

Manufacturing Strategy in a Changing Context

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Manufacturing Strategy in a Changing Context

*Nilmadhab Mohanty**

[Abstract: India's development strategy, from the beginning of the planning period, has given primacy to industrial development as the driver of economic growth. Although the initial approach of public-sector led, regulation-oriented industrial growth was abandoned, since the early 1990's, in favour of industrial and trade liberalisation and private enterprise-oriented industrialization, the mind-set of the 'command-and-control' regime, requirement for multiple 'bureaucratic approvals' and various forms of rent-seeking behaviour of the pre-1991 era linger on. These have posed various challenges for manufacturing that include its low contribution to gross domestic product (GDP) and to employment, the phenomenon of the "missing middle", the difficulties of 'doing business' due to a multiplicity of labour laws and other government regulations, poor quality of investment climate and inability to face international competitiveness due to low productivity and technological deficiencies. As a result manufacturing has played a secondary role to the services sector in the growth-process. Service-led development, however, has its limitations, especially in the area of employment-creation. It is, therefore, necessary to promote the development of the manufacturing sector through the implementation of an appropriate manufacturing strategy for the country. The National Manufacturing Policy 2011 of the Government of India follows a business-as-usual approach and as a result, it fails to address effectively the challenges faced by the manufacturing sector. An effective manufacturing strategy that takes into account the changed national and international conditions should comprise elements that address both the economy-wide policy and implementation issues and the requirements of the major manufacturing sub-sectors and small enterprises. Improving technologies, productivity and international competitiveness should be the main focus of the strategy. The manufacturing strategy will, however, succeed if it is backed by a strong national will along with enthusiastic participation by the state and local governments and receives high-level political support.

This paper seeks to examine if the current manufacturing strategy of the Government of India (GOI), as embedded in the National Manufacturing Policy (NMP) 2011, meets the challenges faced by the (manufacturing) sector in a changed and changing economic scenario. First, we briefly outline the main elements of the pre-1991 industrial development strategy and policy and then indicate broadly the changes that have come about in the

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situation due to the major economic reforms since the 1990s. The institutional context in which these policies need to be implemented has also been highlighted. Next we enumerate the main challenges that the manufacturing sector faces today which a credible strategy must address. Against this backdrop we assess the effectiveness of the strategy and policy put out by the central government. We then conclude with a few suggestions for an alternative approach.

I. Strategy in the Pre-reform Period

Four basic assumptions underlined the Indian industrial strategy and policies in the post-war period:

- Rapid industrialization through the development of heavy and basic industries was the key to long-term growth. The state will play a dominant role in the process with the private sector playing a minor role.
- Private capital was not efficient for growth and had a tendency towards monopolization. The state, therefore, has to intervene to control the growth of monopolies.
- Self-reliance should be the basis for development, including in technology development and investment in production activities. The role of foreign capital should be restricted in order to ensure the development of national capacities (both in production and technology development) and import of technology firmly controlled. This approach also implied 'export-pessimism', infant-industry protection and import substitution as the appropriate strategy for development.
- A small industry development policy was also crafted into the strategy. While large-scale capital intensive industries were meant to produce investment and intermediate goods, traditional house hold and small industries were required to produce consumer goods (to meet increased demand), with very little investment and greatly increased employment. The existence of small firms was viewed as a type of public good and the need for government intervention and reservation was seen as necessary to protect them against large factories.

Based on these assumptions, a series of instruments were devised through various industrial, trade and related policies and development programmes included in the five-year plans during 1951 and 1990. These included the reservation of key areas for the public sector ('commanding heights' rhetoric), a pervasive industrial licensing system, inward-looking trade policy, control over large domestic firms (through MRTP), foreign direct investment (FDI), and technology transfer, protective labour legislation, and reservation of production areas for small-scale industries.

II. Policy Reform in the 1990s

The unwieldy and complex system of regulation and control created to implement this strategy became in course of time counterproductive leading to inefficiency, stifling bureaucracy, corruption and other forms of rent-seeking behaviour which the system

promoted. This led to major economic reforms, first relatively mild “pro-business” ones in the 1980s and later more substantial “pro-market” reforms in 1991. These reforms covered a wide range of areas that somewhat changed the rules of the game, shifting the “driving force of resource allocation—decisively in favour of the market.” The major elements of the economic reforms that impacted on manufacturing are the following:

- The industrial licensing system was scrapped (1992) and the reservation of many areas of industrial activity for the public sector was abolished.
- Inward flow of foreign direct investment (FDI) and portfolio investment was liberalized.
- The restrictions on large industrial houses, intended to curb monopolies, were significantly relaxed and large companies became eligible to expand existing units and set up new ones.
- The small scale reservation policy was diluted substantially by taking most of the manufactured items off the small scale reservation list.
- Sweeping trade liberalization including abolition of import licensing, reduction in tariff levels and progressive reduction of non-tariff barriers, was undertaken. Quantitative restrictions on the import of raw materials, intermediates and capital goods were abolished.
- Major financial sector liberalization including the removal of control on capital issues, free entry for domestic and foreign private banks and opening up of the insurance sector was undertaken.

There are, however, two aspects of this change that must be kept in mind as these have continued to influence the pace of development in manufacturing and other allied sectors in the post-reform years. First, the reforms addressed the problems faced in the product and to some extent capital markets, but left untouched the regulatory obstacles in two important factor markets, namely labour and land, which continue to affect adversely the pace of development in the manufacturing sector.

Secondly, though the stifling regulatory provisions were either scrapped or relaxed, some of the distortions created by them still linger on along with the mind-set of the “command-and-control” regime, corruption and other forms of rent-seeking behaviour of the pre-1991 era. Besides, there are still many ‘bureaucratic’ approvals that a business needs to obtain for starting/running its operations.

Another issue that is often ignored while discussing industrial or manufacturing strategy is the institutional framework within which such strategies and policies are designed and implemented. In India’s federal system of governance, both the central and state governments are involved in the process although there are qualitative differences in their respective roles. The economy-wide or framework policies—macroeconomic, financial, infrastructural, labour, environmental, foreign investment and trade policies—that also impact on manufacturing naturally fall in the domain of the central government. However, for these to be conducive for the emergence of a robust and dynamic manufacturing sector, there needs to be harmony and coordination among the responsible agencies. As far as the sector-specific manufacturing strategy and policies are concerned, normally the ministry in

charge of industry at the centre lays down the guidelines and prescriptions after wide consultation with the other relevant ministries and also the state governments who may have their own state-specific industrial strategy and policy. In any case unless there is a strong political commitment to the announced strategy and policy, it has a very slim chance of success.

Further, historically the states have been relatively more proactive in promoting industries, especially through private sector investment. Small industry development has always primarily been a state responsibility. During the pre-reform years, the central government no doubt established a number of large steel and other heavy and basic industry plants in the public sector, but even then its main focus was on laying down legislation and industrial and trade policies with accent on regulation, control, license and quota. The political environment in which one political party controlled the central and most state governments facilitated this development. The situation has changed somewhat with liberalization in economic policies and assertion of autonomy in economic matters by the states which are now governed by political parties other than the one at the centre. This to a considerable extent has the potential to dilute the effectiveness of central policies and strategies which in a liberalized context will tend to be advisory rather than prescriptive in nature.

Also, globalization and integration with global markets support this trend. Global markets and rules call for “better informed and less intrusive industrial policies, simultaneously strategic in approach and results-oriented, and which “sponsors” rather than “intervenes”, co-opting the private sector, leveraging upon its human and informational resources. (Frischtak, 1997).

III. Manufacturing and Its Challenges

Next, we discuss some key characteristics of the manufacturing sector as it has developed in India as the cumulative result of the mix of the strategies and policies followed during both the pre-reform and post-reform years. Most of the research on industrialization in India has been macroeconomic in nature and based on these studies, economic and business analysts have identified a number challenges that the sector faces which need to be addressed for facilitating growth. These are discussed below.

1. Although industry including manufacturing has shown consistent growth since 1951, manufacturing’s contribution to gross domestic product (GDP) and to employment remains limited. Also the sector is characterized by low productivity. Manufacturing value added in GDP has stagnated around 15-16 per cent since 1980 and remains relatively low compared to other major industrializing countries like China and South Korea (*Table 1*).
2. Further, what is worrying is that manufacturing’s growth-rate has become very volatile since 2008-09 (*Table 2*). Manufacturing needs to grow at a higher rate than GDP for the

economy to grow and create opportunities of employment. Increasingly the services sector is fulfilling this role.

Table 1. Structure of Output (per cent of GDP)

Country	Agriculture		Industry		Manufacturing		Services	
	2000	2010	2000	2010	2000	2010	2000	2010
India	23	19	26	26	16	14	50	55
China	15	10	46	47	32	30	39	43
South Korea	5	3	38	39	28	31	57	58

Source: World Development Indicators, 2012, the World Bank, 2012.

Table 2. Growth of GDP at Factor cost at 2004-05 prices (per cent)

Industry	2007-08	2008-09	2009-10 [^]	2010-11 [@]	2011-12 [*]	2012-13 (PE)
Agriculture	5.8	0.1	0.8	7.9	3.6	1.9
Industry	9.7	4.4	9.2	9.2	3.5	2.1
Manufacturing	10.3	4.3	11.3	9.7	2.7	1.0
Services	10.3	10.0	10.5	9.8	8.2	7.1
GDP at factor cost	9.3	6.7	8.6	9.3	6.2	5.0

[^]: Third revised estimate; [@]: Second revised estimate; ^{*}: First revised estimate; PE: Provisional Estimate

Source: Central Statistical Office, Government of India, New Delhi

Manufacturing's share in aggregate employment has also stagnated at around 11 per cent, as against 24 per cent for the services sector which had a share of 57 per cent in GDP in 2009-10 (Table 3). During the ten year period, 2000-2010, the employment share of agriculture contracted where as that of services increased while manufacturing's share in employment remained unchanged. Thus the excess labour from agriculture is being absorbed into the services sector, especially informal services rather than into manufacturing which in an industrializing country normally plays a much bigger role in creating jobs for the unskilled and semi-skilled persons.

Table 3. Employment by Sector in Millions

Sectors	1999-2000	2009-10	Sectoral share in GDP at 2004-05 prices per cent in 2009-10
Agriculture	237.67 (59.9)	244.85 (53.2)	14.6
Manufacturing	44.05 (11.1)	50.74 (11.2)	16.2
Services	94.2 (23.7)	116.34 (25.3)	57.1
Total	396.76 (100)	460.22 (100)	100

Note: Figures in brackets indicate percentages.

Source: Planning Commission (2013)

Productivity is the key to increased growth in manufacturing. Studies have shown that for the manufacturing sector as a whole TFP (total factor productivity) gain during the post-reform period (1991-92 to 2007-08) has been a low 0.58 per annum (Bhat 2013). A

comparison of productivity differentials in the relevant economic sectors between India and China during 1974-2004 (*Table 4*), as estimated by Bosworth and Collins (2008), further highlights this challenge. These calculations show that in respect of the industry sector, the rate of change in India's labour productivity has been about one-third that for China, the contribution of increased capital per worker has been much smaller, and India's gain in total factor productivity in this sector (also for manufacturing) have averaged only a very modest 1 percent per year. Services, on the other hand, have performed much better, especially after 1993, and have shown impressive performance in the rates of improvement in output per worker as well as in the rate of improvement in total factor productivity. From the overall data it becomes clear that India's growth has been fuelled primarily by the service sector activities whereas China has progressed remarkably due to the high growth in its industrial sector. To that extent the Indian experience differs greatly from that of the other industrializing countries that all started their growth-process by first emphasizing on low-wage, labour-intensive manufacturing before graduating to capital-and-skill intensive industries and IT (information technology) and other services.

Table 4. Sources of Growth: China and India, 1978–2004 [Annual rate of change per cent]

Period / Country / Sector	Output	Employment	Output Per Worker	Contribution of			
				Physical Capital	Education	Total Factor Productivity	
<i>Total Economy</i>							
1978-2004	China	9.3	2	7.3	3.2	0.3	3.6
	India	5.4	2	3.3	1.3	0.4	1.6
1993-2004	China	9.7	1.2	8.5	4.2	0.3	3.9
	India	6.5	1.9	4.6	1.8	0.4	2.3
<i>Industry</i>							
1978-2004	China	10	3.1	7	2.2	0.3	4.3
	India	5.9	3.4	2.5	1.5	0.3	0.6
1993-2004	China	11	1.2	9.8	3.2	0.3	6.1
	India	6.7	3.6	3.1	1.7	0.3	1.1
<i>Services</i>							
1978-2004	China	10.7	5.8	4.9	2.7	0.3	1.8
	India	7.2	3.8	3.5	0.6	0.4	2.4
1993-2004	China	9.8	4.7	5.1	3.9	0.3	0.9
	India	9.1	3.7	5.4	1.1	0.4	3.9

Sources: Bosworth and Collins, 2008G

This brings us to the phenomenon of “missing middle” in Indian manufacturing that many economic analysts, notably Dipak Mazumdar and Sandip Sarkar (2009) and Anne Krueger (2009), have put forward as a major reason for the slow growth of employment and productivity in the manufacturing sector. Manufacturing in India is characterized by a large ‘unorganized’ sector and a small ‘organized’ or formal sector. Most manufacturing employment is distributed among the “500 (employees) or more” and the (unorganized) “5-9” categories with the proportion of employment in the

intermediate middle size groups being very small. Large enterprises (in industries like automobiles, engineering goods, pharmaceuticals, petroleum refining and telecommunications) are capital-intensive or skilled-labour intensive, showing high productivity. Small enterprises (majority being household units) adopt low technologies and exhibit very low levels of productivity. The productivity-difference between these two groups of modern industries is of the order of 8:1 as against 3: 1 in Japan, Korea and Taiwan.

Due to this skewed structure, there is a dearth of middle-sized firms (say, 50-500 workers) which in other Asian countries like China, South Korea and Taiwan have played a dynamic role in providing employment in unskilled, labour-intensive manufacturing (such as food and beverage, textiles, apparel, leather goods and furniture) while at the same time producing high-quality goods for both domestic and international markets. The exploitation of these (Asian) countries' comparative advantage in unskilled activities and relatively low costs of production have spurred output expansion, learning and productivity growth.

Two sets of government policies, namely, the small-scale (SSI) promotion and labour laws and regulations are seen as the major factors responsible for the emergence and continuance of dualism in manufacturing. Small industry promotion has taken the form of reservation of a large number of areas of production exclusively for the small scale sector and provision of various fiscal and financial incentives including subsidized credits and input subsidies as long as the units stay below a certain size. These policies have encouraged entrepreneurs to remain small, expand horizontally with more small units rather than convert their units to medium-sized ones. Although small-scale reservation has since been removed for a large number of manufactured items as a part of the economic reforms, the impact of the reforms on "the size-structure of the establishments in manufacturing has been minimal" as the mind-set of the entrepreneurs and policy makers as well as the marketing channels are all geared in favour of small units with limited markets rather than dynamic units growing into larger sizes and diversified markets. Further, "the incentive to remain small has been greatly reinforced by the plethora of labour market policies that sharply raise labour costs above a fairly low threshold. The strongest disincentive against scaling upwards arises from the combination of labour policies and a set of complex government processes." (Rajiv Kumar and Abhijit Sen Gupta, 2008.)

3. In fact both these factors-- a multitude of labour laws and regulations and a complex system of government processes involving bureaucratic approvals—have a much wider ramifications for manufacturing growth in India. According to one estimate, there are approximately 200 labour laws in India—52 at the central level and nearly 150 state-level laws, some of them not even consistent with each other. Apart from satisfying various rigorous requirements of their provisions, an entrepreneur or business has to handle tons of paper work and go through the annoying experience of dealing with a very demanding "labour-inspector raj" that the system has

spawned. A Report of the World Bank (India's Employment Challenge: Creating Jobs, Helping Workers, 2010) notes that by imposing excess rigidity in the formal manufacturing labour market, the burdensome regulations have created disincentive for employers to create jobs. Analysing data for the period 1959 to 1997, the Report presents an estimate according to which the Industrial Disputes Act 1947 has caused about 2.8 million less jobs to be created in the formal manufacturing sector.

Some analysts have argued that most labour laws in India are more than four decades old and were formulated along with restrictive investment and import licensing policies in order simultaneously to provide ultra-high protection to the workers. Many of these laws, especially the restrictive provisions of the Industrial Disputes Act 1947, the Factories Act 1948 and the Trade Union Act 1926 need to be revisited and modified in order to meet the requirements of the new economic environment in which domestic firms face intense international competition. Although a wholesale reform of these laws is necessary, it would be prudent to go for a planned, sequential approach for managing the reform process politically. (Bhagawati and Panagariya, 2012.)

Investors and analysts have also often complained about the harassing government processes and bureaucratic approvals that businesses, particularly the 'organized' ones, must obtain at various levels. It is accepted that some restrictions on business activities are required and desirable. But when the processes and requirements are unnecessarily cumbersome, requiring considerable time, the effect on economic activity becomes burdensome. There is enough formal and anecdotal evidence to suggest that time-consuming and avoidable requirements with their attendant delays raise costs for all businesses. In the World Bank's rating of countries, published in its report "Doing Business 2013" India ranked 132 among 185 nations on the overall 'ease of doing business'. While it ranks fairly well in investor protection (49th of 185), it shows poorly in starting a business (173rd of 185), dealing with construction permits (182nd of 185), enforcing contracts (184th of 185), resolving insolvency (116th of 185) and getting electricity (105th of 185).

Business analysts and corporations have also complained about opaque and unpredictable government policies involving unilateral rewriting of binding contracts and imposing taxes (on multilateral companies) with retroactive effect. A recent newspaper report (The Economic Times, New Delhi, 12 November 2013) quoted PepsiCo chairman and CEO, Indra Nooyi saying that uncertainties in tax policy (including retroactive changes in law), poor infrastructure and lack of clarity are some of the major problems facing investors in India. This has reduced India's country-grade from "must invest" (i.e. good investment destination) to "must deal with" (i.e. do I have to deal with India?) category. Earlier, the telecom giant Nokia which has invested in a large handset production facility in Tamil Nadu and has been in the country since 1995, complained to the government that "India has suddenly become the least favourable market" and it made business sense to exit and export from China! The

reasons cited were the retroactive taxation and non-compliance with bilateral contracts on the part of the government.¹

4. In fact, a general restrictive and discretionary approach in the implementation of economic and development policies, perhaps a legacy of the pre-reform “command-and-control” regime, has vitiated government action in many areas in the recent past including iron ore mining, coal block allocations and 2G spectrum allotment. So far as industrial investments are concerned the reflection of this approach in the implementation of environmental regulations and to some extent in foreign investment policies has affected investor confidence negatively.

It is accepted that industrial, mining and infrastructure projects must obtain the necessary forest and environmental clearances before starting construction. The forest conservation and environmental protection laws of the country have laid down definite legal procedures for securing such clearances. These procedures, in particular the environment impact assessment system prescribed in the 2006 notification under the environment protection law is meant to be a fair, objective and balanced evaluation of a proposal submitted for environmental clearance (prior to the initiation of construction). Unlike old industrial licensing, environmental clearance procedures are not about approving or rejecting a proposal; these are about balancing the needs of development with those of conservation. The primary purpose of environmental clearances is to anticipate and avoid or mitigate significant environmental consequences of development projects and bring about a project outcome that balances development needs with environmental integrity. This means that to the maximum extent possible the project proponent should be allowed, even guided to correct the perceived deficiencies and take mitigating measures; and the clearance once given should not be rescinded or suspended, especially when the project work itself has not begun.

This is what has happened, for instance, in the case of the \$ 12 billion steel project of the South Korean firm POSCO near Paradip in Odisha, once touted as the largest single case of direct foreign investment into the country. From the statement (Annex I) indicating various developments in this project it may be seen that there have been numerous flip flops; clearances given earlier have either been withdrawn or frozen, panels and committees have been engaged in conflicting recommendations and the state government has been slapped with ‘stop work’ orders in an arbitrary manner, ignoring the numerous difficulties that project and local authorities face these days in setting up large industrial development projects, especially in the area of natural resources utilization. This is the position a full eight years after POSCO signed an agreement (in 2005) with the Odisha government to set up the plant and the concerned central government authorities including the Prime Minister’s office gave their nod!

¹ The Indian Express, New Delhi, 23 August, 2013

A few other large investment proposals have also received similar treatment, thereby giving the impression that the environment clearance system is being run in a manner reminiscent of the dreaded “license-permit raj”.

As far as foreign direct investment (FDI) policies are concerned, in contrast to China which relied heavily on inward FDI for building its processing and assembly activities and also an internationally competitive manufacturing sector, India’s inward FDI regime had long been a complex, restrictive system subject to bureaucratic and discretionary decision-making. Following economic reforms the country has gradually opened its economy to FDI, with many sectors either fully or partially open, of course subject to specific conditions. A consolidated FDI policy, first issued in April 2010 and updated this year (April 2013) significantly clarifies India’s FDI policy. It, however, specifies a cap on foreign shareholding in Indian companies operating in certain sectors, such as defence production, air transport service, asset reconstruction, and telecommunications. The policy allows investment by a foreign investor in an Indian company either through the “automatic” route or under the “government route”, the latter requiring prior approval of the central government through the Foreign Investment Promotion Board (FIPB). This body may impose other conditions (such as local sourcing norms) and also make any assessment of the investment’s contribution to the economy, including whether it has the potential of increasing exports or creating employment. Bureaucratic discretion creeps in through such procedures. For instance, recently (November 2013) there was a move by the Industry Ministry itself to reduce the cap on FDI in ‘brownfield’ pharmaceutical projects to 49 per cent although the consolidated FDI policy issued in April 2013 had permitted 100 per cent foreign investment in this field. This had led² Member (industry) of the Planning Commission, Government of India to criticize the FIPB process for approving overseas investment proposals as “being opaque and inefficient.” Specifically, his criticism was directed against the policy that allowed 100% FDI investment in “greenfield” or new pharmaceutical industry projects while restricting such investment in “brownfield” or existing projects in that sector, on the ground that “this could end up denying lifesaving drugs to Indians.” In the current economic scenario, companies “prefer to do a ‘brownfield’ first to give themselves a base and this is the pattern the world over”, he said.

Although both the annual inflow into and the stock of FDI in India has increased since 1990, these, however, remain relatively small compared to China and a few other (smaller) developing countries (*Table 5*). The country’s share in the total FDI inflow into the host countries world-wide during 2012 was a paltry 1.8 per cent. In view of FDI’s crucial role in technology diffusion, apart from providing capital resources, the challenge is to improve the investment climate in India that will help increasing this

² The Economic Times, New Delhi, 29 October 2013

share in the years to come as global inward FDI flows are projected to increase to \$1.6 billion in 2015 from the 2012 figure of \$1.35 billion (UNCTAD, 2013).

Table 5. Inward FDI Stock and Flow in 1990 and 2012 (Billions of US dollars)

Country	Stock of FDI		Inflow of FDI	
	1990	2012	1990	2012
China	20.69	832.88	3.48	121.06
Hong Kong (China)	201.65	1422.37	3.27	74.58
Brazil	37.14	702.20	0.98	65.27
Singapore	30.46	682.39	5.57	56.65
Chile	16.10	206.59	0.66	30.32
India	1.65	226.34	2.36	25.54
Indonesia	8.7	205.65	1.09	19.85

Source: UNCTAD, 2013

- The quality of investment climate in India has long been an issue of concern both for domestic and foreign investment. A manufacturing strategy to be meaningful must address and seek to tackle this problem although it does not admit of any easy solution.

In a World Bank survey of investment climate obstacles to productivity growth and employment generation in India's manufacturing sector conducted a few years back, most of the respondent manufacturing firms identified electricity shortages, tax rates and administration and corruption as the biggest obstacles. Half of all the manufacturing enterprises had a backup generator because of poor electricity supply. Tax administration was seen as costly, dealing with government officials was time-consuming and informal payments were widespread.

The Bank's own analysis put red tape, corruption and crime as having the largest negative effect on firm productivity, real wages and exports. Poor infrastructure (including electricity, transportation and access to land) was the second biggest investment climate obstacle followed by workforce skills, quality and innovation. "When the competitiveness of the manufacturing sector of India is compared to that of China by measuring the value added per unit labour cost, China is found to be more competitive than India both in the sectors India is gaining world market and in those in which India is not. The poor performance of the Indian manufacturing sector can partly be explained by the high indirect cost that Indian firms have to face—much higher, for example, than Chinese enterprises", the survey report concluded. (The World Bank, 2009)

- Finally, sustaining productivity growth in line with international competitiveness is crucial to a sustainable and successful manufacturing strategy. And rapid productivity growth primarily requires upgradation of existing technologies and creation of new technologies. What is India's experience in this area? In the absence of adequate micro level studies comparing Indian manufacturing subsector or enterprise level performance with their counterparts in other successful nations in

areas such as international competitiveness, appropriate market segmentation, processes and technologies underlying industry-level performance, procedures for controlling quality, inventory etc. and the like, one has to fall back on the export-performance of manufactured products to assess Indian industry's technological competence and competitiveness in different fields.

India's integration with the global market has increased since the 1990's and its imports and exports reached 47 per cent of GDP in 2010 though it is still behind China for which the equivalent figure was 56 per cent (*Table 6*). China's high degree of trade integration with the world market along with the large inflow of FDI into its economy has enabled it to gain access to global knowledge and technology in different fields on a scale that has not yet been possible in India.

Table 6. Trade in Goods and Services

	<i>India</i>	<i>China</i>
Trade as share of GDP (%)		
2000	27	44
2010	47	56
Merchandised exports(% of GDP)		
2000	9.2	20.7
2010	12.7	26.6
Manufactured exports (as % of merchandise exports)		
2000	78	88
2010	64	94
Commercial service exports (as % of GDP)		
2000	3.4	2.5
2010	7.2	2.8
Computer, information, Communication and other Commercial services (as % of commercial services exports)		
2000	63	33
2010	71	51

Source: World Development Indicators, 2012, the World Bank, 2012

Also India's export performance in manufactured goods has been modest and their share in the merchandise exports has been declining over the years 2000-2010 where as in China this reached 94 per cent in 2010. This is a reflection of their relative competitiveness in manufacturing. Of course, as is well known, India's export-performance in the commercial services, particularly in communication and information services, has been better than that of China.

The composition of India's manufactured exports (*Table 7*) shows a mixed bag, distributed among many subsectors, thus displaying an inability to identify and build upon its specific areas of comparative advantage. The subsectors that had the largest share of world imports (*Table 8*) in 2010 and 2011 are diamonds, jewellery, petroleum products, ferroalloys and copper alloys. Either these are capital intensive (petroleum refining and ferroalloys) or skilled labour intensive (such as diamond and jewellery).

Labour-intensive light manufacture (like leather goods and apparel) does not figure high in the list, perhaps a legacy of the past policies of small industry promotion and reservation and stringent labour regulations.

Table 7. India's Exports of Principal Commodity (US Dollars Million)

<i>Commodity/year</i>	<i>2011-12</i>	<i>% in total Export</i>	<i>2012-13</i>	<i>% in total Export</i>
1.Primary products	45923.6	15.0	46200	15.4
2. Manufactured Goods	185422.6	60.6	183718.8	61.1
A. Leather and Manufactures	4793.6	1.6	4870.2	1.6
B. Chemicals and Related Products	37104.6	12.1	39929.7	13.3
(1) Basics Chemicals, Pharmaceuticals & Cosmetics	24528.5	8.0	27043.4	9.0
(2) Residual Chemicals and Allied Products	1606.7	0.5	1500.2	0.5
C. Engineering Goods	67832.2	22.2	65288.6	21.7
(1) Machinery and Instruments	14310.8	4.7	15215.6	5.1
(2) Transport Equipment	21140.5	6.9	18409.3	6.1
(3) Electronic Goods	8851.5	2.9	8065.2	2.7
(4) Other Engineering	7359.7	2.4	7338.3	2.4
D. Textile and Textile products	28026.6	9.2	27343	9.1
(1) Manmade Yarn, Fabrics, Made- up, etc.	5069.5	1.7	4535.2	1.5
(2) Readymade Garments	13691.2	4.5	12925.6	4.3
(3) Silk Carpets	4.2	0.0	3.8	0.0
E. Gems and Jewellery	44840.5	14.7	43457.4	14.5
3. Petroleum Products	56038.5	18.3	60290.7	20.1
4. Others	18579.1	6.1	10631	3.5
Total Export	305963.9	100.0	300570.6	100.0

Source: Reserve Bank of India (2013).

Table 8. Export Items of India with 2 Per Cent and Above Share in Top 100 World Imports at Four-Digit Level Per Cent

<i>SNo</i>	<i>Items</i>	<i>India share in world import 2010</i>	<i>India share in world import 2011</i>
1	Petroleum oils and oils obtained from bituminous minerals, etc.	5.8	6.7
2	Medicaments consisting of mixed or unmixed products for therapeutic use	-	2.1
3	Iron ores and concentrates, including roasted iron pyrites	4.2	2.3
4	Diamonds, whether or not worked, but not mounted or set	18.0	23.8
5	Refined copper and copper alloys, unwrought	6.6	3.2
6	Parts of goods of heading no. 88.01 or 88.02	2.1	3.5
7	Footwear with outer soles of rubber	2.4	3.1

<i>SNo</i>	<i>Items</i>	<i>India share in world import 2010</i>	<i>India share in world import 2011</i>
8	Women's or girls suits, ensembles, jackets, blazers, dresses	3.2	4.9
9	Flat-rolled products of iron or non-alloy steel	3.0	2.8
10	Articles of jewellery and parts thereof, of precious metal	18.2	28.5
11	Cyclic hydrocarbons	3.4	4.4
12	Ferro-alloys	5.8	-
11	Other articles of iron steel	-	2.0
12	Machinery, plant or laboratory equipment, etc.	2.4	-
13	Polymers of propylene or of other olefins, in primary forms.	2.3	2.8
14	Men's or boys' suits, ensembles, jackets, blazers, trousers, etc.	-	2.3
15	T-shirts, singles & other vests, knitted or crocheted	4.3	6.0
16	Cruise ship, excursion boats, ferry-boats, cargo ships, barges, and similar vessels	-	2.2
17	Cane or beet sugar and chemically pure sucrose, in solid form	-	6.0
18	Maize	-	3.4
19	Oil-cake and other solid residues, etc.	5.6	-

Source: Economic survey 2011-12 and 2012-13, government of India, Ministry of Finance (2012-13)

Analysts have commented that the majority of Indian manufactured exports are in 'low value added' categories and are often concentrated in "sunset" segments where either growth is slow or the sectors are losing market share worldwide. High or advanced technology products have always formed a very small part of India's manufactured exports. (The World Bank, 2009 and Kumar and Sen Gupta, 2008)

While the volume, composition and nature of manufactured exports from India raise concerns about the levels and quality of technologies prevalent in many manufacturing subsectors, the country nevertheless has a few domestic firms (such as Tata, Reliance, Dr. Reddy and Ranbaxy) which have acquired international reputation by exhibiting manufacturing excellence in engineering, ferrous metal, automotive, petrochemicals and pharmaceutical industries. It is, therefore, possible that with appropriate strategies and policies, both at the government and industry levels, Indian manufacturing enterprises can be enabled to acquire, manage and develop technologies that will enhance their productivity and enhance their international competitiveness.

International experience of successful industrializing countries (like Japan, China, South Korea and Taiwan) has shown that there are two types of country-experiences that have led to diffusion of technology and innovation that originate mostly from the developed countries. The first comprises those of the countries which could get large

amounts of FDI. The second consists of the countries that participated in large export efforts. Some countries like China have had the experience of both these processes. These countries have been able to absorb technologies by tapping into global knowledge through foreign capital, trade, technology licensing, copying, reverse engineering and accessing foreign technical information in print and through internet. India's earlier autarchic policy of self-reliance through indigenous technology development and associated stringent regulatory control on technology import may have put the country at a disadvantage compared to, say, China which has been very aggressive and systematic in the field of foreign technology absorption. As in the earlier case of Japan, imitation has led to innovation in the subsequent years.

To a limited extent the development of the Indian pharmaceutical industries has followed this path. As Carl J. Dahlman (Dahlman 2009) has pointed out, the asymmetrical type of patent protection in India--where pharmaceutical process patents were protected, not product patents---enabled Indian pharmaceutical firms to find alternate processes to produce pharmaceuticals by analysing the molecular composition of drugs. This led to the development of a strong pharmaceutical industry by the time India finally agreed to extend intellectual property protection to pharmaceutical products in 2005. The most successful of these firms have now many new drugs under development.

It is thus essential to factor the lessons from the contrasting country-experiences while designing a revised manufacturing strategy and policy although we now have to take into account the higher and stricter international regulatory regime for trade and intellectual property protection that has since come into operation.

We next examine how far the manufacturing policy (strategy) announced by the Government of India meets the new realities in the industrial sector.

IV. National Manufacturing Policy 2011 – An Assessment

The National Manufacturing Policy (NMP) announced by the Government of India (Ministry of Commerce and Industry, Department of Industrial Policy and Promotion) in November 2011 (summary at Annex II) incorporates elements of the current manufacturing strategy of the Government. NMP recognizes the relative poor performance of manufacturing in the country and the constraints faced by the sector that have prevented realization of its full potential. It then goes on to prescribe three categories of policy-proposals and 'specific action points' in order to remedy the situation and help achieving six stated objectives.

While the six objectives enumerated are all laudable two of these are stated in quantitative terms, namely increasing manufacturing sector growth to 12-14 per cent in the medium term so as to enhance manufacturing's share in GDP (gross domestic product) to 25 per cent by 2022 and creating 100 million manufacturing jobs by that year and the rest four in

qualitative terms (creation of appropriate skill sets, increase in domestic value addition and technological ‘depth’, enhancing global competitiveness and sustainable industrial growth). If a strategy is interpreted to mean as a broad plan of action in order to achieve some long or medium term goals, it is difficult to see any causal link between the multitude of action proposals and the quantitative objectives outlined in the document. For, it is not clear how these measures would result in increasing annual manufacturing growth to 12-14 per cent per annum or enhance the sector’ share to 25 per cent by 2022.. In an earlier document—the National Strategy for Manufacturing 2006—brought out by the National Manufacturing Competitive Council (NMCC), Government of India an annual manufacturing growth rate of 12 per cent leading to the share of manufacturing in GDP reaching 23 per cent by 2015 was projected. On present indications these targets are not likely to be achieved. In these circumstances the stated quantitative objectives can at best be described as a part of the national ‘wish list’ or elements of a national vision rather than as achievable targets.

A more practical approach, therefore, would be for the Strategy to focus on developing the right and favourable conditions for private sector investment in manufacturing with emphasis on enhancing industry capabilities, technological sophistication and depth as well as efficient and sustainable production for achieving international competitiveness. .

Even in these areas the stated strategy and policy need to be implementable, given the prevalent political and institutional constraints. The strategy that is most likely to be effectively implemented is the one that adopts a selective approach in proposing various interventions which may also be prioritized. NMP’s approach, on the other hand is all-embracing covering a multitude of industry subsectors, enterprises, policy and action areas. In most cases very general statements have been made and quite a few are neither strategic in nature nor result-oriented. In a sense it is the typical “business as usual” approach that results in NMP cataloguing a plethora of instrumentalities covering almost the entire gamut of Indian industry. A similar approach has been adopted in the nearly 80-page chapter on “Industry” included in the Twelfth Five year Plan 2012-2017 (Planning Commission 2013) though such a detailed formulation may perhaps be acceptable since this happens to be a part of the five-year plan proposals.

The response of NMP to the challenges posed by the constraints facing manufacture also appears inadequate. For instance, the Policy mentions that “adequate support” would be provided to labour-intensive industries such as leather, footwear, textiles and garments etc. but it fails to indicate any strategic shift in government policy that would address the problems of rigid labour laws, uncritical promotion of small-scale manufacturing, investment climate obstacles and corruption that seem to be preventing small firms to grow to larger enterprises and also in general, the development of large-scale manufacturing in relatively low-tech, labour-intensive industries.

Also on issues like labour law reforms, and bureaucratic hassles that discourage entrepreneurial initiatives and unsatisfactory business climate, NMP makes formulations in

very general terms, always reposing faith in some SPV (special purpose vehicle) that will be set up in NIMZs (National Industrial Manufacturing Zones) to take care of these problems!

Although NMP does recognize that “environmental clearances” is one of the two most important statutory clearance issues (the other being labour welfare matters) facing manufacturing, the distortions in the method of environmental clearance that has turned it into another ‘industrial licensing’ system, especially in respect of natural resources-based manufacturing industries, is not acknowledged, neither any remedial measures suggested. Similarly, no corrective has been indicated in respect of discretionary decision-making on foreign direct investment proposals (including imposition of conditions and abrupt changes in FDI cap, as suggested recently for brownfield projects in the pharmaceutical industry) that has negative effect on investor confidence.

On technology acquisition and development, the Policy continues to repose an exaggerated faith in the Government’s Technology Acquisition and Development Fund (TADF) and on promoting partnerships between industries and government laboratories. Thereby, it ignores the experience of successful industrializing countries that, through FDI and participation in export efforts, have been able to tap into the global knowledge and then improve their technological capabilities and depth through systematic management of imported technologies, their adaptation and finally indigenous innovation. Even in our country, the two groups of industries which are active in innovation activities are the domestic pharmaceutical industry (which accessed the global knowledge and improved on it) and the multinational companies in the IT (information technology) sector consequent to ever increasing FDI in R&D. (Mani, 2009).

The ‘business- as- usual’ approach is most prominent when it comes to NMP’s treatment of SMEs (small and medium enterprises). The policy-proposals are confined to improvements in SMEs’ access to finance and easing compliance burden of various laws and regulations through the creation of a service entity. These are necessary and useful. Access to finance, in particular, is the biggest investment climate obstacle facing small firms and any proposal to give them relief is welcome. But many of these proposals have appeared in the policy – proposals previously and the problem is of their effective implementation. But the more important strategic question is whether small firms should compete or complement large manufacturing enterprises in sectors where scale economy is a significant factor and therefore, mass production is desirable. This question needs to be addressed if, as a strategy, the country has to promote large-scale manufacturing in labour-intensive industries in order to promote employment of unskilled and semi-skilled persons in these enterprises.

Also small and medium-scale firms will remain competitive if integrated with networks organized around large, even multinational firms or groups. NMP fails to recognize this international experience as well.

Another significant strategic omission in NMP is the near-total absence of any reference to the crucial role of private sector enterprises, especially large private sector companies that in a liberalized economy are prime movers for increasing value-addition and technological depth in manufacturing. They can also play a significant role in upgrading skills through in-house facilities or even formal technical and vocational training institutes in the private sector. The irritation, delays and inconvenience companies face due to complex bureaucratic procedures including (sometimes) abrupt changes in policies and government decisions in areas such as environmental clearance, foreign investment and taxation (including retroactive taxation) are neither referred to nor suitable action-points outlined for mitigating these problems. In the minimum there needs to be an institutional mechanism for enabling a continuous dialogue between the agencies of the government and the relevant industrial companies for designing and then implementing appropriate development and support measures.

Both public and private sector enterprises also face a number of problems in the areas of their location. These are mainly within the realm of state government responsibility. In a sense the states play a greater promotional role than the central ministries in industrial development. NMP does not elaborate on their responsibilities except to give them the task of acquiring large tracts of land (5000 hectares in the minimum), now made quite difficult by the stringent requirements of the new land acquisition law and then setting up NIMZs in their respective territories, to facilitate industrial development through clustering and agglomeration. The state agencies have much greater and longer experience than their central counterparts in this field and hardly need any guidance. However, the constraints that manufacturing faces in the states as well are the usual problems of poor infrastructure facilities, especially power availability and transport bottlenecks, investment climate deficiencies and corruption. The central government must engage with them to improve the situation in the field for achieving successful industrialization.

Finally, the successful implementation of an industrial or manufacturing strategy depends crucially on the internal distribution of organizational power in a country's governance system. This is because many of the macro-economic and even sectoral policies (fiscal, labour, technology, trade and environmental) that affect manufacturing are handled in diverse agencies, in ministries other than the industry or other (manufacturing) sector-specific departments. This means that the manufacturing strategy that is most likely to be effectively implemented is the one that has high-level political support, for oversight, coordination and monitoring. Compared to the state administration where the Chief Minister and Chief Secretary are able to bring about effective coordination among various agencies, the governance system in the central government is more complex with the relevant central ministries taking independent positions that at the worst may be difficult to reconcile or at the best takes considerable time and effort to arrive at a consensus or compromise solution.

NMP's prescription in this regard is to form a committee of senior civil servants chaired by the Secretary, Department of Industrial Policy and Promotion and a Manufacturing

Industry Promotion Board (MIPB) presided over by the Union Minister of Commerce and Industry with the representatives of the central ministries and state governments as members. This institutional mechanism in which a sectoral (and relatively less influential) ministry is charged with the responsibility for inter-ministerial co-ordination, may not generate adequate political and administrative clout to bring about the needed coordination and coherence among various viewpoints required for an effective implementation of the manufacturing strategy.

In the next section, an attempt has been made to delineate some of the main elements of a manufacturing strategy that may be appropriate for the current conditions.

V. Elements of a Possible Manufacturing Strategy

To begin with, a successful manufacturing strategy is predicated upon the existence of a strong national commitment to see manufacturing emerge as the prime mover for economic growth in India. This partly flows from the realization that service-led development which has so far propelled India's growth story has its limitations. It is generally believed that IT-enabled services have been and will continue to be the main catalysts for growth. In reality, however, the service sector growth has been much broader than the IT-enabled services; in fact, nearly 60 per cent of the service sector's growth is accounted for by five subsectors, namely business services, communications, banking, hotels and restaurants and community services. IT-enabled services that are a part of business services are a very small part of the Indian economy and employ about 1 million people out of a total labour force of 460 million and directly contribute to around 1 per cent of GDP.

Secondly, in formulating an appropriate (manufacturing) strategy the following major factors need to be taken into account:

- Economic liberalization has meant that there is a conceptual shift in the role of the state (or government) from that of 'governing the market' to 'enabling the market' (Singh 2009). In manufacturing, as in other production-sectors, private initiative and enterprises must increasingly play a proactive and critical role with the state or government acting as a facilitator providing "public goods for the production sector" in the form of "public R&D, health and infrastructure facilities, sanitary and phytosanitary standards, infrastructure, vocational and technical training" etc. in order to enhance their technological and operational capabilities. (Rodrik, 2004). This means that the mind set of 'command-and-control' must give way to a more collaborative approach of co-opting the private sector, motivating them for and assisting them in their technological efforts to achieve productivity growth and international competitiveness.
- The regulatory and domineering role of the central government agencies in mineral and industrial development is also being increasingly challenged by the state governments due to the emergence of regional aspirations, with many state

- governments being run by the regional parties and coalition governments ruling at the Centre.
- Globalization has brought about significant changes that too have their impact on the dynamics of industrial development. One important consequence is the emergence of intense competition among firms across nations. This has meant adoption of universal concepts of productivity, quality, delivery time etc. The traditional forms of support like subsidies and protection to firms have lost their appeal and effectiveness in open and competitive environments. Competition on a global scale has spurred restructuring of industries and attempts to capture scale economies in the different areas of production and marketing. (Frischtak ,1997)
 - The nature of multinational firms-i.e. national firms with subsidiaries in foreign countries—has also undergone changes, driven by global efficiency objectives combined with the need to expand market presence. Multinational firms are now becoming ‘transnationals’ or super national in nature. “Though sales, technical assistance and related matters are undertaken locally—which is where they establish their presence—their core activities (R&D, planning, financing, sourcing, production and marketing) are conceived and carried out on a global scale, obeying a value-maximization principle.” (Frischtak 1997).
 - International regulatory regimes in trade and for the protection of intellectual property (IPR) have become more stringent. There has also been much stronger teeth in the enforcement mechanisms for the trade and IPR rules. These have reduced the freedom of developing countries to use some of the policy instruments (like tariff and non-tariff barriers, subsidies and copying of technologies of advanced countries) earlier used by the East Asian nations in their industrialization efforts.

Against this background, manufacturing strategy (and the consequential policy-instruments) can be conceived at two levels—as an approach to create conducive ‘framework conditions’ or congenial investment and business climate for manufacturing development and then a more targeted approach in order to help building capacity in particular areas or sectors of manufacturing through assistance in technology acquisition and productivity growth that will create or enhance the competitive position of a manufacturing sector or group of sectors. The forms of state intervention or policy-instruments in support of the strategy have to be selective in nature, especially in the second category, i.e. in the provision of assistance and support for capacity building and technology development in specific manufacturing sectors.

Non-targeted Aspects of Manufacturing Strategy

The overall objective at this level is to ensure a good investment climate in the country for the development of the manufacturing sector. Non-targeted framework or investment climate type policies and services address the industry and economy-wide factors that have an impact on competitiveness of industrial firms as well. In one sense these may not form a part of a narrowly-defined manufacturing strategy although the policies and their

successful outcomes are essential pre-requisites for the development of the manufacturing sector. The areas covered by these framework policies generally include the following:

- Macroeconomic discipline and stability as reflected in low inflation, tax and interest rates and a competitive exchange rate;
- Trade policies;
- Infrastructural services such as electricity, transportation and land;
- Good business environment comprising well-defined property rights, effective contract enforcement, access to finance and low entry and exit barriers for industrial and business entities;
- An alert and efficient regulatory regime that ensures quality and business standards in production units that establish the basis for national firms to operate globally in an increasingly open environment;
- A generally well-functioning governance system and institutions that ensure law and public order, smooth business operations, competition, factor mobility and encourages private sector development;
- Flexible labour laws and regulations;
- Environmental policies and regulations and
- Foreign investment policies.

It has earlier been mentioned that dysfunctional operation of some of these policies, services and institutional arrangements has posed serious challenges to manufacturing development in the country. Some among them have a greater impact than the others. Infrastructure deficiencies, especially inadequacies in both the quantity and quality of electricity, transportation bottlenecks and difficulties due to land availability have been identified as important hindrances to smooth industrialisation. Both the central and state government agencies are involved in providing these facilities. Improving their availability has to be and is an important part of the overall development strategy.

For successful industrialisation, the existence of a good business climate is very essential. There are cross-country comparisons to show a strong relationship between an effective business environment and economic growth; and manufacturing and business development is facilitated when policies focus on creating a business environment that allows easy entry and exit of firms and assures entrepreneurs and financiers that property rights and contracts will be enforced. (The World Bank, 2004).

The responsibility for maintaining a good business environment in a state is mainly that of the state administration. However, the central laws and regulations on labour and environmental issues and more importantly on corporate and other central taxes and their administration also determine its contours. Unfortunately, India has acquired a somewhat negative reputation world-wide for its time-consuming and process-driven bureaucracy. Retail corruption and multiple informal payments are also a problem. Any development strategy including the manufacturing strategy must provide for reforms in this area, through the simplification of and increased computerisation in the procedures and their effective administration.

An aspect of business environment that has particular significance for manufacturing enterprises is the processes, time required and cost for the exit of unviable and failed firms... In India the barriers for exit are quite high involving time-consuming legal procedures and high costs of winding up of companies. It has been estimated that the average time taken for winding up of companies under the old company law had been ten years or more and in some circumstances the cases have dragged on for about twenty-five years! Under the BIFR (Board of Industrial and Financial Restructuring) route the average life of the cases recommended for restructuring or for winding up can be 6-7 years. (Panagariya 2008)

The new company law (the Companies Act 2013) has sought to improve the situation by reducing the modes of winding up from three to two (voluntary and tribunal-directed winding up) and eliminating the long-winded court-supervised closure. The results of this change are yet to be realized. However, the need for improving the efficiency of the winding-up procedures through the adoption of transparent and time-bound processes cannot be overemphasized, for improving the business environment in the country.

The three economy-wide or framework policies that affect manufacturing significantly are the environmental law, labour laws and regulations and foreign investment policies to which references have been made earlier. There will be occasions to comment on these policies while discussing the targeted aspects of the manufacturing strategy.

Targeted Manufacturing Strategy

The elements comprising a targeted manufacturing strategy should ideally aim at accelerating technology acquisition and productivity growth in selected sectors (of manufacturing) so as to enable them to create or enhance their international competitiveness.

For long the discourse on manufacturing strategy and policy in India has been mainly in terms of public and private sectors and large and small industries. In the changed context the focus for policy-purposes should instead be on the nature of and technologies involved in different groups of manufacturing enterprises. These categories could be as follows:

- Natural resources-based (NRB) industries;
- Labour-intensive, low-technology (LILT) industries; and
- Medium and high technology (MHT) industries.

NRB industries are those based on the processing of natural resources and include mineral-based manufacturing like steel and aluminium, food-processing industries, wood products, leather, precious stones and organic chemicals. Some of these can be simple and labour-intensive (like simple food and leather processing) or capital, scale and skill-intensive (steel, aluminium, petroleum refining and modern processed foods).

In respect of some of these industries, especially mining and mineral-based industries, environmental and forest clearance (as well as land availability) have emerged as difficult

problems. As a result, in some of the cases the projects have been delayed and the country had to import some of the materials (iron ore and coal) in spite of their abundant availability in the country. There have been avoidable uncertainty and flip-flops concerning various clearances under the environmental, forest conservation and forest rights regulations. This has led some observers to comment that a new 'license-permit raj' (relating mainly to the environment, forest, tribals and land) has emerged with consequential adverse impact on the development of resource-based manufacturing industries.³ Apart from clarifying the strategy concerning the development of resource-based manufacturing in the country, the need is to bring about coherence and co-ordination among the relevant government agencies that handle various statutory clearances. In the minimum a clear statement should be made that clearances once given will not be withdrawn unless there are serious violations of the conditions.

LILT industries include textiles, apparel, footwear and other leather products, toys, furniture, glassware, simple metal and plastic products. The technologies are low-scale, stable and well-diffused and mainly incorporated in capital equipment. Labour costs tend to be a major element in the production cost-structure.

It has earlier been mentioned that medium and large-scale labour-intensive industries have not developed in India due to the combined effect of rigid labour regulations and the policy of small industry promotion. A major thrust of the manufacturing strategy at this stage should be on seeking a change in the inflexible labour regulations (referred to earlier), perhaps prudentially in a sequential manner and also a reorientation in the small industry promotion policy so as to eliminate the bias against the development of medium and large-scale manufacturing in labour-intensive areas. This will also enable India to occupy the industrial space being vacated by China due to an increase in labour costs in that country.

MHT industries comprise two subgroups. Automotive products, most industrial chemicals, industrial machinery and relatively simple electrical and electronic products have medium-level technologies, complex but relatively stable. These require moderate R&D expenditure in order to enable adaptation and learning. These are also amenable to large-scale production, requiring advanced engineering skills, with extensive supplier and subcontracting networks.

High-technology products, on the other hand, have advanced and fast-changing technologies, requiring complex skills, large R&D investment, advanced technology infrastructure and cooperation between firms and between firms and research institutions. The examples of this category of industries are precision instruments, complex electrical and electronic machinery, fine chemicals and pharmaceuticals.

Learning, adaptation and innovation are essential for attaining technological depth in MHT industries. The manufacturing strategy should aim at facilitating this process. To be

³ "More of the Same" by Swaminathan S Anklesaria Aiyar, the Economic Times, 4 December 2013.

successful, it is not merely the import of technology that is important; it is the management of technology that is more important. There are many aspects of technology management—scanning for good technologies, licensing and importing technologies well-established in world markets, mastering them, tinkering with them for adapting to domestic conditions, improving upon them and finally innovation through indigenous R&D. The process is difficult and prone to market and institutional failures which sometimes requires government intervention and assistance. These interventions have to be selective and non-uniform as the cost and duration of the learning process varies with scale and complexity of technology. The manufacturing strategy must take cognizance of these requirements.

It is also essential to recognise that in manufacturing, it is the efforts of dynamic firms (rather than government efforts) that are central to bringing about technological and productivity improvements. The East Asian experience of successful industrialization hinged upon the existence of a critical mass of industrial enterprises with the capability to adapt and diffuse technologies that originated in most technologically advanced countries. They created the capability to develop new products and processes based on diffusing and advancing generic technologies.

A major thrust of the manufacturing strategy, therefore, should be on identifying groups of similar dynamic firms in each of the manufacturing sectors and encourage them to attain manufacturing and technological excellence in their respective areas. Unfortunately, a hangover of the old 'command-and-control' industrial policy regime has been to view the government-business relationship in a principal-agent mode, with the government as the principal and the firm as its agent and a policy-framework in which the agent aligns its behaviour with the objectives and programmes decided by the principal. This model is passé' in the changed policy-environment. Besides, it is not possible for government functionaries to be aware of the changing technologies and developments in different manufacturing industries as well as their changing needs. What is, therefore, needed is a flexible form of strategic collaboration between public and private sectors with the aim of identifying the most significant obstacles to manufacturing and technological development and then determining the types of interventions needed to remove them. The strategy should provide for appropriate public-private institutional arrangements to carry out this task on a regular basis.

A significant part of public-private partnership relates to the role of private manufacturing firms in R&D and technical training efforts for boosting industrial growth. For many years R&D spending as a share of GDP ranged around 0.8 to 0.9 per cent and more than 70 per cent came from the government. In recent years under the impact of competitive pressures there has been an increase in spending by the private sector, particularly in information and communications, auto, pharmaceuticals and biotechnology. The bulk of the increase has come from MNCs who have found India as a cost-effective location for R&D. According to recent estimates R&D expenditure in India has gone up to a little more than 1 per cent of GDP due to increased expenditure both by foreign and domestic firms. (Dahlman, 2009) The manufacturing strategy must give a boost to this process.

Also in the vocational and technical training areas both public and private sector manufacturing firms can play an important role. Their involvement in organising vocational and technical training has the advantage that they will be able to target the real needs of the industry and will have the flexibility to change the courses to adjust to the changing requirements of the manufacturing enterprises. In recognition of this fact the government of India has set up a National Skill Development Corporation in the public-private partnership mode in order to facilitate setting up of large, high quality, for-profit vocational training institutions

The manufacturing strategy should continue and further streamline the FDI (foreign direct investment) policy regime that has been put in place. For, historically FDI has been a vital means of building technological capabilities in manufacturing in a number of newly industrialized countries. That is also the channel through which multinational companies have brought their (advanced) technologies to these countries.

The strict regulatory regime of intellectual property (through WTO (world trade organization)'s TRIPS agreement and other trade agreements) that has now come into force makes it virtually impossible to copy or engage in reverse engineering of technologies of the advanced countries. In these circumstances MNC-led technology transfer may, in the future, play a significant role in technological capacity-creation and growth, especially in MHT industries. The manufacturing strategy should assure investors that attempts to constrain the operation of the announced FDI policy through imposition of sudden and arbitrary conditions (including change in caps as was being attempted recently in respect of brown field pharmaceutical projects) would not be permitted.

Small industry promotion has remained an article of faith in India's manufacturing strategy since the 1950s although following economic reforms the counterproductive policy of reserving specific areas of production for small industries have been abandoned. The manufacturing strategy must have a fresh look at the subject. The strategy should, however, confine itself to small industries only i.e. small enterprises in manufacturing and exclude those in the services sector as well as cottage and household industries in the informal sector which are often propped up through subsidies as a welfare or poverty-alleviation measure.

The main argument for pro-SME (small and medium enterprises) policy has been that the growth of these enterprises (in manufacturing) boosts employment more than the growth of large firms because SMEs are more labour-intensive. The entire discussion on a "missing middle" in the Indian manufacturing is a repudiation of this argument. There are also research findings to show that small manufacturing firms "are neither more labour-intensive nor better at creating jobs than large firms." (World Bank, 2004) Further, a preponderance of small firms in the manufacturing sector of the country has kept the sector's productivity at low levels.

The overall approach should, therefore, be to facilitate the development of small manufacturing enterprises where the absence of significant economies of scale makes small

scale production feasible and viable. For, smallness of industry or plant size is not itself a virtue; the small sector's ability to participate in the developmental process of the national economy has to be determined primarily by the number of manufacturing industries it can be competitive with large-scale producers and imports.

It is true that a large SME sector has been a characteristic of developed and fast-growing industrial economies, but generally it is not a cause of their rapid growth. In these (industrialized) economies very few small enterprises compete with large enterprises in standardized mass products like shoes, garments etc. They generally confine themselves to two groups of products: (i) customized products or small, specialized batches for niche markets and (ii) products and services required by large firms with whom small enterprises network as suppliers and subcontractors.

Similar approach (in respect of small manufacturing enterprises) needs to be incorporated in the manufacturing strategy. This means that the focus of the strategy should be on innovative small firms, on upgrading SMEs, on small enterprises which have export potential and on inter-firm cooperation through networking, subcontracting and clusters. The justification for this approach gets further emphasized in view of the challenges and the new circumstances that small enterprises face due to the forces of globalization and technology change. Globalization has meant stiff domestic and foreign competition which puts increasing pressure on small enterprises in terms of efficiency, price, quality, and delivery schedule and customer satisfaction. Technology change requires that, in view of their limited resources and capabilities, small enterprises develop strategies and alliances with large firms and among themselves to keep abreast of technological developments in their respective areas. To some extent this process is already taking place in modern small industries such as the. Automotive sector in India. This needs to be encouraged further,

This is where the role of integrated *clusters* comes in. Over a period of nearly four decades the East Asian countries including Japan, China and South Korea have set up industrial clusters including clusters of high-tech firms in order to realise the benefits of industrial agglomeration and clustering. These include the use of a common labour pool, buyer-supplier relationships, collaboration between small and large firms to refine and develop technologies, information gathering and training systems and joint marketing efforts. The governments in these countries have actively encouraged this process through investment in infrastructure and urban facilities in selected (new) urban locations and sometimes, by attracting a major anchor firm, domestic or foreign, that could encourage the in-migration of smaller enterprises, suppliers and imitators.

In India, on the other hand most industrial agglomeration and deepening has taken place around old urban locations like Mumbai, Pune, Kolkata, Chennai, Bangalore, Delhi and Agra. There are textile clusters in Tirupur and clusters for simple machinery in Punjab and Haryana. The initiatives (of the government) to set up 'industrial corridors', export promotion and national industrial manufacturing zones are steps in the right direction. In particular, the central government-sponsored Delhi-Mumbai Industrial Corridor Project,

along the alignment of the freight corridor between Delhi and Mumbai holds a great promise for industrial and commercial development in the western part of the country. However, it is too early to say if these would result in the growth of new clusters in fields such as metallurgy, engineering, chemicals, petro-chemicals, pharmaceuticals and bio-tech industries where most industrial investments seem to be taking place.

A manufacturing strategy is conceived and implemented in an *institutional framework*. In both China and South Korea, as a result of the deep national commitment, there was a constant focus on manufacturing as the growth driver of the economy. China followed a highly decentralized but centrally directed approach to industrialization in which their city governments played a crucial role. A generation of public officials who firmly believe in the desirability of industrialization has spared no efforts to make China's cities industrial success stories.

In India, there is a multiplicity of institutions at various levels which are concerned with industrialization efforts. There are agencies dealing with economy-wide policies that determine the investment climate in the country; and there are organizations handling industry-specific issues. In the absence of proper coordination among them and unless there is a commitment to industrialization on the part the personnel who man these institutions, there is always a danger of industrialization efforts flagging off.

In the central government, apart from the Ministry of Commerce and Industry which is the nodal agency for industrial development and foreign investment policies, there are a number of sectoral ministries who deal with specific industry groups like steel, mining, heavy engineering, automobiles, electronics, chemicals, fertilizer and pharmaceuticals. These sectoral ministries will have to play a major role in identifying dynamic manufacturing companies in their allotted sectors and organise public-private collaborative arrangements for identifying the industry needs and providing assistance to cater to these needs.

Then there are regulatory and other agencies dealing with finance and taxes, environment and forests, land, labour, tribal affairs and science and technology. Sometimes their attitudes and posturing can have a 'slow-down' effect on the progress of industrial projects.

Finally, there are the state government and municipal officials who play a significant role in project implementation through the provision of infrastructural facilities like land and power and maintain a business-friendly investment climate in the states. As in China, the state and municipal governments in India will, in the future, increasingly play a more active and critical role in the industrialization-process.

Turf wars between these agencies are not uncommon; and delays in obtaining clearances and facilities and corruption are always a problem. Delineation of an appropriate institutional arrangement that is able to bring about an effective coordination and coherence among the multiplicity of public institutions will have to be an important aspect of the manufacturing strategy.

Finally, in the industrialization efforts of a number of developing countries, the role of a strong national leader in keeping the focus on industrialization and in bringing about, through continuous monitoring, a close coordination among various government agencies has been crucial in achieving success.

President Park Chung Hee in South Korea and Deng Xiaoping in China have, through their committed and strong leadership, played a critical role in the transformation of their respective economies from being poverty-stricken ones to industrialized nations. Even in our country, Prime Minister Jawaharlal Nehru's leadership and commitment to modernisation through industrialization was to a great extent responsible for the initial spurt of public sector-led industrial development. For the successful implementation of the manufacturing strategy, it is essential that the top most leader in the Government of India, namely the Prime Minister, takes deep personal interest and heads the key institutional mechanism for bringing about coordination and coherence among various government agencies and also with industrial companies. That will ensure that the focus is firmly on manufacturing as the economy's growth driver.

V. Conclusions

Although India's development strategy, since the beginning of the planning period, has given primacy to industrial development as the driver of economic growth in the country, manufacturing has increasingly played a secondary role to the services sector in the growth-process. Service-led development, however, has its limitations. It is, therefore, necessary to promote the development of the manufacturing sector through the implementation of an appropriate manufacturing strategy. The National Manufacturing Policy 2011 of the Government of India follows a business-as-usual approach; and as a result it fails to address effectively the challenges faced by the manufacturing sector. An effective manufacturing strategy that takes into account the changed national and international conditions should comprise elements that address both the economy-wide policy and implementation issues and the requirements of the major manufacturing sub-sectors. Improving technologies, productivity and international competitiveness should be the main focus of the strategy. The manufacturing strategy will, however, succeed if it is backed by a strong national will and it receives high-level political support.

POSCO's Proposed Integrated Steel Plant at Paradip

Project Chronology

June 2005	MoU signing between POSCO and Government of Odisha
July 2007	Environmental Clearance for setting up the steel plant
August 2008	SC's approval for Forest diversion of plant site
January 2009	State Government's recommendation of PL for Khandadhar Mines to Centre
May 2010	Land acquisition and Removing betel vines started
July 2010	Odisha Government's losing the case of Khandadhar mines recommendation at Odisha HC
August 2010	MoEF stopped land clearance work by Odisha Government
January 2011	MoEF's conditional approval after the Meena Gupta Committee report
May 2011	MoEF's final approval for "Forest conversion" Odisha Government resumed Land clearance (stopped in Jun '12 due to protests)
March 2012	NGT suspended additional conditions of Jan '11 on the ECs but kept the ECs intact
May 2012	POSCO applied to the MOEF for revalidation of EC
February 2013	Odisha Government resumed Land clearance (stopped in July '13)
March 2013	Odisha Government handed over the physical possession of 1,704 ac land
May 2013	The SC made final verdict to set aside the Odisha HC judgement and remitted the matter to the Central Government to decide the Odisha Government's recommendation in favour of POSCO
May 2013	EAC found the information furnished by POSCO adequate and it finally recommended the revalidation of EC with certain additional conditions (till now, grant of revalidated steel plant EC is pending in the MOEF)
May 2013	NGT ex parte directed to maintain status quo on the tree-felling in the POSCO project because there is no valid EC. The case is going on.

Project Chronology (FC & EC)

1. Forest Clearance

26.06.2007	Odisha Government recommended the Forest Diversion Proposal (FDP) made by POSCO in consultation with IDCO to the MOEF for prior approval.
09.08.2007	Forest Advisory Committee (FAC) made recommendations for the grant of forest diversion for 1,253 ha of the forest land.
14.11.2007	Central Empowered Committee submitted recommendations for the forest diversion to the Supreme Court.
08.08.2008	The Supreme Court cleared the FDP, subject to the decision of the MOEF and also appointed an SK Patnaik Committee to suggest mitigating measures.
19.09.2008	The MOEF granted in-principle approval for the diversion of 1,253.225 ha of forest land, subject to fulfilment of the conditions.

30.10.2008	The Odisha Government constituted the SK Patnaik Committee.
04.11.2008	The Odisha Government asked POSCO to pay an evaluated royalty for the enumerated trees.
22.10.2009	DFO, Rajnagar raised a demand note of ₹1,05,39,72,314/- for the diversion of the forest land and POSCO deposited the same.
03.12.2009	The Odisha Government furnished the compliance report to the MOEF.
29.12.2009	MOEF granted the final forest diversion approval for diversion of 1253.225 ha.
28.07.2010	MOEF constituted Meena Gupta Committee to look into implementation of forest rights & R&R matters in POSCO project.
18.10.2010	Meena Gupta Committee submitted reports, later reviewed by FAC.
04.05.2011	MOEF confirmed final approval for the diversion of 1253.225 ha.
02.06.2011	IDCO requested DFO, Rajnagar for permission to remove trees in project area.
25.08.2012	IDCO was authorized to dispose of the 100 per cent of the felled trees among the villagers free of cost as fuel wood.

2. Steel Plant Environment Clearance (EC)

27.04.2007	POSCO applied to MOEF for grant of steel plant EC
19.07.2007	MOEF granted steel plant EC with certain conditions
28.07.2010	MOEF constituted Meena Gupta Committee to look into Steel Plant EC compliance
18.10.2010	Meena Gupta Committee submitted reports
31.01.2011	Based on EAC recommendations, MOEF attached additional conditions.
30.03.2012	NGT suspended the additional conditions but kept the original EC valid and intact. It directed the NGT to have the additional conditions reviewed afresh by an expert committee.
24.05.2012	POSCO applied to the MOEF for revalidation of EC.
29.05.2012	MOEF constituted K. Roy Paul Committee.
22.10.2012	K. Roy Paul Committee submitted its report to MOEF in which it made recommendations on land optimization, captive water resource, drainage pattern, wastewater & zero discharge etc.
06.03.2013	EAC examined K. Roy Paul Committee's recommendations and sought certain additional information from POSCO.
16.05.2013	EAC found the information furnished by POSCO adequate and it finally recommended the revalidation of EC with certain additional conditions.
28.05.2013	NGT ex parte directed to maintain status quo on the tree-felling in the POSCO project because there is no valid EC. The case is going on.
30.07.2013	POSCO requested MOEF to issue the revalidated Environment Clearance at the earliest.
30.07.2013	MOEF asked for details on the handing over of 2,700 acres of land by IDCO.
16.08.2013	POSCO gave the details on handing over of 2,700 acres of land by IDCO.

Grant of revalidated steel plant EC is pending in the MOEF even after four months.

3. *Captive Port EC*

14.09.2006	POSCO applied to MOEF for grant of EC for captive port
15.05.2007	The MOEF granted port EC with certain conditions
28.07.2010	MOEF constituted Meena Gupta Committee to look into port EC compliance
18.10.2010	Meena Gupta Committee submitted reports
31.01.2011	Based on EAC recommendations, MOEF attached additional conditions.
30.03.2012	NGT suspended the additional conditions but kept the original EC valid and intact. It directed the NGT to have the additional conditions reviewed afresh by an expert committee.
24.04.2012	POSCO applied to the MOEF for revalidation of the port EC
29.05.2012	MOEF constituted K Roy Paul Committee to review the port EC.
04.06.2012	EAC considered port EC revalidation and required POSCO to submit fresh CRZ recommendation under CRZ Notification, 2011 and other documents.
25.06.2012	POSCO requested OCZMA in Odisha Government to give CRZ recommendation.
26.06.2012	Forest & Environment Department in Odisha Government asked for fresh CRZ map, updated EIA/EMP etc.:
16.07.2012	POSCO engaged MN Disturb & Company to update EIA/EMP.
18.10.2012	POSCO engaged NIO to carry out fresh CRZ survey and prepare CRZ map.
18.01.2013	POSCO engaged SM Consultants to carry out marine sampling work.
14.02.2013	POSCO engaged IMMT, Bhubaneswar for marine monitoring work.
18.09.2013	POSCO applied to OCZMA for the grant of CRZ clearance.

Firstly, OCZMA will consider POSCO's CRZ application and then it will recommend it to the MOEF for consideration for revalidation of the captive port EC.

Source: POSCO INDIA

Abbreviations (Used in POSCO note)

CRZ	Coastal Regulation Zone
DFO	Divisional Forest Officer.
EC	Environment Clearance.
EAC	Expert Appraisal Committee.
FAC	Forest Advisory Committee.
FDP	Forest Diversion Proposal.
HC	High Court.
IDCO	Odisha Industrial Infrastructure Corporation.
IMMT	Institute of Minerals and Materials Technology
MOU	Memorandum of Understanding.
MOEF	Ministry of Environment and Forests
NGT	National Green Tribunal.
NIO	National Institute of Oceanography.
OCZMA	Odisha Coastal Zone Management Authority.
PL	Prospecting License.
SC	Supreme Court of India.

A summary of the National Manufacturing Policy 2011

1. The National Manufacturing Policy (NMP) 2011 has been formulated after extensive consultation with stakeholders and inputs from the industry, state governments or relevant experts. The national manufacturing competition council (NMCC) and the planning commission have made significant contribution.
2. The policy aims to address the constraints faced by the manufacturing sector in India- such as inadequate physical infrastructure, complex regulating environment and shortage of skilled manpower- and bring about a qualitative change with following six objectives:
 - Increase manufacturing sector annual growth to 12-14 % over the medium term and enhance manufacturing's contribution to GDP to at least 25 % by 2022;
 - Create 100 million jobs in the manufacturing sector by 2022;
 - Create appropriate skill sets among the rural and urban poor;
 - Increase domestic value addition and technological depth in the sector;
 - Enhance global competitiveness and ;
 - Ensure sustainable industrial growth
3. In order to achieve these objectives three sets of policy proposals and action points have been outlined:
 - (a) Enhance manufacturing capabilities and technologies through welcoming foreign investments and technologies; improve competitiveness of enterprises; reduce regulatory and compliance burden of business; encourage innovation and improve consultation mechanism with the stakeholders;
 - (b) Provide special attention to the following: employment intensive industries, capital goods industry, industries with strategic significance such as shipping, aerospace, electronics and telecommunication equipment; industries which enjoy competitive advantage such as automobiles and pharmaceuticals, small and medium enterprises (SMEs) and public sector undertaking (many of them included in what is called 'special focus sectors');
 - (c) Implement the following specific policy instruments (or action points): rationalization and simplification of business regulations, simple and expeditious exit mechanism for sick enterprises, financial and institutional mechanisms for technology development including green technologies, industrial skill upgradation; incentives for SMEs; focus on identified specific sectors; leveraging infrastructure deficit and government procurement, clustering and aggregation through National Investment and Manufacturing Zones (NIMZs) and trade policy.

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