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Premature Deindustrialization in India and Re thinking the Role of Government

Sudip Chaudhuri

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The paper is on premature deindustrialization that India is experiencing and the role that government must play. Significant economic reforms were initiated in India in the early 1990s. These have brought about significant changes in the economy, but these have failed to stimulate the manufacturing sector. In fact the situation is worse than that in the pre-reforms period. After discussing the nature of the manufacturing crisis, the paper focusses on three important aspects – import liberalization, foreign direct investment and technological development. The paper analyses the impact of reforms and what has been the official response. The paper stresses the vital importance of industrial policy in India today. It argues for an industrial strategy coordinated and led by the government. The objective of such an intervention is not to replace the private sector but to supplement the efforts of the private sector and enable it to play a more proactive role.

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Premature Deindustrialization in India and Re thinking the Role of Government

Sudip Chaudhuri

April 2015

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The text

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Abstract

The paper is on premature deindustrialization that India is experiencing and the role that government must play. Significant economic reforms were initiated in India in the early 1990s. These have brought about significant changes in the economy, but these have failed to stimulate the manufacturing sector. In fact the situation is worse than that in the pre-reforms period. After discussing the nature of the manufacturing crisis, the paper focusses on three important aspects – import liberalization, foreign direct investment and technological development. The paper analyses the impact of reforms and what has been the official response. The paper stresses the vital importance of industrial policy in India today. It argues for an industrial strategy coordinated and led by the government. The objective of such an intervention is not to replace the private sector but to supplement the efforts of the private sector and enable it to play a more proactive role.

Keywords

deindustrialization; industrial policy; import liberalization, FDI, technology policy, India

La désindustrialisation précoce en Inde : pour un nouveau rôle du gouvernement

Résumé

Ce document de travail traite de la désindustrialisation précoce que connaît l'Inde et du rôle que le gouvernement devrait jouer. Les réformes importantes qui ont été lancées en Inde au début des années 1990 ont transformé l'économie, sans pour autant stimuler le secteur manufacturier. Sa situation actuelle s'est même détériorée par rapport à la période antérieure aux réformes. Après une discussion de la nature de la crise du secteur manufacturier, cet article se concentre sur trois aspects importants : la libéralisation des importations, les investissements directs étrangers et le développement technologique, où l'on analyse l'impact des réformes et les réponses officielles. L'article souligne l'importance vitale d'une politique industrielle pour l'Inde d'aujourd'hui, en argumentant en faveur d'une stratégie industrielle coordonnée et conduite par le gouvernement. L'objectif d'une telle intervention n'est pas de se substituer au secteur privé mais de contribuer à ses efforts et de de lui permettre de jouer un rôle plus dynamique.

Mots-clefs

désindustrialisation, politique industrielle, libéralisation des importations, investissements directs étrangers, politique technologique, Inde

Sommaire

Crisis of Manufacturing	6
Manufacturing growth rate and share in GDP	6
Employment in Manufacturing	7
Manufacturing trade deficit	8
Manufacturing Trade Deficit with China	9
Import share in domestic demand	13
Economic Reforms and Response to Manufacturing Crisis	14
Import liberalization and the question of efficient growth	16
Foreign Direct Investment	23
Indigenous R&D and technology development	26
Direct R&D spending by government	26
R&D tax credits, grants and loans	26
Conclusion: Bringing Back the Government for National Development	29
References	31

The manufacturing sector in India has been going through a crisis. Economic Reforms since 1991 have brought about significant changes in the Indian economy but these have failed to stimulate the manufacturing sector as a whole. India is in fact experiencing what Dasgupta and Singh (2006) have characterized as premature deindustrialization - a situation where unlike in developed countries, manufacturing employment and output suffer at low income levels before the industrial transformation has taken place.¹ This is not quite different from what India experienced during the British Rule. Traditional industries were destroyed and millions of Indians were thrown out of employment. The modern manufacturing industries that developed were not sufficient to prevent the fall in the proportion of the people dependent on industry, leading to de-industrialization (Bagchi, 1976). As we will elaborate below, development efforts under India's planning strategy after independence despite the limitations did succeed in altering the situation. But recent output and employment trends in the manufacturing sector in India are indicative of a similar process of deindustrialization. The employment situation was far from satisfactory even in the period before reforms but at least absolute employment did not decrease. In recent years in the organized sector, thousands of people have been thrown out of jobs. Total employment figures (organized and un-organized sectors combined) too show a decline in some periods - in late 1980s and late 2000s. Reforms promised growth of efficient manufacturing sector. But that did not happen. The share of manufacturing in GDP has stagnated. The expected transformation of the manufacturing sector did not materialize. New industries failed to develop to absorb the people thrown out of jobs. As a result the share of manufacturing in total employment not only declined in the organized sector. In the aggregate too, the share declined in some years.

It has been evident for quite some time that the situation in manufacturing is not satisfactory. But the government continued with the strategy to leave it to the market to do the job rather than intervene specifically to promote the sector. In recent years however the crisis in manufacturing

1. The phenomenon of premature deindustrialization is explored across countries by Rodrik (2015) and across Indian states by Amirapu and Subramanian (2014).

and the need for policy intervention has started attracting more attention in official circles. A «National Manufacturing Policy» (NMP) was announced by the Manmohan Singh government in November, 2011.² The objective of NMP is to bring about not only a quantitative change in terms of output and employment but also a qualitative change for greater domestic value addition and technological depth. It was followed by the formulation of the «National Policy on Electronics 2012» to promote manufacturing of electronic products in the country.³ As we will see below, India has increasingly become dependent on imports rather than on domestic production for electronic products. Meanwhile as a part of the preparation for the Twelfth Five Year Plan (2012-2017), the Planning Commission undertook an exercise to have a re-look at industrial policy. This culminated in the formulation of «The Manufacturing Plan» by the Planning Commission Steering Committee (2013) followed by the Twelfth Plan itself (Planning Commission, 2013).⁴ The Twelfth Plan called for a «radical change in policy approach» (p. 54). In fact in a significant departure from the past and echoing Rodrik (2007, p. 2), the Planning Commission (2013) pointed out: «the critical question now is not whether there should be an industrial policy but what should be the architecture of the industrial policy» (p. 54). While NMP deals with the broad objectives and instruments to be used, the details and the rationale for the new manufacturing policy are provided in the Planning Commission reports - NMP in fact refers to the Planning Commission Manufacturing Plan.

The replies of the Minister of Commerce and Industry to questions on the manufacturing sector in the parliament indicate that the Modi government is continuing with the same manufacturing policy.⁵ Modi launched a «Make in India»

2. Text of NMP accessed from the website of the Department of Industrial Policy and Promotion, Government of India (www.dipp.nic.in).

3. Text of the policy accessed from the website of the Department of Electronics and information Technology (www.diety.gov.in).

4. Twenty six Working Groups were formed to analyse the constraints and suggest policies. These reports were considered by the Planning Commission with the assistance of a team from The Boston Consulting Group to formulate the strategy to develop India's manufacturing sector (Planning Commission 2012, pp. 1-2).

5. Rajya Sabha Question Number 750 (16 July 2014) and 2143 (30 July 2014) (accessed from <http://rajyasabha.nic.in/rsnew/question/rstype.asp#>).

campaign in September, 2014 to promote manufacturing in India. The official website (www.makeinindia.com) refers to NMP. In fact the objectives and the instruments announced are essentially the same as those in NMP. Simultaneously, however the Modi government has disbanded the Planning Commission and replaced it with a new institution named NITI Aayog (National Institution for Transforming India) in January 2015 to provide, among others, central and state government “with relevant strategic and technical advice across the spectrum of key elements of policy”. What shape such advice and its implementation will take will be clear only in future. For the present, so far as the industry and service sectors are concerned, what has been declared is that “the role of the government as a ‘player’ in the industrial and service sectors has to be reduced. Instead, government has to focus on enabling legislation, policy making and regulation.”⁶ The same approach is reflected in the *Economic Survey 2014-15*. It talks about the Make in India campaign but when it comes to the question of what can be done to realize the objectives of the campaign, what it essentially stresses is “improving the business environment by making regulations and taxes less onerous, building infrastructure, reforming labour laws” (Ministry of Finance, 2015, Vol. 1, p. 34).⁷

In this paper, we will first provide a statistical picture of the nature of crisis. Then in the light of the way Economic Reforms since 1991 have affected the manufacturing sector, we will analyse some policy options. We will argue that the situation in the country is such that it is important for the government to be actively involved and to lead and coordinate the development. Unlike what the NITI Aayog announcement advocates, its role must be enhanced rather than reduced.⁸

6. See the text of the Cabinet Resolution in the Press Note, “Government constitutes National Institution for Transforming India (NITI) Aayog”, 1 January, 2015 (<http://pib.nic.in/newsite/PrintRelease.aspx?relid=114268>).

7. It considers other industrial policy measures, such as targeting the promotion of specific industries, protection as less effective and more controversial (p. 34).

8. The emphasis on the indirect role of the government by

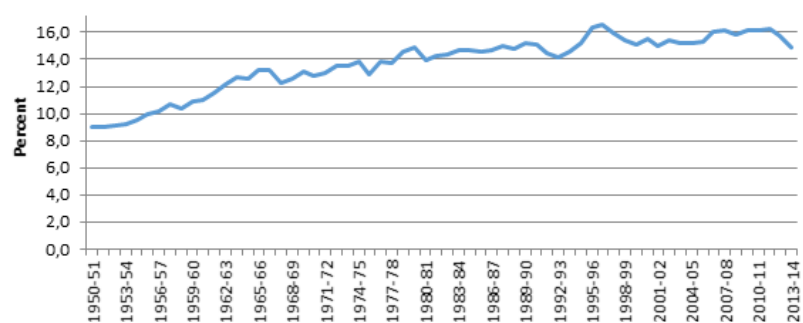
Crisis of Manufacturing

Manufacturing growth rate and share in GDP

Though improving the performance of the industrial sector⁹ was a major objective of the Reforms of 1991, the share of manufacturing in GDP has stagnated around 15-16% since 1991 (Figure 1). Despite the far reaching reforms, the desired manufacturing growth did not take place. This is in contrast to countries such as South Korea and China which have been able to achieve a much higher manufacturing growth. The share of manufacturing in GDP is 31% in Korea and 30% in China. Even Germany with much higher wage costs has a share of 21% (Planning Commission 2013, p. 52).

In contrast to the post reforms period, the manufacturing share in GDP went up from 9% in

Figure 1: Manufacturing share in GDP in India



Source: Calculated from CSO, *National Accounts Statistics*, GDP at constant prices (base year 2004-05).

the Modi government is not fundamentally quite different from what we find in the more elaborate Twelfth Plan issued by the Manmohan Singh government. In the light of the failure of India's reforms to establish a strong manufacturing sector but the success of countries such as Japan, Korea and China where the government proactively promoted manufacturing growth, it has called for a radical policy reorientation. But if we consider the “strategies for highest overall impact” (Planning Commission, 2013, Box, 13.3, p. 98), we find that what the new industrial policy has essentially recommended is the indirect role of the government in technology up-gradation, physical infrastructure creation, human capital formation and policy and process interventions (such as simplification of processes for doing business) rather than a more direct role of the government as an investor, manufacturer and coordinator.

9. Apart from manufacturing, the industrial sector comprises of mining, construction and electricity, gas and water supply. In this paper we focus on the manufacturing sector - by industrial policy, we effectively and essentially mean manufacturing policy.

1950-51 to 15.2% in 1989-90. In fact much of the increase took place during the late 1950s and the early 1960s (Figure 1). This was the period of India's Second and Third Five Year Plans when concrete steps were taken to develop basic and heavy industries. The planning strategy succeeded in widening the industrial base of the economy. In the early 1950s, just four industries (food products, textiles, wood & furniture and basic metal) accounted for more than two thirds of production. By the early 1990s, their contribution reduced to less than a third. The structure of manufacturing changed in favour of new industries. The share of the machinery sector (comprising electrical and non-electrical machinery), for example increased from 1.2% in the early 1950s to about 12.7% in the early 1990s. The other industries which have significantly gained in importance are chemicals, petroleum refining, transport equipment and non-metallic mineral products.¹⁰

So far as the annual growth rate of manufacturing is concerned, the historical pattern that one observes since the early 1950s is that short periods of high growth are invariably followed by sharp downturn. The economy has not been able to move away from this trend after Reforms. After achieving a growth rate exceeding 10% in the late 2000s, the growth rate has started decelerating. Compared to 11.3% growth in 2009-10,

10. CSO, *National Accounts Statistics* (1980-81 series) - see Chaudhuri 1998, Table 6.2

the growth rates were 8.9%, 7.4%, 1.1% and -0.7% respectively in the next four years. Apart from in 2013-14, manufacturing growth rate has been negative in only two other years since the early 1950s: in 1979-80 (-3.2%) and in 1991-92 (-2.4%).¹¹

Employment in Manufacturing

Unlike value added data, time series data are not available for manufacturing employment. Based on periodic surveys conducted by NSSO, we find that the share of manufacturing in total employment remained stagnant at around 10-11% between 1977-78 and 1999-2000. The share increased marginally between 1999-2000 and 2004-05 but it again went down between 2004-05 (12.2%) and 2009-10 (11.4%). The absolute number of persons employed too reduced in some periods - between 1987-88 and 1993-94 and between 2004-05 and 2009-10 (Table 1). The manufacturing employment share of 12.6% in 2011-12 (60 million persons) is way below what China has achieved (28%) (Planning Commission Steering Committee 2012, p. 32).

Manufacturing employment data are not available after 2011-12. Since then, as we have seen above manufacturing growth rate has decelerated with a negative growth rate in 2013-14. The

11. Calculated from CSO, *National Accounts Statistics* (2004-05 series).

Table 1: Manufacturing Employment and GDP in India

	No of persons employed in manufacturing (million)	Share of manufacturing in total employment	Manufacturing GDP (Rs million, constant 2004-05 prices)	Share of manufacturing in GDP (percent)
1977-78	29.81	10.4	1 022 320	13.7
1983	30.49	10.6	1 371 680	14.7
1987-88	38.89	11.2	1 643 140	15
1993-94	37.45	10.5	2 221 240	14.6
1999-2000	44.98	11	3 384 580	15.1
2004-05	56.06	12.2	4 532 250	15.3
2009-10	52.35	11.4	7 304 350	16.2
2011-12	59.80	12.6	8 540 980	16.3
2012-13	NA	NA	8 638 760	15.8
2013-14	NA	NA	8 577 050	14.9

Sources: (i) For employment, National Sample Survey employment data based on principal and subsidiary status of employment, for 2011-12 from Mehrotra et al. 2014 and for other years from Singh 2013; (ii) for GDP, CSO, *National Accounts Statistics*.

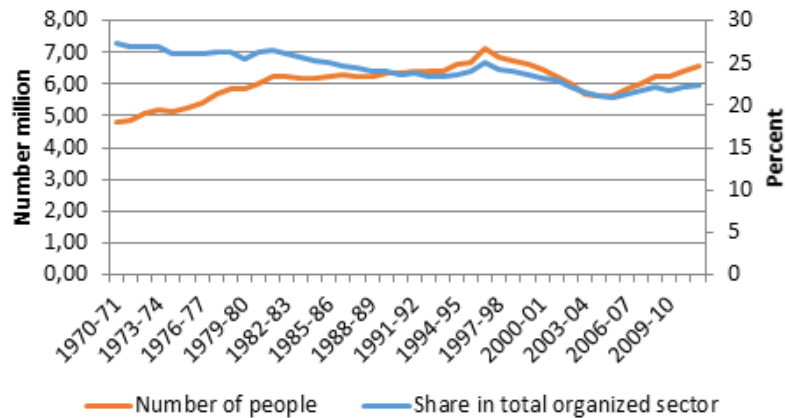
manufacturing share in GDP has gone down from 16.3% in 2011-12 to 14.9% in 2013-14 erasing the gain that was made earlier (Figure 1). In all probability such recession in the manufacturing sector must have adversely affected employment too. In that case for manufacturing employment too, the small gains one observes in the share in recent years may have been erased (Table 1).

If we focus on the organized sector for which continuous time series data on employment are available since 1970-71, we observe quite a steady growth in manufacturing employment from 4.8 million persons in 1970-71 to 7.1 million persons in 1996-97 (Figure 2). But thereafter manufacturing employment went down in absolute terms reaching a figure of 5.8 million in 2006-07. Employment has recovered to some extent in recent years. But the figure of 6.6 million persons is still below the peak of 7.1 million in 1996-97. As a percentage of total organized sector employment however, manufacturing employment went down almost continuously from 27% in 1970-71 to 21% in 2005-06. It is only in the last few years that the declining trend has been arrested. In organized sector, the largest sector in terms of employment is “community, social and personal” service accounting for almost 40% of the employment. But the most dynamic has been the financing, insurance and real estate, where the share has gone from 3% in the early 1970s to 11% in 2011-12.

Manufacturing trade deficit

Thanks to the growth of manufacturing, by the time Reforms started in the early 1990s, India enjoyed a surplus in manufacturing trade with exports exceeding imports. In

Figure 2: Organized Sector Manufacturing Employment

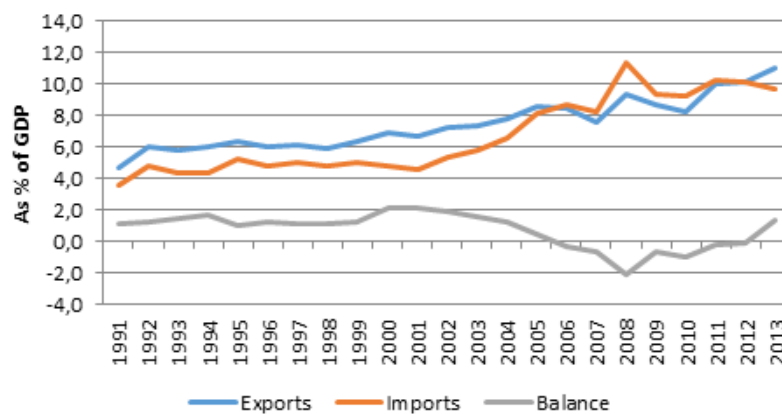


Source: CMIE, Economic Outlook database (original source: Government of India, Economic Survey (various issues))

fact manufacturing trade surplus as a percentage of GDP increased from 1.1% in 1991 to 2.1% in 2001. But the growth of imports accelerated since the early 2000s with the surplus turning into a deficit in 2006 and reaching a level of -2% in 2008 (Figure 3). Since then with some improvements in export demand and slowing down of import demand, manufacturing trade balance has improved and achieved a surplus in 2013 (1.3%).

As we have argued in another paper (Chaudhuri 2013), the initial improvement in manufacturing trade balance after reforms is essentially a reflection of the successful growth of industries which

Figure 3: Manufacturing Trade in India, 1991-2013



Sources and notes: UNCOMTRADE database for trade data (<http://comtrade.un.org/db/default.aspx>) and National Accounts Statistics for GDP data at market prices. SITC-Rev-1 codes of 5 (Chemicals) + 6 (Manufactured goods classified chiefly by material) - 68 (Non-ferrous metals) + 7 (Machinery and transport equipment) + 8 (Miscellaneous manufactured articles) have been considered as manufactures.

had developed earlier and the deterioration since the early 2000s is largely explained by the failure of economic reforms to promote new industries. As can be seen from Table 2, India enjoyed a surplus in 2008¹² only in traditional industries such as textiles, footwear, rubber manufactures, leather manufactures, furniture etc and in industries such as pharmaceuticals, motor vehicles, iron & steel etc which were consciously developed as a part of the planning strategy. While garments (SITC code 84) and textiles (65) top the list, pharmaceuticals (541), iron & steel (67) and passenger motor vehicles (781) are among the sectors with large trade surplus. The same table also shows that the major sectors with trade deficit are high technology sectors such as aircrafts (792), telecommunications equipment (764), computers and office machines (code 75), microcircuits, transistors and valves (code 776), electro-medical and radiology equipment (774), electric power machinery (771), optical instruments (871), measuring and checking instruments (874), photographic equipment (881) etc. The other sectors with manufacturing trade deficits also include medium technology industries such as different types of machinery (codes 72, 73, 74, 778), ships and boats (code 793), railway vehicles (code 791), sanitary and plumbing (code 81), household type equipment (code 775).¹³

If we focus on industries which have been suffering from trade deficits since the early 2000s, we find that in several sectors net imports (i.e., imports minus exports) have been growing at

12. We take the year 2008 because after that import growth has slowed down and that could be more a reflection of the deceleration in the growth of the economy, particularly manufacturing growth rather than a change in the structure of imports. As we will discuss below, import liberalization has adversely affected domestic production and any significant policy action to alter the situation is yet to take place.

13. For a classification of industries into the groups of resource-based, low-technology, medium-technology and high-technology, see UNIDO 2009, Annex II, p. 126.

exceptionally high rates. During the 2001-2008 period, net imports increased at the compound annual rate of growth (CARG) of 76% in aircraft, 37.4% in telecommunications equipments, 39.6% in specialized machinery, 33.3% in general machinery, chemicals other than pharmaceuticals (50%), 56% in metalworking machinery, 41.7% in electrical machinery etc (Table 3). Growth has been 10% or less only in transistor & valves (2.7%) and meters and counters (10%). In only two sectors - optical instruments and watches and clocks, net imports have gone down between 2001 and 2008 by -49.7% and -46.6% respectively. The growth rates of net imports were much lower in the previous period of reforms, 1990-2001. In fact in a number of industries, for example chemicals other than pharmaceuticals, aircrafts, specialized machinery, metal working machinery, electrical machinery, the growth rate was negative, i.e., net imports in 2001 were lower than that in 1990 (Table 3).

Manufacturing Trade Deficit with China

Trade relations with China throw further light on India's dismal performance in manufacturing trade in recent times. India had a small manufacturing trade surplus with China in 1992 and till 2001 the deficit used to be less than USD 1 billion. But it started accelerating since 2002 with the deficit reaching USD 23.28 billion in 2008 and USD 40.97 billion in 2011. Since then however a marginal decline is observed.

In 2008, India had a trade surplus with China in only two product groups - leather products and (code 883) cinematograph films (code 61) - out of the 48 manufactured product groups listed in Table 4. India suffered a deficit in all the other groups including high-tech products such as telecommunications equipment (code 764), computers (code 75), specialized machinery (code 72) and less technology intensive products such as

Table 2: Sectoral Manufacturing Trade Balance in India, 2008

SITC-Rev-2 codes	Commodity Description	(Exports-imports) USD million
84	Articles of apparel and clothing accessories	10987.32
65	Textile yarn, fabrics, made-up articles	8020.04
89	Miscellaneous manufactured articles	6808.47
541	Medicinal and pharmaceutical products	3953.19
66	Non-metallic mineral manufactures	3247.19

67	Iron and steel	2275.35
781	Passenger motor vehicles (excluding buses)	1829.92
85	Footwear	1282.57
61	Leather, leather manufactures	774.62
83	Travel goods, handbags	757.08
69	Manufactures of metals	649.70
62	Rubber manufactures	613.67
785	Cycles, scooters	537.53
874	Measuring, checking, analysis, controlling instruments	405.46
783	Road motor vehicles	316.47
782	Lorries and special purposes motor vehicles	285.26
872	Medical instruments and appliances	186.75
884	Optical goods	120.69
883	Cinematograph film, exposed and developed	22.26
82	Furniture and parts	19.02
882	Photographic and cinematographic supplies	7.16
63	Cork and wood, cork manufactures	1.97
881	Photographic apparatus and equipment	0.78
885	Watches and clocks	-1.72
871	Optical instruments and apparatus	-3.41
786	Trailers, and other vehicles, not motorized	-16.61
775	Household type equipment	-70.72
873	Meters and counters	-78.43
771	Electric power machinery, and parts	-79.69
81	Sanitary, plumbing, heating, lighting fixtures and fittings	-82.17
791	Railway vehicles and associated equipment	-169.18
773	Equipment for distribution of electricity	-197.78
774	Electro-medical and radiological equipment	-279.26
76-764	Telecommunications, sound recording and reproducing equipment exc telecom equipment	-533.72
776	Thermionic, microcircuits, transistors, valves	-542.70
784	Motor vehicle parts and accessories	-603.17
772	Electrical apparatus for making and breaking electrical circuits	-715.67
778	Electrical machinery and apparatus	-1037.01
71	Power generating machinery and equipment	-1207.16
64	Paper, paper board articles	-1240.27
793	Ships, boats	-2189.48
73	Metalworking machinery	-2781.42
75	Office machines and automatic data processing equipment	-3964.76
74	General industrial machinery and equipment	-5472.61
72	Machinery specialized for particular industries	-6099.16
764	Telecommunication equipment	-6105.62
792	Aircraft and associated equipment, and parts	-10677.43
5-541	Chemicals exc medicinal and pharmaceuticals	-17656.74

Source: Calculated from UNCOMTRADE database.

Table 3: Growth of manufactured net imports, India, 1990, 2001, 2008

SITC-Rev-2 codes	Commodity Description	1990 Deficit (Imports-exports) USD million	2001 Deficit (Imports-exports) USD million	2008 Deficit (Imports-exports) USD million	1990-2008 CARG, col (3) and col (5) (%)	1990-2001 CARG, col (3) and col (4) (%)	2001-2008 CARG, col (4) and col (5) (%)
5-541	Chemicals exc medicinal & pharm	1927.11	1035.63	17656.74	13.10	-5.49	50.0
792	Aircraft and associated equipment, and parts	281.57	203.92	10677.43	22.38	-2.89	76.0
764	Telecommunication equipment	155.81	661.19	6105.62	22.60	14.04	37.4
72	Machinery specialized for particular industries	632.27	591.24	6099.16	13.42%	-0.61%	39.6%
74	General industrial machinery and equipment	610.42	731.39	5472.61	12.96	1.66	33.3
75	Office machines and automatic data processing equipment	125.41	978.97	3964.76	21.15	20.54	22.1
73	Metalworking machinery	217.16	123.59	2781.42	15.22	-5.00	56.0
793	Ships, boats	230.72	304.63	2189.48	13.32	2.56	32.5
64	Paper, paperboard, articles	234.95	282.53	1240.27	9.68	1.69	23.5
71	Power generating machinery and equipment	189.64	275.22	1207.16	10.83	3.44	23.5
778	Electrical machinery and apparatus	90.92	90.26	1037.01	14.48	-0.07	41.7
772	Electrical apparatus for making and breaking electrical circuits	128.43	125.10	715.67	10.01	-0.24	28.3
776	Thermionic, microcircuits, transistors, valves	212.41	449.03	542.70	5.35	7.04	2.7
76-764	Telecommunications, sound recording and reproducing equipment exc telecom equipment	-13.74	14.97	533.72	-	-	66.6
774	Electro-medical and radiological equipment	63.46	62.41	279.26	8.58	-0.15	23.9
873	Meters and counters,	41.08	40.37	78.43	3.66	-0.16	10.0
775	Household type equipment	-2.51	20.18	70.72	-	-	19.6
871	Optical instruments and apparatus	177.38	419.15	3.41	-19.70	8.13	-49.7
885	Watches and clocks	140.26	138.15	1.72	-21.70	-0.14	-46.6

Source: Calculated from UNCOMTRADE database.

Note: Only sectors with deficit trade in both 2001 and 2008 have been considered in the table.

travel good (code 83), footwear (code 85), household equipment (code 775), paper (code 64), watches and clocks (code 885) (Table 4). As we have seen above, India has an overall surplus in pharmaceutical trade. But with China, India has a deficit in pharmaceuticals too. However this is restricted mainly to bulk drugs (the raw materials for finished formulations). In formulations, India

has been able to maintain a surplus. China is now a predominant source of supplies for a number of these traded goods. China supplied in 2008, 83% of India's imports of cycles and scooters, 70% of footwear, 55.7% of telecommunications equipment, 53.5% of sanitary and plumbing, 36.8% of medicine products, 28.1% of rubber products etc (Table 4).

Table 4: India's manufacturing trade with China, 2008

SITC-Rev-2 codes	Commodity Description	India's Imports (USD million)	India's Net imports (USD million)	China's share in India imports (%)
5-541	Chemicals exc medicinal and harma	4790.27	-4034.08	14.9
764	Telecommunication equipment	3695.80	-3680.55	55.7
67	Iron and steel	2185.91	-1984.24	22.7
75	Office machines and automatic data processing equipment	1958.35	-1938.40	43.7
74	General industrial machinery and equipment	1696.25	-1568.59	18.7
72	Machinery specialized for particular industries	1404.03	-1364.02	16.5
65	Textile yarn, fabrics, made-up articles	1164.79	-1035.25	48.8
69	Manufactures of metals	918.98	-894.32	27.1
71	Power generating machinery and equipment	794.68	-766.79	20.1
778	Electrical machinery and apparatus	737.22	-724.92	42.2
541	Medicinal and pharmaceutical products	688.20	-615.94	36.8
66	Non-metallic mineral manufactures	527.63	-410.99	3.9
771	Electric power machinery, and parts	410.01	-397.61	37.8
89	Miscellaneous manufactured articles	441.48	-333.23	17.4
773	Equipment for distribution of electricity	329.87	-327.74	36.8
73	Metalworking machinery	320.03	-314.59	9.5
772	Electrical apparatus for making and breaking electrical circuits	309.96	-283.80	17.4
64	Paper, paperboard articles	260.15	-258.99	14.4
785	Cycles, scooters	235.91	-235.18	83.0
62	Rubber manufactures	223.46	-218.34	28.1
76-764	Telecommunications, sound recording and reproducing equipment exc telecom equipment	213.83	-213.79	34.6
793	Ships, boats	213.29	-213.27	4.4
82	Furniture	201.45	-200.24	41.9
775	Household type equipment	168.81	-168.38	57.6
784	Motor vehicle parts	182.18	-159.31	7.7
776	Thermionic, microcircuits, transistors, valves	162.30	-157.51	14.2
874	Measuring, checking, analysis, controlling instruments	119.12	-112.39	4.4
791	Railway vehicles and associated equipment	95.95	-95.07	40.9
81	Sanitary, plumbing, heating, lighting fixtures and fittings, nes	92.06	-91.73	53.5
884	Optical goods	105.74	-90.79	29.4
85	Footwear	71.77	-70.17	70.0
83	Travel goods, handbags	60.75	-60.05	69.7
872	Medical instruments and appliances	42.25	-40.77	5.8
84	Articles of apparel and clothing accessories	47.69	-38.59	27.7
63	Cork and wood, cork manufactures	39.05	-38.07	23.9
885	Watches and clocks	27.41	-27.27	19.2
774	Electro-medical and radiological equipment	49.16	-24.85	8.7
792	Aircraft and associated equipment	24.33	-22.57	0.2
882	Photographic and cinematographic supplies	22.54	-22.50	7.4
786	Trailers, and other vehicles, not motorized	15.55	-15.37	32.7
782	Lorries and special purposes motor vehicles	12.01	-11.83	13.3

871	Optical instruments and apparatus	13.49	-11.79	7.3
873	Meters and counters	11.78	-11.72	28.7
881	Photographic apparatus and equipment	6.06	-5.75	8.6
783	Road motor vehicles	0.74	-0.74	15.7
781	Passenger motor vehicles (excluding buses)	0.32	-0.29	0.1
883	Cinematograph film, exposed and developed	0.01	0.03	0.1
61	Leather, leather manufactures	36.62	16.26	8.0

Source: Calculated from UNCOMTRADE database.

In 1992, about 50% of India's imports from China was manufactured goods. But those days the proportion of manufactured goods exported to China also used to be relatively high. This has changed in the last two decades. Imports of manufactured goods from China has gone up from 47.3% in 1992 to 78.9% in 2008 but exports of manufactured goods has gone down from 36.8% in 1992 to 11.3% in 2008. Trade relations with China now exhibit a colonial pattern - India exporting primary goods and minerals and importing processed manufactured goods. In 2008, 38.6% of India's exports to China was minerals and 48.3% primary goods.¹⁴

Like India, China too went for significant economic reforms. But whereas in China the government in China intervened strongly using the market and private sector for manufacturing

14. Calculated From UNCOMTRADE data Base. V Krishnamurthy, Chairman of the National Manufacturing Competitiveness Council (NMCC) highlighted this pattern of trade with China in a letter to the Minister of Commerce and Industry on 16 January, 2008 (Excerpts downloaded from <http://www.nmcc.nic.in/pdf/IndiaChinaTrade.pdf>).

growth, India missed the opportunity of growth due to withdrawal of the government and passive reliance on the market as we will elaborate below.

Import share in domestic demand

Are imports displacing domestic production or preventing its growth? Is the share of imports in domestic market (domestic production + imports - exports) going up? Dis-aggregative domestic production data corresponding to the trade data discussed above are not available systematically. But there are indications that due to the rapid growth of net imports as discussed above, import share has risen and are very high in many sectors.

Table 5 provides some information on the very important sector of capital goods. In machine tools, the import ratio went up from 53.5% in 2004-05 to 75.4% in 2008-09. Machine tool industry is considered to be the mother of capital goods industry supplying machinery for different manufacturing processes. In metallurgical machinery the increase was from 87.6% to 92.1%. Similarly it has gone up for other capitals

Table 5: Import share in Capital goods industries, 2004-05 to 2010-11

	Machine tools	Plastic processing machinery	Earth moving and mining equipment	Heavy electrical and power plant equipment	Metallurgical machinery	Textile machinery	Process plant equipment	Engineering goods
2004-05	53.5	46.9	40.1	18.0	87.6	46.6	7.4	14.2
2005-06	59.4	52.9	41.9	19.2	86.6	55.7	7.7	17.0
2006-07	65.0	48.4	46.1	20.5	84.5	56.4	1.7	21.7
2007-08	68.9	54.4	44.8	23.0	81.6	48.8	1.4	21.2
2008-09	75.4	50.7	53.8	28.3	92.1	56.1	2.2	23.6
2009-10	66.8	41.9	53.6	24.5	85.6	54.3	1.8	22.2
2010-11	67.2	42.1	51.0	26.2	87.1	47.6	9.5	24.2

Note: Import share is defined as import as a percentage of domestic market(= Domestic production + imports - exports).

Source: Planning Commission Working Group 2011a, pp. 7-10.

goods. The other capital goods with rising import share include earth moving and mining equipment (53.8% in 2008-09), textile machinery (56.1% in 2008-09), plastic processing machinery (50.7% in 2008-09). Among the capital goods listed in Table 5, import share is low only for process plant equipment (2.2% in 2008-09). As we have mentioned above, the manufacturing trade deficit peaked in 2008 and since then there has been some improvements. The same pattern is observed for capital goods listed in Table 5. For all the capital goods except process plant equipment the import ratio has somewhat reduced. But still the share is high in 2010-11 - 678.2% in machine tools, 87.1% in metallurgical machinery, 47.5% in textile machinery etc (Table 5).

Not only the import share in the domestic market is high. The import content of domestic production is also quite high specially for high technology segment of the equipment manufactured signifying low value addition in the country. Import content for high technology production is 78% for earth moving and mining equipment, 40% for machine tools, 37% for heavy electrical plant, 35% for metallurgical machinery, 30% in process plant equipment, 27% for textile machinery and 22% in plastic processing machinery.¹⁵

Consider another vital sector - electronic products. It includes a diverse range of goods including consumer electronics, automotive electronics, IT systems and hardware, telecom products and equipment. In 2012 electronics imports of about USD 30 billion accounted for about two-thirds of the total demand of USD 45 billion in the country.¹⁶ In telecommunications equipment, imports accounted for a higher share of more than three-fourths of the total demand (Planning Commission 2012, p. 23). As the "National Policy on Electronics 2012" has pointed out, "Unless the situation is corrected, it is likely that by 2020, the electronics import may far exceed oil imports" (p.1).

High imports compared to domestic production is a critical issue in India's manufacturing and it is

15. Source: same as in Table 5.

16. *Indian ESDM Market - Analysis of Opportunity and Growth Plan*, An IESA - Frost & Sullivan Report, supported by the Department of Electronics & Information Technology, Ministry of Communications & Information Technology, Government of India (accessed 26 September, 2014, <http://www.iesonline.org/downloads/IESA-FS-report-Indian-ESDM-Market.pdf>).

not restricted to the capital and electronic goods mentioned above. Using trade data for the entire sector but domestic production data from Annual Survey of Industries only for the organized sector, we have computed domestic production ratios for a number of industries.¹⁷ While the domestic production ratio has improved for industries such as pharmaceuticals, iron & steel, motor vehicles etc since the early 1990s, it has gone down in general and special purpose machinery, computer hardware, telecom equipment, aircrafts, ships & boats, optical instruments, watches & clock, household equipment etc (Chaudhuri, 2013, Table 2).

Economic Reforms and Response to Manufacturing Crisis

NMP has promised a lot of action and Make in India campaign has generated a lot of expectation. But the action that has been taken till now primarily relates to the following areas:¹⁸

- Improving the business climate by making it easier to do business: Towards that aim priority has been given for example to speed up the implementation of the e-Biz project which aims to create a single portal for all government clearances and compliances. Steps also have been taken to make taxes less onerous, for example by deferring the applicability of the General Anti-Avoidance Rule (GAAR) applicability in the Budget, 2015-16.
- Improving physical infrastructure: One of the most important recommendations of the NMP is to promote clusters and aggregation through the creation of national investment and manufacturing zones (NIMZs). These NIMZs are planned as integrated industrial townships with developed land, transportation links, power, water, sewerage and

17. The domestic production ratio is defined as domestic production as a percentage of domestic market (= domestic production + imports - exports). Since the trade data and production data refer to different sectors, the absolute value of the ratio does not correctly reflect the situation. But changes in the ratio over time may provide abroad indication of the changing status of domestic production.

18. Prime Minister Narendra Modi's address to the Nation on 15 August, 2014 (<http://pib.nic.in/newsite/PrintRelease.aspx>); "100 days of the New Government: the Making of Manufacturing Driven Economy", Department of Industrial Policy and Promotion (www.dipp.nic.in); Budget Speeches of Finance Minister, July 10, 2014 and 28 February, 2015 (www.indiabudget.nic.in); *Economic Survey, 2014-15*, Vol. 2, p. 91).

effluent disposal, skill development facilities, housing and so on. The government has granted “in-principle” approval to a total of 16 National Investment and Manufacturing Zones (NIMZs) including 8 along the Delhi-Mumbai Industrial Corridor (DMIC) region and work has started for two NIMZs. The emphasis given by the Modi government to infrastructure is clear from the additional Rs 70,000 crore provided in the budget for 2015-16 investments in infrastructure. A National Investment and Infrastructure Fund (NIIF) is also being created with annual flow of Rs20,000 crore to it.

- Enhancing the supply of skilled manpower: Together with the Make in India programme, what the Modi government is emphasizing is the “Skill India” initiative. A new Ministry of Skill Development and Entrepreneurship has been set up and a National Skills Mission is being set up to coordinate and consolidate training to improve employability and entrepreneur skills.
- Liberalizing FDI inflows: One of the most important announcements made by the Modi government in so far as manufacturing is concerned was to raise the foreign equity limit in defence manufacturing from 26% to 49%.
- Changes in customs duty for selected products: one of the problems of the way imports have been liberalized in India is that for many products, the tariff rates on the final products are lower than those for the intermediate products. This has resulted in an inverted duty structure putting the domestic manufacturers in a competitive disadvantage. The Budget for 2015-16 seeks to correct such anomalies by reducing the customs duties for 8 products, for example for metal parts required for the manufacture of electrical insulators. The Budget also seeks to reduce the raw material costs by reducing the customs duty for 14 other products for example organic LED TV panels. Customs duty has been increased for 3 products - metallurgical coke, iron & steel products and commercial vehicles to enable domestic manufacturers to compete against imports.

Improving the business climate by making it easier to do business, improving infrastructure,

enhancing skilled manpower do facilitate the process of manufacturing growth. But the nature of the manufacturing crisis as discussed above is such that much more needs to be done if any significant difference is to be made.

We highlight below some vital industrial policies that are necessary to stimulate manufacturing in the country. We focus on sectors such as capital and electronic goods where domestic production has suffered because of rising imports. We first analyse how instead of growth of efficient manufacturing, drastic cuts in customs duty and removal of other import barriers have led to surge in imports. The attempt in the Budget to correct anomalies arising out of the inverted duty structure is a step in the right direction. But the other steps, for example increasing the duty in only three products are too small to have any significant impact. Unless more substantive measures are taken to ensure demand and provide support to domestic manufacturers, the situation will only worsen and put the country into further crisis. We will discuss the policy steps that are necessary and possible.

Then we take up the question of technological development. Especially for a number of high technology products where the country is import dependent, the country does not have the necessary technology because of lack of experience. Foreign direct investment can be an important source for acquiring technology. Both the Modi government and the previous governments since 1991 have been emphasizing liberalization of FDI to promote manufacturing. We will discuss the impact and the limitations of this approach. Modi government is emphasizing the development of skills. But if investment is to go up significantly to prevent the slide in manufacturing and promote its growth, what is also important is technological innovation.¹⁹ In the light of the current R&D and innovation system in the country, we will discuss some policy options.

19. Kiran Mazumdar Shaw, CMD of Biocon, a very successful biotechnology company in India has pointed out that Skill India programme needs to be supplemented with “Innovate in India” initiative. She expects much more enabling provisions and incentives for companies to innovate than what the “Atal Innovation Mission” announced in the Budget speech with an outlay of Rs 150 crore promises - see “Budget 2015: Preparing India for a brighter economic future”, Business today, March 3, 2015 (<http://business-today.intoday.in/>).

In the last section we will stress the need for an industrial strategy coordinate and led by the government. This will involve a far more direct intervention of the government than is contemplated in official circles.

Import liberalization and the question of efficient growth

The basic justification of reforms has been that the government in India played too large a role and that role was essentially negative. Government was inefficient and government controls and regulations stifled the growth of the efficient private sector. Through withdrawal of the government and de-regulation an environment was sought to be created for efficient growth. Liberalizing imports by reducing tariff and removing non-tariff barriers has been one of the most important aspects of this strategy. The idea was to expose domestic enterprises to international competition to enhance efficiency and promote growth.

We discuss here how import barriers were systematically dismantled but how rather than efficient manufacturing growth it led to surge in net imports. Even though the expected favourable effects did not follow, the government went ahead with import liberalization, in fact intensified the process beyond what was mandated under the WTO rules. It is only recently that we see some acknowledgement of the problem in official circles leading to some corrective action. But as we will see much more concerted action is required reverse the process and put the economy in the growth path.

Dismantling of trade barriers and impact on imports

Indian industry was protected not only through high tariff rates but also through quantitative restrictions on imports. Removal of the latter started with capital goods and intermediate goods and then was extended to consumer goods in a phased manner. Quantitative restrictions were removed by 2001-02 (Mathur and Sachdeva 2005, p. 535). Tariff rates too have been drastically reduced. Simple average import duty on capital goods and intermediate goods declined sharply from 105% and 132% in 1991-92 to 20.4% and 21.3% respectively in 2004-05. The gap between the simple and weighted average also reduced over the years. By 2004-05 the weighted average import duty

was 18.1% and 19.6% for capital and intermediate goods respectively. For consumer goods too, the simple average duty decreased from 141% in 1991-92 to 25.9% in 2004-05. But the weighted average remained relatively high at 50.4% in 2004-05 (Mathur and Sachdeva 2005, Table 1B, p. 537). Since then, tariff rates have been further reduced. For industrial products, the simple and weighted average rate declined to 9.4% and 7.2% respectively in 2009 (Banga and Das 2012, Table 1, p. 8) and 7.5% and 5.6% in respectively 2012.²⁰

Currently, out of the 4305 industrial products,²¹ the customs duty is more than 10% only for 62 products and more than 20% only for 25 products. The maximum customs duty for industrial products is 100% and it is applicable to only 15 products in the product category of motor cars and motor cycles. The duty is 70% for one product (natural rubber latex); 30% for 5 products (bicycles, silkworm cocoons etc) and 25% for 4 products (motor boats, sail boats etc) and 20%.²²

The hope was that dismantling of trade barriers will create a competitive environment to enhance efficiency and promote growth. But what followed was a surge in net imports rather than efficient manufacturing growth. In sectors such as electronic hardware, the performance both in terms of output and productivity deteriorated (Majumdar 2010). We have seen above how net imports have exploded in both high tech products such as aircraft, telecommunications equipment, optical instruments and also in medium tech products such as electrical machinery, watches and clocks, household equipments (Table 3). We have also discussed above how import share in domestic demand has been going up in several sectors (Table 5). The close relationship between tariff cuts and import growth is can be seen by taking the example of IT products. In 217 IT products, in accordance with the Information Technology agreement (see below), import duty

20. Calculated from import data from CMIE India Trades database and tariff data from «Customs Tariff 2013-14» from the website of the Central Board of Excise and Customs (<http://www.cbec.gov.in/customs/cst2013-14/cst1314-idx.htm>). These figures refer to only 1922 tariff lines in Chapters 84, 85 and 90. One product in Chapter 84 with 12.5% tariff rate has been ignored.

21. At 6 digit HS levels (Chapters 25 to 97).

22. «Data on MFN Applied Tariff: India», updated 30 January, 2015, accessed on 12 March, 2015 from the WTO website (https://www.wto.org/english/tratop_e/tariffs_e/tariff_data_e.htm).

was eliminated in 96 products between 1997 and 2000 and in 121 products between 2000 and 2005. Whereas imports increased annually at 18% between 1997 and 2000, the growth was 38% between 2001 and 2005 (Kallummal 2012, p. 15; Ernst 2013, p. 13).

Import liberalization beyond WTO

India started the process of import liberalization started before the formation of WTO in 1995 and continued to do so beyond what has been mandatory under WTO.

GATT is a multilateral agreement of WTO and India as a member of WTO is bound by GATT obligations. But as we will see below, even under GATT, India liberalized tariff more than what was required. Moreover, India signed and joined the Information Technology Agreement in 1997. The latter being a plurilateral agreement, India had the option not to join it without sacrificing WTO membership. In fact all the WTO countries are not members of the agreement. But India was among the first developing country to join it and as required under the agreement committed herself to harmonizing non-tariff barriers and eliminating tariffs in 217 IT products under the broad product groups of computers, telecom equipment, semiconductors, semiconductor manufacturing and testing equipment, software and scientific instruments. The average tariff rate for these products was 37.8% in 1997. This was reduced to 11.8% in 2000 before it was completely eliminated in 2005.²³

In addition, India has signed bilateral trade deals with 54 countries in the form of Comprehensive Economic Partnership Agreement (CEPA)/ Comprehensive Economic Cooperation Agreement (CECA)/Free Trade Agreements (FTA)/ Preferential Trade Agreements (PTAs). These are again voluntary agreements not mandated by WTO. As a part of these deals India has committed to provide preferential market access to partner countries in designated products with the ultimate objective of removing all trade barriers.

So far as import liberalization is concerned, other steps taken include the policy of allowing duty free imports of power equipment and construction equipment required for mega power projects and the national highway development project

23. Some of those mentioned in the initial list of 217 products are same products. The number of products is actually 165 after removing these duplication (see Kallummal 2012), p. 15).

(Planning Commission Steering Committee 2012, p. 140); Krishnamurthy Committee, p. 124). India also permitted unregulated imports of second-hand machinery. As a part of the efforts to reduce carbon footprint, developing countries in plastic processing industries for example are replacing older machines with new technology machines. These began to be sold at extremely low prices in developing countries such as India (Planning Commission Working Group 2011a, p. 35).

Import liberalization without proper assessment

Proper cost benefit analysis should have been carried out to justify agreements such as the IT Agreement and bilateral trade agreements for which India had the option not to join. These are not uncommon in other countries which pursue national interests. The United States International Trade Commission (USITC), for example undertakes studies to find out the probable economic effect and advises the President before any FTA is negotiated. Such analysis is conspicuous by its absence in India. As the Krishnamurthy Committee (2008, p. 94) suggested what is important is not only to estimate the growth of trade but also the impact on domestic industry and employment. In the bilateral trade agreements, India liberalized trade restrictions in return for similar market access that India will enjoy in other products. But if we consider the deals with countries with more advanced manufacturing, India loses out in manufactured products. Consider for example the India Korea CEPA which came into force in January, 2010. Korea has agreed to liberalize tariff in products such as marine products (prawns, shrimps and lobsters), textiles, chemical and chemical products, vegetables, fruits. In return India will provide unrestricted access to Korea in all manufactured products except a negative list comprising of products such as automotives and components.²⁴ Products such as electronics and telecom equipment where India is heavily dependent on imports are not in the negative list. In some types of machinery, imports increased several times immediately after the introduction of Korea CEPA.²⁵ In products where

24. "Free Trade Agreements: Frequently Asked Questions", accessed from the website of the Ministry of Commerce, (<http://commerce.nic.in>).

25. Imports increased from USD 7.7 million in 2009 to USD 35.9 million in HS 841989; from USD 11.6 million to

China is finding it difficult to directly export to India because of anti-dumping duties, China is setting up plants in countries such as Vietnam to take advantage of the duty free exports from there under FTAs (Planning Commission Working Group 2011a, p. 35). Another problem with these trade agreements is that while the tariff rates on final products have been reduced/eliminated, those on intermediate products have often been left untouched. This has resulted in an inverted duty structure putting the domestic manufacturers in a competitive disadvantage.

Similarly so far as the IT Agreement is concerned, USA was its main promoter and understandable so from the point of view of their interests. As a leader of IT products, USA had much to gain and indeed did so - in semiconductors for example USA has improved its global market share after the IT Agreement (Ernst 2013, p. 9). Similarly China joined the IT Agreement but not in 1997. She joined it in 2003 after she had developed its competencies in the sector and hence could gain from larger market access (Ernst 2013, p. 12).

Import liberalization and efficiency

If import liberalization leads to rising imports rather than efficient growth, then rather than continuing to passively rely on market forces, it is important for the government to intervene to redress it. But Indian policy planners suffered from the confusion between means and ends. Rather than using tariff policy as a means to attain the objective of stimulating manufacturing growth, falling tariff rate was treated as an indicator of success of reforms. The other side of the story - the rise in imports and the harm it caused to the economy did not get the attention it deserves. In fact India's policy makers were more concerned about making India's trading partners happy than enlarge the market for domestic manufacturers. India reported to WTO in 2007²⁶ with contentment about the "radical unilateral tariff liberalization carried out by India" which "provided real and substantial additional market access, to all of India's trading partners without attaching

any conditions of reciprocity" (p. 15). In a letter addressed to the Minister of Commerce and Industry in 2008²⁷, V Krishnamurthy, Chairman of the National Manufacturing Competitiveness Council highlighted how India's manufacturing is suffering because of import liberalization while competing with China where the government not only protects the manufacturers through non-tariff barriers but also actively supports them. Hardly any specific action followed.

Economic reforms rightly stressed the importance of competitive pressures and efficiency. International competition can indeed induce or force manufacturer to be more efficient by cutting costs, improving quality etc. But the benefits depend on the conditions and the stage of development. Our policy planners failed to appreciate the problems of international competition in earlier stages of development and underestimated the importance of other measures such as domestic competition. If domestic manufacturers are unable to withstand international competition and if domestic users start relying on imports, then what follows is not better utilization of existing capacities and greater efficiency but under utilization of existing capacities, decrease in production and rise in unemployment. Decay of existing industries which are unable to survive without protection does not automatically lead to the creation of new capacities in new industries. In the formative stages of development of an industry, a country suffers from cost disadvantages when compared with other countries with matured industries. Hence if industries are exposed to international competition from the very beginning then what typically will happen is that country will continue to import these goods rather than manufacturing these in the country. It is therefore not a coincidence that developed countries such as the United States, Britain, France, Germany as well as that of late industrializers such as Japan, Korea, Taiwan, China protected domestic players and provided them the time and the resources to be internationally competitive (Chang 2005).

It is true that protection may lead to inefficiencies. Protection alone does not lead to creation of efficient industries. It is also important to take other steps to ensure a competitive environment to enhance efficiency and promote growth. This can be done through other measures including

USD 58 million in HS code 841990 and from USD 5 million to USD 10.7 million in HS code 841950 (see Planning Commission Working Group 2011a, p. 53).

26. "Trade Policy Review: Report by India", 18 April, 2007, accessed on 12 March, 2015 from the website of WTO (https://www.wto.org/ENGLISH/tratop_e/tpr_e/tp_rep_e.htm).

27. Letter dated 16 January, 2008 (Excerpts downloaded from <http://www.nmcc.nic.in/pdf/IndiaChinaTrade.pdf>).

by strengthening domestic competition, setting performance standards and exposing domestic manufacturers to competition in the export markets (Lall 2004, p. 13). Economic reforms assumed that protection (and other forms of government intervention), necessarily lead to inefficiencies and dismantling trade barriers necessarily leads to efficient growth. India's experience suggests that both these assumptions are wrong. As we have seen above, dismantling of import barriers have led to more imports rather than more domestic production. Contrary what is believed in some circles, under the planning strategy India did succeed in developing industries such as pharmaceuticals. Government support in the form of public sector investments in manufacturing and R&D and the change in the patent law played vital roles. Despite high tariff, efficiency did not suffer - a large number of firms compete both in the domestic and export markets (Chaudhuri 2005). Similarly high tariff rates in the automobile industry helped domestic manufacturers to develop. Tariff rates are still very high (100%) in automobiles (see below), but efficiency did not suffer because of intense competition among both Indian and foreign firms.

Government Procurement as Industrial Policy

Unlike the response in the earlier years of reforms, some re-thinking took place towards the last days of the Congress Party led United Progressive Alliance (UPA) government. The Twelfth Plan acknowledged the need for government support to compensate domestic manufacturers for the cost disadvantages when competing against more matured industries abroad (Planning Commission 2013, pp. 66-67). What has been appreciated is that cost advantages of matured industries in more developed countries are not only because of the maturity of the industries, the larger experience and opportunities of learning or because of economies of scale but also because of the support which the manufacturers in some trading partners get in their countries. Discussing the severe competition that India faces from China in capital goods industries, Planning Commission mentions the advantages which Chinese manufacturers and exporters get with respect to lower interest rates, tax incentives and subsidies, lower cost of infrastructure (power etc) (Box 13.2, p. 68).

Some action has been initiated in government procurement policy which has the potential to

help local manufacturers. In projects funded by international agencies such as the World Bank and Asian Development bank, there are provisions for allowing preferences for domestically manufactured goods. No such clause exist for government procurement in India funded by own sources (Planning Commission Steering Committee 2012, p. 148). In fact domestic enterprises are discriminated against. To ensure that indigenously products are reliable, government typically stipulates «earlier supply» condition and disqualify local manufacturers who have developed the product but are supplying for the first time. As the Planning Commission Working Group 2011a (p. 72) pointed out this is a chicken and egg situation since unless local manufactures are given a chance, they will never be able to be experienced suppliers.

What has been suggested is that not only such disadvantages should be removed but that local manufacturing should be favoured by reserving a certain percentage of the government procurement for local manufacturers. Countries such as the United States, China and Brazil have procurement laws to favour locally manufactured goods (Planning Commission Working Group 2011a, pp.24-26; Planning Commission Working Group 2011b, pp. 31-32). There is no reason why India should not actively utilize this opportunity. This is in fact one of the flexibilities which WTO permits. WTO's Agreement on Government Procurement which imposes some conditions on government procurement is not a multilateral agreement but a plurilateral one. Unlike the other plurilateral agreement on IT, India has not signed and joined this agreement and hence can exercise some freedom in deciding its procurement policies.

NMP has acknowledged that «government procurement is a major policy instrument for strengthening manufacturing industry and development of technological competence» (p. 24). It announced the intention of the government to use this policy instrument with stipulation of local value addition in critical sectors and sectors where the country imports huge volumes, for example IT hardware, equipment for power, railways. The «National Policy of Electronics, 2012» too made a similar announcement. This has been reiterated in the Make in India programme - government procurement is mentioned as one of the important incentives to promote «national

manufacturing» (<http://www.makeinindia.com/policy/national-manufacturing>). A beginning has been made with the notification issued in December 2013 for government procurement of electronic goods. For the products notified - for desktop, laptop, IP based Soft Switches, Media gateways, Small size 2G/ 3G GSM based Base Station Systems etc - at least 30% of the procurement will have to be sourced from domestic manufacturers. Domestic value addition of these products must be at least 25% in the first year, going up to at least 45% in the fifth year.²⁸

Both the Finance Minister's budget speech of 28 February, 2015 and the *Economic Survey 2014-15* have highlighted the importance of Make in India campaign. But neither refers to government procurement even once as a tool of generating demand for domestic manufacturers. If this reflects a lack of enthusiasm on the part of the Modi government to utilize the tool of public procurement for promoting manufacturing in the country then an important opportunity will be lost. The government in India is a huge spender. Public procurement accounted for about 16% of India's GDP in 2009-10 with public sector procuring goods worth USD 143.6 billion and the Central government USD 44.1 billion.²⁹ Hence if the government procurement policy is properly formulated and implemented for different products, it can have a noticeable impact on local manufacturing. This is particularly important in sectors such as defence equipments where government is the sole buyer. India is one of the largest importers of defence equipments and 60% of the requirements are met through imports.³⁰ Thus preferential market access policy together with the offset policy which stipulates offset requirement of minimum 30% of procurement (where the value is in excess of Rs 3000 million) have a

great potential to promote domestic manufacturing and facilitate transfer of technology.³¹

Use of "Security Exception"

Obviously in sectors where government is not the major purchaser, the industrial policy of government procurement will not be of much use. Consider telecom services, for example. Government owned service providers (BSNL, MTNL etc) accounted for only 14% of the sales in 2013³². But this is one of the fastest growing sectors and huge equipment are recurrently imported, as we have seen above. In a significant development the government announced on 10 February 2012, guidelines not only for government procurement of electronic products but also for those which have security implications. For such products as notified by the government, at least 30% of the procurement whether by the government or by the private sector were proposed to be domestic manufacturers with domestic value addition of at least 25% in the first year, going to at least 45% in the fifth year.³³ This was a very innovative use of the "Security Exception" under Article XXI of GATT, 1994. WTO. Under this article, member countries cannot be prevented "from taking any action which it considers necessary for the protection of its essential security interests."

On 5 October 2012 however only the products to be procured by the government for its own use was notified.³⁴ For products with security implications, only a draft policy was issued. The move by the government to restrict imports and create a market for domestic manufactures in products with security implications met with stiff resistance. Business organizations such as the American Chamber of Commerce in India, Japan Information Technology Service Industry Association, the US-India Business Council and agencies

28. "Notification on Preference to domestically manufactured electronic products in Government procurement", 23 December, 2013, Department of Electronics and information Technology accessed 3 October, 2014, http://deity.gov.in/sites/upload_files/dit/files/Notification_Preference_DMEPs_Govt_%20Proc_23_12_2013.pdf; "Preference for Domestically Manufactured Electronic Goods(PMA)", Department of Electronics and information Technology, accessed 29 September, 2014, <http://deity.gov.in/esdm/pma>.

29. Railways bought goods worth 1.4 billion and Directorate General of Supplies and Disposal USD 1.3 billion (see Planning Commission Working Group 2011b, p. 25).

30. "Defence manufacturing" in <http://www.makeinindia.com>.

31. India has an offset policy only in defence procurement introduced in 2005. Under it the foreign seller is required to compensate through various means - coproduction, licensed production, technology transfer, exports etc - see Behera 2009).

32. Calculated from CMIE Prowess database.

33. Gazette Notification No 44 dated 15 February, 2012, Department of Electronics and information technology, Ministry of Communications and Information Technology, New Delhi (<http://deity.gov.in/content/gazattes>) (accessed 3 October, 2014).

34. Gazette Notification No 227 dated 5 October, 2012, Department of Electronics and information technology, Ministry of Communications and Information Technology, New Delhi http://deity.gov.in/sites/upload_files/dit/files/DoT_PMA_for_Govt_pdf.pdf) (accessed 3 October, 2014).

such as the United States Trade Representative opposed such moves. It was alleged that distinguishing between imported and domestically manufactured products and forcing the private sector to buy from the latter is not consistent with WTO rules. The Cellular Operations Association of India (COAI) too opposed such moves and demanded that “undue preference” should not be given to domestic manufacturers.³⁵ In a letter to the Prime Minister of India on 20 December 2012, four European business associations were candid enough to admit they are opposed to the government policy because it “will severely restrict the market participation of European companies in key sectors of the economy.”³⁶ But such restrictions are in India’s interest since it helps manufacturing in India, create jobs, reduce trade deficit. One would have expected the prime minister of a country to pursue the country’s interest. But what the Prime Minister of India did on 8 July, 2013 was to declare that the draft notification issued on private sector procurement of electronic products with security implications will be withdrawn and no further notifications will be issued till the entire policy is reviewed. The international business community was further assured that the revised policy on security related issue “will not have domestic manufacturing requirements, percentage based or otherwise” for the private sector.³⁷ Ultimately when the electronics procurement policy was announced in December, 2013 as mentioned above, all references to private sector procurement was deleted. Swadeshi Jagran Manch, an organization reportedly close to RSS and BJP was quick to issue a statement

denouncing the prime minister’s decision. It accused the PM of ‘pro-MNC bias’ compromising with national interest and security.³⁸ After the Modi government came to power, no announcement however has been made reversing the UPA government decision. In fact there are no indications that any change is being considered by the current government.

Increasing tariff rates and protecting domestic manufacturers

We have seen above the adverse effect of drastic import liberalization that India has been pursuing since 1991. The obvious policy implication is that if tariff cuts have led to larger imports rather than more domestic production then why not increase tariff rates to provide a larger market for domestic manufacturers? But does India enjoy the policy freedom to do so under WTO?

In India domestic producers suffer from a disadvantage compared to foreign producers because indirect taxes (excise, sales tax etc) applicable to domestically produced goods are not fully neutralized by countervailing duty (CVD) on imported goods. The *Economic Survey, 2014–15* has recommended the elimination of such negative protection by eliminating all exemptions presently granted for CVD.³⁹ But it is hesitant to increase basic customs duty to protect domestic manufacturers against foreign manufacturers because this would “run up against India’s external obligations under the WTO and other free trade agreements, and also undermine India’s openness credentials” (p. 34). As we will argue below, India still enjoys considerable policy space and despite that if India does not act the reason is India’s unwillingness/inability to utilize the space available.

Except for a few products such as motor cars and motor cycles, India has reduced tariff rates to extremely low levels indiscriminately for all

35. “PMA Policy and COAI Recommendations”, The Centre for Internet and Society (<http://cis-india.org/internet-governance/blog/pma-policy-and-coai-recommendations#fn1>) (accessed 21 January, 2015); “India to amend domestic electronics purchasing policy: Indian government will review a mandate for businesses to purchase domestically-manufactured electronic products,” Procurement Leaders, Global Intelligence Network (<http://www.procurementleaders.com/news-archive/news-archive/india-to-amend-domestic-electronics-purchasing-policy>) (accessed 3 October 2014).

36. Letter from Business Europe, Digital Europe, ESF and ETNO (http://www.esf.be/new/wp-content/uploads/2012/12/Joint-EU-Industry-letter_India-PMA_18-12-2012-Prime-Minister-Singh-FINAL.pdf) (accessed 3 October, 2014).

37. “PMA Policy in Private Sector to be reviewed, notifications kept in abeyance”, Prime Minister’s office, 8 July, 2013 (<http://pib.nic.in/newsite/erelease.aspx?relid=97078>) (accessed 11 March, 2015).

38. “Decision to Keep PMA Policy in Private Sector notifications in abeyance shows Pro-MNC bias of UPA”, (<http://www.swadeshionline.in/news/decision-keep-pma-policy-private-sector-notifications-abeyance-shows-pro-mnc-bias-upa>) (accessed 3 October, 2014); “The Left in the Right”, *The Telegraph*, Kolkata, 1 February 2015.

39. It has actually recommended a proper GST system uniformly applicable to both domestically produced and imported goods. Pending the implementation of such a GST system, it has asked for eliminating all CVD exemptions. The effective rate of excise on domestically-produced non-oil goods is about 9 percent but the effective collection rate of CVDs is only about 6 percent because of various exemptions granted (Ministry of Finance 2015, Box 1.4, p. 35).

products. This however is not mandated under WTO. As a part of the Uruguay Round Trade negotiations, developing countries were required to bind the tariff of a larger proportion of products (i.e., agree to not increase the tariff rate beyond the announced level) and to commit to reducing the previous bound rates. This gave developing countries some flexibility not only to leave some tariffs unbound but also to fix the bound rate at a relatively higher level. Hence WTO's GATT did not prevent developing countries from having higher tariff rates in specific sectors which they may want to promote given the conditions and the stage of development (UNCTAD, 2014, p. 85).⁴⁰

India has bound the tariff of 71.6% of the non-agricultural products and the bound rates vary between 0% and 40% (with some exceptions) and the average bound rate is 32%. As we have seen above, the actual tariff rate imposed (i.e., the "applied rate") is significantly below the bound rate for many products. Utilizing the difference between the applied and bound rates ("tariff binding overhang") to increase the tariff rate and support domestic manufacturers does not conflict with any obligation of India under WTO. In fact depending on circumstances, the bound rate too can be re-negotiated.⁴¹ As the WTO itself has acknowledged in its Trade Policy Review for India, 2011:⁴² "The gap between applied and bound tariff rates provides the authorities with scope to raise applied tariffs. These gaps allow the Government to modify tariff rates in response to domestic and international market conditions" (p. 47).

The Budget of 2015-16 has proposed reduction of import duties in 22 inputs and an increase in 3 products. Such changes should be a part of a proper tariff strategy. As Akyuz (2005) has argued a country need not have uniformly low or high tariff rates for all sectors. It can benefit by having differential tariff rates. To prevent the slide in

manufacturing in India it is important to target specific sectors for development. In these sectors, a reduction in the tariff rate for inputs does reduce the cost of production. But the cost of production of the final good may be still higher compared to that of its international competitors because of the underdeveloped status of the industry in the country. So, as other now developed countries have done, customs duty need to be carefully decided and imposed on final products to neutralize such cost disadvantages. In sectors where production from more basic stages is possible and feasible, tariff rates need to be appropriately high for both the final products and the inputs.

What about the commitments which India has given under FTAs/PTAs/ITA? Drastic situation requires drastic action. That is what developed countries such as the United States did with respect to textiles imports from developing countries. As intended under GATT, 1948, developing countries such as India enjoyed unrestricted market access in cotton textiles in the 1950s in developed country markets. This was similar to what the United States enjoy today in India in IT products under ITA. But as these textiles exports staring ruining their industry, the developed countries did not passively accept the situation in the name of satisfying their international commitments. They initiated several steps both within and outside GATT to impose restrictions on such exports from developing countries. What was supposed to be a temporary protection, continued for decades, was expanded to include synthetic fibres and was eliminated only in 1995 after the formation of WTO. Similarly in view of the devastation that ITA and FTAs/PTAs have caused, India should have a re-look at these arrangements. Official committees such as the Planning Commission Working Group 2011a (p. 13) and the Planning Commission Steering Committee 2012 (p. 144) have actually recommended that existing FTAs/PTAs should be re-visited and new ones not signed without careful analysis of the impact on domestic manufacturing.

Foreign Direct Investment

In his speech delivered on Independence Day, 15 August, 2014, PM Modi appealed to global industrialists: "Come, make in India, Come, manufacture in India... Come, I am giving you an invitation". Such invitation has been the essence of FDI policy which successive governments have

40. However, with the insistence on tariff reduction line-by-line, i.e., for all products rather than the average level, such flexibilities may be reduced or eliminated under the Doha Round non-agricultural market access (NAMA) negotiations (p. 85).

41. India has renegotiated bound rates for some agricultural products - "Trade Policy Review: India", 24 July, 2007 (accessed on 12 March, 2015 from the WTO website (https://www.wto.org/english/tratop_e/tpr_e/tp_rep_e.htm), p. 37.

42. "Trade Policy Review: India" 14 and 16 September, 2011 (accessed on 12 March, 2015 from the WTO website (https://www.wto.org/english/tratop_e/tpr_e/tp349_e.htm). The figures on bound rates in this paragraph are from this report.

followed in India since 1991. The focus has been on removing restrictions on FDI to induce the foreign enterprises to invest in the country and stimulate the economy. As we will now see, like import liberalization, the policy of FDI liberalization was also implemented successfully. But the favourable results did not follow – FDI failed to stimulate the manufacturing sector. Rather than learning from India's past experience and that of other economically successful countries, India continued with the policy of passive reliance on FDI rather using it strategically for national benefit.

Before 1991, India imposed various restrictions on FDI. FDI liberalization started in 1991 with relaxation of ownership norms. FDI up to 51% of total equity was permitted without any prior permission if they participated in about 30 priority industries and subject to the condition that the imports of capital goods would be financed through foreign equity and the dividends would be repatriated out of export earnings. Since then in stages more sectors have been opened up and foreign equity limits relaxed. At present so far as the manufacturing sector is concerned, 100% FDI is permitted under "automatic route", i.e., without government permission in all the sectors except tobacco (cigars, cigarettes etc), manufacturing for defence and products reserved for the small scale sector. FDI is prohibited in tobacco. FDI with 100% foreign equity is permitted in products reserved for the small scale sector and up to 49% in defence manufacturing under "government route", i.e., requiring prior permission. For the later, foreign equity beyond 49% is also possible if it results in "access to modern and state-of-the-art technology". All restrictions relating to dividends, repatriation of profits, local production, imports, exports etc have been withdrawn. Restrictions on foreign technology agreements which used to be there before 1991 have also been liberalized. At present such agreements are freely allowed without any restriction on the amount of technical fees and royalties payable. Payments for use of brand names and trademarks are also permitted without prior government approval. In addition with the abolition of industrial licensing and import liberalization, the foreign enterprises (like their Indian counterparts) do not face the restrictions which they faced before 1991 (Chalapati Rao et. al 2014; DIPP 2014).

Thus foreign enterprises currently enjoy a very liberal environment in the country. FDI flows

have gone up significantly both relatively and in absolute terms particularly compared to the pre-1991 period. Annual average FDI inflow has increased from USD 797 million during 1991-1995 (1.02% of gross fixed capital formation) to USD 30190 million during 2006-2012 (6.30%) (Chalapati Rao et al 2014, Table 1, p. 7). But the manufacturing sector has failed to attract the volume and the type of FDI that would have helped the growth of the sector. Less than a third of the inflows went to the manufacturing sector. During 2000-2012, 55.95% of the flows went to the service sector and only 30.32% came to the manufacturing sector.⁴³ Within the manufacturing sector again the flows were restricted to few industries as Table 6 below shows. Just four industries - pharmaceuticals, other chemicals, automobiles and metallurgical - accounted for nearly 60% of the total FDI flows between 2000-2012. Moreover, the entire amount of the flow does not reflect creation of fresh capacities. Nearly half of the flows in manufacturing during the period September 2004 to March 2013 were used for acquiring existing companies.⁴⁴

Economic reforms in India hoped that removal of restrictions on FDI will lead to a greater flow of FDI and that in turn will stimulate manufacturing growth. But as we have seen above that did not happen. This is not surprising. As the experiences in different countries shows, FDI does not drive industrial growth without local capabilities. Removal of restrictions and open door policy helps FDI to exploit the existing capabilities more freely. It does not automatically lead to the creation of capabilities necessary for industrial development. In the absence of complementary factors, foreign companies do not invest (Lall and Narula 2004). This is also demonstrated in India's experience after reforms. Pharmaceuticals and automobiles accounted for almost a third of FDI in manufacturing (Table 6). These are among the more developed industries in the country. And as we have mentioned above, government intervened consciously to help

43. Remaining 8.06% went to energy and 5.66% to miscellaneous (see Chalapati Rao et al 2014, Table 2, p. 8).

44. If a foreign enterprise acquires an existing company in India not directly but through a newly set up holding company, then such investments are not considered as acquisition in official data sources. Chalapati Rao et al 2014 (Table 10, p. 20) have tried to rectify these and other limitations and hence their estimates are more than what the official sources report).

Table 6: FDI flows in Manufacturing, 2000-2012

Sector	Amount in USD million	Share in total inflows in manufacturing (%)
Drugs and pharmaceuticals	9 824.6	17.16
Chemicals other than fertilizers	8 769.86	15.32
Automobiles	7 717.94	13.48
Metallurgical	7 353.25	12.84
Electrical equipment	3 095.41	5.41
Cement and gypsum	2 632.36	4.6
Industrial machinery	2 231.16	3.9
Miscmechanical and engineering	2 290.79	4
Food processing	1 694.97	2.96
Textiles	1 220.02	2.13
Electronics	1 197.52	2.09
Fermentation	1 131.62	1.98
Rubber	988.48	1.73
Paper and pulp	862.3	1.51
Prime mover	767.94	1.34
Machine tools	623.85	1.09
Medical & surgical appliances	584.66	1.02
Soaps, cosmetics	511.07	0.89
Ceramics	506.34	0.88
Vegetable oil	384.01	0.67
Glass	371.05	0.65
Diamond, gold ornaments	381.22	0.67
Fertilizers	298.02	0.52
Printing of books	261.11	0.46
Commercial, office & household equipment	239.73	0.45
Other manufacturing	1 049.74	1.83
Total manufacturing	57 247.91	100
Other sectors	131 357.26	
Grand total	188 605.17	

Source: Chalapati Rao et al 2014, pp. 8-9.

develop these industries. Indigenous enterprises played a very important role in this growth. But the under developed industries with huge import deficit has not attracted much FDI. Contrary to what was hoped, foreign enterprises neglected these sectors. Consider the vital sector of electronics. As we have seen above, imports account for about two-thirds of the domestic demand and unless the domestic industry develops, it is anticipated that imports may soon surpass that of oil. It has attracted only 2% of FDI compared to 17% in pharmaceuticals and 13.5% in automobiles (Table 6).

The presumption behind India's FDI policy has been that what is required not only to attract FDI but also to benefit from FDI is removal of restrictions and establishment of a free environment. Countries which have developed have invariably used FDI. But if their experience is any guide then neither the inflows of FDI, nor the benefits from FDI resulted from a passive open door FDI policy. They have imposed various types of restrictions on foreign investment to benefit from such investments. Such restrictions included limits on ownership, encouraging or providing access to only certain activities and sectors and banning

others, import restrictions, insistence on technology transfer, joint ventures, favouring domestic firms and restricting acquisition of domestic firms etc (Chang 2004). In the last few decades, China has used FDI to develop many high tech industries such as telecommunication equipment from scratch. FDI was regulated strategically keeping in mind the national interest (Hsueh, 2011). Some of the policies earlier used, for example imposition of performance requirements on foreign investors such as local content, export performance, trade balancing regulations are no longer possible under WTO's TRIMS Agreement (Trade Related Investment Measures). But policy spaces still exist. FDI regulations which do not violate national treatment or impose quantitative restrictions are still consistent with WTO rules. Governments can continue to impose sector-specific entry conditions on foreign investors, including industry-specific limitations. They can also impose technology transfer requirements as we will see below (UNCTAD 2014, p. 82).

What India's policy planners after reforms failed to appreciate is that both the quantity and quality of FDI depend on presence of right conditions and often an active industrial policy rather than passive reliance on FDI is necessary for creating the right conditions. Consider the question of markets. One of the biggest advantages which India offers to foreign investors is a large market. Surely for any foreign company this is a great attraction. India as we have seen above has drastically liberalized imports and that is touted as one of the achievements of reforms. What has not been adequately appreciated in policy making circles in India is that under such circumstances foreign enterprises do not lose the Indian market by not manufacturing in the country. They can manufacture in other countries and freely export to India. This is precisely what is happening in sectors such as telecommunication equipment. But in telecommunication services where physical presence is required India has been able to attract foreign firms. The foreign company Vodafone is the second largest player in the telecommunications services (after Airtel in terms of number of subscribers). If India wants to use FDI for developing industries which are currently import dependent then what India should do is to use the advantage of the large market to force or induce the foreign companies to invest in India. In other words India need to deny the foreign companies the Indian market unless they

manufacture in the country. The policy of earmarking a part of the market for domestic manufacturers as discussed above is critical for attracting more FDI in manufacturing.

Another major issue is the question of technology transfer. A major benefit that a country expects from FDI is to get access to technology in areas where domestic expertise is deficient. However this benefit accrues to a country when in the process of manufacturing, technology is locally absorbed and assimilated. This paves the way for further development of technology which is critical for efficiency and growth. It is not in the commercial interest of the profit seeking foreign enterprise to voluntarily assist this process of technology assimilation and development. Hence as the experience of countries such as South Korea and China which have successfully used foreign technology in their development efforts show, governments need to insist on transfer of technology through presence of local partners in joint ventures or by other means.

Technology transfer policies are not forbidden under TRIMS or any other WTO agreement. Governments can not only insist on local equity participation and promote joint ventures. It can also directly intervene by imposing technology transfer requirements such as insisting that certain proportion or type of its research and development activities must be conducted locally or that a specified technology must be transferred or licensed to domestic firms (UNCTAD 2006, p. 169).

But India has voluntarily given up the concept of joint ventures. It was presumed that foreign enterprises will not invest in India unless 100% foreign equity is provided and in that case not only will they manufacture in the country but will transfer the technology so that the country benefits. Hence no conditions were also imposed on technology transfer. This not unexpectedly has not helped the process of technological development necessary for manufacturing growth. Krishnamurthy Committee (2008, pp 18-19) highlighted that 100% foreign equity has made technology transfer difficult and recommended that conditions need to be imposed for mandatory technology transfer. What got more attention in India is the foreign exchange aspect of FDI flows. What has been ignored is the technological dimension of these flows. A new development that has been observed is that FDI has started flowing in India for R&D activities. But this is restricted to few

sectors - particularly software/IT, pharmaceuticals and automotive sectors (Sandhya, Mrinalini and Nath 2014). More importantly, the R&D behaviour suggests that only a part of the global R&D projects are done in the country and the local linkages and spill-overs are limited (Basant and Mani 2012; Subbarao 2014).

In the light of the liberal FDI environment in the country but poor record of manufacturing and technology transfer, The Planning Commission Working Group 2011a has asked for a modification of the FDI policy to favour JVs (p. 13). The Twelfth Plan has echoed this recommendation (Planning Commission 2013, p. 109). But no action is visible. In fact it seems that the government is more keen in preserving "India's openness credential," as the *Economics Survey 2014-15* put it (p. 34) than impose conditions and use FDI strategically.

Indigenous R&D and technology development

As we have seen above, India is lagging behind in a number of high-tech sectors. The country does not have the experience of manufacturing a number of products currently imported and understandably does not currently have the necessary technology. This is a problem which any country with underdeveloped industries face and as the experience of developing industries successfully in different countries show, government typically plays a very important role. Technology can be developed in the country and/or it can be acquired from abroad. Economic reforms relied a lot on FDI as a source of technology. We have discussed the limitations of the approach above. Here we focus on the question of R&D by domestic enterprises for developing technology in the country. At the formative stages in particular private sector under-invests in R&D and technology and that makes manufacturing growth difficult without official assistance. NMP and the Planning Commission documents emphasize the importance of technological development for manufacturing growth. As the Planning Commission (2012, p. 61) recognize, "government support is essential to enable a country's industrial eco system to gain depth because technological learning takes a long time, requires large investments and is risky".

Government support for R&D and technology development can be broadly classified between "push" and "pull" incentives. Push programmes

are designed to stimulate R&D by providing funds and inputs and reducing the costs. Pull mechanisms are essentially market enhancing. These create a market or increase the certainty of a market. In the absence of the latter, entrepreneurs are unlikely to invest in R&D for technological development. Ensuring demand for domestic manufacturers is vital for mitigating R&D risks. In the light of the adverse impact of import liberalization on demand for domestic manufacturers, we have discussed above some measures that are possible to provide a larger space of operations to domestic players.

Push incentives can be broadly classified between:

- Direct R&D spending by government
- R&D tax credits, grants and loans provided by the government to industry

Direct R&D spending by government

The government is by far the main spender of R&D in India. R&D spending by government accounted for 66%, private sector 30% and educational institutions 4% of the total R&D expenditure of Rs 726204.4 million in 2011-12. But industry got only 8.6% of the government expenditure in 2009-10. The bulk of government R&D expenditure is directed towards defence, space, atomic energy etc. Defence Research and Development Organization, Department of Atomic Energy and Department of Space accounted for 61.5% of the total R&D expenditure in 2009-10 by major scientific agencies including those by Department of Science and Technology (DST), Council of Scientific and Industrial Research (CSIR), Indian Council of Agricultural Research (ICAR) (DST, 2013).

R&D tax credits, grants and loans

The government provides in India both direct and indirect R&D incentives to the industry. The major tax incentives available are: 100% write off of revenue and capital expenditure on R&D; weighted tax deduction @200% for sponsored research in government laboratories/educational institutions; weighted tax deduction @200% on in house R&D in industries except in a negative list comprising of alcohol, tobacco etc; accelerated depreciation allowance for investment in plant and machinery made on the basis of indigenous technology; customs duty exemptions for

capital goods and consumable setc (Joint Committee of Industry and Government 2013, pp. 24-26). There are a number of schemes under DST, DSIR, TIFAC, CSIR, Department of Biotechnology etc under which direct support in the form of grants, loans, and equity participation are provided. But the extent is limited. Only about 6% of the government R&D expenditure are used for these purposes (Planning Commission Working Committee 2012, p. 10). In India, government support for R&D for private sector is mainly indirect through R&D tax incentives. This is unlike in countries such as USA and France where direct government support to industry is much more important (Joint Committee of Industry and Government 2013, p. 13).

NMP has stressed the importance of “Financial and institutional mechanisms for technology development”. It has also recommended the setting up of a technology development fund to support R&D and innovative activities of the private sector. It is not yet clear to what extent these recommendations will be implemented. Properly implemented, these will improve the R&D environment in the industry.

But it is also important to note the limitations of such indirect support to industry and to stress the importance of a more direct role of the government. Current indirect incentives are among the best in the world (Joint Committee of Industry

and Government 2013, p.6; Mani 2013). A comparative study covering 42 countries including developed countries such as USA, UK, France, Germany etc and also, India, China, South Africa, Brazil etc shows that India provides the best R&D tax benefits in the world (Stewart, Warda and Atkinson 2012). But as we can see from Table 7, private sector R&D is concentrated in a few industries. Only seven industry groups - drugs and pharmaceuticals, transportation, information technology etc - spent more than Rs 5000 million in 2009-10 and their total expenditure amounted to about 88% of the entire private sector R&D expenditure. These are among the more developed industries in the country. More recent (2013) company-wise data for major R&D spenders in the country reveal a similar pattern. In Table 8, we have considered the top 25 R&D spenders in the country. These 25 companies account for about 60% of the total R&D expenditure by the 20026 non-financial companies considered by the CMIE Prowess database in 2013. As can be seen from the table, the main R&D spenders are in the fields of pharmaceuticals, automobiles, refineries, computer software etc.

Indirect incentives enhance the R&D propensity of firms already developed as Table 7 and 8 show. But in the first place to be able to use such incentives the firms must have the capacity to do R&D. Providing such incentives are not adequate to develop such capacities in the private

Table 7: R&D Expenditure by Industry Groups in Private sector, 2009-10

Industry group	No of R&D units	R&D expenditure (Rs million)	R&D expenditure as % total	R&D expenditure as % of sales
1. Drugs and pharmaceuticals	228	45452.00	33.5	3.22
2. Transportation	89	22905.90	16.9	1.37
3. Information technology	27	22265.50	16.4	4.87
4. Agriculture & agriculture machinery	104	8861.40	6.5	1.2
5. Chemicals other than fertilizers	192	8122.40	6.0	0.25
6. Biotechnology	76	6227.60	4.6	1.81
7. Electrical and electronic equipment	142	5286.50	3.9	0.32
Total (groups 1 to 7 above)		119121.30	87.7	
Total (all industry groups)		135872.80	100.0	0.82

Source: DST, 2013, Table 13.

Note: Only industry groups with R&D expenditure >Rs 5000 million in 2009-10 have been listed in the table

sector. Capacities develop with the growth of the industry and to do so as we have been arguing in this paper a more direct role of the government is required.

This is what China, for example has been trying to do – designing and implementing an active innovative strategy (Guilhem and Grumbach 2012). Even in the economically most powerful nation in the world, the United States where the private sector plays such an important role, the government actively involves to promote innovation. It acts both as an “entrepreneurial State” and as a “coordinating State”. As an “entrepreneurial

State” it funds risky research and reduces the risks of the private sector. The US government does so because otherwise there will be underinvestment in R&D. As a “coordinating State” it creates and manages research networks involving different actors such as firms, financial and research institutions. Private firms operate individually. In the absence of coordination by government the benefits of networks and synergies remain unrealized.⁴⁵

45. For a brief survey of how the United States uses industrial policy for technological development, see UNCTAD 2014, pp. 93-95.

Table 8: R&D expenditure
by Top 25 non-financial companies in India, 2013

	Industry group	Research & development expenditure (Rs million)	Research & development expenditure as % of sales
Tata Motors	Commercial vehicles	21443.5	6.0
Mahindra & Mahindra	Diversified	13009.4	3.0
Reliance Industries	Refinery	12180.5	0.3
Bharat Heavy Electricals	Boilers & turbines	11137.9	2.7
Hindustan Aeronautics	Diversified	10832.6	7.2
Dr.Reddy's Laboratories	Drugs & pharmaceuticals	10706	10.9
Lupin	Drugs & pharmaceuticals	9929.2	11.1
Infosys	Computer software	8730	2.0
Maruti Suzuki India	Passenger vehicles	6576	1.3
Ranbaxy Laboratories	Drugs & pharmaceuticals	5686.4	8.3
Oil & Natural Gas Corp	Crude and natural gas	5509.4	0.6
Cipla	Drugs & pharmaceuticals	5175.1	5.5
Bharat Electronics	Communication equipment	5055.3	8.1
Mylan Laboratories	Drugs & pharmaceuticals	4994.8	7.1
Cadila Healthcare	Drugs & pharmaceuticals	4451	12.1
Sun Pharmaceutical	Drugs & pharmaceuticals	4223.9	14.1
Cairn India	Crude and natural gas	3523.8	3.5
Bajaj Auto	Two & three wheelers	2767.9	1.3
Aurobindo Pharma	Drugs & pharmaceuticals	2708	3.7
Alstom T & D India	Diversified	2669.2	7.2
Ashok Leyland	Commercial vehicles	2624.1	2.4
Piramal Enterprises	Drugs & pharmaceuticals	2558.7	16.6
Indian Oil Corpn	Refinery	2527.2	0.1
Wockhardt	Drugs & pharmaceuticals	2415.8	13.3
Rolta India	Computer software	2178.1	19.1

Source: Calculated from the CMIE Prowess Data base.

Conclusion: Bringing Back the Government for National Development

Within 100 days of assumption of power, President Park announced the launching of the first five year development plan in South Korea (Amsden 1989, p. 50). The Economic Planning Board which was set up in 1961 functioned as the main actor behind Korea's industrialization. While the private sector played an important role, every major industrial project in the country in the 1960s and 1970s was masterminded by the government (Amsden 1989, p. 80). The industries designated as priority industries received massive support from the government including, import protection, funding, preferential tax treatment (Chang 1993, p. 141).

Within 100 days of becoming the Prime Minister of India, Modi did exactly the opposite. He announced the disbanding of India's Planning Commission with the intention of reducing "the role of the government as a 'player' in the industrial and service sectors".⁴⁶ This reflects a reluctance to learn from experience. As we have mentioned above, the basic justification of reforms has been that government has been inefficient and government controls and regulations have stifled the growth of the efficient private sector. As a result since 1991 the country experienced not only de-regulation but also downsizing of the public sector. Private sector was allowed to enter into areas previously reserved for the public sector. More importantly privatization and divestment became the default policy though the actual implementation of the policy varied from time to time. Due to the uncertainty and the lack of support from the government, the contribution of the public sector to the manufacturing sector went down (Krishnamurthy Committee 2008, p. 64).

If the private sector - Indian or foreign - were able to rejuvenate the manufacturing sector, a re-thinking of the role of the government perhaps would not have been necessary. But the fact is that it did not. In fact the attempts to withdraw the government made the situation worse. Concern about inefficiency and a negative impact on the private sector continues to deny a larger and active role

of the government for manufacturing growth. But the objective of government intervention in a capitalist environment is not to replace the market but rather to use it for development. It is not a question of government versus private sector or for that matter of efficiency versus inefficiency. It is a question of finding out what needs to be done to promote manufacturing in India and to ensure that what needs to be done are actually done. The government is required to intervene in areas which are critical for development but where private sector is currently unwilling/unable to invest. In such cases absence of the government does not benefit the private sector. Rather it is the government intervention which helps both the private sector and the process of development. This is the basic reason why in so many industries in different countries, the public sector was called upon to take the lead role. Examples include pharmaceuticals in India, aircraft manufacturing in Brazil, steel production in South Korea, The United States government is actively involved in promoting and funding technology development because in the absence of that the necessary R&D investments will not be forthcoming in the private sector. Similarly government regulation is required where the market fails to deliver. The logic of import protection, for example is not to stifle the growth of the private sector. It is just the opposite - to provide a space for the growth of the domestic players.

In actual practice government intervention may not lead to growth. Import protection may lead to inefficiencies. Public sector may not utilize resources properly inflicting a cost on the economy. But the point is that government is *per se* not less efficient. The role of the government crucially ultimately depends on the policy framework and the priorities of the top political leadership. India can be legitimately proud of its successes in the fields of space, atomic energy, missile programmes including the latest Mars orbiter mission. The perceived inefficiencies of the government did not prevent the government from launching these programmes in the government sector. And these government programmes succeeded because of the necessary political backing and faith on indigenous efforts. With similar backing and faith there is no reason why government initiatives in manufacturing wherever these are necessary cannot succeed.

46. Modi became the prime minister on May 26, 2014, the decision to disband the Planning Commission was announced on 15 August, 2014 and actually implemented on 1 January, 2015.

Interestingly and significantly, the Planning Commission Steering Committee (2012) representing different stake holders and with more awareness of the ground realities suggested that the public sector “can potentially be investors in areas which are important for the country but which, due to heavy investment requirements and/or high risks, are not attractive for the private sector. Such capabilities are required in the process of industrial growth to provide foundations and spin-offs that the private sector could benefit from” (p. 19). Equally significantly, the Planning Commission headed by the Prime Minister and reflecting the priorities of the top political leadership did not accept the suggestion in the *Twelfth Plan* in 2012. The same Prime Minister enthusiastically launched the Mars orbiter mission and devoted considerable resources for its implementation and success. Surely developing import dependent industries such as telecommunications equipment industry is not as complicated as the Mars mission. The reluctance of the government to get actively involved despite the failure of market reforms and private sector to develop such industries reflects the bias of the top political leadership rather than any inherent deficiencies in the government sector.

Government needs to lead and coordinate the development of the manufacturing sector. As in Korea, for example, the focus should be on development of selected industries at a time. These industries need to be developed in a mission mode with clear objectives and targets, time frame and plan of action.⁴⁷ In this paper while trying to find out the impact of reforms, we have focussed on capital goods and electronics which are suffering from huge trade deficits and huge import share. These are among the more technology and capital intensive sectors with opportunities of high value addition and productivity growth. It is important to develop these industries. But it is also important to acknowledge that employment generation in these industries are unlikely to be significant to absorb India's surplus labour. For that to happen a more broad based manufacturing and economic strategy is required. In this paper with a more limited objective, we have not dealt with these issues.

47. Planning Commission Steering Committee and Working Groups referred in the text suggested such mission mode approach in a number of sectors.

Government needs to coordinate investment and growth in the sectors identified by coordinating different elements including demand, technology and finance.⁴⁸ Where private investment is not forthcoming, government needs to intervene to fill up the void. In this respect India is quite favourably placed compared to many other developing countries. India can initiate a development plan starting with the base of huge human, physical and technological resources in India's public sector. Despite the unfavourable - often hostile environment that the public sector faced, it occupies a significant space in the economy. India has 277 Central public sector enterprises (CPSEs), of which 89 operate in the manufacturing sector accounting for about 28% of total investments (gross block) and for about two-third of the total turnover in 2012-13. The CPSEs are active in a range of manufacturing sectors including steel, petroleum refining, fertilizers, chemicals & pharmaceuticals, heavy engineering, medium and light engineering, transportation equipment. During 2012-13, out of the 229 operating CPSEs, 149 companies made profits, 79 incurred losses and one made no loss or profit.⁴⁹ While some CPSEs could not cope up with the new environment, others fared quite well in the competitive markets and have been able to maintain a significant presence. Public sector's overall contribution to the economy has gone down after reforms but contrary to what is usually believed, the overall profitability of the CPSEs (in terms of return on capital employed) is higher compared to that of the private sector in manufacturing sector (Khanna 2015; Nagaraj 2015).

We have discussed above the negative impact of import liberalization on demand for domestic manufacturers. More manufacturing investments

48. Another major issue is finance. This is a crucial factor which we have not covered in this paper. The development financial institutes (DFIs) such as the Industrial Development Bank of India played a significant role in providing long term funds for industrial investment. With the demise of DFIs as a part of the financial sector reforms since 1991, industrial finance situation has worsened (Ray 2015). In Brazil, its DFI, BNDES has been playing an important part in the new institutional framework for industrial policy established in 2004 (UNCTAD 2014, p. 97). In India too similar initiatives are crucial to ensure the supply of much needed funds for manufacturing investments.

49. These data on CPSEs are based on *Public Enterprises Survey, 2012-13* (New Delhi: Department of Public Enterprises, Ministry of Heavy Industries and Public Enterprises, accessed 17 March, 2015, http://dpe.nic.in/publications/pe-survey_2012-13).

are unlikely unless demand prospects improve. We have discussed several policy options to provide and ensure a larger demand including public procurement, raising tariff rates, using WTO flexibilities that are possible, for example security exception.

These demand enhancing measures need to be coordinated with other measures on the supply side including technology development and availability of finance. It is important to identify the gaps and to have a plan for the development and availability of technology and skills. There is a huge technology and R&D infrastructure in public enterprises. Public enterprises such as Bharat Heavy Electricals, Hindustan Aeronautics, Oil and Natural Gas Corporation, Bharat Electronics, Indian Oil Corporation are among the top R&D spenders in the country. There are also a large number of R&D laboratories under different agencies of the government such as CSIR). What is important is not only to use and further develop the technological resources in the public sector. It is also important to use and actively involve the private sector including the foreign sector for the purpose. We have discussed above how the nature of FDI policies pursued after 1991 did not facilitate technology transfer. Necessary changes are required in the FDI and technology transfer policies to import the necessary technology and assimilate it for further growth. As in the United States it is also important to promote active R&D networks involving also the private sector. India has a very good R&D tax incentive system but direct funding of R&D by the government in the industry is limited. Depending on the plan of action, government needs to provide more direct support to the private sector.

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