

IMPACT OF MERGERS ON COMPETITION IN THE INDIAN MANUFACTURING: An Assessment

Beena Saraswathy

Working Paper

188

March 2016

ISID

Institute for Studies in Industrial Development
New Delhi

**Impact of Mergers on Market Competition
in Indian Manufacturing:
An Assessment**

Beena Saraswathy

ISID

Institute for Studies in Industrial Development

4, Institutional Area, Vasant Kunj Phase II, New Delhi - 110 070

Phone: +91 11 2676 4600 / 2689 1111; *Fax:* +91 11 2612 2448

E-mail: info@isid.org.in; *Website:* <http://isid.org.in>

March 2016

ISID Working Papers are meant to disseminate the tentative results and findings obtained from the ongoing research activities at the Institute and to attract comments and suggestions which may kindly be addressed to the author(s).

CONTENTS

<i>Abstract</i>	1
I. The Relationship between Mergers and Competition	2
II. A Review of Relevant Studies	4
III. Data and Methodology	8
IV. The Results: Disappearance, Survival and Invisibility	9
V. Concluding Observations	22
References	24

List of Figure(s)

<i>Figure 1</i>	Equilibrium with Mergers	3
<i>Figure 2</i>	Market Share: 1989 and 2009	10
<i>Figure 3</i>	Market Power of 1989 and 2009 “Majors”	11
<i>Figure A1</i>	With and Without Merged Firms	34

List of Table(s)

<i>Table 1</i>	Selected Studies on Mergers and Concentration	6
<i>Table 2</i>	Disappearance Rate of Merged Firms (1988-89 to 2008-09)	13
<i>Table 3</i>	Disappearance, Survival Probability and Firm Size at the Time of Merger	15
<i>Table 4</i>	Impact of Mergers on Disappearance and Market Concentration (C4 and C10 Together)	16
<i>Table 5</i>	Impact of Cross-border Mergers on Disappearance and Market Concentration (C4 and C10 Together)	18
<i>Table 6</i>	Market share of Leader Ten Firms in the Pharmaceutical Sector	21
<i>Table A1</i>	Market share of 1989 and 2009 Leaders	27
<i>Table A2A</i>	Concentration Levels for Leading Four with and without Merged (and Cross-border merged) Firms	28
<i>Table A2B</i>	Concentration Levels for Leading 10 with and without Merged (and Cross-border merged) Firms	29
<i>Table A2C</i>	Concentration Levels for Leading Four with and without Merged Firms	30

<i>Table A2D</i>	Concentration Levels for Leading 10 with and without Merged Firms	31
<i>Table A3</i>	Disaggregated Level of Merger Activity (Number of Firms)	32
<i>Table A4</i>	Changes in Concentration: Disaggregated Level	33

Impact of Mergers on Market Competition in Indian Manufacturing: An Assessment

*Beena Saraswathy**

[Abstract: *The Competition Commission of India (hereinafter the “Commission”) took over the functions of the MRTP Commission from 2009 onward, which marked a paradigm shift in the competition regulation in India. The latter had been dealing with competition issues in India for more than three decades. In general, the approval of combinations has been distrusted in the academic literature, mainly due to its potential to create or strengthen the market power of firms, which in turn has an adverse impact on consumer welfare. In this study, our attempt is to examine the role of mergers in changing the level of market competition across various industries since it reduces the actual number of firms in the industry, which in turn is likely to allow the merged entity to strengthen and derive benefits from increased market power. We have adopted various indicators such as disappearance rate and survival probability to examine the effect of mergers. In the Indian context, it is the first attempt to empirically examine the impact of mergers on competition across sectors using a long period database. Our study found that in most of the merger intensive sectors, the disappearance rate was significant to influence market competition. However, in the case of surviving firms, the increase in market shares is not sustained in the long run as expected, which was mainly due to the absence of synergy creation during the post-merger period.]*

JEL classification: G34, L4, G38, D4

Key Words: Mergers, Acquisitions, Restructuring, Antitrust Issues and Policies, Government Policy and Regulation, Market Structure and Pricing

* Assistant Professor, Institute for Studies in Industrial Development (ISID), 4, Institutional Area II, Vasant Kunj, New Delhi 110070. Email: vsbeena@gmail.com; sbeena@isid.org.in

Acknowledgments: This study is the revised version of a chapter of the Ph.D. Thesis submitted to Jawaharlal Nehru University (Centre for Development Studies), New Delhi. My heartfelt thanks to Prof. P. Mohanan Pillai (supervisor), Prof. K.K. Subrahmanian (living in our hearts!), Dr K. Pushpangadan, Dr P.L. Beena, Prof. K.J. Joseph Prof. Sunil Mani, and Dr. K.N Harilal for the comments at various stages of this study. Comments by Dr Kirti Mehta (Ex. Cartels Director, Directorate General for Competition , European Commission), Augustine Peter (Member, Competition Commission of India), Adv. Samir Gandhi (AZB Partners) and others during the First National Conference on ‘Economics of Competition Law’ organised by the Competition Commission of India also enriched the study. My sincere thanks to the reviewers, Prof. K. S. Chalapati Rao and Dr. Satyaki Roy for the insightful comments and suggestions.

In this study, our attempt is to understand the role of mergers in changing the market competition of different industries since mergers are expected to reduce the actual number of firms in the industry, which, in turn, is likely to allow the merged entity to strengthen and derive benefits from increased market power. We have also made an attempt to incorporate the trade effects of mergers, which has not been analysed much in the Indian literature on mergers and competition. This study consists of four sections. After introducing the relationship between mergers and competition, the second section deals with important studies undertaken and the methodological issues, while the third section summarises the major findings from the analysis. This is followed by concluding observations in the final section.

I. The Relationship between Mergers and Competition

The adverse effect of mergers on consumer welfare arises on two grounds. First is due to the *unilateral effects* and the second is through the *coordinated* or *pro-collusion effects*. In the first case, merger will allow firms to unilaterally increase the prices, which reduces consumer surplus and increases producer surplus. Here, there is divergence of views among economists. Those who consider “price” as the decision-making variable argue that it will increase the price of insiders as well as outsiders. And those who favour “quantity” as the decision-making variable argue that the insiders’ production will decline while that of the outsiders will increase. However, both will reduce consumer welfare since the net increase in outsiders’ output will be lower than the reduction in insiders’ output. The coordinated effects imply that mergers create favourable conditions for collusion. Collusive outcomes, which might not have been possible during the pre-merger period, become possible during the post-merger period mainly due to a reduction in the number of firms (Motta, 2004). In this context, we have used Stigler’s (1950) diagrammatic explanation to bring out the impact of mergers on competition.

1.1 Monopoly and Oligopoly Formation and Merger

Stigler (1950) discussed about the existence of monopoly and oligopoly, when merger occurs. Stigler’s model is based on four assumptions: (1) the long-run average and marginal cost of production are equal for all firms; (2) entry of new firms is free, though not necessarily inexpensive; (3) demand for output of the industry is stable, and (4) the specialised resources employed in the industry are indestructible (fixed factors). Under these conditions, is it possible for mergers to create monopoly power? This is the central question that Stigler attempted to answer. And, his answer is “they may occur,” which simply says the outcome is not fool proof. Let us consider his major argument.

Consider an industry which satisfies all of the above-mentioned assumptions and consists of numerous identical firms which are in the long-run competitive equilibrium. Each firm will have a short run cost curve as shown in *Figure 1*. Initially, the firm is in equilibrium at “e”, where MC equals MR, and is producing OA output at OB prices. At this level, the firm

the basis of the above predictions, our study intends to examine the disappearance of firms through mergers and its consequent influence on the market power of firms. Before discussing the empirical estimation, we shall review the major contributions made to the merger-concentration studies and the measures used by them.

II. A Review of Relevant Studies

2.1 Studies on the Direction of Relationship

It is important to note that different schools of thought emerged on the possible effect of competition on market structure. This has a bearing on the discussion on the relationship between merger and competition. First is the Structure, Conduct and Performance (SCP) paradigm developed by the traditional Harvard School in the 1950s (Structuralistic view). It says that structural remedies are of great importance as their central message is that *structure influences conduct and conduct, in turn, affects performance*. They emphasised that Competition Law (CL) has an important ‘interventionist’ role in curbing market power and believed less in market mechanism. In contrast, in the 1970s and 1980s, the Chicago school revolutionised the anti-trust thinking—that there is no need to worry much about market concentration, since market is a remedy for curbing market power. They pointed out that government intervention is usually *inefficient*. Accordingly, CL should not be too “interventionist” as emphasised by the Harvard school (Dhall, 2007). The second relates to the Chicago school, which argued that mergers should be allowed—even if it reduces consumer surplus in the short run—as the overall welfare will be higher. Defenders of this view argued that many consumers are also shareholders of the firm and therefore are anxious about the profitability of the firms in which they are investing. Demsetz (1973) pointed out that large firms with their superior efficiency may own more market share and earn higher profits. Hence, a high correlation between profit and market concentration may not be a true indicator as increased market power may be the outcome of higher efficiency generation. Thus, concentration should not be treated as bad, and mergers should be allowed. The post Chicago school argued that consumer benefits and efficiency should be the criteria. Farrel and Shapiro (1990) argued that instead of calculating the overall effects, it is better to measure the net external welfare, that is, the joint welfare of consumers and non-participating firms (Glais, 2000). The studies dealing with mergers and concentration were positioned mainly in the context of the initial merger waves that occurred in the USA and the UK. There have been five such waves in USA and four in the UK³. Most of the early literature on mergers focused on the first three and two waves that occurred in the USA and the UK respectively. It is estimated that around 1800 firms disappeared and approximately 71 formerly competitive industries converted into virtual monopolies

³ Merger waves in USA are: 1. 1890s–1905, 2. 1920s–1930, 3. 1950s–mid 1970s, 4. 1980s and 5. 1990s. In the case of UK it is: 1. 1920s small wave, 2. 1960s–1970s, 3. 1980s–1989 and 4. 1990s (see Owen, 2006 for details).

during the first merger wave of USA. Around 12000 firms disappeared during the second wave. In this context, there is a vast literature which has studied the implication of mergers on market concentration. This includes Weston (1953), Federal Trade Commission Report (1948), Cook (1954), Nutter (1954), Stigler (1956) and so on. We shall discuss some of these in the following paragraphs.

Weiss (1965), in his case study of six industries for the period 1920–1958, found that merger is an important tool in determining market concentration, when more majors⁴ are considered. At four- or twenty-firm level, mergers are more likely to represent “rationalisation” and less likely to create monopoly. It seems certain that, beginning from the 1920s, most mergers in these industries can at the least be defended as harmless and socially desirable as only sub-optimal plants were subjected to mergers. Taking a sample of 1956–57 mergers, Ijiri and Simon (1971) observed that mergers and acquisitions do not greatly affect the Pareto curve slope⁵. According to their study, the overall growth of a firm encompasses both internal growth (that is due to mergers and acquisitions⁶) and external growth (due to growth outside the firm). At the sectoral level, Desvouses and Piette (1979) studied the impact of mergers in the context of the changing concentration levels of petroleum sector during 1955–1975. It found that concentration is more likely to increase at eight- or twenty-firm levels and the role of mergers increases as more leaders are included. For example, out of the total change of concentration 2.2, the contribution of merger was 1 for the period 1955–60 for four major firms. Similarly, for the period 1960–65, the contribution of merger was 0.3 out of the total change of 3.5. When we consider 20 major firms, the contribution of merger becomes 2.5 and 4.9⁷ of the total change of 3.1 and 4.8 per cent respectively for the two time periods. This result is almost similar to that of Weiss’s (1965) study.

Even though the UK merger waves lack a long history like the US case, there were four merger waves in the UK. Most of the studies concentrated on the first and second waves. Hart and Prais (1956) pointed out that there was an increase in concentration in the quoted segment of manufacturing and mining sectors during 1885–1939, which declined during war time but again increased between 1950 and 1955 (Hart, 1957; Hart, 1960). However, the classic article of Hart and Prais (1956) reached the conclusion that the impact of mergers on concentration is not significant. This generated a debate with Hannah and Kay (1977). They found that mergers play an important role in changing the levels of concentration. The findings of this study are similar to that of Aaronovitch and Sawyer (1975), which pointed out that about one-fourth to one-third of the growth is through acquisitions. Large firms

⁴ “Majors” means top ranking or leading firms.

⁵ In other words, not much increase in concentration.

⁶ This definition of internal growth is given by Ijiri and Simon. However, in our study we define growth by mergers and acquisitions as external growth, as is done by other studies.

⁷ Here, the contribution of merger is higher than that of the total change. It is because of the presence of displacement factor, which exerts negative pressure on the total change in concentration.

recorded better survival prospects compared to small firms, and mergers and acquisitions have a substantial role in increasing concentration. Growth of firms is not systematically related to the initial size distribution. Thus, this study is in line with the argument made by Ijiri and Simon (1971). However, another study by Utton (1971) says that concentration has increased in industries, largely due to the tendency of the large firms to grow at a faster pace than the small firms⁸. An important part of change in concentration is due to mergers.

In the case of Germany, the first systematic analysis of the relationship between mergers and concentration is credited to Müller (1976) for the period 1858–1971. This study decomposed the changes in concentration into five elements—internal growth, displacement, mergers, exit, and entry. This framework has been used by Weiss (1965), Desvouses and Piette (1979), and others. The study found that merger is a dominant factor in changing the four firm concentration ratio while at the eight firm level, both internal growth and mergers are important. However, sectorwise there are small variations. A summary of the other studies is given in *Table 1*.

From the studies cited above, we can infer that there is wide variation in the findings of different studies owing to differences in the samples, techniques used, time period and the underlying motives of merger. It points to the need for studying the events not only at the aggregate level, but also separately in the context of industry specific deals. However, from these studies, it is clear that merger is an important factor in determining the structure of different sectors of the manufacturing industry in different countries at different time periods. Moreover, in the Indian case, we have seen that the occurrence of merger to a notable extent is only a recent phenomenon, more specifically of the 1990s (see Beena, S 2010). Thus, our initial phase of merger is comparable to the fourth and fifth merger waves of UK and USA. Consequently, the literature on mergers is also a recent one. Existing studies have not dealt with this issue in detail. Here, our attempt is to understand the impact of mergers on the structure of the Indian manufacturing sector since 1990s in light of the available information. Next, we shall discuss the standard measures of market competition, which are important in the context of increasing mergers.

Table 1: Selected Studies on Mergers and Concentration

<i>Study</i>	<i>Period</i>	<i>Country</i>	<i>Findings</i>
<i>Case study approach</i>			
Moody (1904)	1887-1904	USA	Substantial increase in market control
Livermore (1935)	1887-1904	USA	Used Moody's list of deals. Found that half of the deals formed during the first merger movement were failures and many of them obtained no significant increase in market power.
Evely and Little (1960)	1951	UK	In most of the cases, mergers have been responsible for high market concentration in different sectors.
Hart, Utton,	1958-	UK	Impact varies; internal and external effects have equal impact on

⁸ In other words, it is the differential growth rates.

<i>Study</i>	<i>Period</i>	<i>Country</i>	<i>Findings</i>
Walshe (1973)	63		concentration
Hart and Clark (1980)	1958-68	UK	Half the increase in average product concentration is due to mergers.
Walshe (1974)	1958	UK	Only in 11 out of the 32 products concentration increased due to mergers. It is an important weapon to prevent subsequent erosion of market power.
<i>Correlation based analysis between Merger and Concentration</i>			
George (1972, 1975)	1958-68	UK	Those sectors which experienced sharpest increase in concentration also tended to display big reduction in the number of firms which is mainly due to mergers. The second article found that merger predominant sectors experienced larger degree of concentration.
<i>Size distribution, internal growth etc.</i>			
Hart and Clark (1980)	1935-75	UK	Even though the merger variable is significant, its contribution in changing overall concentration is low.
Hart and Prais (1956)	1896-1950	UK	Used variance of log size. Only a small proportion of the increase in concentration is due to mergers.
Utton (1971)	1954-75	UK	Used variance of log size. Merger is a dominant factor leading to concentration in several industrial groups.
Hannah and Kay (1977)	1919-73	UK	Separated into four time periods and found that merger is mainly responsible for increasing concentration.

Source: Compiled from Curry and George (1983) and other studies

2.2 Measurement of Competition

When we talk about merger analysis, a relevant question is how to measure the possible effects of mergers on competition. Measurement of competition itself has been one of the seriously contested topics in the industrial organization literature. Competition can be viewed as either static or dynamic. Static competition is a traditional way of looking at competition, whereas dynamic competition refers it as a process. According to Baldwin, J. and Gorecki (1998), at the conceptual level, these two approaches may not disagree as to what constitutes highly competitive markets; rather they differ on practical measurement. Baldwin, J. and Gorecki (1998) and Curry and George (1983) clearly bring out the debate centred on measurement issues⁹. The notable measures of competition have been the K-firm Concentration Ratio, Hirschman-Herfindahl Index, Variance of Logarithms of Firm Size, Price-Cost Margin (PCM) and Relative Profit Difference (RPD). The first four are the most popular, while the last one is of recent origin. However, there is still a lack of consensus among scholars on the best measure of concentration. Realizing the fact that all concentration measures suffer from some kind of inadequacy, attempts were made to set forth the necessary properties of a concentration measure (see Hall and Tideman, 1967; Hannah and Kay, 1977). The fourth axiom of Hannah and Kay argues that *mergers should increase concentration*. However, there is disagreement among economists regarding this

⁹ See Baldwin, J. and Paul Gorecki (1998), and Curry and George (1983) for a detailed discussion of different measures.

axiom, which is discussed in the literature section in detail. Hart (1979) and Ijiri and Simon (1971) argued that it may not be necessary under all circumstances. According to Stigler (1950) and Hart (1975), merger between intermediate firm size may lead to increased competition for the larger existing firm because it will lead to the formation of more cohesive oligopoly group and thus more effective collusive behaviour. Thus, the outcome may be determined by a number of other factors such as actual number of firms in the industry and the size distribution of firms following mergers (Curry and George, 1983). In addition, the implication of cross-border deals on market structure is also missing in the literature. Curry and George, rightly pointed out that “[n]o concentration measure will succeed in capturing every conceivable aspect of business behaviour. The best that can be done is to devise sensible measures of concentration and exercise caution in using them... Given that no concentration measure can be expected to reflect every aspect of firm’s behaviour, some exceptions and anomalies have to be tolerated.”

III. Data and Methodology

From the preceding discussion, it is clear that measurement issues are complex. We have two sets of firms—the *targets* or *disappeared firms*, which lose their identity after mergers as well as the *bidders* or *surviving firms*, which continue to exist after mergers. Both sets of firms are important in the merger analysis. The disappeared firms are important in determining the market structure since the “disappearance” from a particular sector may lead to changes in the existing structure of that particular industry. The surviving firms, being the receivers of the disappeared firms, are expected to contribute to the increase in market shares owing to the absorption of disappeared firms into them (invisibility). In our analysis, we have focused on the disappearance rate, survival probability and the effect of invisibility on the dominance of leaders. Being aware of all limitations, we have used the largest four (C-4) and ten firms’ (C-10) market shares¹⁰ to understand the market power of the *disappeared* firms. We have selected these ratios considering the data availability as well as the applicability of these indicators in the context of mergers. For *surviving* firms, we have used two static statistical measures: market shares and ranking. We have followed the two-digit level of Standard Industrial Classification (SIC) 2004 since the number of mergers turns out to be quite low if the analysis is undertaken at product level. However, this is feasible in some industries even at the four-digit level due to the high intensity of deals. We have taken drugs and pharmaceuticals sector separately (at four-digit level) since a relatively large number of deals have been struck in this sector¹¹. Nevertheless, understanding the fact that the two-digit level analysis is not good for market concentration analysis, we have also carried out product level analysis for important sectors at a later stage. Market shares are calculated based on sales figures. The major

¹⁰ There is no exact rule to decide upon the actual number of firms in the n-firm concentration ratio. We have taken the leading four and ten firms.

¹¹ Thus, the chemical sector in the study excludes pharmaceutical firms.

problem with using this method is that it is not adjusted for direct imports. Data on imports given by PROWESS, CMIE relates to raw materials and other such goods and services purchased by firms, which is different from the final goods import. Hence, even if we aggregate the imports at the sectoral level, this data will not serve our purpose. Since we do not have information on this, it remains as a limitation imposed by lack of data. Therefore, we have limited the analysis to mergers alone. The data will also capture the effect of the entry of new firms.

The Data: The period of analysis for our study is 1988–89 to 2008–09. This is in accordance with the firm level data available from PROWESS, CMIE for a longer time period. We understand that the PROWESS database is not a completely reliable source for understanding the true market structure. However, like other studies, we, too, depend on this source owing to the non-availability of superior firm level data sources. We have not used the Size and Market Shares (published by CMIE) since we are dealing with additional firm level aspects for a longer time period, for which it is not a reliable source. It covers only a selected number of top firms from each sector. The data is unbalanced panel as the disappearance through consolidation is against the balanced panel form of data.

IV. The Results: Disappearance, Survival and Invisibility

4.1 Old and New Leading Firms

To start the analysis, we provide a general picture of the overall behaviour in the concentration ratios for the manufacturing sector. This is only the beginning. A detailed analysis of disappearance and survival will follow in the subsequent sections. We have examined the four- and ten-firm concentration ratios for various sectors in 1988–1989 and 2008–2009. While there was not much consolidation activity during 1988–1989, the recent period, i.e. 2008–2009, witnessed a large number of deals. It can be seen in *Figure 2* that, broadly, there has been a decline in the concentration ratios (C4 and C10) in the recent years compared to 1988–1989, except for chemicals. A slightly increasing trend in four-firm concentration ratio is also visible in the case of food products (see *Figure 2*). This raises confusion about what is happening to the shares of the old leading firms. Will the older tigers be able to continue their dominance or will the new entrants overtake them? After considering these questions, we will analyse mergers.

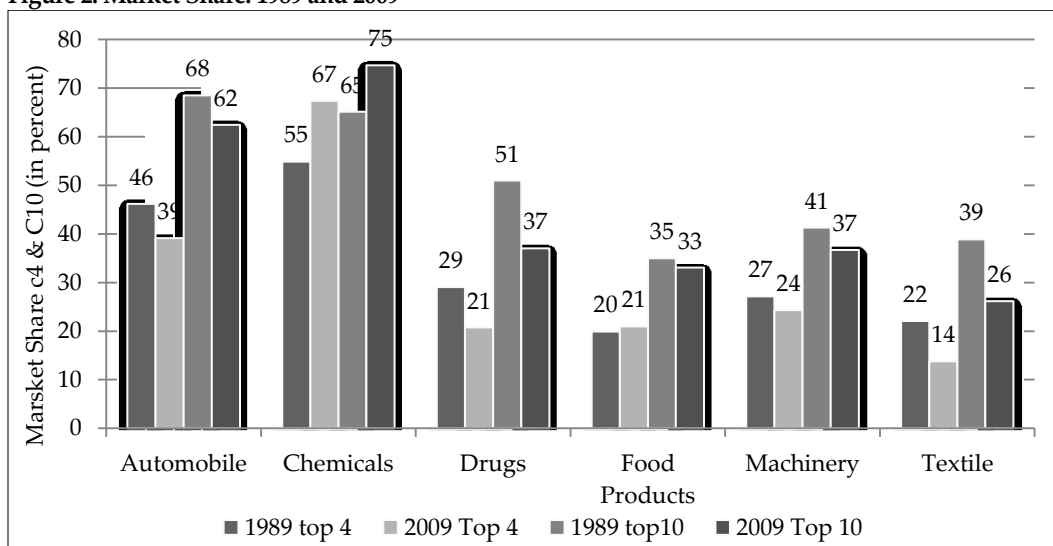
In order to understand the market shares of the new and old leaders, we have examined the market shares of the 1989 and 2009 leaders, which led us to the following observations¹².

The 1989 leaders stagnated or lost their market share substantially whereas those of 2009 gained market power. In all industries, except chemicals, a similar pattern can be noticed.

¹² Unbalanced panel has been used for this analysis, since we are dealing with the mergers. Total number of firms from each sector used for this can be seen from Appendix Table 1.

In some industries, the firm structure itself is undergoing remarkable change. In some other cases, even though the 1989 leaders still function at their previous pace, they are unable to catch up with the present leaders due to the comparatively faster rate of growth of the new leaders. The details can be seen from Figure 3 and *Appendix Table A1*.

Figure 2: Market Share: 1989 and 2009

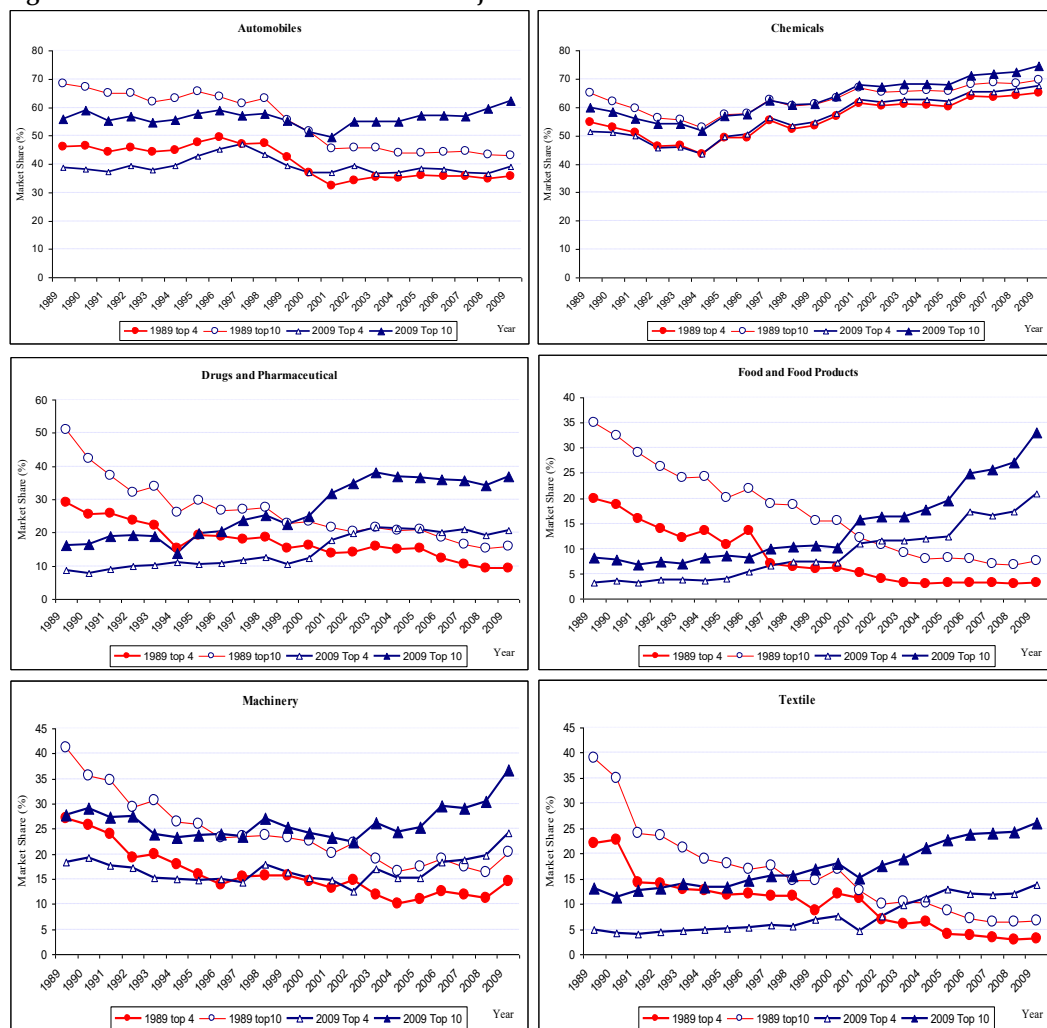


Source: Calculated from PROWESS, CMIE

Both the 1989 and 2009 leaders increased their shares in the chemicals sector. However, the growth rates of new leaders outweighed that of the old leaders. In fact, the new leaders were not driven by new entrants, but by the repositioning of the existing low-ranked firms. Out of the five new leaders, four were already in existence. In the automobile sector, the 1989 leaders lost their shares considerably, and were replaced by three new entrants—Hyundai Motor India Ltd (1996), Bajaj Auto Ltd (2007), and Honda Sael Cars India Ltd (1995). However, it is to be noted that the shares of the leading four firms in this sector are less affected because three of them—Tata Motors, Maruti Suzuki, and Mahindra & Mahindra—are still in the top-four list. Shares were lost to the subsequent leaders, that is, from the top five firms onward. The specialty of firms in the drugs and pharmaceuticals sector is their high mobility. Seven out of the ten leaders are new in the 2009 leaders list. Like in the chemicals sector, here, too, it was not new entries; only a repositioning of firms occupying the lower ranks. In the food and food products sector as well as the textiles sector, eight out of ten leaders were new in the list. Here, the replacement is not caused by repositioning of the existing low-ranked firms; rather, it is because of the entry of new firms in the 1990s. In the food sector, four leaders were new entrants, while it was five in the textiles sector. This is the reason for the “X” shaped graphs for new and old leaders in both the sectors, which clearly indicates “loss” for old and “gain” for new leaders (see Figure 3). Even though the machinery sector experienced restructuring, it was a repositioning of the

existing firms rather than the entry of new firms. Six firms were new in the list, out of which only one was a new entrant. Among the above-mentioned sectors with new entrants, the entry of foreign firms replaced domestic leadership only in the automobiles sector. New entrants in sectors such as food, textiles and machinery were the domestic firms.

Figure 3: Market Power of 1989 and 2009 “Majors”



Source: Calculated from PROWESS, CMIE

Now the question is: What happened to the old leaders? Did Have they completely disappeared from the market at all or do they still exist? It is evident that many of the 1989 leaders have disappeared because of mergers. In the pharmaceutical sector, three such instances are noticeable. They are Parke-Davis (India) Ltd (7th ranked); Burroughs-

Wellcome (India) Ltd (8th rank); and SmithKline Beecham Pharmaceuticals (India) Ltd (10th rank). All of these are foreign firms. In the food and food products sector also, three such deals also occurred in the food and food products sector, and even with the first- ranked number one firm disappeared disappearing in this the process. Brooke Bond Lipton India Ltd (1st rank); Shaw Wallace & Co. Ltd (3rd rank); and McDowell & Co. Ltd (9th rank) were the targets in this sector. In the chemicals sector, the case of Indian Petrochemical Corporation Ltd (1st rank) is another example. A closer examination of this process leads us to the fact that it is not disappearance, but invisibility for the survival of the best, in the process of acute competition in the era of market regime. These firms are absorbed by the surviving firms (mostly the leaders), which leads to increased market concentration. As discussed earlier, mergers are expected to reduce the number of firms in the industry, which may result in increased market concentration unless it has been overtaken by a proportionate entry of new firms in the industry. Thus, the number of firms in the industry is an important determinant of the prevailing market structure. In order to understand the effect of mergers on the number of firms, we have calculated the disappearance rate and survival probability for different sectors. This technique has been used by Ijiri and Simon (1971). Disappearance Rate is defined as the total number of firms that disappeared because of mergers divided by the total number of firms in the industry. It is to be noted that the exit of firms may be attributed to a number of reasons other than mergers. Here, we are considering exit through merger alone. Survival Probability is the total number of firms in the industry minus number of firms that disappeared due to mergers divided by total number of firms in the industry. Thus, if the value of survival probability is near to one, it means that survival probability is high, whereas, if the value of disappearance rate is near to one, it indicates that the survival rate of firms in that industry is very low¹³.

From *Table 2*, it can be seen that a large number of firms from the manufacturing sector have disappeared due to mergers. It amounts to 660 firms for manufacturing as a whole, which make up seven per cent of the firms reported. Sector-wise, in certain sectors such as petroleum and petroleum products, it is as high as 10.5 per cent. In this sector, the ratio is high because of the fewer number of firms in the sector as a whole. For drugs and pharmaceuticals sector, it is 9.2 per cent, chemicals 8.5 per cent, food and food products 8.3 per cent, and non-metallic minerals 8.1 per cent. It is to be mentioned that the disappearance rate will be even higher if we take into account only those firms that are currently in operation in the respective sectors. We have taken all firms—irrespective of their disappearance due to other reasons—for calculating the total number of firms in the industry. In addition, there have been a substantial number of acquisitions, which are not covered in the CMIE list. Even without these, the disappearance rate was substantial.

¹³ To illustrate, when survival probability equals to one, it implies that the number of surviving firms are equal to the number of firms in the industry and vice versa for disappearance.

Table 2: Disappearance Rate of Merged Firms (1988-89 to 2008-09)

<i>Year</i>	<i>Automobiles</i>	<i>Chemicals</i>	<i>Drugs and Pharmaceutical</i>	<i>Food</i>	<i>Footwear</i>	<i>Machinery</i>	<i>Metals</i>	<i>Non-metallic</i>	<i>Paper</i>	<i>Petroleum</i>	<i>Rubber Plastic</i>	<i>Textiles</i>	<i>Wood & Products</i>	<i>Total</i>
1989	3.1	5.0	8.1	5.1	0.0	3.8	3.0	5.9	8.3	5.9	6.6	1.2	6.3	4.3
1990	1.9	0.8	0.0	1.1	0.0	1.7	0.5	2.2	0.0	0.0	0.0	0.0	0.0	0.9
1991	0.0	0.6	0.0	0.0	0.0	0.3	0.4	0.0	1.3	0.0	1.0	0.0	0.0	0.3
1992	0.0	0.6	1.6	1.1	0.0	2.0	0.0	0.0	0.0	0.0	1.9	1.0	0.0	0.9
1993	0.6	0.5	0.6	2.6	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.5
1994	0.5	1.1	0.5	1.5	2.3	1.5	0.7	1.1	0.0	0.0	1.0	0.4	0.0	1.0
1995	0.0	0.8	1.4	0.0	0.0	1.2	1.0	0.5	0.0	0.0	0.0	0.5	0.0	0.6
1996	1.4	0.2	1.4	0.9	0.0	0.9	1.2	0.5	0.0	2.0	0.0	0.2	0.0	0.7
1997	0.9	0.5	1.2	1.0	0.0	0.7	1.3	1.1	0.0	0.0	0.0	0.8	0.0	0.7
1998	0.4	0.9	0.7	1.3	0.0	0.3	0.4	0.6	0.0	0.0	0.4	0.8	0.0	0.6
1999	0.0	0.8	0.7	1.4	0.0	0.8	1.0	0.5	0.0	2.0	1.1	0.4	0.0	0.8
2000	0.9	0.9	2.7	2.0	1.9	0.7	0.3	0.5	0.5	0.0	0.4	0.5	0.0	0.9
2001	0.6	0.9	2.0	2.2	0.0	0.7	0.5	1.0	2.1	7.3	1.8	0.2	0.0	1.1
2002	0.7	0.7	2.6	0.9	0.0	0.8	0.8	1.0	0.0	0.0	0.7	0.5	0.0	0.8
2003	0.6	0.6	0.3	0.3	0.0	0.6	0.4	0.0	0.4	0.0	0.6	0.5	0.0	0.4
2004	0.6	1.2	1.0	0.5	0.0	0.4	0.8	0.8	0.7	1.4	0.3	0.8	0.0	0.7
2005	0.8	2.0	0.3	1.0	0.0	1.2	0.3	1.2	0.3	1.4	0.5	0.8	1.9	0.9
2006	1.7	0.3	0.8	0.0	0.0	0.9	0.3	1.2	0.7	0.0	0.0	0.4	0.6	0.5
2007	1.9	0.7	0.5	0.5	0.0	0.3	0.6	0.8	0.3	1.4	0.6	0.3	0.0	0.6
2008	0.3	0.4	0.3	0.3	0.0	0.6	0.3	0.9	0.4	1.4	0.0	0.1	0.0	0.3
2009	0.0	1.0	0.7	0.5	0.0	0.6	0.6	1.0	0.0	1.6	0.0	0.3	0.0	0.5
Merged (No)	41	109	60	112	2	117	69	34	18	12	28	53	5	660
Total (No)	545	1278	653	1354	137	1500	1342	422	452	114	555	1267	237	9856
Share (%)	7.5	8.5	9.2	8.3	1.5	7.8	5.1	8.1	4.0	10.5	5.0	4.2	2.1	6.7

Note: Values in percentage share to the total number of firms reported data unless specified

Source: Calculated using PROWESS, CMIE.

However, if the disappearance is adversely affecting the market depends on whether the absence of these firms from the market increases the market power of the existing leaders. In order to understand this, we have examined two factors. One is whether the disappeared firms are strong enough to influence the market during the pre-merger period, which will also give an indication about future performance. This is very important because we will not get post-merger data on firms that have disappeared, since they are now part of the surviving firms. This requires us to infer the future impact from the available information. The second factor is to see where these disappeared firms are visible. Are they absorbed into the leaders or into the low-ranked firms? This will determine the

market power of the leaders. If they are absorbed into the low-ranked firms, then it may increase competition rather than concentration. The following section will deal with this aspect.

4.2 On Disappeared Firms in Our Sample

The size of a disappeared firm is very important in determining the market share. In order to examine this, we have, firstly, examined the disappearance rate and survival probability across different sizes of firms. Disappearance rate is defined as the number of firms that have disappeared in size category because of a merger divided by the total number of firms in that size category. This is different from the earlier analysis since here we are defining disappearance according to the size category of firms. Size classification for merged firms is done according to their value of sales at the time of merger. The corresponding figures for all firms are calculated using the average sales value for the period, 2004–05 to 2008–09. This will help avoid fluctuations that occurred because of specific events such as economic crisis. Similarly, survival probability is defined as the total number of firms in a size class minus the disappeared firms in that class as a proportion of the total number of firms in that size class.

From *Table 3*, it can be seen that, in general, the survival probability is higher for mega-sized firms, especially if the sales turnover is beyond Rs 1000 crore. Aaronovitch and Sawyer (1975) also found that large firms have a better survival record than small ones. However, in our analysis, there are variations across sectors. In certain industries such as petroleum, chemicals, metals and food, a good proportion of the big firms disappeared through mergers. Overall, six per cent of the firms fall in the size category “greater than Rs 3000 crore disappeared through mergers”. The disappearance rate in the other categories are: 10 per cent (Rs 2000–3000 crore), four per cent (Rs 1000–2000 crores), seven per cent (Rs 500–1000 crores), nine per cent (Rs 100–500 crores) and eight per cent (Rs 100 crores) respectively¹⁴. It is interesting to note that none of the disappeared firms in the drugs and pharmaceuticals sector and the machinery sector belonged to the size category “beyond Rs 1000 crores at the time of merger”. In the non-metallic and textiles case, this limit is Rs 500 crores and in the automobiles it is Rs 2000 crores.

In order to understand the strength of the disappeared firms, we have to see what happened to the market structure in the absence of these firms. As mentioned earlier, we normally do not get data for firms that disappear after a merger. The shares of the disappeared firms are added to those of the merging firms. Therefore, in order to understand the market power of the disappeared firms, the pre-merger scenario has to be taken into consideration. It will enable us to understand the significance of the disappeared firm in a particular industry. If the market shares of the leaders increased in the absence of merged firms, it indicates that the disappeared firms had played an important role in that

¹⁴ These figures may be a little different from the overall disappearance rate we have discussed in *Table 6.4* since here we had to classify firms according to their size. In some cases, it is missing.

particular sector in determining the market structure during the pre-merger period. The degree of importance of the disappeared firms depends on the increase in the shares of the leaders when we remove these firms from the list of the overall manufacturing firms. A somewhat similar technique has been used by Aaronovitch and Sawyer (1975). We have calculated the market share of the four and ten leaders from 1988–89 to 2008–09 and the share of leaders with and without merged or disappeared firms. This is also done for different sectors. The following are the major observations from this analysis (see *Appendix Tables A2 A, B, C, D and Appendix Figure A1*).

Table 3: Disappearance, Survival Probability and Firm Size at the Time of Merger

Size (crores)	Automobile	Chemicals	Drugs & pharmac.	Food and products	Footwear	Machinery	Metals	Nonmetal minerals	Paper and printing	Petroleum products	Rubber & plastic	Textiles	Wood and furniture	Total
Disappearance Rate														
>3000	0.00	0.08	0.00	0.00		0.00	0.06	0.00		0.30	0.00		0.00	0.06
2000-3000	0.00	0.25	0.00	0.33		0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.10
1000-2000	0.10	0.03	0.00	0.16		0.00	0.05	0.00	0.00		0.00	0.00	0.00	0.04
500-1000	0.00	0.09	0.04	0.19	0.00	0.05	0.11	0.00	0.17	0.20	0.14	0.00	0.00	0.07
100-500	0.08	0.11	0.14	0.09	0.00	0.13	0.07	0.12	0.09	0.27	0.04	0.06	0.04	0.09
<100	0.09	0.10	0.11	0.11	0.03	0.11	0.06	0.08	0.03	0.04	0.06	0.06	0.03	0.08
Total	0.08	0.10	0.11	0.11	0.02	0.10	0.06	0.08	0.04	0.12	0.06	0.05	0.03	0.08
Survival Probability														
>3000 crores	1.00	0.92	1.00	1.00		1.00	0.94	1.00		0.70	1.00		1.00	0.94
2000-3000	1.00	0.75	1.00	0.67		1.00	0.86	1.00	1.00	1.00	1.00	1.00	1.00	0.90
1000-2000	0.90	0.97	1.00	0.84		1.00	0.95	1.00	1.00		1.00	1.00	1.00	0.96
500-1000	1.00	0.91	0.96	0.81	1.00	0.95	0.89	1.00	0.83	0.80	0.86	1.00	1.00	0.93
100-500	0.92	0.89	0.86	0.91	1.00	0.87	0.93	0.88	0.91	0.73	0.96	0.94	0.96	0.91
<100	0.91	0.90	0.89	0.89	0.97	0.89	0.94	0.92	0.97	0.96	0.94	0.94	0.97	0.92
Total	0.92	0.90	0.89	0.89	0.98	0.90	0.94	0.92	0.96	0.88	0.94	0.95	0.97	0.92

Source: Calculated using PROWESS, CMIE

While analysing the changes in four- and ten-firm concentration ratios, overall, we get three types of influences. The impact varies from no effect (nil) to high degree. In some sectors, its impact is nil or low moderate, and in some other sectors it is very high. Automobiles, footwear, wood and furniture are sectors in which there is no change in concentration levels registered. This result is not surprising since these are sectors in which the disappearance rate is very low, except for the automobile sector. Paper and printing, textiles, rubber and plastic show low levels of change, while for machinery and non-metallic it is at moderate levels. This is applicable to both the leading four and the leading ten ratios. In case of the top ten firms, the disappearance rate is higher than that of the top four firms.

On the other side, chemicals, drugs and pharmaceuticals, food and food products, metals and petroleum products responded well to mergers. It seems the effect of change in concentration levels and disappearance rate are moving in tandem, which clearly indicates the direction of change because of mergers (see *Table 4*). The degree of change in concentration ratio is higher for the leading ten firms compared to the leading four firms.

Table 4: Impact of Mergers on Disappearance and Market Concentration (C4 and C10 Together)

<i>Change in market power</i> <i>Disappearance rate</i>	<i>High</i>	<i>Medium</i>	<i>Low</i>	<i>Nil</i>
<i>High</i>	Petroleum, Pharmaceutical Chemicals, Food and food products	Non-metallic; Machinery		Automobiles
<i>Medium</i>	Metals and metal products		Rubber & Plastic	
<i>Low</i>			Paper; Textiles	Footwear; Wood & Furniture

Source: Calculated from PROWESS, CMIE

This means that when we add more leaders, the impact of merger also increases. This is similar to the observation made by Weiss in 1965 for UK mergers. From *Appendix Tables A2 A, B, C, D* and *Appendix Figure A1*, the following observations can be made. In chemicals sector, the overall concentration in terms of leading four firms was 22.3 in 1989, which increased to 25.7 due to disappearance. Similarly, the leading ten firms' ratio increased to 47 from 41. The difference in the ratios was even higher in the case of drugs and pharmaceuticals sector. In this sector, the shares of the leading four firms increased to 38 from 29 and that of leading ten firms increased to 67 from 51 due to disappearance since 1989. However, during the post 2000 period, the graphs with and without mergers are converging. This is mainly because of the addition of shares of the disappeared firms to the surviving firm; consequently, the sample without merged firms resembles the sample with mergers or overall case. Here also, the inclusion of more leaders almost doubles the concentration levels. In the food sector, initially, the four-firm concentration ratio increased to 26 per cent from 20 per cent due to the disappearance of the merged firms. The corresponding figures for the leading ten firms are 35 per cent and 45 per cent respectively. This trend continued into the early part of 2000s. Metals and metal products also have a similar story. It is one of the highly concentrated sectors. However, overall concentration has declined over the years. In 1989, 56 per cent of the sales were controlled by leading four firms, which went up to 63 per cent due to disappearance, while the same figure for leading ten firms is 78 per cent from 69 per cent. Most interestingly, the petroleum sector

has shown very high variation with and without merged firms. This sector is highly concentrated due to the regulations prevailed earlier¹⁵. Ninety per cent of the shares were controlled by the four leading firms, which increased to 95 per cent in the absence of merged firms. Similarly, the leading ten firms' ratio was 95, which went up to 99.8 per cent in the absence of disappeared firms. Two important mergers in this sector involve two central government undertakings, Bongaigaon Refinery and Petrochemicals Ltd with the Indian Oil Corporation Ltd. and Kochi Refineries Ltd with Bharat Petroleum Corporation Ltd, which strengthened the domain of the merging firms to a great extent.

Thus, from the forgoing analysis it is clear that size-wise, survival probability is higher for mega-sized firms. In four sectors, that is, petroleum, pharmaceuticals, chemicals and food, the disappearance rate as well as the changes in market concentration were high owing to mergers.

Implications of Cross-border Deals

As discussed earlier, the implications of disappearance may be important if it is a cross-border deal¹⁶, since it can lead to the creation of foreign monopoly. It is feared that it may lead to the creation of global monopolies with the help of the already established subsidiaries. As mentioned earlier, for many foreign firms, consolidation provides easy entry into India's vast consumer market. Once they enter with their well-equipped sales and distribution network strategies, advertising capacity along with the unbeaten technical capability, it may enable them to create market power and may drive out domestic firms. It is also possible that they "cherry pick" the domestic firms, which means they may be more cautious in selecting the target. They also see to it that the partner company has well established strategic assets. Therefore, we assume that the degree of market power they earned through mergers might be substantial, especially in sectors where the overall concentration ratios have changed because of mergers. For this, we have taken only those sectors in which concentration ratios have changed substantially due to the disappearance of firms. Out of the five sectors in which concentration changed substantially due to mergers—petroleum, metals and metal products, drugs and pharmaceuticals, food and food products and chemicals—it is seen that petroleum and metals have not experienced any change because of cross-border deals. For petroleum sector and the metals and metal products sector, it is due to the low intensity of cross-border deals¹⁷. In case of chemicals,

¹⁵ Recently, the government deregulated the sector. Earlier, FDI was permitted up to 26% in public sector units (PSUs), another 26% the PSUs were holding and the rest 48% by the public (Government of India, 2003). Now the FDI limit has been raised to 49 percent. But automatic approval will not be available for the refining; rather, it will be through the Foreign Investment Promotion Board (FIPB). In the case of private Indian companies 100 percent FDI is now allowed through the automatic route (GOI, 2008). However, we have seen that most of the leaders in this sector are PSUs.

¹⁶ Cross-border deals are defined as deals which involve foreign firms.

¹⁷ In the petroleum sector, there is only one cross-border deal, while in the metal and metal products sector there are seven deals, based on the sample used for this analysis.

too, it shows a very small change because of cross-border deals. Thus, it is not due to the low intensity of cross-border deals since it is only 24 per cent (28 deals). However, the market share seems to increase when we compare the leading ten firms with the leading four firms. The effect of cross-border mergers is most noticeable in drugs and pharmaceutical industry. A similar trend can be noticed in food and food products also. In case of drugs and pharmaceutical industry, in the year 1989, the concentration ratio of the leading four firms was 32.5 per cent (57 per cent for leading ten) in the absence of cross-border merged firms from 29 per cent (51 per cent for leading ten). Thus, the contribution of cross-border deals in the overall change in concentration is 39 per cent¹⁸ for leading four firms and 37.5 per cent for leading ten firms. The cross-border intensity¹⁹ in this sector is 30 per cent. Similarly, in the food and food products sector, the corresponding figure in concentration is 22 from 20 per cent for leading four firms and 39 from 35 per cent for leading ten firms. Thus, the contribution of cross-border deals in the overall change in concentration in food sector is 33.3 per cent for leading four firms and 40 per cent for leading ten firms. In this sector, cross-border intensity is very low at 6.25 per cent. Even with this low cross-border intensity, the market shares appear to be responding to mergers. Out of the eight cross-border mergers covered in this sample, six are owned by the Unilever Group. Unilever has undertaken several mergers, not only in the food sector, but also in other sectors such as soaps and detergents, chemicals, and metals. Even the former market leader, Brooke Bond Lipton India Ltd, has been acquired through this process. Moreover, as discussed earlier, in both of these sectors, many 1989 leaders have disappeared because of mergers. Most of them were cross-border deals. The absence of these firms will substantially increase the market power of the existing leaders. *Table 5* summarises the above results for four-firm and ten-firm concentration ratios. This seems to be very important since it is occurring in two consumer goods sectors, which has serious implications for consumer welfare.

Table 5: Impact of Cross-border Mergers on Disappearance and Market Concentration (C4 and C10 Together)

<i>Cross-border intensity</i>	<i>Change in market power</i>		
	<i>High</i>	<i>Low</i>	<i>Nil</i>
<i>High</i>	Drugs and pharmaceutical	Chemicals	
<i>Low</i>	Food and food products		Petroleum, Metals and metal products

Source: Calculated from PROWESS, CMIE

¹⁸ This is calculated as percentage of change in concentration in the absence of cross-border deals to the change in concentration in the absence of all deals.

¹⁹ Cross-border intensity is the presence of cross-border deals in the overall deals.

Product Level Analysis of Two Sectors

One of the major problems facing the above analysis is that it does not take homogeneous products into account, since we have undertaken the analysis at the two-digit level. As mentioned earlier, it is because of the nature of information we have. However, we have tried to concentrate on this issue by focusing on the food and the pharmaceuticals sectors, which are highly responsive to mergers, especially cross-border deals. Though an attempt has been made to delve into the product level, an important point to be noted is that many firms produce multiple products. And, we have only been able to capture their major product lines. According to NIC classification, there are 38 product lines within the food and food products sector and in the pharmaceuticals sector it is 51. We have calculated the disappearance due to mergers in each of these product lines and selected the major product line based on the disappearance rate. We have seen that within the pharmaceuticals sector, 55 per cent of all mergers (numbers: 34/62) occurred in the drug formulations subsector. Similarly, in the food sector, 33 per cent (40/121) of mergers occurred in the beer & alcohol subsector, and another 24 per cent (29/121) were among the tea and coffee producing firms (see *Appendix Table A3*). Therefore, we have selected these three sectors for a more disaggregated level of analysis. Here we have repeated the earlier analysis of changes in concentration with and without merger.

The results are shown in *Appendix Table A4*. It can be seen that in all sectors, the effect of mergers is very high, compared to the two-digit industry level. Within the food sector, the concentration ratios of both divisions'—beer & alcohol and tea & coffee—increased more than 100 in the absence of merged firms. This merely shows that in these cases, too, leaders (both top four and 10) have disappeared through mergers. Here cross-border deals also show similar impact in the case of tea & coffee, but its impact has been almost absent in the case of beer & alcohol. In the case of drug formulations also, the impact is highly noticeable. However, it is less as compared to the former two. Cross-border deals in the formulation had impact on the overall concentration. From this it is clear that at the disaggregated level, sectors/products with relatively high merger rates are likely to be affected by consolidation.

4.3 On Surviving Firms in the Sample

The following observations emerge from the foregoing discussion. In several industries, firms that merged/disappeared were strong enough to change the share of the existing leaders. When we include more leaders, the degree of their influence on concentration also increases since the successive leader is also involved in several deals. In the case of cross-border deals, its impact is currently noticeable only in certain sectors such as drugs and pharmaceutical and food. So far, we have focused on disappearing firms. But, an important point to be mentioned here is the “invisibility” of the merged firms. In actuality, they do not disappear; rather, they only become invisible during the post-merger period because they add their market shares to the surviving firms in the process of competition. Now, the

issue is whether these firms add their values to the leaders or the low-ranking firms in the respective sectors. If it is the first case, the concentration ratio²⁰ will increase since the disappeared firms are added to the existing leaders. In the second case, the leader's share need not rise but competition increases, as the low-ranked firms are now better-off due to the addition of these firms²¹.

We have attempted to understand this by examining mergers undertaken by the leading ten firms in the drugs and pharmaceutical industry. It will help us identify where the disappeared firms have added their shares. We have selected this industry because of its importance in general as well as for its cross-border deals, as seen from the analysis. It is interesting to see that the leading ten firms in this industry have undertaken 38.3 per cent of all mergers²² in this industry. This is in addition to the fact that the number of acquisitions is very high compared to the number of mergers. For this analysis we have taken only mergers due to data limitations. However, from our earlier discussion it is seen that in general, merger intensive sectors are also acquisition intensive. So these results also indicate the presence of acquisitions. The number one ranking firm Cipla Ltd has not engaged much in consolidation activities except for a few deals made recently. But the followers are actively involved in consolidation activities. Ranbaxy, Sun Pharmaceuticals, Piramal Healthcare, GlaxoSmithKline are well known in the field of mergers and acquisitions. They have also undertaken cross-border transactions. Ranbaxy's consolidation spree can be understood from its initial takeover by the Japanese manufacturing firm, Daiichi Sankyo Ltd and later by Sun Pharma in 2015²³. The findings based on the ranking and market share analysis of the leading firms is given below.

Ranking and Market Share of the Surviving Leaders

It is noted that many of the big businesses use consolidation strategy to expand their market and widen their operations. In most sectors, the leaders are engaged in multiple consolidation activities. And, most of the leading firms are owned by big business groups which rely on mergers and acquisitions as their growth strategies in all areas of operation so as to expand their domains, reduce risk and derive synergies. The same group owns more than one firm in the same sector, under different names and with small changes in product profile. Some of the consolidation intensive groups are Tata, Unilever, Murugappa Chettiar, Thapar, and RPG Enterprises. However, we are not going into the details since it is not a subject matter of our analysis. Our examination of the changes in the ranks based on the sale values of the leading ten firms immediately after a merger shows that firms

²⁰ An increased concentration ratio sometimes undermines the actual degree of concentration. For example, it can lead to increased concentration within the major four firms, in which case the ratio may rise, but the extent of competition will be higher than the pre-merger scenario.

²¹ It need not always be "better off," since the deal may prove unsuccessful in the long run.

²² Twenty-three mergers are covered in the sample.

²³ In India, Ranbaxy was operating under the same name when it was acquired by Daiichi. In March 2015, Ranbaxy was acquired by Sun Pharma.

could graduate to relatively better positions immediately after a merger. For example, Ranbaxy ranked number one in the year 1997, immediately upon its merger with Crosslands Research Laboratories Ltd in 1996 (from rank 2). The ranking of Matrix Laboratories Ltd changed from 85 in 2001 to 21 in 2003 with two mergers in 2002; it ranked 10 in 2009²⁴. Similar observations can be made in the case of Piramal Healthcare Ltd, Dr. Reddy's Laboratories Ltd, etc. There are also evidences for group consolidation, which helped improve the rankings; for instance, Lupin Laboratories Ltd moved up to the sixth position in the year 2001 from 83 upon merging with Lupin Ltd²⁵.

When we analyse the market shares of disappeared firms, we can see a clear increase in the shares of the surviving firms immediately after undertaking merger. It can be seen from *Table 6* that immediately after undertaking merger, the surviving firms were able to expand their shares in all cases. For example, before entering into a merger with American Remedies Ltd and Cheminor Drug Ltd, Dr. Reddy's Laboratories Ltd held only two per cent of the market shares in 2000, which increased to 3.8 per cent in 2001. Similar observations can be made in case of all other leading firms. It can be seen that in the case of

Table 6 Market share of Leader Ten Firms in the Pharmaceutical Sector

	<i>Dr Reddy</i>	<i>Ranbaxy</i>	<i>Lupin</i>	<i>Aurob</i>	<i>Sun</i>	<i>Piramal</i>	<i>Glaxos</i>	<i>Cadila</i>	<i>Matrix</i>
1989						0.6	7.0		
1990	0.6					0.7	8.0		
1991	1.1					1.2	8.6		
1992	1.7					1.4	8.1		
1993	1.7	6.0		0.3		1.2	7.2		
1994	1.9	6.5	0.0	0.4	0.6	1.4			0.1
1995	1.7	6.0	0.3	0.7	0.7	1.3	6.6		0.1
1996	1.6	6.3	0.4	0.9	0.8	1.3	6.5		0.1
1997	1.6	6.7	0.4	1.4	1.1	3.3	4.6	1.4	0.1
1998	1.9	7.1	0.5	1.7	1.5	3.1	4.4	1.7	0.2
1999	2.0	5.2	0.5	2.5	1.6	2.0	4.0	1.6	0.2
2000	2.0	6.8	0.3	3.1	2.0	2.0	3.7	1.8	0.2
2001	3.8	6.8	3.1	3.8	2.1	2.2	3.7	1.9	0.3
2002	5.4	6.6	3.0	3.5	2.3	3.2	3.8	1.9	0.4
2003	4.7	9.2	3.0	3.5	2.3	3.4	3.4	2.9	1.2
2004	4.2	9.3	2.9	3.2	2.1	3.4	2.9	2.7	1.3
2005	3.8	8.9	2.8	2.7	2.4	3.0	3.4	2.6	1.5
2006	4.2	6.5	3.4	2.9	2.7	3.0	3.1	2.6	1.5
2007	6.5	5.6	3.2	3.1	2.7	2.7	2.7	2.4	1.2
2008	4.8	4.9	3.6	3.2	3.3	2.7	2.4	2.4	1.3
2009	5.6	4.9	3.7	3.6	3.5	2.9	2.2	2.2	1.9

Note: Shaded points show the year of merger.

Source: Calculated from PROWESS, CMIE.

²⁴ It is also involved in other deals post 2002.

²⁵ Upon merger, the name Lupin Laboratories Ltd was changed to Lupin Ltd.

Lupin Laboratories Ltd, there was a shift in the market share from 2001 onward, which is mainly due to its internal merger. However, in some cases, the firms could not sustain their increased market shares in the long run. Why it happened is an interesting question. Here, we shall refer to the findings from our study on efficiency generation (Beena, 2015) in which we have observed that efficiency declines after getting into merger.

By using different indicators such as concentration ratios and ranking of firms, from the forgoing discussion we have seen that the *disappeared* firms played an important role in deciding the market structure of various sectors, while the *surviving* firms used merger as an important growth strategy. The limitation of this analysis is that it does not take trade effects into account.

V. Concluding Observations

In this paper, an attempt has been made to explore whether the merger strategy followed by firms in the Indian manufacturing sector has changed the structure of the industries, as indicated by the theoretical literature on mergers and acquisitions. We have seen that a large number of firms have disappeared from the manufacturing sector, and the disappearance rate is substantial since it has changed the concentration ratios in the respective sectors. The survival probability of big firms is relatively higher than that of small firms; however, there are sectoral variations. The sectors, which are more affected by the occurrence of mergers is chemicals, drugs and pharmaceuticals, food and food products, metals and petroleum products. Amongst these, the petroleum sector is most influenced by mergers. It seems that the change in concentration levels is moving in tandem with the disappearance rate, which indicates that the entry of new firms is inadequate to overcome the effect of disappearance through mergers. It is also evident that the emergence of more leaders increases concentration. Though we understand that the Indian scenario is not completely comparable with the international experience due to differences in policy regimes and the stages of development, our findings are in accordance with the findings of some earlier studies in the international context, such as that of Weiss's. In the case of cross-border deals, the effect is visible in drugs and pharmaceuticals and food and food products sectors, while the chemicals sector is not much affected. High frequency of cross-border deals in some sectors (such as the pharmaceutical sector) reflects the buyers' and sellers' preferences to invest in attractive sectors. Moreover, it also reflects the changes made in the FDI policy over time. We also examined the product level impact on three sectors selected on the basis of the earlier analysis. We found that when further disaggregated, the impact of mergers increases. Consolidation leads to invisibility of the disappeared firms as part of the surviving firms. This requires us to examine whether the disappeared firms are adding their shares to the leaders or to those at the lower end. We have examined this by taking the case of drugs and pharmaceuticals sector. The study found that the top ten leaders in this sector are involved in a substantial proportion of deals. Also, their ranks have improved compared to the pre-merger phase. We have also noted that many of the 1989 leaders either disappeared or lost their market shares

substantially, whereas the 2009 leaders have increased their market shares. The data shows that in many cases, the disappearance of leading firms is due to mergers, along with that of exit other than merger²⁶. Many of the leaders are owned by big business groups, which are engaged in consolidation activities. They have not only consolidated their subsidiaries and affiliates, but also consolidated those firms which are unrelated to the management.

In short, in most of the merger intensive sectors, firms that have disappeared through mergers have been strong enough to influence the concentration ratios. However, in case of surviving firms, the increase in market shares is not sustained in the long run as was expected. This may indicate the absence of adequate synergy creation to the expected levels for further strengthening the market position. In this regard, we shall refer to our study on mergers with efficiency, in which we have observed that efficiency declines upon entering into mergers and acquisitions (Beena, S, 2015). There is need for further inquiry into the reasons for the declining efficiency.

²⁶ Exit of firms may be either due to merger or due to other reasons. Here we have captured exit through mergers only.

Reference

- Aaronovitch, S. and M.C. Sawyer (1975), 'Mergers, Growth and Concentration,' *Oxford Economic Papers, New Series*, Vol. 27, No. 1, Pp. 136–155.
- Baldwin, J. and Paul Gorecki (1998), *Dynamics of Industrial Competition: A North American Perspective*, Canada: Cambridge University Press.
- Beena, P.L. (2008), 'Trends and Perspectives on Corporate Mergers in Contemporary India,' *Economic and Political Weekly*, Vol. 43, No. 39, Pp. 48–56.
- Beena, S. (2010), 'Cross-border Mergers and Acquisitions in India: Extent, Nature and Structure,' Working Paper No. 434, Centre for Development Studies, Thiruvananthapuram, India. Available at: www.cds.edu/wp-content/uploads/2012/09/wp434.pdf
- Beena, S. (2015), 'Production Efficiency of Firms with Mergers and Acquisitions in India,' Working Paper No. 299, Indian Council for Research on International Economic Relations, New Delhi, June. Available at: http://icrier.org/pdf/Working_Paper_299.pdf
- Boone, J. (2008), 'A New Way to Measure Competition,' *The Economic Journal*, Vol. 118, No. 531, Pp. 1245–1261.
- Chari, A.S.R. (1972), 'Monopolies and the Public Policy,' in *Monopolies and the Public Policy (Papers and Speeches)*, a Round Table Discussion organised by the Society for Democracy, New Delhi: People's Publishing House.
- Clark, J.M. (1961), *Competition as a Dynamic Process*, Washington: Brookings Institution.
- Cook, P.L. (1954), 'Reviewed Work: The Role of Mergers in the Growth of Large Firms by J. F. Weston,' *The Economic Journal*, Vol. 64, No. 255, Pp. 586–588.
- Curry, B. and K.D. George (1983), 'Industrial Concentration: A Survey,' *The Journal of Industrial Economics*, Vol. 31, No. 3, Pp. 203–255.
- Demsetz, H. (1973), 'Industry Structure, Market Rivalry, and Public Policy,' *Journal of Law and Economics*, Vol. 16, No. 1, Pp. 1–9.
- Desvousges, W.H. and M.J. Piette (1979), 'The Effect of "Large" Mergers on Concentration Trends in Petroleum Production, 1955–1975,' *Southern Economic Journal*, Vol. 46, No. 2, Pp. 615–622.
- Dhall, V. (Ed.) (2007), *Competition Law Today: Concepts, Issues and the Law in Practice*, New Delhi: Oxford University Press.
- Downie, J. (1958), *The Competitive Process*, London: Gerald Duckworth.
- Federal Trade Commission (1948), *The Merger Movement: A Summary Report*, Washington: U.S. Govt. Print. Off.
- Fortune Magazine (2010), Vol. 162, No. 2, July 26 Issue. Available at: <http://money.cnn.com/magazines/fortune/global500/2010/countries/India.html>; accessed on November 08, 2010.
- Glais, M. (2000), 'Merger Control Law in the European Union,' in Jackey Krafft (Ed.) *The Process of Competition*, United Kingdom: Edward Elgar, Pp. 165–187.
- Goldberg, A.H. (2007), 'Merger Control' in Vinod Dhall (Ed.) *Competition Law Today: Concepts, Issues and the Law in Practice*, New Delhi: Oxford University Press.

- GOI (2003), *Manual on Foreign Direct Investment in India (FDI): Policy and Procedures*, Secretariat for Industrial Assistance, Department of Policy and Promotion, Ministry of Commerce and Industry, Government of India, New Delhi.
- GOI (2008), *Petroleum and Natural Gas Sector Foreign Direct Investment (FDI) Policy*, Ministry of Petroleum and Natural Gas, Government of India, New Delhi.
- GOI (2007), 'The Competition (Amendment) Act, 2007,' Competition Commission of India, Government of India.
- Goyal, S.K. (1972), 'Government Policy and Concentration in the Indian Economy,' in *Monopolies and the Public Policy (Papers and Speeches)*, a Round Table Discussion organised by the Society for Democracy, New Delhi: People's Publishing House.
- Hall, M and Tideman, N. (1967), 'Measures of Concentration', *Journal of the American Statistical Association*, Vol. 62, Pp. 162-168.
- Hannah, L. and J.A. Kay (1977), *Concentration in Modern Industry: Theory, Measurement and the UK Experience*, United Kingdom: Macmillan.
- Hannah, L. and J.A. Kay (1981), 'The Contribution of Mergers to Concentration Growth: A Reply to Professor Hart,' *The Journal of Industrial Economics*, Vol. 29, No. 3, Pp. 305-313.
- Hart, P.E. (1957), On Measuring Business Concentration, *Bulletin of the Oxford Institute of Statistics*, Vol. 19, No. 3, Pp. 225-248 (Reprinted 1975).
- Hart, P.E. (1960), 'Business Concentration in the United Kingdom,' *Journal of the Royal Statistical Society*, Vol. 123, No. 1, Series A (General), Pp. 50-58.
- Hart, P.E. (1979), 'On Bias and Concentration', *Journal of Industrial Economics*, Vol. 28, No. 3, Pp. 211-216.
- Hart, P.E. and S.J. Prais (1956), 'The Analysis of Business Concentration: A Statistical Approach,' *Journal of the Royal Statistical Society*, Vol. 119, No. 2, Series A (General), Pp. 150-191.
- Ijiri, Y. and H.A. Simon (1971), 'Effects of Mergers and Acquisitions on Business Firm Concentration,' *Journal of Political Economy*, Vol. 79, No. 2, Pp. 314-322 (Reprinted in 1977)
- Lintner, J.A. and J.K. Butters (1950) 'Effect of Mergers on Industrial Concentration, 1940-47,' *Review of Economics and Statistics*, Vol. 32, No. 1, Pp. 30-48.
- Marshall, A. (1920), *Principles of Economics*, London: Macmillan.
- Motta, M. (2004), *Competition Policy: Theory and Practice*, Cambridge University Press (Reprinted, 2009).
- Müller, J. (1976), 'The Impact of Mergers on Concentration: A Study of Eleven West German Industries,' *The Journal of Industrial Economics*, Vol. 25, No. 2, Pp. 113-132.
- Mukherjee, H. (1972), 'On the Monopolies,' in *Monopolies and the Public Policy (Papers and Speeches)*, a Round Table Discussion organised by the Society for Democracy, New Delhi: People's Publishing House.
- Nutter, G.W. (1954), 'Growth by Merger,' *Journal of the American Statistical Association*, Vol. 49, No. 267, Pp. 448-466.

- Owen, S. (2006), 'The History and Mystery of Merger Waves: A UK and US Perspective,' Working Paper No. 2006-02, The University of New South Wales, Australia.
- Pushpangadan, K. and N. Shanta (2009), *The Dynamics of Competition: Understanding India's Manufacturing Sector*, New Delhi: Oxford University Press.
- Schumpeter, J.A. (1950), *Capitalism, Socialism and Democracy*, New York: Harper and Row.
- Shekhar, C. (1972), 'Vested Interests must be Liquidated,' in *Monopolies and the Public Policy (Papers and Speeches)*, a Round Table Discussion organised by the Society for Democracy, New Delhi: People's Publishing House.
- Stigler, G.J. (1950), 'Monopoly and Oligopoly by Merger,' *The American Economic Review*, Vol. 40, No. 2, Pp. 23-34.
- Stigler, G.J. (1956), 'The Statistics of Monopoly and Merger,' *Journal of Political Economy*, Vol. 64, No. 1, Pp. 33-40.
- United States (1964), Congress House Senate Committee on the Judiciary, Subcommittee on Antitrust and Monopoly, Hearing, July-September, Washington.
- Utton, M.A. (1971), 'The Effect of Mergers on Concentration: UK Manufacturing Industry, 1954-1965,' *The Journal of Industrial Economics*, Vol. 20, No. 1, Pp. 42-58.
- Weiss, L.W. (1965), 'An Evaluation of Mergers in Six Industries,' *The Review of Economics and Statistics*, Vol. 47, No. 2, Pp. 172-181.
- Weston, J.F. (1953), *The Role of Mergers in the Growth of Large Firms*, California: University of California Press.

Appendix

Table A1: Market share of 1989 and 2009 Leaders (in per cent)

Year		1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Auto mobile	1989	T4	46.2	46.4	44.3	45.7	44.1	44.9	47.7	49.3	47.1	47.4	42.5	37	32.2	34.1	35.5	35.1	36.1	35.7	35.7	34.9	35.7
		T10	68.5	67.1	65.1	65.1	62	63.1	65.7	63.9	61.4	63.2	55.6	51.6	45.5	45.7	45.9	44	44	44.4	44.6	43.4	43
	2009	T4	38.7	38.1	37.3	39.3	37.7	39.5	42.6	45.1	47.1	43.3	39.4	36.9	36.8	39.4	36.6	37.1	38.6	38.1	37.1	36.6	39.1
		T10	55.8	58.8	55.3	56.8	54.6	55.4	57.7	59	57.1	57.7	55.2	51.2	49.6	54.8	55.1	55	57	57	56.7	59.7	62.4
Chemicals	1989	T4	54.9	52.9	51.1	46.3	46.7	43.4	49.2	49.4	55.2	52.4	53.7	56.9	61.4	60.5	61.1	60.9	60.3	63.8	63.6	64.3	65.2
		T10	65.1	62.2	59.5	56.4	55.8	52.9	57.6	57.8	62.7	60.6	61.2	63.2	67	65.5	65.8	66	63.6	68.1	68.7	68.5	69.6
	2009	T4	51.4	51.1	49.9	45.6	46	43.5	49.7	50.5	56.4	53.6	54.6	57.9	62.7	61.9	62.5	62.6	62.1	65.4	65.4	66.2	67.4
		T10	59.9	58.3	55.9	54.3	54.1	51.7	57	57.5	62.5	60.9	61.3	63.8	67.9	67.2	68	68.3	67.8	71.2	71.9	72.4	74.7
Drugs and Pharmaceutical	1989	T4	29	25.5	25.8	23.7	22.1	15.4	19.1	19	18	18.7	15.2	16.2	13.8	14	16	15.1	15.2	12.4	10.6	9.3	9.2
		T10	50.9	42.2	37.3	32	33.8	26.1	29.7	26.8	26.9	27.6	22.7	23.4	21.5	20.5	21.6	20.8	21.1	18.7	16.5	15.2	15.8
	2009	T4	8.7	7.7	9	9.8	10.3	11.2	10.5	10.9	11.7	12.6	10.5	12.3	17.8	19.8	21.5	21.2	20.9	20.2	21	19.1	20.7
		T10	16.3	16.4	18.8	19.2	19	13.7	19.9	20.4	23.6	25.1	22.5	25	31.8	34.9	38.2	36.9	36.6	36	35.8	34.3	37
Food Products	1989	T4	19.9	18.7	15.9	14	12.1	13.6	10.7	13.6	6.9	6.4	5.9	6.1	5.1	3.9	3.2	3.1	3.3	3.2	3.2	3	3.2
		T10	35	32.4	29	26.4	24.1	24.2	20.1	21.9	18.9	18.7	15.6	15.4	12.2	10.7	9.2	7.9	8.2	8	6.9	6.7	7.5
	2009	T4	3.2	3.6	3.3	3.7	3.9	3.6	4	5.4	6.6	7.4	7.3	7.2	11	11.6	11.5	11.9	12.4	17.4	16.6	17.3	21
		T10	8.2	7.7	6.7	7.3	6.9	8.2	8.5	8.2	9.9	10.3	10.5	10.2	15.7	16.2	16.4	17.7	19.5	24.8	25.7	27.1	33.1
Machinery	1989	T4	27.1	25.8	24	19.3	19.9	18	16	13.9	15.4	15.8	15.7	14.6	13.2	14.8	11.9	10.2	10.9	12.5	11.9	11.1	14.4
		T10	41.3	35.6	34.7	29.4	30.6	26.5	25.9	23.4	23.5	23.7	23.4	22.6	20.2	22.2	19.1	16.7	17.4	19.1	17.5	16.3	20.4
	2009	T4	18.4	19.3	17.6	17.3	15.2	14.9	14.8	14.9	14.3	17.9	16.3	15.3	14.7	12.6	17.1	15.3	15.3	18.3	18.7	19.7	24.3
		T10	27.8	29.1	27.3	27.4	24	23.2	23.7	24	23.6	27.2	25.2	24.3	23.2	22.3	26.2	24.5	25.4	29.6	29.2	30.5	36.7
Textile	1989	T4	22.1	22.8	14.2	14	13	12.7	11.9	12	11.6	11.5	8.7	12.1	11.1	6.9	6	6.4	4.1	3.7	3.3	3	3.1
		T10	38.9	34.9	24.2	23.5	21.2	19	18	17	17.7	14.7	14.8	16.9	12.8	10.1	10.6	10.3	8.7	7.2	6.5	6.4	6.6
	2009	T4	4.9	4.2	4	4.4	4.6	4.8	5	5.3	5.8	5.5	7	7.5	4.7	7.5	9.7	11.2	12.8	12	11.9	12.1	13.8
		T10	13.2	11.3	12.6	13.2	14	13.5	13.4	14.7	15.6	15.6	17	18.1	15.2	17.5	18.9	21.2	22.7	23.8	24	24.2	26.2

Source: Calculated using PROWESS, CMIE

Note: T4 and T10 show the top 4 and 10 firms of 1989 and 2009.

Table-A2A Concentration Levels for Leading Four with and without Merged (and Cross-border merged) Firms (in per cent)

Top 4	Chemicals			Drugs, pharmaceutical			Food, food products			Machinery			Metals			Petroleum products		
	WM	WC	All	WM	WC	All	WM	WC	All	WM	WC	All	WM	WC	All	WM	WC	All
1989	25.7	23.1	22.3	38.1	32.5	29.0	25.7	22.0	19.9	29.5	27.1	27.1	63.2	56.1	55.9	94.7	90.1	90.1
1990	22.3	20.0	19.3	34.4	28.7	25.5	23.8	20.4	18.7	28.7	26.1	26.1	58.7	51.5	51.3	94.5	89.4	89.4
1991	20.5	18.4	17.7	35.5	28.9	25.8	20.5	17.4	16.2	26.5	24.0	24.0	55.8	49.3	49.1	94.2	89.3	89.3
1992	20.1	17.8	17.3	31.7	26.4	23.7	18.0	15.3	14.4	24.6	22.2	22.2	51.9	46.6	46.4	94.4	89.8	89.8
1993	20.1	17.8	17.3	28.9	24.6	22.1	17.0	14.5	13.8	22.3	20.4	20.4	51.0	45.7	45.5	94.5	89.9	89.9
1994	19.6	17.6	17.1	23.9	20.4	18.8	18.6	16.4	15.3	20.6	18.7	18.7	50.6	45.1	44.8	93.6	88.7	88.7
1995	20.4	18.3	17.9	24.8	21.3	19.9	19.4	17.5	16.2	18.5	17.2	17.1	47.1	42.1	41.9	94.2	90.0	90.0
1996	19.9	18.0	17.7	24.2	20.8	19.6	18.5	16.7	15.5	18.0	16.9	16.9	44.3	39.6	39.6	94.7	89.6	89.5
1997	23.4	21.5	21.0	22.2	19.8	18.6	16.0	14.1	14.0	18.6	17.4	17.4	42.8	38.6	38.6	94.4	89.9	89.8
1998	25.3	23.2	22.5	22.2	19.7	18.8	14.9	13.3	13.2	20.4	19.0	19.0	42.1	38.2	38.2	94.1	89.4	89.3
1999	26.4	24.3	23.6	18.3	16.3	15.7	13.2	12.0	11.9	20.4	19.0	19.0	39.6	35.9	35.8	93.5	89.4	89.4
2000	26.7	24.5	23.7	20.0	18.1	17.5	13.2	12.1	12.0	19.5	18.3	18.3	38.9	35.1	35.1	93.8	90.2	90.1
2001	28.0	25.6	24.8	20.1	19.1	18.6	13.9	13.2	13.1	18.2	17.2	17.2	37.5	33.6	33.6	97.1	83.9	83.8
2002	28.3	25.8	25.0	21.6	21.0	20.6	14.0	13.2	13.2	18.8	17.9	17.9	37.6	33.7	33.7	93.6	90.7	90.6
2003	26.2	23.8	23.3	22.3	22.2	22.0	12.6	12.1	12.1	22.7	22.1	22.1	37.8	35.6	35.6	91.9	88.1	88.0
2004	26.8	24.0	23.7	22.0	21.9	21.8	12.7	12.0	12.0	20.8	20.3	20.3	37.2	35.3	35.3	90.9	86.9	86.8
2005	24.8	22.4	22.2	21.6	21.6	21.5	13.2	12.4	12.4	21.5	21.0	21.0	35.3	34.4	34.4	88.2	83.8	83.8
2006	26.8	24.3	24.2	20.3	20.2	20.2	17.9	17.4	17.4	19.9	19.6	19.6	32.6	32.3	32.3	87.2	86.0	86.0
2007	23.1	22.7	22.6	21.1	21.0	21.0	16.8	16.6	16.6	21.4	21.2	21.2	31.6	31.4	31.4	87.8	86.8	86.8
2008	23.2	23.0	22.9	19.1	19.1	19.1	17.3	17.3	17.3	21.3	21.0	21.0	30.2	30.1	30.0	87.9	87.1	87.1
2009	29.6	29.4	29.3	20.8	20.7	20.7	21.0	21.0	21.0	24.4	24.3	24.3	31.1	31.1	31.1	84.0	84.0	84.0

Source: Calculated from PROWESS, CMIE.

Note: WM denotes without merger; WC denotes without cross-border merger; All denotes the overall.

Table-A2B: Concentration Levels for Leading 10 with and without Merged (and Cross-border merged) Firms (in per cent)

Top 10	Chemicals			Drugs, pharmaceutical			Food, food products			Machinery			Metals			Petroleum products		
	WM	WC	All	WM	WC	All	WM	WC	All	WM	WC	All	WM	WC	All	WM	WC	All
1989	46.8	42.1	40.7	66.9	57.1	50.9	45.0	38.7	35.0	44.9	41.3	41.3	78.2	69.4	69.2	99.8	95.0	95.0
1990	42.8	38.4	37.2	61.3	51.2	45.6	43.8	37.6	34.5	45.3	41.1	41.1	73.6	64.6	64.3	99.7	94.4	94.4
1991	38.7	34.7	33.4	59.2	48.2	43.0	40.7	34.5	32.0	43.2	39.0	39.0	69.5	61.3	61.1	99.8	94.6	94.6
1992	38.8	34.4	33.3	52.1	43.5	38.9	35.7	30.3	28.5	39.5	35.7	35.7	67.1	60.2	60.0	99.6	94.7	94.7
1993	37.4	33.1	32.2	50.1	42.7	38.3	34.2	29.3	27.8	36.3	33.2	33.2	65.9	59.1	58.9	99.6	94.7	94.7
1994	35.9	32.3	31.4	42.4	36.3	33.3	34.0	29.9	27.9	34.1	31.0	31.0	63.4	56.4	56.1	99.5	94.3	94.3
1995	35.5	31.9	31.2	41.0	35.4	32.9	33.1	30.0	27.7	32.2	29.8	29.8	59.5	53.2	52.9	99.4	95.1	95.1
1996	35.0	31.8	31.2	40.0	34.3	32.4	31.9	28.8	26.7	30.3	28.4	28.4	56.9	50.9	50.8	99.2	93.9	93.8
1997	37.1	34.1	33.3	39.8	35.4	33.3	31.2	27.6	27.4	31.7	29.7	29.7	55.2	49.7	49.7	99.2	94.5	94.4
1998	39.8	36.4	35.4	40.1	35.6	34.1	28.5	25.5	25.2	34.6	32.2	32.2	55.9	50.9	50.8	99.2	94.1	94.1
1999	40.2	37.1	36.0	34.3	30.5	29.4	25.6	23.3	23.0	33.1	30.8	30.8	53.3	48.3	48.2	99.3	95.0	94.9
2000	40.1	36.8	35.6	36.6	33.1	32.0	26.3	24.1	23.8	31.9	29.9	29.9	53.7	48.6	48.5	99.2	95.4	95.4
2001	41.4	37.7	36.6	36.5	34.6	33.7	24.8	23.5	23.4	30.2	28.5	28.5	54.0	48.5	48.4	99.4	85.8	85.8
2002	41.0	37.4	36.2	38.8	37.7	36.9	26.5	24.9	24.9	30.3	28.8	28.7	53.3	47.8	47.7	99.4	96.4	96.3
2003	39.6	36.1	35.2	39.7	39.4	39.2	23.3	22.4	22.4	34.1	33.1	33.1	52.3	49.2	49.2	99.2	95.1	95.1
2004	41.0	36.7	36.2	37.8	37.6	37.4	23.5	22.2	22.2	32.2	31.3	31.3	53.2	50.5	50.4	99.2	94.8	94.7
2005	39.5	35.7	35.3	37.2	37.1	37.1	23.9	22.4	22.4	33.2	32.3	32.3	52.4	51.1	51.1	99.1	94.3	94.3
2006	41.3	37.4	37.3	36.5	36.3	36.3	27.1	26.4	26.4	32.2	31.7	31.7	49.8	49.3	49.3	99.3	97.9	97.9
2007	35.3	34.6	34.5	36.5	36.3	36.3	27.8	27.5	27.5	33.1	32.8	32.8	49.5	49.2	49.2	99.3	98.2	98.2
2008	35.6	35.4	35.2	34.9	34.8	34.8	28.0	27.9	27.9	34.2	33.8	33.8	47.9	47.7	47.7	99.2	98.3	98.3
2009	44.8	44.5	44.4	37.1	37.0	37.0	33.1	33.1	33.1	36.9	36.7	36.7	47.8	47.7	47.7	99.1	99.1	99.1

Source: Calculated from PROWESS, CMIE

Note: WM denotes without merger; WC denotes without cross-border merger; All denotes the overall.

Table-A2C: Concentration Levels for Leading Four with and without Merged Firms (in per cent)

Top 4	Automobiles		Footwear		Paper, printing		Rubber, plastic		Textiles		Wood and furniture		Non-metallic minerals	
	WM	All	WM	All	WM	All	WM	All	WM	All	WM	All	WM	All
1989	46.9	46.2	100.0	100.0	41.4	37.1	51.4	48.0	24.5	22.1	57.1	56.2	37.1	34.1
1990	47.5	46.5	96.9	96.9	38.5	35.5	48.6	45.1	25.1	22.8	53.2	53.2	43.9	40.6
1991	45.2	44.4	96.6	96.6	35.2	32.7	39.9	36.4	18.0	16.5	49.0	49.0	38.2	35.6
1992	46.8	46.0	89.3	89.3	39.5	37.6	42.3	38.6	17.9	16.5	52.8	52.8	41.2	38.2
1993	44.9	44.1	85.7	82.8	41.4	39.3	41.5	38.6	16.9	15.6	51.6	51.6	39.3	36.7
1994	46.3	45.5	66.8	65.1	39.1	36.8	35.9	33.5	16.4	15.7	48.3	48.3	37.0	34.5
1995	49.0	48.2	55.2	54.3	36.3	34.2	32.1	30.3	15.2	14.6	41.3	41.3	36.8	34.6
1996	51.6	50.6	50.4	49.6	35.2	33.5	35.5	33.6	14.6	13.9	39.3	39.3	35.3	33.2
1997	53.5	52.8	49.7	48.8	32.1	30.4	37.6	35.5	15.0	14.2	41.8	41.7	36.0	33.8
1998	48.5	48.0	55.5	54.8	22.9	21.6	37.0	34.9	15.6	14.8	34.4	33.4	34.5	32.2
1999	43.4	42.8	56.4	55.7	31.5	29.5	32.9	31.1	14.5	13.9	37.6	36.8	35.6	33.2
2000	38.9	37.5	55.5	54.7	25.3	23.6	34.0	32.2	15.2	14.6	40.9	39.5	35.4	32.2
2001	39.0	37.3	56.6	56.6	29.9	26.7	32.6	30.9	13.0	12.5	46.1	45.2	34.4	31.7
2002	41.9	41.4	58.7	58.7	28.7	28.3	31.3	29.6	9.4	9.0	30.7	30.0	32.3	30.0
2003	38.9	38.3	46.4	46.4	25.6	23.8	35.3	34.7	10.9	10.4	27.4	26.9	31.9	30.0
2004	38.5	38.1	46.6	46.6	25.9	25.6	34.4	33.8	12.0	11.5	39.8	38.8	33.6	31.5
2005	39.8	39.5	43.4	43.4	24.7	24.6	33.4	33.0	13.3	13.0	42.1	41.5	33.1	31.3
2006	39.3	39.0	42.1	42.1	24.0	23.9	33.7	33.4	12.7	12.4	45.1	45.1	31.3	29.4
2007	38.0	37.8	44.3	44.3	25.8	25.7	33.3	33.0	12.9	12.9	47.2	47.2	36.0	34.9
2008	36.7	36.7	44.0	44.0	26.9	26.9	32.6	32.6	12.6	12.5	51.6	51.6	32.7	32.1
2009	39.1	39.1	47.2	47.2	26.8	26.8	34.7	34.7	13.9	13.8	49.5	49.5	31.2	30.8

Source: Calculated from PROWESS, CMIE.

Note: WM denotes without merger; All denotes the overall.

Table-A2D: Concentration Levels for Leading 10 with and without Merged Firms (in per cent)

Top 10	Automobiles		Footwear		Paper and printing		Rubber and plastic		Textiles		Wood and furniture		Non metallic minerals	
	WM	All	WM	All	WM	All	WM	All	WM	All	WM	All	WM	All
1989	69.6	68.5	100	100	67.6	60.6	79.3	74.1	43.1	38.9	91.5	90.0	55.1	50.6
1990	70.8	69.4	100	100	65.3	60.2	77.2	71.7	41.0	37.2	85.1	85.1	60.2	55.7
1991	66.3	65.1	100	100	59.4	55.1	68.4	62.5	31.7	29.1	77.7	77.7	54.7	50.9
1992	66.6	65.4	100	100	62.2	59.3	68.7	62.6	31.0	28.5	80.6	80.6	56.6	52.6
1993	63.9	62.8	100	97.2	62.4	59.3	65.2	60.6	30.2	28.0	75.2	75.2	54.7	51.1
1994	65.3	64.2	83.2	81.1	59.8	56.3	60.1	56.1	28.2	26.9	69.2	69.2	54.6	51.0
1995	67.3	66.3	74.4	73.2	55.2	51.9	54.1	51.1	26.6	25.4	64.2	64.2	53.4	50.3
1996	67.1	65.7	72.0	70.9	54.6	52.0	56.7	53.5	26.9	25.7	65.4	65.4	51.8	48.7
1997	66.4	65.4	71.9	70.6	51.4	48.8	58.3	55.0	26.7	25.3	63.9	63.8	53.6	50.3
1998	66.2	65.4	76.2	75.2	45.1	42.5	56.6	53.4	27.5	26.1	69.5	67.4	52.6	49.2
1999	62.5	61.6	79.4	78.4	51.7	48.4	51.3	48.5	26.2	25.1	65.6	64.2	51.6	48.1
2000	58.8	56.6	78.2	77.1	46.3	43.2	53.3	50.5	26.2	25.3	68.4	66.1	50.7	46.1
2001	59.2	56.7	78.0	78.0	50.5	45.1	50.0	47.3	23.8	22.9	70.4	69.1	51.7	47.6
2002	61.3	60.5	82.3	82.3	46.4	45.8	47.9	45.3	20.5	19.7	59.9	58.6	48.5	45.1
2003	60.2	59.2	67.0	67.0	45.1	41.9	50.3	49.4	21.6	20.7	57.3	56.0	48.0	45.1
2004	58.8	58.2	70.7	70.7	42.2	41.6	49.7	48.9	23.3	22.3	65.3	63.6	50.1	47.0
2005	60.2	59.7	67.7	67.7	42.0	41.8	49.8	49.1	24.5	23.9	66.7	65.6	48.9	46.3
2006	59.9	59.5	68.8	68.8	40.1	39.9	50.9	50.4	24.6	24.2	68.4	68.3	47.9	45.0
2007	59.4	59.0	74.3	74.3	43.1	43.1	51.0	50.5	24.5	24.4	67.1	67.1	53.1	51.4
2008	59.7	59.7	74.0	74.0	43.5	43.5	51.4	51.4	24.3	24.2	70.4	70.4	51.1	50.3
2009	62.4	62.4	79.5	79.5	44.5	44.5	54.2	54.2	26.3	26.2	70.8	70.8	49.1	48.5

Source: Calculated from PROWESS, CMIE.

Note: WM denotes without merger; All denotes the overall.

Table-A3: Disaggregated Level of Merger Activity (Number of Firms)

32

Industry	Economic activity	Number of Firms		Per cent Merged to total
		Non-merging	Merged	
1. Drugs and Pharmaceutical	Penta-erythritol	0	2	2
	Sulphamethoxazole	3	1	4
	Pharmaceutical products, nec	22	4	26
	Drug formulations	278	34	312
	Drugs, medicines & allied products	172	20	192
	Antibiotics	9	1	10
	Others	99	0	99
	Total	583	62	645
2. Food and Food Products and Beverages	Tea	184	25	209
	Colza oil; Cotton seed oil; different types of oil	324	19	343
	Beer	24	19	43
	Country liquor	40	16	56
	Sugar	137	14	151
	Ethyl alcohol	31	5	36
	Coffee	17	4	21
	Cereal roasted products, etc. (Snacks & Namkin)	22	3	25
	Fish	97	2	99
	Milk	23	2	25
	Others	311	12	323
	Total	1210	121	1331
				10

Source: Calculated from PROWESS, CMIE

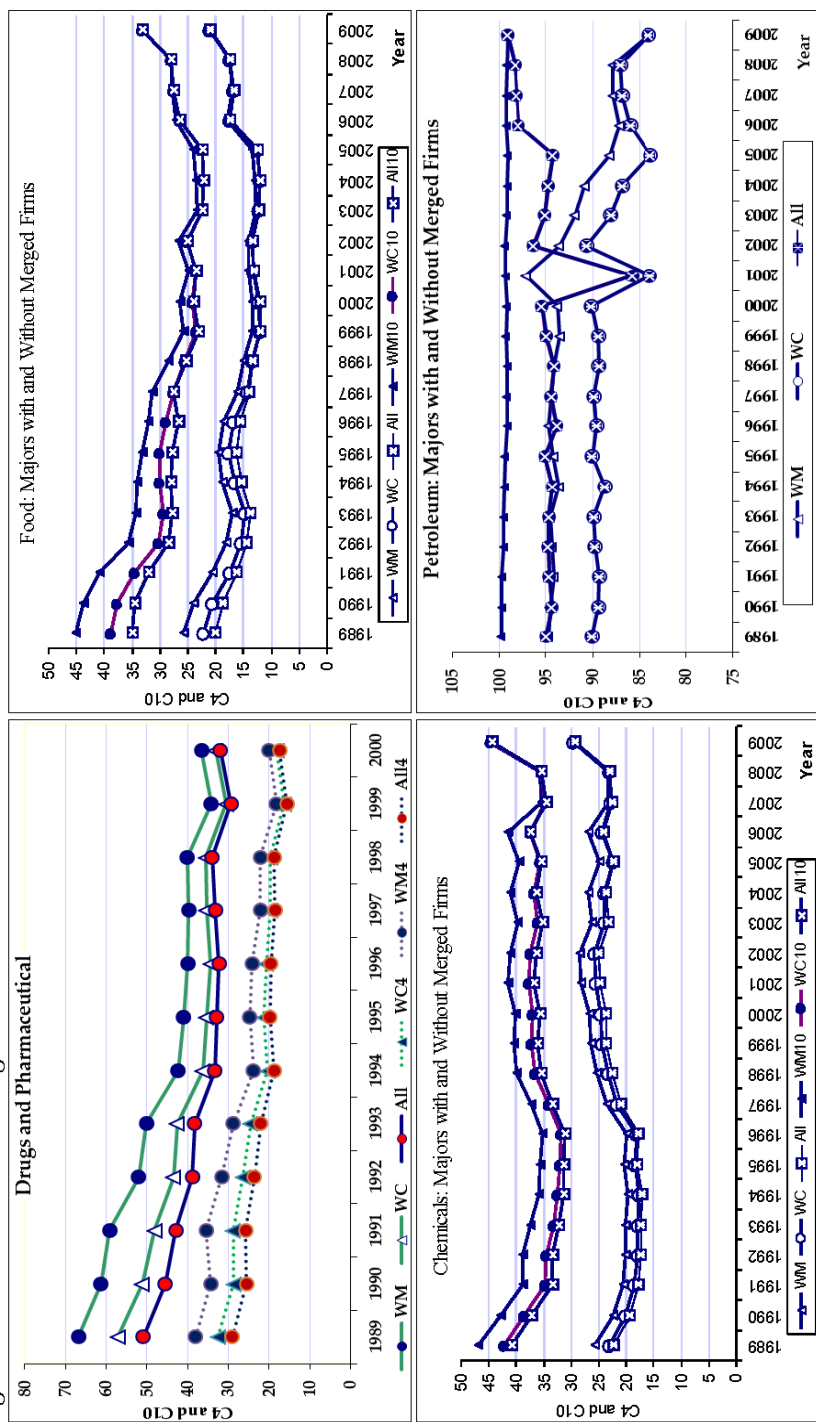
Table A.4: Changes in Concentration: Disaggregated Level (in per cent)

Year	Top 10												Top 4											
	Beer & alcohol				Tea and coffee				Drug Formulations				Beer & alcohol				Tea and coffee				Drug Formulations			
	All	WM	WC	All	WM	WC	All	WM	WC	All	WM	WC	All	WM	WC	All	WM	WC	All	WM	WC	All	WM	WC
1989	81	170	83	83	183	132	57	75	64	58	122	59	62	137	99	35	45	39						
1990	82	173	84	78	143	110	51	69	57	65	137	66	54	98	76	30	41	33						
1991	81	212	82	74	135	103	48	65	53	56	149	57	51	94	72	29	39	32						
1992	77	214	78	73	127	100	46	60	51	52	145	53	51	90	70	28	37	31						
1993	77	200	77	73	132	102	45	59	50	52	135	52	52	95	73	26	34	29						
1994	81	201	81	72	135	114	41	53	45	58	146	59	54	101	86	24	30	26						
1995	77	162	78	76	141	121	41	52	45	52	110	53	61	113	97	25	31	27						
1996	74	164	75	76	138	121	40	49	42	53	116	53	61	110	96	24	30	26						
1997	81	253	82	73	84	76	40	48	42	55	174	56	50	58	52	23	27	24						
1998	73	185	74	69	81	73	41	49	43	50	125	50	48	57	51	23	27	24						
1999	66	140	67	66	81	72	37	43	38	45	94	45	46	57	50	20	23	20						
2000	66	141	67	63	74	68	39	45	40	45	96	45	44	51	47	21	24	22						
2001	65	92	65	58	65	60	41	45	43	40	57	40	34	38	35	23	25	24						
2002	64	92	64	67	70	67	45	47	46	34	49	34	51	54	51	25	26	26						
2003	63	71	65	60	64	60	48	48	48	38	43	39	41	44	41	27	27	27						
2004	62	75	63	54	58	54	47	48	47	36	44	37	32	34	32	27	28	28						
2005	66	81	66	54	57	54	47	48	47	39	48	39	33	35	33	27	28	27						
2006	68	75	68	58	59	58	46	46	46	47	52	47	38	38	38	26	26	26						
2007	73	81	73	61	62	61	47	47	47	52	57	52	39	39	39	27	27	27						
2008	71	78	71	64	64	64	45	45	45	48	53	48	41	41	41	25	25	25						
2009	79	87	79	63	63	63	47	47	47	58	64	58	41	41	41	27	27	27						

Note: 1. WM denotes without merger; WC denotes without cross-border merger; All denotes the overall. 2. Values can be more than 100, which we have explained in the text.

Source: Calculated from PROWESS, CMIE

Figure A1: With and Without Merged Firms



Source: Calculated from PROWESS, CMIE.

List of ISID Working Papers

- 187 Trends in Foreign Investment in Healthcare Sector of India, *Reji K. Joseph & K.V.K. Ranganathan*, February 2016
- 186 Industrial Finance in the Era of Financial Liberalization in India: Exploring Some Structural Issues, *Santosh Kumar Das*, December 2015
- 185 Private Sector in Healthcare Delivery Market in India: Structure, Growth and Implications, *Shailender Kumar*, December 2015
- 184 Growth and Distribution: Understanding Developmental Regimes in Indian States, *Kalaiyarasan A.*, October 2015
- 183 Foreign Exchange Use Pattern of Manufacturing Foreign Affiliates in the Post-Reform India: Issues and Concerns, *Swati Verma*, August 2015
- 182 India's Manufacturing Sector Export Performance: A Focus on Missing Domestic Inter-sectoral Linkages, *Smitha Francis*, May 2015
- 181 Foreign Investment in Hospital Sector in India: Trends, Pattern and Issues, *Shailender Kumar Hooda*, April 2015
- 180 India: Trade in Healthcare Services, *T.P. Bhat*, March 2015
- 179 Clinical trials industry in India: A Systematic Review, *Swadhin Mondal & Dinesh Abrol*, March 2015
- 178 Seaports, Dry ports, Development Corridors: Implications for Regional Development in Globalizing India, *Atiya Habeeb Kidwai & Gloria Kuzur*, February 2015
- 177 Determinants of Public Expenditure on Health in India: The Panel Data Estimates, *Shailender Kumar Hooda*, January 2015
- 176 Manufacturing Strategy in a Changing Context, *Nilmadhab Mohanty*, December 2014
- 175 Freight logistics & Intermodal Transport: Implications for Competitiveness, *Arvind Kumar*, December 2014
- 174 Industrial Policy: Its Relevance and Currency, *Biswajit Dhar*, December 2014
- 173 INDIA: Structural Changes in the Manufacturing Sector and Growth Prospect, *T.P. Bhat*, December 2014
- 172 Post-Fordism, Global Production Networks and Implications for Labour: Some Case Studies from National Capital Region, India, *Praveen Jha and Amit Chakraborty*, November 2014
- 171 From the Phased Manufacturing Programme to Frugal Engineering: Some Initial Propositions, *Nasir Tyabji*, November 2014
- 170 Intellectual Property Rights and Innovation: MNCs in Pharmaceutical Industry in India after TRIPS, *Sudip Chaudhuri*, November 2014
- 169 Role of Private Sector in Medical Education and Human Resource Development for Health in India, *ISID-PHFI Collaborative Research Programme, Pradeep Kumar Choudhury*, October 2014

* Most of the working papers are downloadable from the institute's website: <http://isidev.nic.in/> or <http://isid.org.in/>

About the Institute

The Institute for Studies in Industrial Development (ISID), successor to the Corporate Studies Group (CSG), is a national-level policy research organization in the public domain and is affiliated to the Indian Council of Social Science Research (ICSSR). Developing on the initial strength of studying India's industrial regulations, ISID has gained varied expertise in the analysis of the issues thrown up by the changing policy environment. The Institute's research and academic activities are organized under the following broad thematic areas:

Industrialization: Land acquisition, special economic zones, encroachment of agricultural land, manufacturing sector, changing organized-unorganised sector relationship, rise of service economy in India, training and skill formation etc.;

Corporate Sector: With special emphasis on liberalization-induced changes in the structures of the sector, corporate governance, individual firms/groups, emerging patterns of internationalization, and of business-state interaction;

Trade, Investment and Technology: Trends and patterns of cross-border capital flows of goods and services, mergers & acquisitions, inward and outward FDI etc. and their implications for India's position in the international division of labour;

Regulatory Mechanism: Study of regulatory authorities in the light of India's own and international experience, competition issues;

Employment: Trends and patterns in employment growth, non-farm employment, distributional issues, problems of migrant labour and the changes in workforce induced by economic and technological changes;

Public Health: Issues relating to healthcare financing, structure of health expenditure across states, corporatisation of health services, pharmaceutical industry, occupational health, environment, health communication;

Media Studies: Use of modern multimedia techniques for effective, wider and focused dissemination of social science research to promote public debates;

Other Issues: Educational policy and planning, role of civil societies in development processes etc.

ISID has developed databases on various aspects of the Indian economy, particularly concerning industry and the corporate sector. It has created On-line Indexes of 230 Indian Social Science Journals (OLI) and 18 daily English Newspapers. More than one million scanned images of Press Clippings on diverse social science subjects are available online to scholars and researchers. These databases have been widely acclaimed as valuable sources of information for researchers studying India's socio-economic development.

ISID

Institute for Studies in Industrial Development

4, Institutional Area Phase II, Vasant Kunj, New Delhi - 110 070

Phone: +91 11 2676 4600 / 2689 1111; Fax: +91 11 2612 2448

E-mail: info@isid.org.in; Website: <http://isid.org.in>