.	United Breweries Ltd.	3.81	6.03	7.63	0.79	0.32	3.00	4.21	0.63	7.75	4.05	12.01	0.85
38.	United Spirits Ltd.	4.65	0.77	15.03	2.34	1.85	0.36	7.00	1.99	6.99	2.22	15.88	2.42
39.	Visaka Industries Ltd.	13.87	1.64	11.14	3.50	6.52	0.76	5.74	2.86	16.90	1.39	14.02	3.48

Source: Computed results based on the compiled & edited data from the financial statements of selected firms listed-CMP-promess package.

## Appendix B (ii)

## Descriptive Statistics of Profitability of Manufacturing Firms in India in Pre-and Post-Merger Periods

Sl. No.	Name of the firms	ROIR				RONWR				ROER			
		Pre-Merger		Post-Merger		Pre-Merger		Post-Merger		Pre-Merger		Post-Merger	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1.	ACC Ltd.	17.35	12.13	32.75	14.82	20.02	11.91	21.09	4.25	20.02	11.92	19.28	6.83
2.	ADL Foods Ltd.	11.70	2.22	16.45	3.94	6.22	2.17	12.05	2.54	6.21	2.18	12.05	2.54
3.	Ambuja Cements Ltd.	19.01	14.08	26.14	4.96	21.28	12.73	18.26	3.91	21.30	12.71	16.76	6.14
4.	Archies Ltd.	17.99	5.40	14.48	2.27	11.23	3.57	7.81	5.18	11.23	3.58	7.82	5.18
5.	Arvind Ltd.	7.81	2.95	7.75	3.98	8.15	3.66	6.37	9.73	8.23	3.68	6.02	9.65
6.	Aurobindo Pharma Ltd.	12.09	5.12	14.07	3.37	13.22	6.85	16.48	12.19	13.43	6.90	16.48	12.19
7.	Baliboi Ltd.	4.49	16.16	6.38	8.43	4.53	24.62	3.30	13.03	3.57	32.18	3.42	12.51
8.	Bilpower Ltd.	15.31	5.22	10.67	4.67	16.30	10.58	4.82	18.58	16.78	11.25	4.82	18.59
9.	Blue Star Ltd.	28.78	2.89	40.56	30.91	26.22	1.46	33.33	32.36	26.21	1.46	35.22	28.33
10.	BSL Ltd.	6.87	2.41	8.32	3.21	1.80	1.68	-0.13	9.84	1.80	1.67	0.25	9.89
11.	Caplin Point Laboratories	1.90	22.39	22.18	17.15	-2.56	9.67	1.63	0.87	-2.50	9.58	1.30	0.63
12.	Chromatic India Ltd.	-1.03	9.37	-8.38	12.10	0.51	8.22	-0.39	3.76	0.52	8.21	-0.37	3.72
13.	Coromandel International	18.91	6.24	27.69	4.18	16.66	4.06	33.75	6.86	16.55	4.09	33.75	6.86
14.	Dalmia Bharat Sugar & In.	8.85	2.62	9.45	5.17	13.45	6.48	11.33	13.04	9.79	5.68	10.72	12.21
15.	EID-Parry (India) Ltd.	13.85	4.88	8.13	6.65	15.73	8.49	21.12	29.44	15.41	8.40	21.00	29.25
16.	Emansi Ltd.	23.17	14.23	23.31	7.22	47.17	6.26	31.70	3.83	8.90	3.47	31.70	3.83
17.	India Cements Ltd.	2.60	3.63	12.87	7.24	-12.98	21.98	11.71	8.63	-10.77	21.71	9.70	6.46
18.	Indian Oil Corpn. Ltd.	20.08	6.76	13.58	2.07	23.42	7.31	12.84	6.03	23.42	7.31	12.82	6.02
19.	Indo Rama Synthetics	13.51	5.68	7.60	8.87	19.04	11.39	2.12	17.48	14.20	8.58	2.28	15.06
20.	Induco Steel Ltd.	12.24	15.76	13.38	8.08	4.48	14.92	12.30	3.95	4.50	14.95	12.30	3.96
21.	Jain Irrigation Systems Ltd.	6.12	4.29	16.56	0.98	10.12	6.05	16.43	2.85	17.82	6.57	16.43	2.85
22.	JB Chemicals & Pharma.	22.68	4.23	14.13	4.56	21.36	0.80	25.26	23.63	21.36	0.80	25.26	23.64
23.	KLRF Ltd.	12.60	3.57	8.65	3.83	7.05	9.65	-0.10	16.87	7.04	9.65	0.33	14.74
24.	Marksans Pharma Ltd.	1.15	0.83	3.04	6.12	0.17	3.64	9.85	16.78	0.45	3.84	9.85	16.78
25.	Modi Natural's Ltd.	7.34	3.07	7.56	3.79	4.04	4.34	5.15	7.24	4.04	4.34	5.14	7.22
26.	Motherson Sumi Systems	28.15	7.82	21.31	3.21	30.51	7.43	26.41	6.47	30.07	7.43	25.31	5.63
27.	NCL Industries Ltd.	17.08	3.40	17.23	6.47	8.19	3.30	20.09	8.32	8.67	3.91	20.04	8.30
28.	Novopan Industries Ltd.	8.71	4.17	-23.28	37.23	0.60	0.31	-0.40	14.49	0.60	0.31	-3.91	5.45
29.	Permanent Magnets Ltd.	11.36	3.61	11.71	4.14	1.27	7.60	0.94	10.69	1.63	10.05	3.95	5.54
30.	Pfizer Ltd.	68.39	14.31	25.81	5.17	17.79	6.80	26.57	16.37	17.89	6.91	26.57	16.37
31.	Reliance Industries Ltd.	14.98	2.66	12.55	1.86	16.83	3.19	15.36	5.23	15.42	3.01	14.75	5.41
32.	Sangam (India) Ltd.	10.89	1.56	10.21	7.23	15.21	3.06	6.63	11.77	15.57	3.14	6.63	11.76
33.	Spentex Industries Ltd.	4.03	6.65	1.28	13.64	6.42	18.47	2.71	13.00	6.82	18.35	2.85	13.30
34.	Sterlite Technologies Ltd.	3.84	16.94	16.34	6.87	1.18	20.20	15.70	8.68	1.22	20.22	22.57	10.34
35.	Thermax Ltd.	21.78	12.46	45.82	9.92	14.57	6.89	27.29	9.00	15.03	6.77	27.29	9.00
36.	Uflex Ltd.	9.49	2.21	13.08	6.72	10.63	2.09	14.21	5.77	10.68	2.14	14.21	5.77
37.	United Breweries Ltd.	10.10	5.21	12.55	2.15	-1.55	15.40	10.89	3.35	-2.33	30.44	10.89	3.35
38.	United Spirits Ltd.	10.01	1.65	12.75	3.62	6.57	1.96	9.26	3.71	6.59	1.92	9.25	3.72
39.	Visaka Industries Ltd.	17.49	1.65	18.32	6.18	17.73	3.03	15.48	7.41	17.94	3.10	15.48	7.40

Source: Computed results based on the compiled & edited data from the financial statements of selected firms listed-CMIE-prowess package.

**Appendix B (III)**  
**Descriptive Statistics of Profitability of Manufacturing Firms in India in Pre-and Post-Merger Periods**

Sl. No.	Name of the firms	ROAR				ROITR				S-TAR				EPSR			
		Pre-Merger		Post-Merger		Pre-Merger		Post-Merger		Pre-Merger		Post-Merger		Pre-Merger		Post-Merger	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1	ACC Ltd.	0.08	0.07	-0.59	2.98	20.34	11.60	35.17	19.74	1.25	0.13	1.12	0.21	22.74	24.95	70.22	9.73
2	ADZ Foods Ltd.	3.80	1.36	54.33	7.32	14.13	1.86	17.06	3.51	-1.47	0.20	-0.62	0.78	1.39	0.77	6.56	1.75
3	Arcadia Cement	1.15	0.93	5.73	7.80	19.37	13.91	36.67	5.84	0.74	0.40	0.83	0.45	11.68	5.65	14.71	14.1
4	Avonies Ltd.	0.61	0.17	8.30	5.04	16.82	5.71	15.76	2.87	1.39	0.18	1.51	0.73	8.86	2.30	5.91	6.38
5	Avonit Ltd.	3.28	1.22	60.72	10.17	9.26	3.30	19.31	5.29	0.19	0.13	0.73	0.11	1.86	2.51	1.68	7.11
6	Auroclanco Pharma	0.55	0.30	19.89	11.96	15.43	6.14	19.30	4.56	0.92	0.21	0.62	0.04	25.49	12.08	38.25	51.0
7	Balshon Ltd.	7.63	7.07	17.44	0.87	4.74	19.79	7.78	10.10	1.76	0.51	1.19	0.13	1.55	4.75	0.67	7.18
8	Biprower Ltd.	0.79	0.47	5.91	2.36	19.35	9.81	16.28	10.86	2.11	0.21	1.76	0.78	6.43	6.96	7.56	13.1
9	Blue Star Ltd.	9.27	0.96	46.22	13.42	32.07	4.39	46.16	33.54	4.62	0.55	5.02	0.9	19.79	4.97	14.00	13.5
10	BST Ltd.	0.59	0.54	57.69	5.01	10.39	4.02	7.40	4.76	1.56	0.69	1.37	0.15	1.15	1.08	0.08	5.55
11	Capita Food Lab.	0.91	15.98	13.17	3.92	5.21	10.99	25.85	17.19	1.36	1.17	1.72	0.13	0.19	2.25	2.62	1.63
12	Chromatic India Ltd.	0.17	5.69	82.51	12.88	-1.28	10.18	-9.00	13.56	0.92	0.15	0.73	0.18	0.99	4.51	-3.20	1.24
13	Connaught Intern.	0.6	0.21	7.51	1.77	23.34	6.36	51.94	1.63	7.02	0.39	7.46	0.06	17.61	5.09	36.60	8.8
14	Dabur Eshan Sugar	0.40	0.13	11.54	5.67	10.70	3.66	10.32	5.46	0.56	0.05	0.55	0.06	30.99	7.06	15.96	17.5
15	DOD-Perry (India)	0.71	0.49	8.66	3.03	16.17	3.63	9.42	7.49	1.41	0.17	0.64	0.09	26.02	18.61	22.95	33.4
16	Eaton Ltd.	21.30	5.23	52.46	16.80	25.55	11.13	15.21	6.22	0.64	0.11	1.35	0.16	15.83	11.23	16.57	5.4
17	India Cement Ltd.	-0.15	0.33	13.89	0.71	3.05	4.72	5.77	7.35	0.38	0.66	0.58	0.05	-3.65	6.66	17.74	7.50
18	Indira Oil Corp.	0.76	0.27	27.72	7.32	26.04	7.86	9.68	7.35	5.17	0.14	3.79	0.13	51.99	17.39	34.47	16.5
19	Indo Rama Syntex	4.60	2.45	37.39	3.73	13.95	5.99	8.46	9.82	1.24	0.27	1.98	0.15	6.83	4.51	1.10	5.57
20	Indoco Steel Ltd.	1.22	11.25	87.78	8.20	15.04	16.10	11.40	5.44	1.86	1.81	1.27	0.27	0.56	1.59	7.29	5.01
21	Indo Trigritex	0.28	0.15	18.47	16.38	8.67	5.54	22.55	2.12	0.77	0.22	0.94	0.05	5.32	2.81	17.13	11.6
22	JB Chemicals	1.57	0.13	7.74	7.54	25.75	5.11	75.41	5.44	1.73	0.10	0.85	0.17	76.77	16.72	9.80	5.70
23	KLR Ltd.	1.76	2.60	-62.32	-1.37	17.08	5.33	19.34	4.78	2.02	0.42	1.93	0.45	1.56	5.17	0.22	6.89
24	Mishra Pharma	1.95	7.25	0.97	6.23	14.75	11.50	2.43	4.16	1.04	0.27	0.62	0.92	1.09	8.54	-2.05	3.07
25	Modi Naruka Ltd.	15.75	19.97	26.79	8.47	9.82	4.64	-0.17	5.29	5.14	1.31	3.35	0.6	1.51	1.61	1.86	5.05
26	Motherson Syntex	10.84	7.46	19.88	9.87	35.85	8.95	25.56	4.97	1.81	0.45	1.57	0.16	7.89	5.91	5.18	-2.59
27	NCT Industries Ltd.	2.14	0.79	61.18	9.06	21.21	4.32	20.73	8.85	1.31	0.10	0.86	0.16	1.37	0.61	8.13	5.12
28	Novopac Industries	4.06	1.92	18.47	26.36	9.76	5.14	36.76	39.98	0.85	0.12	0.94	0.22	2.99	1.76	-3.05	10.2
29	Pennacort Magnets	0.54	1.82	17.61	1.14	15.69	5.53	13.51	7.72	1.64	0.42	1.67	0.45	0.25	1.29	0.22	1.79
30	Pitover Ltd.	1.15	0.42	51.86	8.48	35.52	7.67	25.26	7.99	1.81	0.15	0.97	0.14	2.72	1.09	7.94	2.76
31	Reliance Industries	0.79	0.18	51.32	15.07	15.95	3.03	15.27	2.32	0.99	0.11	1.07	0.27	1.22	1.57	8.07	5.16
32	Sargam (India)	4.50	0.57	51.28	15.0	12.80	1.91	14.28	10.75	1.77	0.21	1.07	0.1	1.87	1.56	1.07	6.68
33	Spencer Industries	-5.84	12.01	8.85	12.11	6.88	12.46	2.20	11.56	1.13	0.78	1.61	0.73	0.39	5.52	-3.24	5.53
34	Starlite Technologies	1.08	9.06	53.78	34.30	-5.29	20.93	27.75	6.69	0.66	0.44	1.64	0.3	1.57	12.31	8.74	6.21
35	Thermus Ltd.	0.80	0.25	9.47	2.77	21.84	12.39	46.87	8.97	1.89	0.79	3.79	0.57	16.93	6.21	23.15	8.79
36	ULF Ltd.	1.86	3.16	13.11	3.75	10.12	2.03	16.00	7.02	0.89	0.10	0.92	0.26	7.39	1.13	19.81	11.1
37	United Breweries	0.42	1.99	35.92	11.55	10.13	5.06	16.26	3.22	1.19	0.46	1.27	0.26	-4.24	17.92	3.75	1.37
38	United Spirits Ltd.	0.19	0.04	34.56	9.52	17.87	7.78	15.45	4.34	1.47	0.39	0.73	0.14	4.34	1.77	29.76	1.81
39	Vsaka Industries	0.63	0.01	14.23	3.28	19.72	1.47	25.28	7.79	1.22	0.04	1.53	0.18	10.93	4.35	22.69	11.5

Source: Computed results based on the compiled & edited data from the financial statements of selected firms listed in CMR process package.