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Abstract

In the context of various policy initiatives made during the last two decades to reform the Indian economy in general and corporate sector in particular, this paper documents strategies followed by firms in this period and the resultant changes in business conditions. We find that although the rate of growth of the industry sector has not accelerated following economic reforms probably due to slow growth in agriculture and industrial productivity, investment in general and FDI in particular have shown considerable increase. Increase in competitive pressures seems to have resulted in firms adopting a variety of strategies. While reliance on mergers and acquisitions (M&As) has increased to restructure business and grow, the role of embodied technology purchase has declined in relative terms with firms depending somewhat more on in-house R&D, disembodied technology purchase and FDI linked technology inflows. There are some signs of a growing domestic technology market as well. Although strategies of building marketing and distribution related complementary assets continue to be important for implementing the strategy of product differentiation, their role seems to have declined in a relative sense as these expenses as a proportion of sales show a declining trend. The emerging competitive pressures have significantly raised the importance of sub-contracting/outsourcing in manufacturing possibly as an alternative to the strategy of vertical integration, a measure of in-house value addition. While cost-efficiencies do not show improvements, export orientation has increased significantly across industries and import penetration has seen a marginal decline. Overall, the observed trends of corporate response to economic reforms are interesting, but one needs to systematically explore how M&As led consolidation and flows of FDI are linked to the adoption of various non-price strategies relating to technology and product differentiation. As economic reforms deepen and competitive pressures build up, an analysis of these interactions would provide useful insights for understanding corporate behaviour and for making policy choices.

Keywords: Economic reforms, corporate sector, strategies, performance, India

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I Introduction

Economic reforms initiated in 1991 comprising a variety of deregulatory measures have significantly altered the environment in which the Indian corporate sector operates. Although the pace of economic reforms has faltered in recent years, the overall direction of policy changes remains more or less the same and seeks to strengthen market discipline and enhance competition. The impact of the new liberal regime would depend on strategies adopted by firms in response to these policies and fine tuning of policies and regulations taking cognizance of emerging trends in firm level choices.

The Indian corporate sector responded to policy changes in a variety of ways in the initial years of economic reforms.[3] However, since the firms take time to develop a strategy mix appropriate to changing economic and policy environment, the earlier analyses may have captured only the 'initial' responses to economic reforms. Corporate strategies tend to stabilize over time, especially in situations where regulatory changes are an ongoing process. Moreover, given the subsequent deepening of economic reforms in areas like FDI, competition policy, privatization and intellectual property regulation, changes in the nature and intensity of firms' responses are very likely. Therefore, an exploration of strategies and performance over a longer period of time would provide better insights on the efficacy of economic reforms.

The present paper is an attempt in this direction. Using data from secondary sources, we examine the trends and patterns of firms' strategies during the two decades following initiation of economic reforms in the early 1990s. While data on industrial growth and investment are collected from the official websites of the Reserve Bank of India (www.rbi.org.in), Department of Industrial Policy and Promotion, Government of India (www.dipp.nic.in), and UNCTAD, information on mergers and acquisitions is compiled from the *Business-Beacon* database of the Centre for Monitoring Indian Economy (CMIE), Mumbai. Data on other corporate strategies and performance are sourced from the *Prowess* database of CMIE. The

[3]For example, there was vigorous business consolidation and restructuring by the firms in a few chosen areas to correct inefficiencies caused by over-diversification in the pre-reform era. For a detailed discussion on corporate responses to economic reforms during the initial years of the 1990s, see Basant (2000).

period covered in this exercise is 1992-93 to 2012-13. Most recent years are not covered in the study for two reasons. First, no major policy or regulatory change was initiated during 2012-2014. Second, although the present government at the centre has made some initiatives, the impacts so far may be very tentative. Further, since the paper covers a long time period (almost two decades), temporary fluctuations in the variables are very likely. In order to overcome such problem, three-year moving averages are used for all the variables relating to firms' strategies (except M&As and investment) and performance with the year under reference being the middle year[4].

The rest of the paper is organized in six sections. Key dimensions of policy changes and their probable strategic implications are summarized in the next section. The third section discusses investment trends and the nature of industrial growth during the reform period. Strategies involving mergers and acquisitions, technology development, manufacturing and other aspects of non-price competition are discussed in the fourth section. The fifth section focuses on trends in some performance indicators like efficiency, profitability, and inventory management. The last section concludes the paper with a summary of major trends in strategies and identifies some areas of future research.

II Key Dimensions of Economic Reforms

The policies prior to initiation of economic reforms in 1991 were broadly characterized by multiple controls over private investment and imports. It is well recognized that policy rigidities of the pre-reform era adversely impacted the economy[5]. The main objectives of the new policy regime have been to facilitate growth in productivity and employment, attain international competitiveness, develop indigenous capacity in technology and manufacturing, widen capital markets, encourage foreign investment and technology collaboration, curtail monopoly, and ensure rightful role of public sector in areas of national importance[6]. Some other policy measures initiated during last two decades include greater emphasis on knowledge-based industry and export of services, setting up special economic zones (SEZs),

[4]For example, estimate in the paper for the year 1994-95 is an average of the same for the year 1993-94, 1994-95 and 1995-96.
[5]For example, rigidities in investment policy constrained firm-level choices and limited competition leading to inefficiency, whereas industrial licensing and product reservation for small-scale sector inhibited firms from reaping economies of scale.
[6]Basant (2000) provides a detailed discussion on various policy measures introduced in the early 1990s and their implications for the Indian corporate sector.

enactment of the Foreign Exchange Management Act (FEMA), attracting FDI through automatic approval route of the RBI, and private sector participation in infrastructure (e.g., multiple operators in telecom) and insurance sectors.

In addition, there have been many important changes in the regulatory structure. For example, India's obligation to sign the TRIPS agreement in 1994 has caused amendments to the Indian Patent Act (1970) resulting in a marked shift from the process patent regime towards an era of product patents, particularly for pharmaceuticals and food products. The term of patent has also been extended to 20 years[7]. Similarly, following the wave of M&As during the first decade of economic reforms, the Competition Act (2002) was enacted along with the establishment of the Competition Commission of India to regulate M&As and prosecute restrictive trade practices so that monopoly power is not created and/or misused.[8]

Thus, economic reforms in general and removal/relaxation of restrictions on investment (both domestic as well as foreign) and trade in particular have not only created new opportunities for growth, but also enhanced degrees of contestability and hence greater market competition. In order to enhance competitiveness to face the threat of competition and exploit new business opportunities, firms are expected to adopt a variety of strategies relating to investment, trade, technology development and non-price competition. The regulatory changes are also likely to influence firms' conduct. For example, the new patent laws that improve appropriation along with sector specific policies may enhance innovative efforts[9]. Performance of firms would depend on how they strategically respond to the changes in policies and regulations.

In this perspective, what follows next is an attempt to explore firms' strategic responses to economic reforms with reference to the following inter-related questions: How have industrial growth and composition of domestic and foreign investments changed following economic reforms? What types of restructuring processes have been dominant in the manufacturing sector? What product differentiation strategies have been followed? Has building of marketing

[7]Introduction of product patent regime is expected to cause significant impact on market concentration, prices of drugs and performance of the industry.
[8]As compared to the MRTP Act (1969), the Competition Act (2002) focuses more on behavior of enterprises and not so on market structure. For example, the new Act makes pre-notification mandatory if threshold value of assets/turnover of merging/acquiring firms or of respective business groups is beyond the threshold limits.
[9] For example, the *Pharmaceutical Policy (2006)* also aims at promoting R&D in the industry by creating an appropriate incentive structure.

and distribution related complementary assets dominated over advertising? What changes have come about in technology strategies? In what way has enhancement of 'internal' and 'external' competition changed sourcing of inputs and export orientation? Does one see signs of strategies of import substitution and/or export orientation being followed? How have the firms performed in the new policy regime?

III Industrial Growth and Investment

The patterns of industrial growth and investment have undergone some changes in the post-reform period. We provide an overview of these patterns before we explore firm level strategies in some detail.

Nature and Pattern of Industrial Growth

In independent India, the experience prior to initiation of economic reforms in 1991 shows three distinct phases of growth of the industry sector - the phase of rapid growth from the early 1950s to the mid-1960s, the phase of deceleration or relative stagnation from the mid-1960s to the late 1970s, and the period of revival from the late 1970s to the early 1990s. During the last phase, the sector not only recovered from the lost momentum, the rate of growth was also somewhat comparable to what was achieved during 1950-65 and that of the star performers of the 1980s like Korea, Indonesia, Malaysia, Thailand, and Turkey. The manufacturing output grew at 7.4 percent per annum during 1981-91 (Nagraj, 2003b). This high rate of growth of the manufacturing sector in the 1980s has been attributed to the surge in factor productivity (Unel, 2003; RBI, 2004).

Although the acceleration phase of the 1980s continued in the first few years of economic reforms (except in the crisis years of 1990-91 and 1991-92) and reached a high of 12.8 per cent in 1995-96 (Basant, 2000), there was a declining tendency with fluctuations in the growth path since the mid-1990s possibly due to the South-East Asian crisis in 1997 and political instability at the Centre. While the rate of growth of the industry sector in general and that of the manufacturing sector in particular was somewhat higher during the last decade, it does not show any improvement when the entire post-reform period is taken together (Table 1). The situation has worsened in recent years with rate of growth of these

two sectors being substantially lower[10]. Slow growth of these two sectors has resulted in only a marginal increase in their share in GDP during the post-reform period. In other words, economic reforms have failed to accelerate growth of Indian industry sector[11]. In general, this relative stagnation seems to have been caused by slowdown in growth of factor productivity and slow growth of the agriculture sector. However, drawing any definite conclusions on the underlying factors requires further exploration, which is beyond the scope of this paper.

Table 1: Growth of Indian Industry Sector

Aspects		1980-81 to 1991-92	1993-94 to 1999-2000	2000-01 to 2011-12	1993-94 to 2011-12
Industry	Share in GDP %)	18.8	20.2	19.72	20.16
	Growth (%)	7.4	7.2	8.1	7.1
Manufacturing	Share in GDP (%)	14.5	15.3	15.08	15.40
	Growth (%)	7.2	7.7	9.0	7.8

Source: www.rbi.org.in

As regards employment, the Economic Survey (2011-12) reports an increase from 43.8 million in 1999-2000 to 52.4 million in 2009-10 in the manufacturing sector, and from 47.1 million to 56.5 million in the industry sector (excluding construction) as a whole. But, share of the sectors in total employment shows only a marginal increase during this period. While share of manufacturing sector has increased from 11 percent in 1999-2000 to 11.4 percent in 2009-10, that of the industry sector has increased from 11.8 percent to 12.3 percent[12]. Further, while growth of total employment in the economy has slowed down during the 2000s as compared to that in the 1990s, the experience is the opposite in organized industry. The sector has recorded substantially high rate of growth of employment in the 2000s. This may be encouraging considering that every job created in the manufacturing sector creates two-three additional jobs in related activities[13], but overall growth of employment is lagging

[10]The index of industrial production recorded an annual average rate of growth of only 1.3 percent for the industry sector as a whole during 2012-2015, and it was even less than 1 percent for the manufacturing sector. More importantly, both the sectors recorded negative growth (i.e., decline in production) in 2013-14. Low domestic demand partly due to contractionary policies, slow decision-making by the government and problems relating to land acquisition seem to have played critical role in this regard.

[11]However, the growth performance is mixed when it is seen across major industries. For example, while the industries like beverages and tobacco, textile products, chemicals, machinery, basic metals and alloys, transport equipments have grown at reasonably high rate, growth performance of food products, jute and other vegetable fibres, wood and wood products, etc. have been dismal. Such inter-industry variations in growth performance may largely be due to industry-specific factors and policies, and any conclusion in this regard requires further exploration.

[12]For the details, see Economic Survey (2011-12), Department of Economic Affairs, Ministry of Finance, Government of India.

[13]See the National Manufacturing Policy 2011 for the details.

behind that of the labour force and bulk of the organized sector job creation is probably with informal contracts. Further, when the entire post-reform period is taken together, the manufacturing sector did not experience any improvement in its contribution to employment generation, as its share was around 12 percent of the workforce in the 1980s (Nagaraj, 2003b). Thus, while it was expected that economic reforms would help the industry sector to emerge as the key in generating additional employment opportunities, experience in this regard has not been very encouraging.

Growth in Industrial Investment Intentions

However, policy reforms seem to have a significant positive impact on investment situation in the economy. As many as 91510 investment proposals have been received during 1992-2014 with proposed investment of Rs. 10259947 crore. Further, the quantum of investment intentions has increased over the years from around 9 percent of GDP in the 1990s to around 13.5 percent of GDP during the last decade (Table 2). Nevertheless, a large portion of the investment proposals (in terms of both number and proposed amount of investment) are concentrated in a few industries like metallurgy, chemicals (excluding fertilizers), and textiles. The sectors like fuels, prime movers, and cement and gypsum also have a considerable share in proposed investment, though the number of proposals received by these industries is relatively less. On the other hand, industries like food processing and fermentation have considerable share in number of proposals received, but their share in proposed investment is not that high[14].

[14]See SIA Statistics (Department of Industrial Policy and Promotion, Government of India), August, 2011 for the details in this regard.

Table 2: Trends in Industrial Investment Intentions, 1992-2011						
Year	Investment Intentions (Percentage of GDP*)			Capital Formation (Percentage of GDP*)		Share of private sector in GCF*
	IEM	LOI	Total	GFCF	GDCF	
1992-2000	7.81	1.24	9.05	25.20	26.63	31.29
2000-2011	13.43	0.08	13.51	30.94	34.26	31.56
1992-2011	11.07	0.56	11.63	28.52	31.05	31.44

Note: *Average for the period
Source: www.dipp.nic.in and www.rbi.org.in

It is important to note that while policy reforms aimed at encouraging private investment, low rates of implementation of investment proposals has remained a matter of serious concern. A total of 10973 industrial entrepreneurs' memorandums (IEMs) with an investment of Rs. 570307 crore were implemented during 1992-2014. This accounts for only 11 percent and 4.8 percent of proposed projects and investment amount respectively[15]. Given that inward investment intensions have been much below the country's potential in recent years and the rate of implementation of the proposals has been very low, stalling of projects in the areas of infrastructure, manufacturing, mining and power appears to be another matter of serious concern. The stock of stalled projects at the end of December 2014 was Rs. 8.8 lakh crore accounting for 7 per cent of GDP[16] and the rate is much higher in the private sector largely due to unfavourable market conditions[17]. Such stalling of projects has not only lowered the rate of growth of gross fixed capital formation, it has also caused severe adverse impact on balance sheets of private corporate sector and hence future investment prospects.

Foreign Investment Inflows

The liberal policy measures have resulted in a significant increase in foreign direct investment (FDI) inflows during the post-reform period (Kumar, 1998; Nagraj, 2003a; Rao and Murthy, 2006; Rozas and Vadlamannati, 2009)[18]. Inflows of both FDI and foreign portfolio investment (FPI) have increased over the years (Table 3), making India's growth

[15]See SIA Statistics of Department of Industrial Policy and Promotion, Ministry of Commerce and Industry, Government of India (available at www.dipp.nic.in) for the details in this regard.
[16]See Economic Survey 2014-15 of the Ministry of Finance, Government of India for the details in this regard.
[17]On the other hand, the public sector projects are stalled mainly due to regulatory reasons including problem of land acquisition.
[18]In addition to granting automatic approval for equity investment and foreign technology agreements in identified high-priority industries, several incentives like tax holidays, etc. have also encouraged FDI inflows particularly in manufacturing sector considerably.

strategy increasingly dependent on foreign capital. The country ranked eighth in global FDI inflows in 2009[19]. Inflows of FDI into India, particularly in 2015 have been very encouraging with the country becoming the most preferred destination of foreign investment surpassing China and the USA. It has received Greenfield investment proposals of US$31 billion during the first six months of the year. Total FDI inflows into India touched US$44.3 billion during the fiscal year 2014-15, which was 23 percent higher than the previous financial year. This is encouraging considering that as many as 97 of 154 emerging economies have recorded drop in capital expenditure on Greenfield projects during the same period. The cumulative amount of FDI inflows from April 2000 to June 2015 amounts to US$ 380,215 million with equity inflows being US$ 258,020 million. The contribution of inward FDI in country's capital formation has also increased during the post reform period, particularly during 2006-12 (ISID, 2014).

Despite considerable increase over the years, inflows of FDI or FPI have not been so high when considered as a proportion of GDP. As Table 3 shows, FDI and FPI inflows were only 1.21 percent and 0.92 percent of GDP respectively during the post-reform period. Further, in terms of actual FDI inflows, India is far behind China and even some smaller economies in Asia like Hong Kong and Singapore. Thus, there is a gap between India's potential as an investment destination and actual FDI inflows possibly due to incorrect perception of foreign investors on potential of Indian market, domestic policies and regulations, time lags in processes and procedures, quality of infrastructure and obstacles at the centre and state level (Rozas and Vadlamannati, 2009). However, share of FPI in total foreign investment has declined during the 2000s indicating greater stability in foreign investment inflows.

Table 3: Trends in Foreign Investment Inflows, 1991-92 to 2010-11

Year	Foreign Investment Inflows (Percentage of GDP)*			Share of FPI in Foreign Investment*	FDI as percentage of GFCF*	FDI through M&As (%)*#
	FDI	FPI	Total			
1991-2000	0.48	0.62	1.10	45.23	2.09	15.09
2000-2011	1.81	1.16	2.97	34.52	5.65	19.04
1991-2011	1.21	0.92	2.13	39.34	4.15	17.46

Note: *Average per annum for the period; # For calendar year; GFCF – Gross Fixed Capital Formation

Source: www.rbi.org.in

[19]See World Investment Report, 2011, UNCTAD, Geneva.

There are two important concerns relating to FDI inflows in the post-reform era. First, acquisitions have become the predominant channel of foreign investment inflows. The average share of acquisitions in total equity inflows increased from 11 percent during 1995-2000 to 27 percent during 2000-2012[20]. More specifically, share of acquisitions in FDI inflows in manufacturing and services were 23.85 percent and 19.32 percent respectively during September 2004 to December 2009, and it was as high as 45.83 percent in IT and ITES (Rao and Dhar, 2011). Such a considerable share of acquisitions in FDI inflows has important implications on the developmental front due to its limited potential to add to the stock of productive capital, generate favourable knowledge spillovers and competitive effects as compared to Greenfield entry (Kumar, 2000).

Second, the manufacturing sector accounted for only about 30 per cent of FDI inflows during 2000-2012 against 56 percent by the service sector. Even within manufacturing the distribution is highly skewed towards a few industries. The industries having considerable share include drugs and pharmaceuticals (17.16 percent), chemicals (excluding chemical fertilizers) (15.32 percent), automobiles (13.48 percent) and metallurgical (12.42 percent)[21]. These four industries together accounted for 59 percent of FDI inflows during this period. Such a skewed distribution of inward FDI may be caused by a set of industry specific factors along with policies of the government. But, it has important implications, as the spillovers from foreign technology and skills to the local industry are not an automatic consequence of foreign investment (Blomstorm and Kokko, 2003), rather depend largely on industry specific characteristics (Kokko, 1994).

IV Economic Reforms and Corporate Strategies

Given the aggregate patterns of industrial growth and investment, this section of the paper explores strategic responses by the firms to the changes in policies and regulations in respect of mergers and acquisitions, non-price competition, and other business strategies like manufacturing outsourcing, vertical integration, and international trade.

Mergers and Acquisitions

[20]See ISID (2014) for year-wise data.
[21]See ISID (2014) for the details.

Initiation of economic reforms has forced Indian firms to build new competencies and capabilities to become competitive and grow profitably. Many of the domestic firms have taken the route of M&As to restructure their businesses and grow. As a result, there has been a significant increase in the number of M&As in Indian corporate sector in the post-liberalization era, especially after the mid-1990s (Table 4)[22]. This increase is quite substantial, particularly when it is compared with the number of deals during the entire period of 1975-90, though the pace slackened during 2008-2014. Interestingly, share of mergers in total deals has declined in the post-reform era, more specifically after the mid-1990s. This means that, unlike what was observed during the initial years of economic reforms, mergers no longer necessarily follow acquisitions. It is possible that, during the initial years, firms used mergers primarily to consolidate their business, and subsequent increase in efficiency and competitiveness seems to have motivated them to use the route of acquisitions to strengthen their position in the market and grow. It is also possible that the measures to control anti-competitive mergers under the Competition Act (2002) have reduced the share of such combinations. Further, FDI inflows through cross-border acquisitions seem to have resulted in larger number of these deals in recent years reducing the share of mergers further.

The wave of mergers has been largely dominated by private domestic firms, whereas private foreign firms have used the route of acquisition to enter into the Indian market and strengthen their presence (Mishra, 2005). It is noteworthy that quite a large number of private foreign firms have been acquired by private domestic firms. Whether such acquisitions were due to improvements in market position of private domestic firms or due to failures of private foreign firms in their Indian operations need further scrutiny. However, state-owned enterprises have not opted to restructure their business through M&As possibly due to lack of necessary flexibility in their functioning. This may change in the years to come as privatization initiatives take concrete shape and public enterprises are given more autonomy.

[22]A number of studies have shown significant increase in number of M&As in Indian corporate sector following economic reforms. See Basant and Mishra (2012) for details.

Table 4: Trends in M&As in the Indian Corporate Sector, 1975-2014						
Year	Mergers		Acquisitions		Total Deals	
	Number	Share (%)*	Number	Share (%)*	Number	Share (%)*
1975-1990	425	78.4	117	21.6	542	100.0
1990-1995	236	72.2	91	27.8	327	100.0
1995-2000	425	57.4	316	42.6	741	100.0
2000-2008	1078	61.6	672	38.4	1750	100.0
2008-2014	473	57.3	353	42.7	826	100.0
1995-2014	1976	59.6	1341	41.4	3317	100.0

Note: *share in total deals.
Source: Beena (2014) and Prowess (CMIE)

Many of the country's leading business groups were actively involved in M&As, particularly in the 1990s. A majority of these business houses preferred the path of mergers among the group companies to restructure their businesses to correct inefficiencies caused by over-diversification during the regime of regulation and control (Basant, 2000). Such efforts towards business consolidation were also motivated by the need for increasing controlling block of shares to guard against a takeover or a dilution of control (Beena, 2000). Some of them also acquired firms from outside the group, either to enter into a new product/market segment, or to strengthen their presence in the existing market. As a result, while around 71 per cent of mergers were among the companies of the same business house, in around 68 per cent cases of acquisitions, the firms involved were from different groups (Mishra, 2005)[23].

The efforts by domestic firms towards business consolidation are also reflected in the increasing share of the group companies in assets and capital (Table 8). However, the experience is mixed when it is considered across major industries (Table 5). Industries that have experienced significant increase in equity holding by the group companies include drugs and pharmaceuticals, plastics products, metal and metal products, electronics, transport equipment, etc. However, equity holding of the group companies declined in some of the industries like beverages and tobacco, and tyres and tube and the decline is quite substantial in case of the latter. It is difficult to ascertain reasons for these sectoral patterns. However, since many of these industries like drugs and pharmaceuticals, metal and metal products, transport equipment, etc. have also recorded considerable share of M&As, it is possible that firms in these industries have used this route to consolidate their business.

[23]It is also possible that in terms of tax laws, implementation issues or administrative needs, mergers make more sense as compared to acquisitions, if they are to be undertaken within the business group. This needs to be explored further.

Table 5: Business Consolidation in Major Industries of Indian Manufacturing Sector, 1994-11						
Industry	Equity of Group Companies/ Assets			Equity of Group Companies/ Capital Employed		
	AV	CV	GR	AV	CV	GR
Food products	10.93	0.23	3.09	5.72	0.17	1.98
Beverages and tobacco	25.20	0.26	-2.69	11.20	0.28	-2.79
Textiles	9.04	0.17	2.15	4.57	0.13	1.98
Drugs and pharmaceuticals	18.33	0.65	12.11	6.76	0.55	10.53
Petroleum products	9.31	0.12	-0.35	4.59	0.21	1.94
Plastic products	16.87	0.64	12.23	8.34	0.51	9.90
Rubber and rubber products	8.38	0.33	4.13	5.56	0.31	4.60
Tyres and tubes	13.81	0.73	-13.66	7.94	0.59	-11.23
Non-metallic mineral products	7.61	0.22	3.25	4.38	0.26	2.82
Metals and metal products	12.30	1.04	16.19	5.44	0.76	12.36
Electronics	12.21	0.67	9.36	4.67	0.53	8.29
Electrical and non-electrical Machinery	18.36	0.58	8.52	6.47	0.38	5.04
Transports	16.81	0.62	9.49	8.39	0.57	9.37
Misc. manufacturing	10.65	0.39	4.67	5.28	0.24	2.69
Diversified	26.15	0.71	13.28	9.71	0.53	10.12
Total manufacturing	11.82	0.46	7.93	5.79	0.36	6.69

Note: AV – Average; CV – Coefficient of variations; GR – Growth rate.
Source: Prowess (CMIE)

Although a large part of M&As were concentrated in manufacturing sector, the number of deals varied significantly across different industry groups and the distribution is highly skewed towards a few industry groups. As it is shown in Table 6, majority of deals were concentrated in industries like food products, textiles, drugs and pharmaceuticals, metal and metal products, and machinery. In addition, non-metallic mineral products and electronics also had a reasonable share in M&As. On the other hand, the industries like beverages and tobacco, automobiles, petroleum and polymers, and rubber had negligible share in total number of deals. As regards composition, share of acquisition has increased in most of the industries. Given that inter-industry variations in M&As in the 1990s were caused by factors relating to market structure, firms' behaviour, their performance and policies of the government (Mishra, 2011)[24], it would be interesting to know if the factors and the nature and extent of their impact have undergone any change during the last decade. This would provide important insights on the role of regulatory changes such as the Competition Act (2002) and the new patent regime along with deepening of economic reforms for various sectors.

[24]The number of M&As was more in industries with larger market, faster growth of sales, greater selling and technology efforts, and higher exports intensity, but less in industries with higher minimum efficient scale of operation (Mishra, 2011).

Table 6: Distribution of Mergers and Acquisitions by Major Industries, 1992-93 to 2008-09						
Industry	Distribution of Deals (%)			Share of Acquisitions (%)		
	Mergers	Acquisitions	Total	1992-2000	2000-2009	1992-2009
Food Products	11.8	8.7	9.6	53.3	65.4	63.6
Beverages and tobacco	4.7	2.4	3.1	36.4	59.7	55.2
Textiles	10.6	8.8	9.4	53.3	68.0	66.4
Drugs and pharmaceuticals	8.5	9.1	8.9	61.2	73.4	71.8
Chemicals	21.4	18.8	19.6	58.0	69.3	67.8
Plastic products	3.2	3.8	3.6	58.1	75.9	73.9
Petroleum and Poly	2.9	3.2	3.1	70.3	72.6	72.2
Rubber and tyre	1.2	1.7	1.5	75.0	76.6	76.3
Non-metallic mineral products	4.7	6.9	6.2	79.2	77.4	77.7
Metals	10.1	9.1	9.4	50.6	70.6	68.3
Machinery	11.5	12.0	11.8	60.5	73.4	71.3
Electronics	5.3	6.5	6.1	75.5	73.9	74.3
Automobile	0.9	2.7	2.2	90.5	87.7	88.1
Automobile ancillaries	3.6	5.3	4.8	62.5	79.5	77.6
Misc. manufacturing	4.8	7.4	6.7	73.5	79.0	78.6
Diversified	3.1	2.7	2.8	63.0	69.3	67.9
Total manufacturing	100.0	100.0	100.0	61.6	71.9	70.5

Source: Business-Beacon (CMIE)

In service sector also, the distribution of M&As is highly skewed towards a few areas like financial services, wholesale and retail trading, information technology, and construction (Table 7). These four services together have accounted for more than 70 percent of the deals during the post reform period. Besides, in most of the services, acquisitions related deals have dominated mergers. However, change in share of acquisition in total deals is mixed across services. An exploration of the factors affecting variations in number of deals across services can also be an interesting area for future research.

As mentioned earlier, a large number of the MNCs have used the route of M&As to enter into Indian market and strengthen their presence. As a result, around 40 percent of FDI inflows during the early phase of economic reforms came into the country through cross-border M&As (Kumar, 2000; Saha, 2001). Dominance of M&As in FDI inflows continued in the recent past also with a significant portion of total FDI equity inflows taking the route of M&As. However, the MNC related deals were concentrated in consumer goods industries such as foods, beverages, household appliances, pharmaceuticals, personal care products, automobiles, etc. primarily to exploit countrywide established marketing, distribution and service network of firms involved in M&As in these industries (Beena, 2008).

Table 7: Distribution of Mergers and Acquisitions by Major Services, 1992-93 to 2008-09						
Service	Distribution of Deals (%)			Share of Acquisitions (%)		
	Mergers	Acquisitions	Total	1992-2000	2000-2009	1992-2009
Financial services	28.5	20.0	22.7	57.0	60.7	60.3
Hotels and tourism	3.4	3.6	3.5	65.5	69.8	69.2
Recreational services	3.7	6.9	5.9	88.0	79.6	80.2
Health services	0.9	1.2	1.1	57.1	77.8	75.7
Wholesale and retail	20.0	11.3	14.1	61.0	54.1	55.1
Transport services	3.0	3.8	3.5	80.0	72.8	73.4
Communication services	4.4	6.0	5.5	100.0	72.0	74.7
Information technology	14.6	25.6	22.1	88.8	78.0	79.2
Misc. services	8.8	10.7	10.1	88.0	71.2	72.5
Construction	12.8	10.9	11.5	55.6	65.2	65.0

Source: Business-Beacon (CMIE)

The high share of acquisitions in total number of deals and large proportion of FDI inflows through M&As have been reflected in increasing MNC participation in Indian manufacturing sector (Table 8)[25]. However, the extent and the trends of MNC participation have differed across major industries (Table A-1). In general, MNC participation has increased in most of the industries though at a different pace[26].

Outward Foreign Direct Investment

An interesting dimension of corporate response to economic reforms is increasing investment by Indian corporations abroad through either cross-border M&As or Greenfield projects. Rapid economic growth in the home country, abundant financial resources and strong motivations to acquire resources and strategic assets abroad have made the transnational corporations (TNCs), especially the Indian large state-owned enterprises and of other BRIC countries as important investors abroad in recent years (UNCTAD, 2011)[27]. Although India's share in FDI outflows from developing economies was the lowest vis-à-vis the emerging economies like Brazil, People's Republic of China, Mexico, and South Africa in the early 1990s, it has grown over the years and has subsequently surpassed that of South Africa and Mexico (Athukorala, 2009).

[25] Here, ratio of foreign exchange spending as dividend to profit before interest and taxes (PBIT), and total dividends earned and paid have been used as proxy for the extent of MNC participation. It is assumed that higher the ratio, greater is the extent of MNC participation.
[26] The patterns vary depending on the measure one uses. The appropriateness of different measures is not obvious and needs to be discussed.
[27] Outward FDI from India increased by US$10 billion in 2014 largely due to international expansion by Indian MNCs, making India is one of the largest outward investing developing economies (UNCTAD, 2015).

Table 8: Some Aspects of Corporate Strategies in Indian Manufacturing, 1994-2011					
Strategy	Average I (1994-95)	Average II (2010-11)	Average (1994-2011)	Coefficient of Variation	Growth Rate (%)
MNC Participation					
FOREX Spending as Dividend/ PBIT	1.23	2.32	2.23	0.17	1.71
Share of MNCs/ Dividend Paid	13.76	18.28	17.69	0.10	1.49
Business Consolidation					
Equity of Group Companies/ Assets	8.09	23.57	11.82	0.46	7.93
Equity of Group Companies/ Capital Employed	3.89	10.24	5.79	0.36	6.69
Technology Strategy					
In-house R&D Intensity*	0.04	0.26	0.14	0.77	14.03
Domestic Technology Purchase Intensity (Disembodied)*	0.07	0.28	0.27	0.35	5.32
Foreign Technology Purchase					
Disembodied (FOREX Spending as Royalty & Fees/Sales)	0.03	0.32	0.28	0.50	9.52
Embodied (FOREX Spending on Capital Imports/Sales)	2.23	1.44	1.67	0.38	-2.89
Total	2.65	1.70	1.94	0.36	-3.03
Non-Price Competition					
Advertising Intensity*	0.59	0.66	0.69	0.11	-0.58
Marketing Intensity*	3.35	1.49	1.96	0.30	-5.09
Distribution Intensity*	2.62	2.38	2.70	0.10	-0.99
Total Selling Intensity*	6.56	6.25	5.45	0.12	-1.78
Other Corporate Strategies					
Outsourced Manufacturing/ Sales	0.16	0.95	0.65	0.44	8.18
Imports Intensity#	0.33	2.06	1.75	0.42	-0.18
Vertical Integration@	42.08	29.56	35.71	0.14	-2.73

Note: *Intensity is measured as percentage share of expenditure in total sales of goods; #for final goods only; @Computed as the percentage share of value added in value of output[28]

Source: Prowess (CMIE)

Share of FDI outflows in gross domestic capital formation has also increased. (Table 9) The number of projects approved has increased from 220 in 1990-1991 to 395 in 1999-2000 and further to 1,595 in 2007-2008 (Kumar 2008). Total FDI outflow from India has increased from about US$25 million in the early 1990s to nearly US$14 billion in 2007 (Athukorala,

[28] Here, value added is computed as [Sales of Goods - (Raw material expenses + Salaries, wages, bonus, etc. + Power, fuel and water charges + Expenses for outsourcing manufacturing jobs+ Indirect taxes)]. On the other hand, indirect taxes are subtracted from sales of goods to compute value of output.

2009). In fact, during the second decade after reforms, the level of outward foreign direct investment (OFDI) was as much as 45 per cent of inward FDI (Table 9)

Table 9: Outward FDI (OFDI) by Indian Firms, 1991-2011

Year	OFDI/GFCF	OFDI/FDI	OFDI/Exports
1991-2000	0.13	6.22	0.39
2000-2011	2.54	45.10	6.42
1991-2011	1.46	27.61	3.70

Note: GFCF – Gross Fixed Capital Formation
Source: UNCTAD

Such increasing internationalization of Indian firms may largely be due to relaxation of restrictions on foreign exchange used to transfer capital for overseas acquisitions (Nagaraj 2006). Allowing domestic firms to invest in wholly owned subsidiaries or in joint ventures abroad seem to have helped these enterprises to strengthen their presence in the international market. As a result, many of the Indian firms have taken the route of acquisition for foreign investment. The country ranked 21 in global FDI outflows in 2009. It is important to ascertain the extent to which these outward capital flows are a result of inflexibilities and constraints faced by firms in domestic market.

The number of foreign acquisition by Indian firms has also increased significantly in recent years, particularly in the sectors like drugs and pharmaceuticals, information technology and telecommunications indicating enhanced competitive strength of domestic firms in the global market (Mishra, 2005 Gopinath, 2007; Nayyar, 2007). However, distribution of investments has been largely skewed towards information technology, drugs and pharmaceuticals and healthcare (FICCI, 2006). Using a sample of 173 foreign acquisition deals announced during January 2001 to August 2004, Mishra (2005) found that in around 59 per cent cases the target firms were from either USA or UK. This means that acquisition of firms from the developed countries is no longer a difficult proposition for the Indian companies. Besides, a large number of these acquisitions were horizontal in nature implying that the Indian companies are using the route of foreign acquisitions to enter into the international market for strengthening presence therein.

Non-Price Competition

Technology Strategies

With production becoming more knowledge-oriented across a wide range of industries and the process of liberalization and globalization leading to greater market competition, innovation-based competition is imperative. While the developed country firms have made significant in-house R&D efforts, technological progress in the developing countries has taken place mainly through spillovers from trade, foreign direct investment, technology licensing, joint ventures, mergers, acquisitions, and various other alliances.

In India, policy induced entry barriers reduced competitive pressures on firms and retarded their innovative efforts in the pre-liberalization era (Kumar, 1987). Further, during the pre-reform period, licensing or purchase of technology from foreign firms was difficult, and there were several restrictions on royalty rates to be charged, period of the contract, etc. that raised the 'price' of acquiring technology (including transaction costs). With economic reforms exposing firms to greater market competition, both domestically as well as internationally, it was expected that there would be more innovative efforts. In addition, the amendments to the Indian Patent Act since the late 1990s were likely to provide greater market power to the innovative firms and enhance their incentives to innovate[29].

The policy initiatives seem to have made firms to invest more in in-house R&D which shows an increasing trend in the post-reform era (Table 8). Although the level of in-house R&D intensity is very low and the Indian firms still rely heavily on foreign technology, more specifically on imports of capital goods[30], increase in R&D expenditure as proportion of sales at an average rate of 14 percent per annum appears to be very encouraging. Besides, while it remains very high, reliance on foreign technology through capital imports has declined. Disembodied foreign technology purchase, however, shows an increasing trend but its growth is lower than that of in-house R&D. In terms of levels, however, disembodied foreign

[29]The new policy regime also aims at removing unnecessary governmental interference that leads to endemic delays and uncertainty, provides automatic approval to technology agreements in high priority industries within specified parameters, and allows domestic firms to negotiate with foreign counterparts according to their own commercial judgements.

[30] Reduction in 'relative price' of foreign technology vis-à-vis in-house R&D and complementarities between the two seem to have made firms heavily dependent on the former.

technology purchase still remains higher than firms' own innovative efforts. Interestingly, there are signs of a growing domestic market for technology with more and more transactions for disembodied domestic technology purchase taking place.

Overall, while purchase of embodied foreign technology has declined, disembodied foreign technology purchase and in-house R&D have increased with the latter showing a higher rate of growth. Acquisition of technology from other domestic sources is also on the rise. While increase in in-house R&D intensity at a high rate may be due to its low base, decline in imports of capital goods is somewhat surprising. Easy access to foreign embodied technology through inward FDI and trade liberalization could have resulted in higher reliance on this source of technology. The increase in reliance on disembodied foreign technology may be due to regulatory relaxation of such imports and higher MNC participation in the Indian industry through inward FDI. The evolution of domestic technology market is an interesting new development and needs a more detailed analysis.

Table 10 : Technology Strategies in Indian Manufacturing Sector according to Ownership Category, 1993-94 to 2010-11

Technology Strategy (Expenditure as Percentage of Sales)	Private Domestic			Public (Center & State)			Private Foreign			All Firms		
	AV	CV	GR	AV	CV	GR	AV	CV	GR	AV	CV	GR
In-house R&D	0.13	0.77	12.83	0.12	0.82	11.81	0.21	1.01	16.15	0.13	0.80	12.59
Domestic Technology Purchase*	0.17	0.27	4.28	1.51	0.37	1.06	1.32	0.50	8.49	1.16	0.32	1.68
Foreign Technology Purchase-Disembodied@	0.09	0.30	-1.51	0.11	0.79	-10.93	0.98	0.49	7.45	0.20	0.27	-0.87
Foreign Technology Purchase-Embodied#	1.80	0.41	0.59	1.54	0.75	-4.40	2.53	0.55	-1.11	1.71	0.50	-2.90
Foreign Technology - Total	1.89	0.39	0.49	1.65	0.73	-4.83	3.51	0.41	1.28	1.90	0.47	-2.69
Total Technology Intensity	2.19	0.35	1.51	3.27	0.31	-1.53	5.04	0.37	3.79	3.19	0.24	-0.49

Note: *Includes only disembodied technology (i.e., payment of licence fees, technical knowhow and service fees and royalty; @include payment of royalty, licence fees and technical knowhow fees
#includes import of capital goods; AV – Average; CV – Coefficient of variations; GR – Growth rate
Source: Prowess (CMIE)

Most industries show a pattern of technology choices similar to those observed at the aggregate level. Firms in all major industries except non-metallic mineral products have recorded a sharp increase in in-house R&D intensity (Table A-2). The intensity of disembodied technology purchase from domestic sources has also increased at a very high rate in all the major industries except beverages and tobacco where the rate of increase has been low. While the intensity differs, most of the industries barring a few like beverages and tobacco, drugs and pharmaceuticals, and metal and metal products, have reduced their

reliance on embodied foreign technology through imports of capital goods. The reliance on disembodied foreign technology purchase also increased for all industry groups except beverages and tobacco. Given that in-house R&D has also increased at a high rate, increasing reliance on imports of disembodied technology in most industries may be due to complementarities between the two. However, despite the declining trend, reliance on capital imports vis-a-vis other sources of technology is still high in most industries and may have partly induced R&D for adaptation purposes.

Broad patterns of technology strategies do not differ across various ownership categories of firms (Table 10). In general, firms have emphasised more on purchase of foreign technology, and the intensity is the highest for the foreign firms possibly due to nature of industries they are engaged in, greater access to foreign technology and ability to spend for the same. Interestingly, as compared to private domestic firms, state-owned enterprises and foreign players have spent more on purchase of domestic technology. However, unlike levels, the trends differ for various types of firms. Firms belonging to all ownership categories have recorded an increase in in-house R&D intensity with the highest rate of growth as compared to other sources; the private foreign firms showing the highest rates of growth from a relatively higher levels, although private domestic and public sector firms have also done reasonably well in this regard [31]. But there are differences in the use of other sources of technology. Private domestic firms show an increase in expenditure on all types of technology sources, except foreign disembodied technology. While purchase of foreign disembodied technology has increased significantly for private foreign firms, imports of embodied technology show a decline. The public sector firms on the other hand show a significant decline in the purchase foreign technology, both embodied and disembodied. In fact, these firms show a decline in total expenditure on different types of technology sources.

Insofar as they can be captured by simple correlation coefficients, the interrelationships across various sources of technology differ by ownership category of firms (Table 11). For example, there is a positive relationship (which can be seen as a complementarity) between in-house R&D and disembodied domestic technology purchase for private (both domestic

[31]The trends in foreign technology purchase in Table 10 appear to be different when compared with that in Table A-2. This inconsistency is due to difference in composition of the sample of firms used in the two tables. Besides, Table 9 is based on firms classified across different ownership categories, whereas in Table 2-A, firms are grouped into different industries.

and foreign) firms, whereas the relationship is negative (which can be seen as substitutability) when public sector enterprises are considered. For foreign firms, the relationship is positive between in-house R&D and foreign disembodied technology and between purchase of domestic and foreign disembodied as well. On the other hand, the relationship between domestic and foreign technology is negative in case of public sector enterprises.

When all firms are taken together, complementarities between in-house R&D and technology purchase (either domestic or foreign) are not observed. Instead, it is found that there is substitutability between domestic and foreign disembodied technology purchase. But, no such relationship is observed when public sector enterprises are considered. Interestingly, complementarities between in-house R&D and domestic technology purchase are stronger than that between in-house R&D and foreign technology purchase both for private domestic and foreign firms. These relationships need to be explored more carefully as the correlation coefficients only provide a tentative idea of the same. An interesting research question could be if ownership – public, private foreign, private domestic – has moderated the relationship between different sources of technology as economic reforms liberalized access to all sources of technology and presumably facilitated technology market creation through changes in the IPR and trade policy regimes.

Table 11: Interrelationships across Various Technology Strategies by Ownership, 1993-2011						
Nature of Ownership	Technology Strategy	Technology Strategy				
		In-house R&D	Domestic Disembodied	Foreign Disembodied	Foreign Embodied	Total Foreign
Private Domestic Firms	In-house R&D	1.00				
	Domestic Disembodied	0.73[1]	1.00			
	Foreign Disembodied	-0.12	-0.36	1.00		
	Foreign Embodied	0.35	-0.28	0.34	1.00	
	Total Foreign	0.34	-0.29	0.37	0.99[1]	1.00
	Total	0.50[1]	-0.12	0.32	0.99[1]	0.98[1]
Public Sector Enterprises	In-house R&D	1.00				
	Domestic Disembodied	0.09	1.00			
	Foreign Disembodied	-0.42[2]	-0.59[1]	1.00		
	Foreign Embodied	-0.03	-0.53[1]	0.60[1]	1.00	
	Total Foreign	-0.06	-0.55[1]	0.64[1]	1.00	1.00
	Total	0.07	-0.10	0.40[2]	0.89[1]	0.88[1]
Private Foreign Firms	In-house R&D	1.00				
	Domestic Disembodied	0.94[1]	1.00			
	Foreign Disembodied	0.89[1]	0.86[1]	1.00		
	Foreign Embodied	0.05	-0.05	-0.04	1.00	
	Total Foreign	0.34	0.24	0.29	0.94[1]	1.00
	Total	0.71[1]	0.64[1]	0.63[1]	0.72[1]	0.90[1]
All Firms	In-house R&D	1.00				
	Domestic Disembodied	0.16	1.00			
	Foreign Disembodied	0.22	-0.48[1]	1.00		
	Foreign Embodied	-0.03	-0.52[1]	0.67[1]	1.00	
	Total Foreign	-0.02	-0.52[1]	0.70[1]	0.99[1]	1.00
	Total	0.19	-0.10	0.60[1]	0.89[1]	0.89[1]

Note: [1]significant at 5 percent; [2]significant at 10 percent
Source: Prowess (CMIE)

Overall, economic reforms including the new patent regime seem to have had a favourable impact on in-house innovative efforts along with an increase in purchase of disembodied technology domestically and from abroad. The change in the IPR regime may have contributed to the development of markets for disembodied technology by creating more enforceable/clearly defined property rights and the associated reduction in leakages and transaction costs. While embodied foreign technology purchases intensity has declined, reliance on foreign disembodied technology has increased but the levels are still low. It is possible that with liberalization of FDI policies, equity linked dis-embodied foreign technology inflows have increased, leaving the ratio of expenses on capital imports (embodied foreign technology) to sales high but showing a relative decline.

Product Differentiation, Marketing and Distribution

Non-price competitive strategies like advertising play a significant role in differentiating products/services from rivals, and creating entry barriers under imperfect competition. Advertising can enhance image of products/services of the concerned firm in terms of quality, thereby persuading the consumers to favour these products/services over other alternatives. This makes demand for these differentiated brands less elastic and results in increased control over price and hence higher profitability. Moreover, advertising also creates barriers to entry for new firms as well as for upward mobility of less favoured firms. While advertising by entrants helps them to become recognized, intensive counter advertising by incumbents drowns out entrants' images and thereby lessens the volume of sale they can capture. All these limit competition in the marketplace[32]. In addition, investments for building marketing and distribution related complementary assets help a firm in two ways. First, it raises competitiveness by developing strong marketing and distribution network and, thereby, facilitating appropriability and enhancing efficiency. This results in greater market penetration as well as in the creation of entry barriers for potential entrants. Secondly, such assets increase bargaining power in equity based foreign collaborations by providing greater access to distribution channels which may be useful for partnering firms, especially MNCs.

The data suggests that the role of advertising based product differentiation as a strategy has been less prominent vis-à-vis efforts towards developing marketing and distribution related complementary assets in Indian manufacturing sector during the post-reform period (Table 8). More importantly, expenses on advertising, marketing and distribution as proportion of sales have declined during this period, and the decline has been sharp in case of marketing intensity. This sharp decline may be due to rationalisation of expenses towards paying commissions, rebates, discounts, and direct selling agents through business consolidation.

Table A-3 shows the relative importance of advertising, marketing and distribution across industries and their changes over time. It is observed that selling expenses as proportion of sales differ significantly across industries depending on their requirements of advertising, marketing and distribution. For example, advertising seems to be an important strategy in beverages and tobacco, whereas emphasis on marketing is higher in industries like drugs and

[32]Advertising can also facilitate entry by helping the newcomers to make their product known quickly so that its concentration increasing effect can be dissipated or even reversed.

pharmaceuticals, and tyres and tubes. Similarly, creating distribution networks appears to be a crucial strategy in non-metallic minerals, and tyres and tubes.

The rates of growth of selling expenses by industry groups show some interesting patterns. All types of selling expenses have seen a positive growth in drugs and pharmaceuticals and transport equipment, whereas all of them have declined in petroleum products, and metal and metal products. Advertising expenditures have increased in textiles, rubber and rubber products, non-metallic mineral products, and transport equipment at a pace faster than the distribution related expenses. Transport equipment has seen significant multinational entry in the post-reform era which may have induced firms to spend more on advertising for reaching the customers. Rapid growth in advertising expenditures in non-metallic mineral products signifies emergence of product differentiation strategies in the sector which was hitherto known for its homogeneous products like cement. However, decline in advertising expenditures in beverages and tobacco, and electronics is surprising as competitive pressures have increased in these industries.

Decline in investments for marketing and distribution related complementary assets can result in two types of problems, viz., decline in relative competitiveness of firms due to inadequate appropriability and efficiency, and their lesser bargaining power in future equity based foreign collaborations. Interestingly, changes in selling expenses have significantly affected market concentration and patterns of M&As across industries. While industries with higher advertising and distribution intensity have experienced increase in market concentration, it has declined in industries where firms make larger efforts towards marketing (Mishra and Behera, 2007). Similarly, industries with greater selling efforts by firms have recorded more number of M&As (Mishra, 2011). All these links are interesting and worthy of further analytical exploration.

Other Corporate Strategies

Competitive pressures unleashed by economic reforms seem to have resulted in an increase in importance of business strategies like outsourcing manufacturing jobs (Table 8). It is expected that manufacturing outsourcing would allow rationalization of production wherein firms can exploit economies of scale and scope in specific segments while outsourcing activities that are not cost-competitive. In this sense, outsourcing has a very important

strategic role in situations where firms compete with one another on production costs. While there has been movement towards greater outsourcing at a reasonably high rate during the post-reform period, at the same time, as one would expect, degrees of vertical integration have recorded a decline (Table 8). Thus, manufacturing outsourcing is emerging as an alternative to in-house production and hence can be seen as a strategy of vertical disintegration.

Imports of finished goods in a particular sector can enhance market contestability. For firms that are importing for re-sale, they can also reduce vertical integration by lowering value-added to sales ratios. Interestingly, import intensity (of finished goods) was higher during the last three years in the data as compared to that in the initial years of reforms. However, it has recorded a declining trend when the entire post-reform period is taken together, though the rate of decline has been only marginal. This broadly suggests that removal of restrictions on imports has failed to increase market penetration through import of finished goods and outsourcing may be one of the strategies used to reduce costs and compete with imports of finished goods.

However, importance of these strategies varies by major industries (Table A-4). It is found that manufacturing outsourcing has increased in majority of industries and the rate of growth is high in all the cases possibly due to its low base. On the other hand, all major industries have recorded decline in degrees of vertical integration during this period. Thus, outsourcing manufacturing jobs is emerging as an alternative business strategy, particularly to vertical integration in most industries. Given that vertical integration can potentially reduce production and other transaction costs and/or uncertainties in output and input markets, identifying the underlying factors for such a strategic shift towards manufacturing outsourcing can be an interesting area of future research. At a broader level, however, it reflects maturing of outsourcing markets.

While its extent differs across major industries, the rate of growth in import intensity of final goods has been quite high in some of the industries like plastic products, tyres and tubes, machinery, and transport equipment. However, competition from imports and/or import reliance has declined in beverages and tobacco, textiles, drugs and pharmaceuticals, and

petroleum products and the rate of decline has been very high in petroleum products possibly due to regulations on price and imports by the government (Table A-4).

Are there systematic linkages across various corporate strategies?

When seen across various corporate strategies for the manufacturing sector as a whole, the interrelationships appear to be very complex during the post-reform period (Table A-5). For example, while there is a positive association between in-house R&D and business consolidation, innovative efforts are found to be negatively correlated with non-price competition. Negative correlation is observed between domestic and foreign technology purchase as well, when the entire period is taken together. It is also found that advertising is negatively correlated with foreign technology purchase, whereas the correlation is positive for marketing. Interestingly, correlation between foreign embodied and disembodied technology purchase appears to be very strong and positive. Similarly, business consolidation and outsourcing of manufacturing jobs are negatively linked to the strategies of marketing and vertical integration respectively. Further, outsourcing of manufacturing jobs is negatively associated with technology purchase, whereas it has positive association with business consolidation. On the other hand, relationship is reverse when vertical integration is considered. The implications of these linkages are not obvious in all cases but it is possible that business consolidation may have a varied effect on different firm strategies.

However, the interrelationships across various strategies seem to differ a great deal across industries as the correlation coefficients are not only smaller and insignificant at times, the signs of the coefficients also change when we estimate correlations across strategies using pooled data for major industries over time (Table A-6). For example, with pooled data, association of in-house R&D is positive not only with business consolidation, but also with various aspects of non-price competition. Similarly, unlike for the manufacturing sector as a whole, the relationship between innovative efforts and vertical integration appears to be positive when it is seen across industries as well as over time. Furthermore, business consolidation is found to have positive association with disembodied technology purchase, whereas the relationship is weak but negative when entire manufacturing sector is taken together. Such complexities in relationships across strategies require more rigorous efforts in

a multidirectional structure-conduct-performance-policy framework for deeper understanding of the underlying issues.

Overall, the trends and patterns of firms' responses to economic reforms have varied widely across industries as well as over time. The relationships among various strategies seem to be quite complex and vary across industries. While some of the strategies are positively associated with each other and therefore appear to be 'complementary' , there are also strategies that have negatively correlated with one another and can potentially be seen as ' substitutes' Insofar as correlations reflect linkages across strategies, these associations throw up interesting patterns and the linkages need more rigorous and elaborate exploration. Irrespective of the nature of linkages across strategies, the obvious questions are: What has been the impact of corporate responses to economic reforms on performance of firms? Have the strategic combinations helped firms in improving performance? What have been the trends and patterns of performance of firms in different industries? The next section of the paper addresses these questions.

V Corporate Performance

There are two broad ways of examining corporate performance, viz., the stock market approach which applies stock market valuations to determine performance, and firms' profitability. The stock market approach is based on the assumption of efficiency and assesses performance in terms of changes in share prices, controlling for movements in the market in general and the systematic risks of the company. However, the stock price approach may suffer from the problem of undervaluation or overvaluation if share prices incorporate random valuation errors[33]. Given this limitation, assessing corporate performance on the basis of profitability may be considered as a better approach. But, the profitability approach itself may have the problems of creative accounting techniques especially in respect of sales, assets, and profits, and published accounts may not be a true or fair reflection of performance. Hence, examining corporate performance only on the basis of profitability may be misleading. Considering these problems, the present paper examines both financial performance and operational efficiency. While three indices, viz., ratio of profit before interest and taxes (PBIT) to sales, and returns on capital employed (ROCE) are used to examine financial performance, operational efficiency is assessed in terms of cost-efficiency, export competitiveness, and inventory management.

[33]When it is so, changes in share prices do not necessarily reflect efficiency gains or losses rather may be due to merely a market correction.

Table 12: Some Aspects of Corporate Performance During the Post-Reform Period					
Performance Indicator	Average I (1994-95)	Average II (2010-11)	Average (1994-2011)	Coefficient of Variation	Growth Rate (%)
Cost Efficiency					
Expenditure for Raw Materials/Sales	43.24	40.05	47.03	0.11	1.36
Expenditure for Energy/Sales	5.70	3.73	4.87	0.17	-3.15
Expenditure for Wages and Salaries/Sales	0.66	4.26	3.61	0.49	6.47
Total Production Costs/Sales	49.61	45.87	55.37	0.10	1.22
Export Competitiveness					
Export Intensity	8.97	17.86	12.90	0.26	5.04
Trade Openness	9.00	20.00	16.59	0.23	4.41
Financial Performance including Inventory Management					
Profitability (PBIT/Sales)	12.00	10.79	10.15	0.13	0.36
Return on Capital Employed (ROCE)	13.11	13.54	12.68	0.21	2.41
Inventory of Raw Materials /Sales	10.90	8.45	8.27	0.14	-1.74
Inventory of Goods /Sales	11.38	8.72	9.58	0.13	-2.46

Source: Prowess (CMIE)

Operational Efficiency and Competitiveness

It is observed that economic reforms have failed to improve cost-efficiency of firms in Indian manufacturing sector (Table 12). Share of total costs of production in sales has declined during the last three years as compared to that in the initial years of economic reforms. But, when the entire post-reform period is considered, it shows an increasing trend largely on account of increasing expenses for raw materials that constitute 47 percent of sales[34]. As a result, although expenses for power and fuel show a declining trend at a moderate rate, share of production costs in sales revenue has continued to rise.

However, the level as well as the change in cost efficiency varies across industries (Table A-7). Except for beverages and tobacco, drugs and pharmaceuticals, and rubber and rubber products, share of raw materials in sales has increased in rest of the industries, though in many cases, the rate of increase has been marginal. On the other hand, wherever it has declined, the rate of decline has not been high. The ratio of expenses for power and fuel to sales has been very high in textiles, non-metallic minerals, and metal and metal products. But

[34] On contrary, average expenses for energy, and wages and salaries taken together is only around 8.5 percent of sales (Table 12)

the share of these expenses in sales has declined in most of the industries with beverages and tobacco, textiles, plastic products and electronics being exceptions. As regards wages and salaries, their share in sales has been higher than that for the sector as a whole in many industries like textiles, drugs and pharmaceuticals, rubber and rubber products, metal and metal products, electronics, and machinery. Further, the ratio has increased at a high rate in all these industries except metal and metal products[35].

Overall, cost competitiveness has not improved during the post reform period. The scale of operations of most of the Indian manufacturing firms is below their global competitors due to higher capital costs, restrictive labour laws, small size of the domestic market, and inadequate systems to manage large work forces and majority of Indian firms do not perceive themselves as having strengths to compete on low prices globally (Chandra, 2009).

Interestingly, while cost intensity does not show any improvement, policy reforms seem to have helped the Indian corporate sector to enhance competitiveness in the international market. Both export intensity and trade openness have increased during the post–reform period (Table 12). In contrast to the pre-reform period, India's exports have grown at a faster rate than the rate of growth of world exports during the post-reform period possibly due to devaluation of rupee particularly in the 1990s and increase in competitiveness of firms following enhanced market competition.

The observations are by and large the same when considered across major industries (Table A-8). Export intensity has been very high in many of the industries like food products, textiles, drugs and pharmaceuticals, plastics, non-metallic mineral products, and miscellaneous manufacturing, whereas high trade openness is observed in most of the industries barring a few such as beverages and tobacco, petroleum products, transport equipments and miscellaneous manufacturing. Both the indices show increasing trend in all industries except beverages and tobacco and miscellaneous manufacturing, and the rate of growth has been reasonably high in some of the industries like drugs and pharmaceuticals and petroleum products.

Increase in export intensity in a large number of industries suggests an improvement in export orientation of Indian firms. International market is preferred to domestic market in these

[35] Further, in all industries, the ratio has fluctuated considerably during the period under consideration.

industries possibly due to impetus given by devaluation of rupee and firms' inclination to reap benefits of various incentives in export policies. High competition in the domestic market might have also forced firms to find out new market opportunities through exports. On the other hand, higher rate of growth of trade openness vis-a-vis export intensity in tyres and tubes, non-metallic mineral products, and transport equipment implies that if export competitiveness has increased, reliance on imports has also increased in these industries. A variety of factors like import intensity of exports, price elasticity of Indian exports, etc. might have contributed to the changes in the ratio of exports to imports.

Both profitability and rate of return on capital employed have increased during the post-reform period, though the rate of growth has been marginal for profitability. More importantly, fluctuations in profitability or rate of returns on capital employed are quite low, indicating reasonably consistent performance over the years. In other words, economic reforms have been accompanied by stable financial performance of firms, though there is no significant improvement in this regard. Inventory management in respect of raw materials and output shows sign of improvement, though at a slow pace. However, management of output inventory has improved at a relatively faster rate vis-a-vis that of raw materials.

As one would expect, the level and trends in financial performance indicators vary across industries reflecting variations in intensity and level of competitive pressures and/or efficiency changes (Table A-9). While both the level of profitability and rate of returns on capital employed appear to be high for most of the industries, food products, petroleum products, and transport equipment have experienced a decline in profitability. On the other hand, the rate of returns on capital employed shows a marginally declining trend in food products and miscellaneous manufacturing. However, unlike what is observed at the aggregate level, some of the industries have experienced fluctuations in financial performance over the years possibly due to the nature of competition and/or inappropriateness of strategic sets in respective markets. Although profitability has increased, the rate of growth has not been high in most of the industries except rubber and rubber products, and metal and metal products. Similarly, only a few industries like rubber and rubber products, non-metallic minerals, metal and metal products and machinery could record a reasonably high rate of growth of returns on capital employed.

As regards performance in terms of inventory management, it is observed that the ratio of both output inventory to sales and inventory of raw materials to sales have declined significantly in many industries, particularly when compared with the entire manufacturing sector. Further, in most of the industries, the trends in output inventory and inventory of raw materials have been the same with food products, beverages and tobacco and tyres and tubes being the exceptions. While majority of industries have experience an improvement in inventory management, the pace of improvement differs across industries. Expansion of markets and/or increase in competitive pressure seems to have contributed to better management of inventory (Table A-9). It is, however, difficult to assess if declining trends in output inventory to sales ratio in these industries can be seen as a reflection of improvements in manufacturing capabilities of firms.

Thus, while the firms have applied a variety of strategies for their survival and growth following economic reforms, the chosen strategic combinations seem to have failed in improving their performance in a significant way. The observed trends and patterns are the same in majority of the industries though the extent differs. Increase in market competition, especially from the MNCs has limited firms' monopoly power. It is possible that inadequate innovative efforts and various policy rigidities have slowed the pace of efficiency improvement. However, it needs to be emphasized that while profitability may not have increased dramatically, it still shows a positive trend and in that sense, strategic responses to economic reforms have helped firms to deal with enhanced competition and retain their profitability. Of course, the data only captures the surviving firms and we do not know if there has been an increase in mortality rates. The same can be said for operational efficiency as one sees some positive signs. Understanding the appropriateness of the strategic sets chosen by firms, therefore, requires a more detailed scrutiny.

VI Concluding Observations

In the context of various policy initiatives made during the last two decades to reform the Indian economy in general and the corporate sector in particular, the present paper explores how firms have responded to these policy measures and the resultant changes in business conditions. During the post-reform period as a whole, industry sector in general and manufacturing sector in particular have grown at a consistent rate. However, the rate of growth of industry sector has not

accelerated following economic reforms probably due to slow growth in agriculture and industrial productivity. On the positive side, investment in general and FDI in particular have shown considerable increase in the decade of 2000 vis-à-vis that in the 1990s. Increases in competitive pressures during this period have resulted in Indian corporate sector adopting a variety of strategies.

Firms have largely relied on mergers and acquisitions to restructure their business and grow. However, these strategies were concentrated in a few industries like food products, textiles, chemicals (more specifically in drugs and pharmaceuticals), metals and machinery. Moreover, merger as a strategic option was mainly used by private domestic firms of the same business group to consolidate their businesses and presumably to enhance competitiveness. Foreign private firms, on the other hand, have been more active in using the route of acquisition to enter into specific industry groups. State-owned enterprises did not restructure their business through M&As possibly due to stiff resistance by employees and other organizational rigidities. One of the outcomes of M&As was that group firms have consolidated their ownership and enhanced share in equity. This share of equity has increased dramatically from about 8.1 per cent to 23.6 per cent during the period under consideration. The combinations that aimed at correcting over-diversification of the pre-reform period can potentially provide efficiency benefits to firms.

Technology strategies seem to have undergone a major change in recent years. In-house R&D intensity (although still low) has seen significant growth, the relative role of embodied technology purchase from abroad has declined, while disembodied technology purchases (both from domestic and foreign sources) has seen an increase. This shift towards higher reliance on indigenous technology is welcome but this effort needs to be enhanced. Given the fact that FDI inflows have increased in recent years, it is likely that equity linked transfer of foreign technologies have replaced embodied technology purchase from foreign sources. From the available data it is difficult to understand the dynamics of the linkages between equity linked technology flows and indigenous technology efforts. But this remains an area which needs to be explored in detail.

The strategies of building marketing and distribution related complementary assets continue to dominate the strategy of product differentiation in terms of relative investments in marketing, distribution and advertising. However, share of selling expenses in sales has declined and this

decline was essentially due to relative reduction in marketing expenditures. All types of selling expenses have not grown as rapidly as sales. It is possible that efficiency of these investments has improved partly due to the efficiencies derived from merger and acquisition driven consolidation. However, it is difficult to assess that possibility.

Competitive pressures unleashed by introduction of deregulatory policy measures and stagnancy in growth of industry sector in particular seems to have resulted in growing importance of business strategies of sub-contracting and outsourcing of manufacturing jobs. As a result, degrees of vertical integration have declined. However, despite removal of restrictions, import intensity shows a declining trend indicating lesser reliance on imports of finished products in different industries and degree of import-based competition in the market, though the rate of decline has been very marginal.

Despite all these strategic changes , cost-efficiencies in Indian manufacturing sector do not show improvements; share of production costs as a proportion of sales have increased largely on account of increasing expenses for raw materials. Energy costs as a proportion of sales have declined. Although wages as a proportion of sales have increased at a higher rate, their contribution is not significant due to low weight in overall cost structure of firms. Insofar as this ratio also depends on price of output, which has seen some downward pressures during the post-reform period, total costs of production to sales ratio needs to be interpreted cautiously. In this context, it is useful to know that inventory management in terms of both output and raw materials has seen marginal improvements during the post-reform period. Besides, profits have continued to rise, though at a low pace.

Export orientation of firms has increased considerably during the post-reform period and this increase in exports intensity is spread across industries. Significantly high exports intensity and its increase across major industries signal enhanced global competitiveness of Indian firms following economic reforms. However, this increase is not high enough when compared with imports, which have grown faster in some of the industries.

Financial performance of firms measured as the ratio of PBIT to sales and rate of returns on capital employed has improved consistently, though the rate of increase has not been high, particularly in case of PBIT/sales. This slow growth of profitability may be due to increasing

competition in different markets and failure of firms in enhancing their cost efficiency. It is also possible that firms have failed in choosing appropriate set of strategies.

Overall, the observed trends in the post-reform period are interesting and need to be analysed more closely. More specifically, one needs to systematically explore how in the liberalized scenario, merger and acquisition led consolidation and inflows of FDI are linked to adoption of various non-price strategies relating to technology and product differentiation. As economic reforms deepen and competitive pressures build up, an analysis of these interactions would provide useful insights for understanding corporate behaviour and for making policy choices.

Further, along with differences in broad trends of various strategies, their interrelationships may also differ for some industries depending on structure of market and other sector specific differences including policies and regulation, etc. Given such complexities, more rigorous efforts are required towards exploring interrelationships across various strategies in different industries in a multidirectional structure-conduct-performance-policy framework.

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Annexure

Table A-1: MNC Participation in Major Industries of Indian Manufacturing Sector, 1995-96 to 2010-11				
Industry	FOREX Spending as Dividend/PBIT		Share of MNCs/ Dividend Paid	
	AV	GR	AV	GR
Food products	3.21	2.48	26.72	2.72
Beverages and tobacco	5.01	8.53	30.16	1.25
Textiles	1.17	-1.23	13.54	4.59
Drugs and pharmaceuticals	2.70	1.04	17.96	-0.48
Petroleum products	1.18	0.33	9.93	-1.81
Plastic products	1.28	3.51	11.27	8.89
Rubber and rubber products	2.07	4.98	24.10	5.48
Tyres and tubes	0.73	-0.29	10.19	4.87
Non-metallic mineral products	0.93	10.70	8.75	11.05
Metals and metal products	0.82	-3.45	8.00	1.15
Electronics	0.94	1.41	10.13	-0.43
Machinery*	3.04	2.37	22.03	1.20
Transports	3.66	3.68	27.73	-0.72
Misc. manufacturing	0.50	-2.39	6.66	-2.08
Diversified	2.41	3.46	20.40	3.69
Total manufacturing	2.23	1.71	17.69	1.49

Note:*includes electrical and non-electrical machinery; AV – Average; GR – Trend Growth Rate (%)
Source: Prowess (CMIE)

Table A-2: Technology Strategies by Firms in Major Industries of Indian Manufacturing Sector, 1994-95 to 2010-11										
Industry	In-House R&D Intensity		Domestic Technology Purchase Intensity		Foreign Technology Purchase Intensity					
					Royalty		Capital Imports		Total	
	AV	GR	AV	GR	AV	GR	AV	GR	AV	GR
Food products	0.06	7.63	0.63	12.91	0.15	4.59	0.49	-2.86	0.57	-4.40
Beverages and tobacco	0.05	18.81	0.92	2.17	0.38	-0.15	0.73	4.55	0.76	4.22
Textiles	0.02	8.23	0.46	27.92	0.03	11.63	3.11	-1.65	3.19	-1.93
Drugs and pharmaceuticals	2.09	15.21	0.31	21.73	0.06	2.79	1.42	6.32	1.50	5.55
Petroleum products	0.01	17.81	0.13	23.74	0.01	11.62	1.33	-6.51	1.66	-7.81
Plastic products	0.05	11.47	0.38	21.03	0.09	17.80	3.54	-3.56	3.64	-3.68
Rubber and rubber products	0.20	21.63	1.09	17.22	0.28	5.26	1.06	1.42	1.22	2.15
Tyres and tubes	0.10	10.05	0.57	21.00	0.14	11.27	1.27	8.89	1.37	7.69
Non-metallic mineral products	0.03	0.21	1.03	6.92	0.50	7.90	1.52	-2.97	1.64	-3.12
Metals and metal products	0.04	7.89	0.69	11.49	0.29	5.84	2.34	2.75	2.57	1.48
Electronics	0.40	14.63	1.08	8.64	0.46	5.39	2.78	-0.90	3.16	-1.13
Machinery*	0.26	15.18	0.65	16.84	0.16	11.18	1.11	-0.85	1.38	-0.78
Transports	0.19	18.23	0.97	11.56	0.60	13.08	2.54	-4.64	3.32	-1.63
Misc. manufacturing	0.06	7.37	0.55	19.64	0.13	5.56	2.49	1.17	2.59	0.93
Diversified	0.21	12.07	0.86	18.77	0.27	15.47	1.27	-3.73	1.78	-3.03
Total manufacturing	0.14	14.03	0.27	5.32	0.18	9.52	1.67	-2.89	1.94	-3.03

Note: *includes electrical and non-electrical machinery; AV – Average; GR – Trend Growth Rate (%)
Source: Prowess (CMIE)

Table A-3: Non-Price Competition in Major Industries of Indian Manufacturing Sector, 1994-95 to 2010-11								
Industry	Advertising Intensity		Marketing Intensity		Distribution Intensity		Selling Intensity	
	AV	GR	AV	GR	AV	GR	AV	GR
Food products	1.39	-0.67	1.39	0.56	2.90	-1.40	5.84	0.15
Beverages and tobacco	3.03	-2.48	2.63	4.49	1.71	3.02	7.45	1.65
Textiles	0.51	2.51	1.88	-0.44	2.24	0.15	4.95	2.35
Drugs and pharmaceuticals	1.34	1.48	5.31	0.71	1.91	1.53	8.58	1.10
Petroleum products	0.06	-7.40	2.38	-20.06	2.41	-2.32	4.90	-10.67
Plastic products	0.40	-4.74	1.57	-2.62	2.32	1.28	4.40	0.17
Rubber and rubber products	1.08	6.17	1.97	-2.52	2.32	1.89	5.92	4.08
Tyres and tubes	0.84	-3.59	3.04	0.17	3.35	1.32	7.44	1.17
Non-metallic mineral products	0.68	3.32	1.90	-0.62	8.17	1.73	10.69	1.24
Metals and metal products	0.11	-5.32	0.85	-1.53	2.82	-3.44	3.94	-1.54
Electronics	0.89	-3.45	2.31	0.79	1.05	1.57	4.54	2.22
Machinery*	0.64	-2.99	2.18	2.76	1.33	2.82	4.36	3.46
Transports	0.79	2.70	1.67	1.83	1.32	0.72	3.82	1.99
Misc. manufacturing	1.11	4.21	3.48	0.87	2.27	-1.76	7.05	1.40
Diversified	1.40	4.71	3.50	3.59	4.12	0.17	9.28	3.04
Total manufacturing	0.69	-0.57	1.96	-5.08	2.70	-0.99	5.45	-1.78

Note: *includes electrical and non-electrical machinery; AV – Average; GR – Trend Growth rate (%).
Source: Prowess (CMIE)

Table A-4: Other Business Strategies by Firms in Major Industries of Indian Manufacturing Sector, 1994-95 to 2010-11						
Industry	Outsourced Manufacturing/ Sales		Imports Intensity		Vertical Integration	
	AV	GR	AV	GR	AV	GR
Food products	0.71	8.44	2.34	6.77	27.06	-2.73
Beverages and tobacco	0.37	9.98	0.04	-2.24	53.24	-0.77
Textiles	1.74	10.36	0.27	-2.28	26.65	-3.19
Drugs and pharmaceuticals	0.80	9.77	1.14	-1.44	46.03	-0.90
Petroleum products	0.12	3.83	3.43	-8.77	48.42	-3.38
Plastic products	0.84	2.73	0.32	11.17	27.90	-2.40
Tyres and tubes	0.71	12.91	0.13	16.74	28.44	-3.13
Non-metallic mineral products	0.86	3.83	2.45	5.75	42.30	-0.69
Metals and metal products	1.05	6.49	0.32	2.00	32.14	-3.37
Electronics	0.27	10.95	2.96	3.70	27.16	-3.60
Machinery*	1.40	11.35	0.88	10.67	26.16	-4.75
Transports	0.85	10.95	0.26	10.15	25.45	-3.63
Misc. manufacturing	0.84	7.01	0.47	8.51	33.05	-1.76
Diversified	0.67	8.99	4.36	10.43	25.14	-7.34
Total manufacturing	0.65	8.18	1.75	-0.19	35.71	-2.73

Note: *includes electrical and non-electrical machinery; AV – Average; GR – Trend Growth Rate (%)
Source: Prowess (CMIE)

Table A-5: Correlation Between Various Strategies Adopted in Indian Manufacturing Sector During 1993-2012

Broad Strategy	Specific Strategy	Technology Strategy					Business Consolidation			Non-Price Competition				Other Strategies		
		In-House R&D	Domestic Disembodied	Foreign Disembodied	Foreign Embodied	Total Foreign Technology	Consolidation-Assets	Consolidation-Capital	Consolidation-Total Equity	Advertising	Marketing	Distribution	Selling	Manufacturing Outsourcing	Imports	Vertical Integration
Technology Strategy	In-House R&D	1.00														
	Domestic Disembodied	0.36	1.00													
	Foreign Disembodied	-0.30	-0.74[1]	1.00												
	Foreign Embodied	-0.04	-0.44[2]	0.76[1]	1.00											
	Total Foreign Tech	-0.08	-0.49[1]	0.81[1]	0.99[1]	1.00										
Business Consolidation	Consolidation-Assets	0.74[1]	0.35	-0.20	-0.05	-0.07	1.00									
	Consolidation-Capital	0.76[1]	0.46[1]	-0.34	-0.20	-0.22	0.98[1]	1.00								
	Consolidation-Total Equity	0.75[1]	0.24	-0.15	0.10	0.07	0.83[1]	0.80[1]	1.00							
Non-Price Competition	Advertising	-0.36	0.31	-0.46[1]	-0.43[2]	-0.45[2]	-0.33	-0.20	-0.57[1]	1.00						
	Marketing	-0.53[1]	-0.79[1]	0.74[1]	0.53[1]	0.57[1]	-0.52[1]	-0.61[1]	-0.31	-0.31	1.00					
	Distribution	-0.54[1]	0.03	-0.20	-0.29	-0.29	-0.63[1]	-0.56[1]	-0.76[1]	0.78[1]	0.13	1.00				
	Selling	-0.61[1]	-0.25	0.33	0.08	0.12	0.00	-0.07	-0.12	-0.02	0.42[2]	0.10	1.00			
Other Corporate Strategies	Manufacturing Outsourcing	0.71[1]	0.75[1]	-0.66[1]	-0.58[1]	-0.60[1]	0.68[1]	0.78[1]	0.50[1]	0.09	-0.86[1]	-0.27	-0.39[2]	1.00		
	Imports	0.09	0.11	0.08	0.33	0.30	0.19	0.15	0.02	0.17	-0.28	-0.02	-0.06	0.03	1.00	
	Vertical Integration	-0.71[1]	-0.65[1]	0.58[1]	0.49[1]	0.51[1]	-0.75[1]	-0.83[1]	-0.63[1]	0.08	0.80[1]	0.42[2]	0.30	-0.94[1]	0.01	1.00

Note: Here, the correlation coefficients are computed for the manufacturing sector as a whole with time-series data for the period 1993-94 to 2011-12;
[1]significant at 5 percent; [2]significant at 10 percent

Source: Prowess, CMIE

Table A-6: Correlation Between Various Strategies Adopted in Major Industries of Indian Manufacturing Sector Over Time

		Technology Strategy					Business Consolidation			Non-Price Competition				Other Strategies		
		In-House R&D	Domestic Disembodied	Foreign Disembodied	Foreign Embodied	Total Foreign Technology	Consolidation-Assets	Consolidation-Capital	Consolidation-Total Equity	Advertising	Marketing	Distribution	Selling	Manufacturing Outsourcing	Imports	Vertical Integration
Technology Strategy	In-House R&D	1.00														
	Domestic Disembodied	-0.03	1.00													
	Foreign Disembodied	0.02	0.00	1.00												
	Foreign Embodied	-0.03	-0.08[2]	-0.01	1.00											
	Total Foreign Tech	-0.04	0.92[1]	0.07	0.32[1]	1.00										
Business Consolidation	Consolidation-Assets	0.29[1]	0.21[1]	0.26[1]	-0.11[1]	0.18[1]	1.00									
	Consolidation-Capital	0.22[1]	0.18[1]	0.29[1]	-0.15[1]	0.13[1]	0.93[1]	1.00								
	Consolidation-Total Equity	0.19[1]	0.12[1]	0.12[1]	-0.04	0.10[1]	0.51[1]	0.57[1]	1.00							
Non-Price Competition	Advertising	0.10[2]	-0.04	-0.06	-0.21[1]	-0.12[1]	0.22[1]	0.26[1]	0.11[1]	1.00						
	Marketing	0.35[1]	-0.05	0.08[2]	-0.11[1]	-0.08	0.17[1]	0.12[1]	0.16[1]	0.44[1]	1.00					
	Distribution	-0.09[2]	-0.03	-0.12[1]	-0.11[1]	-0.08	-0.05	0.01	0.08	0.04	0.01	1.00				
	Selling	0.10[1]	0.75[1]	-0.08	-0.18[1]	0.64[1]	0.22[1]	0.21[1]	0.19[1]	0.31[1]	0.40[1]	0.38[1]	1.00			
Other Corporate Strategies	Manufacturing Outsourcing	-0.01	0.03	-0.03	0.03	0.03	0.09[2]	Neg.	0.02	0.22[1]	0.19[1]	-0.09[2]	0.08	1.00		
	Imports	0.06	0.09[2]	0.141	-0.16[1]	0.03	0.23[1]	0.13[1]	0.14[1]	0.07	0.22[1]	0.24[1]	0.24[1]	-0.01	1.00	
	Vertical Integration	0.10[1]	-0.11[1]	-0.08	-0.06	-0.13[1]	-0.05	Neg.	0.10[1]	0.28[1]	0.25[1]	0.24[1]	0.15[1]	-0.30[1]	0.00	1.00

Note: Here, the correlation coefficients are computed with pooled data set for 22 major industries (Food Products, Beverages and Tobacco, Cotton Textiles, Other Textiles, Readymade Garments; Synthetic Textiles; Textile Processing; Drugs & Pharmaceuticals; Petroleum Products; Plastic Products; Rubber and Rubber Products; Tyres and Tubes; Non-Metallic

Mineral Products; Metals and Metal Products; Electronics; Electrical Machinery; Non-Electrical Machinery; Automobile; Automobile Ancillaries; Leather Products; Miscellaneous Manufacturing, and Diversified) over the period 1994-95 to 2011-12; Neg. – Negligible (<0.005); [1]Statistically significant at 5 percent; [2]Statistically significant at 10 percent

Source: Prowess, CMIE

Table A-7: Cost Efficiency of Major Industries in Indian Manufacturing Sector, 1994-95 to 2010-11								
Industry	Raw Material/ Sales (%)		Energy/ Sales (%)		Wages & Salaries/ Sales (%)		Total Production Cost/Sales	
	AV	GR	AV	GR	AV	GR	AV	GR
Food products	60.78	0.46	3.45	-3.14	3.85	5.47	67.95	0.50
Beverages and tobacco	19.72	-0.76	1.67	1.10	3.28	9.68	24.65	0.73
Textiles	51.66	0.52	8.60	0.13	5.55	7.81	65.66	1.01
Drugs and pharmaceuticals	38.94	-0.97	3.16	-0.13	6.79	10.01	48.63	0.43
Petroleum products	42.28	3.35	0.85	-6.38	0.82	6.09	43.90	3.18
Plastic products	54.46	0.47	4.74	0.15	3.29	8.92	62.38	0.84
Rubber and rubber products	39.48	-0.28	5.90	-1.69	11.16	7.82	56.72	1.26
Tyres and tubes	50.36	1.27	5.16	-0.23	3.75	7.90	59.26	1.55
Non-metallic mineral products	29.54	0.91	16.48	-1.82	3.81	6.50	49.43	0.17
Metals and metal products	45.39	1.64	8.95	-1.95	4.74	3.80	58.81	1.12
Electronics	57.36	0.10	1.67	0.60	6.93	7.58	65.83	0.84
Machinery*	55.28	0.70	2.07	-3.81	6.94	6.65	64.19	1.15
Transports	56.00	0.66	1.81	-1.75	4.00	6.87	61.72	0.95
Misc. manufacturing	42.75	0.44	10.72	-4.06	7.89	9.14	61.06	0.61
Diversified	49.47	1.78	9.12	-3.10	7.89	10.20	66.29	2.02
Total manufacturing	47.03	1.36	4.87	-3.14	3.61	6.47	55.37	1.22

Note: *includes electrical and non-electrical machinery; AV – Average; GR – Trend Growth Rate (%)
Source: Prowess (CMIE)

Table A-8: Performance of Major Industries in International Market, 1994-95 to 2010-11				
Industry	Export Intensity		Trade Openness	
	AV	GR	AV	GR
Food products	14.87	0.73	17.21	1.55
Beverages and tobacco	5.16	-2.41	5.20	-2.41
Textiles	22.63	2.20	22.91	2.15
Drugs and pharmaceuticals	31.92	6.61	33.06	6.33
Petroleum products	8.95	13.78	12.38	7.54
Plastic products	15.54	2.44	15.85	2.61
Tyres and tubes	9.98	3.85	19.21	7.08
Non-metallic mineral products	21.83	2.32	14.28	6.61
Metals and metal products	13.72	4.66	24.27	2.67
Electronics	11.85	5.68	14.04	4.60
Machinery*	8.64	5.15	14.82	5.29
Transports	8.11	4.72	9.53	5.66
Misc. manufacturing	20.31	-5.20	8.38	4.89
Diversified	12.23	2.80	20.78	-4.89
Total manufacturing	12.90	5.03	16.59	4.81

Note: *includes electrical and non-electrical machinery; AV – Average; GR – Growth Rate (%)
Source: Prowess (CMIE)

Table A-9: Financial Performance of Major Industries in Indian Manufacturing Sector, 1994-95 to 2010-11								
Industry	PBIT/Sales		ROCE		Inventory of Raw Materials		Inventory of Goods	
	AV	GR	AV	GR	AV	GR	AV	GR
Food products	8.14	-1.51	11.08	-0.36	7.84	3.69	16.56	-2.49
Beverages and tobacco	12.96	2.45	24.35	0.52	8.37	-0.26	4.98	2.06
Textiles	8.99	2.85	7.65	2.82	10.68	0.85	11.45	0.40
Drugs and pharmaceuticals	17.14	3.58	15.66	0.57	9.37	0.82	14.03	0.66
Petroleum products	6.87	-2.14	13.94	0.11	4.81	0.57	6.57	0.73
Plastic products	9.70	1.32	9.22	2.66	8.58	-3.29	8.10	-2.77
Rubber and rubber products	12.46	8.43	13.28	9.92	8.06	-2.26	9.18	-3.20
Tyres and tubes	6.89	0.62	13.49	2.09	6.41	0.85	7.17	-0.98
Non-metallic mineral products	12.02	2.92	11.72	5.19	10.13	-2.19	9.51	-1.98
Metals and metal products	12.75	3.99	11.30	6.29	10.64	-2.13	11.68	-4.66
Electronics	10.90	0.52	9.97	0.03	15.52	-2.23	12.99	-3.48
Machinery*	11.32	2.17	16.65	3.59	10.59	-1.60	12.80	-3.40
Transports	9.13	-0.82	17.04	0.48	6.46	-5.74	5.18	-2.45
Misc. Manufacturing	12.47	1.06	9.89	-0.48	13.79	-0.75	9.04	-3.22
Diversified	13.44	3.64	12.70	3.40	11.00	-1.56	12.58	-0.12
Total manufacturing	10.15	0.36	12.68	2.41	8.28	-1.74	9.58	-2.46

Note: *includes electrical and non-electrical machinery; AV – Average; GR – Trend Growth Rate (%)
Source: Prowess (CMIE)