

## **Trade and Investment Promotion Policies in India**

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## 1. Preamble

India is essentially an agricultural based economy and adopted a planned approach for an all round development since its independence, focussing on employment, indigenous development, capacity building, and self reliance, utilising local resources maximally, in various areas such as agriculture, industry, science & technology, education, defense, and strategic areas of national importance including atomic energy and space technologies. Promoting international cooperation and foreign collaborations policies have catalysed the development process. Trade, industrial and investment policies were designed and modified from time to time towards above objectives. Appropriate implementation and control or regulatory mechanisms, and institutional and other infrastructural facilities were evolved parallely, including industrial and trade promotion bodies, investment promotion agencies and financial institutions, educational institutions and S&T promotion agencies and research and development institutions.

Public investments were largely made in heavy industries and manufacturing sector while private investments were also encouraged on selective basis in various sectors. These restrictive policies which were gradually liberalised cautiously till 1990, in a way, helped to build up indigenous manufacturing and technological capacities and experience in various sectors, though largely based on inputs acquired from foreign sources, and technologies absorbed and upgraded as per local or export needs. Development of small and medium industries was one of the focus areas for investment, industrial development and employment. Reservation policies, fiscal incentives, subsidised investments, and technical and financial institutional facilities helped in the growth of SMEs in India. Rural development and backward area development industrialisation was encouraged.

More liberalised and globalising policies including industrial, trade and investment policies were evolved in 1991, which are being gradually brought in tune with world practices in most cases. Foreign direct investment (inward and outward)

have been encouraged primarily to enhance competitiveness, investments, exports and technological and management capacities. Service sector including computer software has developed significantly during this period, contributing more than 50% to GDP.

Indian industry and corporates as well as SMEs have demonstrated their dynamism, capacities, entrepreneurship and innovative approaches in restructuring their strategies for competing and growing internationally in a globalising era, supported by government policies and mechanisms. These new policies have resulted in faster economic, trade, and industrial developments, with a GDP growth rate reaching as high as 9-10% and at about 7% in current year. The export growth has been about 20% - 30% in last five years, accounting for about 1% of world exports. India is today one of the fast developing economies in the world. Thus, the restrictive policy regime till 1991 and globalising policies after 1991 seem to have been instrumental in the development process in India, though there is a vast scope to continue to improve policies and mechanisms based on experiences, for speedier development.

The present paper briefly covers the issues such as foreign trade policies and investments policies with special reference to innovation and technical capacities, trade pattern, global competitiveness, MNCs and foreign R&D centres, technology trade and innovation capacity in India, and makes a few suggestions in conclusion.

## **2. Foreign Trade Policy**

A. The Foreign Trade Policy 2004-2009 took an integrated view of the overall development of India's foreign trade, with major objectives to double the country's percentage share in world exports by 2009, and to act as an effective instrument of economic growth with thrust to employment generation. It also aimed at boosting country's manufacturing sector, besides earning foreign exchange. A number of schemes and programmes were evolved towards fulfilling these objectives which have been generally in the form of tax incentives, tariff concessions, subsidizing loans and finances, easier availability of raw materials and components, support for marketing, infrastructural facilities, rewards, and manpower development. These included

incentives for exporters to modernize their production facilities through import of capital goods, promoting 100% export oriented units (EOUs) and Special Economic Zones (SEZ), Market development Assistance (MDA) and Market Access Initiatives Scheme (MAI). To promote export of high value added manufactured products, an enhanced incentive had been announced. Special Focused Markets and Product Export Schemes included agriculture, handlooms, handicrafts, gems and jewellery, leather and marine products. The Trade Promotion programme included focus areas such as CIS, Africa and Latin American (LAC) countries. Cluster development mainly for exports from small and medium enterprises. Food Parks and Mega Food Parks, Software Parks, and Industrial Parks etc. are essentially aimed at promoting exports in specific sectors. IT and R&D in natural sciences and engineering are permitted in Industrial Parks. An Export Promotion Forum for Telecom was announced in 2007 to boost exports in Telecom sector. Introduction of e-commerce in government and increased use of IT, removal of controls and simplification of procedures have been pursued relentlessly. A joint Task Force was proposed to be constituted to plan an integrated strategy to facilitate export promotion to look into issues such as development of global manufacturing hubs in sectors like auto components, generic drugs, gems and jewellery, handicrafts, textiles, and petroleum products, etc. Also, development of global hubs, not only in IT, but also in industrial design, R&D, and product testing is proposed. Development of a chain of sector-specific skill development institutes is another proposed activity. Regional, multilateral and bilateral trade mechanisms and cooperation are also identified as instruments for trade promotion besides other objectives.

B. The following measures have been proposed in April 2008 to further the exports from India:

- i. To promote modernization of our manufacturing and services exports, the import duty under the EPCG scheme is being reduced from 5% to 3%.

- ii. Refund of tax on a large number of services relating to exports has already been announced by the Government. A few remaining issues regarding refund of service tax on exports would also be resolved soon.
- iii. Income tax benefit to 100% EOUs available under Section 10B of Income Tax Act is being extended for one more year, beyond 2009.
- iv. Sports and toys are mainly produced by our unorganized labour intensive sector. To promote export of these items and also to compensate disadvantages suffered by them, an additional duty credit of 5% over and above the credit under Focus Product Scheme is being provided.
- v. Our export of fresh fruits and vegetables and floriculture suffers from high incidence of freight cost. To neutralize this disadvantage, an additional credit of 2.5% over and above the credit available under VKGUY is proposed.
- vi. Interest relief already granted for sectors affected adversely by the appreciation of the rupee is being extended for one more year.
- vii. The DEPB scheme is being continued till May 2009.

C. With a view to continuously increasing our percentage share of global trade and expanding employment opportunities, especially in semi urban and rural areas, certain special focus initiatives have been identified for Agriculture, Handlooms, Handicraft, Gems & Jewellery, Leather, Marine, Electronics and IT Hardware manufacturing Industries and Sports Goods and Toys sectors. Government of India plans to make concerted efforts to promote exports in these sectors by specific sectoral strategies that shall be notified from time to time.

D. In 2004 exports stood at a little over US \$63 billion. In 2007-08, they have exceeded US \$155 billion; Average cumulative annual growth rate (CAGR) of 23%, year on year, has been way ahead of the average growth rate of international trade.

Total merchandise trade – exports and imports together – will be almost US \$400 billion this past year, accounting for 1.2% of world trade. If the trade in services is added to this, our commercial engagement with the world would be in the region of US \$525 billion.

Total trade in goods and services is now equivalent to almost 50% of GDP. This is unprecedented in India's modern economic history.

On the issue of employment, it was estimated that during the last 4 years increased trade activity has created 136 lakh *new* jobs. Exports are not just about earning foreign exchange but about boosting our manufacturing sector, creating large scale economic activity and generating fresh employment opportunities.

Trade and technology policies are closely linked. There is however often lack of coordination between policies, and the role and importance of technology policies in promoting foreign trade is not adequately appreciated. There is overlapping of technology acquisition, development and transfer mechanisms evolved by various departments, and are usually aimed at indigenous technology capability building in high tech and new areas in public funded institutions, while supporting technology efforts through tax and fiscal incentives and grants to industry. The foreign trade policy generally aims at strengthening infrastructural facilities and subsidizing physical inputs and outputs, including support for marketing, but does not adequately emphasise on intellectual capability building or strengthening interactions of national R&D with export production. Further, the export emphasis continues to be on traditional and lower end of technology based products. There are insignificant incentives for export production, marketing and capability building for high technology intensive products. Though, both approaches are important for short term and long term exports and competitiveness.

### **Special Economic Zones**

The rapid development of industrial clusters has been a central factor in the growth of the software and IT-enabled services industries in India, especially in the export sectors of those industries. Initiatives to establish software industrial parks were

pivotal in this respect. The development has been promoted through industrial clustering in IT, biotech, and engineering and in other fields. These initiatives include launching of new Special Economic Zones (SEZs). In May 2005, the Indian Parliament passed legislation providing new tax and labour laws, plus other incentives for private investment in SEZs. These zones are intended to be engines for export-oriented growth in a wide range of goods and services industries. They are also envisaged to attract offshore outsourcing business, resulting in a large number of industry clusters serving global markets.

As per World Economic Processing Zones Association (WEPZA) a total of 3600 export zones are in operation in 138 countries providing direct employment to 67.86 million people. Total investments in these zones are approx. US\$1596 billion and they export approx US\$751 billion worth of goods.

There are 87 SEZs in operation in India at present against 552 formal approvals out of which 274 have already been notified. The number of in-principal approvals is 141. They employ 3, 62,650 people. The exports from these SEZs in 2007-08 were of the order of Rs. 66,638 crore (US\$17 billion), a Growth of 92% over Rs 34615 crore in 2006-07. The share of exports from the SEZs was US \$16492 million out of total Indian exports of US\$155512 million in the year 2007-08. SEZ policy may however need a review if higher level of FDI and, manufacturing and technologies are to be attracted, especially in technology intensive areas.

### **3. Balance of Payment**

The details of total imports and exports, and balance of payment for the years 2000-01, 2004-05, and 2006-07 are given in Table - 1. This shows that the exports increased from US \$45.45 b in 2000-01 to US \$85.2 b in 2006-07, while imports increased from US\$7.9 b in 2000-01 to US \$118.9 n in 2004-05, and to US \$191.2 b in 2006-07. The overall balance of payment increased from US \$5.9 b in 2000-01 to US \$26.2 b in 2004-05 and US \$36.6 b in 2006-07. Major imports have been related to petroleum and capital goods.

**Table 1: Balance of Payments**
**Source: Reserve Bank of India.**

Item	2000-01		2004-05 (R)		2006-07 (PR)		
	Rs. Crore	US \$million	Rs. Crore	US \$million	Rs. Crore	US \$million	
1	Imports (c.i.f)	264589	57912	533550	118908	865404	191254
2	Exports (f.o.b)	207852	45452	381785	85206	579128	128083
3	Trade balance (2-1)	-56737	-12460	-151765	-33702	-286276	-63171
4	Invisibles						
	(a) Receipts	147778	32267	311550	69533	519425	115074
	(b) Payments (of which: Interest & Services payments on loans and credits)	102639	22473	171959	38301	278492	61669
	(c) Net	(21948)	(4801)	(17838)	(3973)	(24920)	(5511)
5	Current account (net)	45139	9794	139591	31232	240933	53405
5	Current account (net)	-11598	-2666	-12174	-2470	-45343	-9766
6	Capital Account						
	I. Foreign Investment	26744	5862	58057	13000	70443	15541
	(a) Inflow	80824	17720	210205	46934	598106	132581
	(b) Out flow	54080	11858	152148	39934	527663	117040
	(c) Net	26744	5862	58057	13000	70443	15541
	II. Loans	24459	5264	48595	10909	110629	24534
	i. External Assistant						
	(a) Inflow	13521	2941	16988	3809	16961	3763
	(b) Out flow	11519	2531	8463	1886	9024	1996
	(c) Net	2002	410	8525	1923	7937	1767
	ii. Commercial borrowings						
	(a) Inflow	95750	20865	118697	26478	229947	50965
	(b) Out flow	73293	16011	78627	17492	127255	28198
	(c) Net	22457	4854	40070	8986	146546	22767
	III. Banking						
	(a) Receipts	44448	9744	65278	14581	167494	37209
	(b) Payments	53592	11705	48238	10707	159017	35296
	(c) Net	-9144	-1961	17040	3874	8477	1913
	IV. Rupee Dept Service	-2760	-617	-1858	-417	-725	-162
	V. Other Capital						
	(a) Receipts	12948	2856	30507	6737	34540	7724
	(b) Payments	11637	2564	26974	6081	16975	3771
	(c) Net	1311	292	3533	656	17565	3953
	VI. Errors & omissions	-1369	-305	2714	607	2588	593
7	Total Capital (I to VI of 6)	39241	8535	128081	28629	208977	46372
8	Overall Balance (5 + 7)	27643	5868	115907	26159	163634	36606
9	Monetary Movement						
	a). IMP Transactons	....	....	....	....	....	....
	i). Purchase	115	26	....	....	....	....
	ii). Repurchase	-115	-26	....	....	....	....
	iii). Net	-27528	-5868	....	....	....	....
	b0. Increase (-)/decrease (+) in Reserves						
10	Total Reserve movement (9a(iii) + 9b) [(-) increase/ (+) decrease]	-27643	-5842	-115907	-26159	-163634	-36606

#### **4. Foreign Trade Pattern**

Table 2 shows India's' sector-wise principal exports during 2002-03 to 2006-07, showing an increase from Rs. 2,55,137 crores to Rs. 5,17,779 crores. The main items of export relate to Agri and allied products, engineering goods, petroleum products, textile and textile products, chemicals and allied products, and Gems & Jewellery. These exports are mainly labour intensive and low technology products, showing that Indian exports need to be diversified to higher technology or higher value added products for sustainable growth for achieving a target of 1.5 percent of world exports. Table 3 shows that the export composition has not shown any significant change during the period 1996 to 2005, and continue to be labour intensive or low technology intensive.

#### **5. Technology Intensive Exports**

Table 4 further shows that technology intensive exports from India, including low, medium and high technology exports have been around 50 to 58 percent of total exports. The low technology based exports reduced to about 38% in 2006-07 from 51.68% in 2002-03, while medium technology exports increased from 17.04% to 23.29%, and high technology exports have increased from about 5% to 6.74% in 2006-07. Table 5 shows high technology exports of major countries during 2001-05, as a percentage of manufactured exports. High technology exports seem to have decreased from 6% in 2001 to 5% in 2005 of manufactured exports for India. Some variations in data mentioned above may be due to classification criterion adopted. However, overall trends are similar. The high technology export from China was as high as 31% in 2005 while that for Republic of Korea was 33%. Thus, Indian exports need to be more technology intensive for

Table 2:

## INDIA'S SECTORWISE PRINCIPAL EXPORTS (2002-03 TO 2006-07)

Sector	2002-03	2003-04	2004-05	2005-06	2006-07	(Rs. crore) %age change in 2006-07 over 2005-06
Plantations	2,646	2,723	2,792	3,319	3,925	18.26
Agri & allied products	22,391	24,845	27,111	31,960	38,711	21.12
Marine products	6,928	6,106	5,695	7,036	7,890	12.13
Ores & minerals	9,659	10,885	18,842	27,288	31,825	16.63
Leather & manufactures	8,943	9,939	10,286	11,944	13,272	11.12
Gems & jewellery	36,080	48,586	61,587	68,753	70,525	2.58
Sports goods	351	455	441	596	569	-41.53
Chemicals & allied products	36,080	45,768	56,967	69,148	80,148	15.91
Engineering goods	37,208	48,324	65,543	85,462	1,18,337	38.47
Machinery	—	2,23,912	29,137	42,639	52,696	23.59
Iron & steel	7,847	11,386	16,316	15,710	23,692	50.81
Other engineering items	—	14,547	20,010	27,113	41,950	54.72
Electronic goods	6,063	8,294	8,106	10,040	12,649	25.99
Project goods	239	387	221	655	595	-9.16
Textiles & textile products	53,404	56,082	53,995	68,823	72,930	5.97
Handicrafts	3,801	2,296	1,543	2,045	1,682	17.75
Carpets	2,578	2,691	2,679	3,775	4,016	6.38
Cotton raw, incl. waste	50	942	364	2,904	6,101	110.08
Petroleum products	12,469	16,397	30,518	51,533	83,947	62.90
Unclassified exports	8,626	8,646	9,389	11,136	24,519	120.17
<b>GRAND TOTAL (incl.others)</b>	<b>2,55,137</b>	<b>2,93,367</b>	<b>3,61,879</b>	<b>4,56,418</b>	<b>5,71,779</b>	<b>25.27</b>

Note: Rs 100 crore = Rs 1 billion

Source: Ministry of Commerce & Industry, Annual Reports (various issues).

Table 3: Changing Structure of India's Trade: 10 Top Exports and Their Share in Total Exports

Product name	1996 Value	1996 share	Product name	2005 value	2005 share
Diamonds non-industrial next excluding	4028039	9	Petroleum oils, etc. (excl. crude)	11439920	9
Semi-milled or wholly milled rice	891755	2	Diamonds non-industrial next excluding	11214411	8
Oil-cake and other solid residues	769332	2	Non-agglomerated iron ores and ...	3519748	2
Men's or boy/s shirts of cotton	748712	2	Art. Of jewellery and pts thereof	3357736	2
Frozen shrimps and prawns	725340	2	Other organic compounds, nes	1690186	1
Combed single cotton yarn, with >=8	557561	1	Other medicaments of mixed or unmixed	1424499	1
Women's or girls's blouses, shirts,	526754	1	Semi-milled or wholly milled rice	1364245	1
Art. of jewellery and pts thereof	517244	1	T-shirts, singlets and other vests,	1107091	1
Petroleum oils, etc. (excl. crude)	482013	1	Flat rolled prod, i/nas, plated or	1059096	1
Non-agglomerated iron ores	428364	1	Women's or girls' blouses, shirts,	1018038	1

Source: ICRIER Working Paper No. 21, August 2008

international competitiveness. However, the recent recessionary trends in exports might need more detailed study about the strategies for long term competitiveness and economic development.

**Table 4:**

**TECHNOLOGY INTENSIVE EXPORTS AS A PERCENTAGE OF  
TOTAL MERCHANDISE EXPORTS FROM INDIA (2002-03 TO 2006-2007)**

(Rs. crore)

<i>Sector</i>	2002-03	2003-04	2004-05	2005-06	2006-07	<i>%age change in 2006-07 over 2005-06</i>
Resource Based Technology	41,282 (16.18)	50,942 (17.36)	60,501 (16.72)	70,436 (15.43)	86,270 (15.09)	22.48
Low Technology	1,31,858 (51.68)	1,44,010 (49.08)	1,63,749 (45.25)	1,96,514 (43.05)	2,17,467 (38.03)	10.66
Medium Technology	43,474 (17.04)	56,617 (19.30)	74,648 (20.63)	94,369 (20.68)	1,33,166 (23.29)	41.11
High Technology	13,334 (5.22)	16,084 (5.48)	22,738 (6.28)	30,001 (6.57)	38,553 (6.74)	28.50
<b>Total (including others)</b>	<b>2,55,137</b>	<b>2,93,367</b>	<b>3,61,879</b>	<b>4,56,418</b>	<b>5,71,779</b>	<b>25.27</b>

*Note:* Figures within brackets indicate percentage of the total merchandise exports. Rs 100 crore = Rs 1 billion

*Source:* Compiled from the Ministry of Finance, *Economic Survey* (various issues).

*Source: Compendium on Technology Exports 2008, IIFT*

**Table 5:**

**HIGH TECHNOLOGY EXPORTS BY MAJOR COUNTRIES  
According to Percentage Share of Manufactured Exports  
(2001 to 2005)**

(Value: US\$ million)

(%age: Manufactured exports)

<i>Country</i>	2001		2002		2003		2004		2005	
	(US\$)	(%)								
USA	178,906	32	162,345	32	160,212	31	216,016	32	233,079	32
China	49,427	20	68,182	23	107,543	27	161,603	30	214,246	31
Japan	99,389	26	94,730	24	105,454	24	124,045	24	122,680	22
Germany	85,958	18	86,861	17	102,869	16	131,838	17	137,547	17
Singapore	62,572	60	63,792	60	71,421	59	87,742	59	105,078	57
UK	67,416	31	71,481	31	64,511	26	64,295	24	82,841	28
Korea Rep	40,427	29	46,438	32	57,161	32	75,742	33	83,527	32
France	67,191	23	52,582	21	56,336	19	64,871	19	69,673	20
Netherlands	38,960	32	33,667	28	49,546	31	55,211	29	65,758	30
Malaysia	40,939	57	40,912	58	47,042	58	52,868	55	57,376	55
Mexico	29,759	22	28,939	21	28,734	21	31,832	21	32,262	20
Ireland	35,898	48	31,624	41	27,578	34	30,239	34	-	-
Philippines	21,032	70	11,488	65	23,942	74	-	-	26,077	71
Switzerland	14,271	18	1,077	21	20,472	22	24,121	22	25,544	22
Thailand	15,286	31	15,234	31	18,203	30	18,203	30	22,480	27
Finland	9,254	23	9,139	24	10,485	24	10,625	21	13,835	25
Hungary	6,298	23	7,364	25	9,631	26	14,158	29	13,045	25
Israel	7,456	25	5,414	20	5,322	18	6,861	19	4,937	14
Denmark	6,912	21	8,089	22	8,402	20	9,686	20	11,733	22
India	1,680	6	1,788	5	2,292	5	2,840	5	2,840	5
Brazil	6,110	18	6,007	19	4,505	12	5,929	12	8,007	13
Hongkong, China	3,716	20	2,688	17	1,845	13	80,109	32	94,808	34

*Source:* World Bank, *World Development Indicators 2003, 2004, 2005, 2006 and 2007*, Washington, DC (USA).

## **6. Technology Imports**

Indian industry has been largely based on technologies and technical support services from advanced countries, through various modes of technology transfer such as import of capital goods, turn-key projects, through licensing and payment of know-how fee and royalty, import of designs & drawings, training etc. Foreign Technical collaborations were common. The firms generally developed indigenous capabilities to absorb and upgrade these imported technologies to produce goods and services for domestic and export markets. That is reverse engineering was not uncommon. However, in the new policy regime, the modes of technology transfer have generally shifted from turn-key approach to purchase of technology or know - how / why through collaborative arrangements including patent rights, technical collaborations for higher generation of technologies, R&D collaborations, and through FDI. Technology transfer through FDI (inward and outward) seems to be more common in current times.

### **Foreign Technology Transfers**

Number of cumulative FTC approvals during 1991 to 2008 was at 7962 including 81 in 2006-07 and 116 in 2007-08. These approvals were maximum for companies from USA (22.34%) followed by Germany (13.89%), Japan (10.91%) and UK (10.86%), and were in electrical equipments including computers & electronics (15.76%), chemicals (11.14%), industrial machinery (10.93%), transportation (9.38%) and mechanical engineering (5.58%). Maharashtra topped the list of FTC approvals (17.26%) followed by Tamil Nadu (8.34%), and Gujarat (7.66) and Karnataka (6.51%).

Indian corporate has also been very active in FDI outflows through Mergers & Acquisitions (M&A) abroad in recent years. FDI outflows have been similar to FDI inflows in 2007, but have decreased during 2008. The number of M&A and value of deals have also been increasing. Access to knowledge and technology has been one of the major objectives in M&As, besides other objectives, especially in manufacturing. These activities have given rise to need of human resource and innovation management skills in a cross cultural and multi product international environment.

The data for FTC approvals indicated that the number of approvals has considerably decreased after liberalizing of FDI policy, and FDIs might have been generally seeking technology flows also, though various studies have not yet confirmed this trend. However, Indian corporate seems to be again seeking access to technologies through FTC as the number increased in 2008 compared to 2007. Also, there does not appear to be any direct corroboration between the sectors of FDI-in flows and FTC approvals. Indian manufacturing industry is generally based on acquired foreign technologies, for domestic and export purposes.

R&D expenditures of foreign affiliates in India increased from US \$61.5 million in 2002 to US \$70.5 million in 2003. These foreign affiliates paid US \$84 million as royalty in 2003 as against US \$58 million in 2002 (World Investment Report 2007). The total license fee and royalty payments from India increased to US \$356 million in 2003 from US \$306 million in 2001, while the receipts were only US \$29 million in 2003 compared to US \$83 million in 2001 or even as low as US \$12 million in 2002. These data tends to show that the import of technologies is increasing to manufacture and export products and processes, rather than exporting technologies or high technology products and projects or those based on indigenous technologies. However, this might involve higher level of value addition and innovation efforts in industry in India. Innovation indicators of various countries show wide differences in their innovation capacities, competitiveness and exports. (WIR 2008)

### **Royalty and Licence Fee Payments**

Payments of royalties and licence fees are indication of technology imports. Similarly, receipts are indication of technology exports. Table 6 shows the receipts and payments of royalties and licence fee for select countries. It may be seen that payments for India increased from US \$306 m in 2001 to US \$949 m in 2006, thereby indicating the imports of technologies in an increasing fashion. The technology receipts however increased from US \$83 m in 2001 to US \$112 m in 2006, indicating that technology exports are yet to be made in a significant manner from India.

**Table 6: Receipts & Payments of Royalty and License Fee of Select Countries (2001 to 2006)**

(US\$million)

Country	2001		2002		2003		2004		2005		2006	
	Recd.	Paid	Recd.	Paid	Recd.	Paid	Recd.	Paid	Recd.	Paid	Recd.	Paid
India	83	306	12	350	29	356	25	421	25	421	112	949
China	110	1,938	133	3,114	107	3,548	236	4,497	157	4,398	205	6,634
Thailand	9	823	7	1,104	7	1,268	14	1,584	17	1,674	46	2,046
Malaysia	21	751	12	628	20	782	20	782	27	1,370	26	1,052
Singapore	--	--	--	--	197	3,334	224	5,647	544	8,647	730	10,470
World	72,356	73,148	79,611	82,187	92,116	936,630	109,808	120,273	123,690	134,689	1,119	21,151

*Source: World Bank, World Development Indicators 2003, 2004, 2005, 2006, 2007 and 2008 Washington, DC(USA).*

## 7. World Trade Mechanisms

Real impetus to globalisation and international trade was given with the birth of WTO in 1995, and India is an active member of WTO. In recent years, RTA / FTA as instruments for promoting foreign trade have been common in the world.

### World Trade Organisation (WTO) Agreement

There are a large number of multilateral WTO Agreements such as those relating to TRIMS, TRIPS, SPSS, GATS, TBT and IT, are aimed at enhancing trade capacities in developing countries, and facilitate world trade flows, among other objectives. There are differing schools of thoughts and experiences about WTO. But, India has moved much foreword during last about fifteen years in trade and development. However, there are direct or indirect technological implications in trade development for developing countries which are not yet fully understood. Some of the provisions in these Agreements tend to constrain the access to technology in advanced countries thereby limiting the technological capacities due to various factors including cost of technologies and facilities or capabilities for meeting specified tests, certification and quality standards requirements of importing countries. Also, the increased costs towards these

activities which are often considered as non-tariff or technical barriers to trade, lead to increased costs of products and services which might result in increasing non-competitiveness for exports. A host of literature is available on the subject, but it is not intended to discuss the same here.

For example, enhancing technical capacities and availability of information, and support for transfer of technologies to developing countries has been recognized in WTO, but very little has been actually done in practice though a Working Group on Trade and Transfer of Technology (WGTT) has been established. In owning critical technologies, large corporations are seen to be in the possession of “intangible assets” that provide these entities with superior market power with which they can enter into bargain over technology with the recipients. The increasing recognition that technology is one of the critical factors in determining competitiveness of production systems has led to an increasing tendency on the part of owners of technology to seek higher economic rents for their products of R&D. A group of developing countries submitted in May 2003 possible recommendations on steps that might be taken within the mandate of the WTO to increase the flow of technology to developing countries which included examination of:

- The different provisions contained in various WTO Agreements relating to technology transfer
- The respective practices adopted by multinational enterprises in the area of technology transfer
- The impact of tariff peaks and tariff escalation in developed countries on technology transfer
- The difficulties faced by developing countries in meeting the standards set by the WTO Agreements due to lack of required technology; and
- The need for and desirability of internationally agreed disciplines on transfer of technology.

The primary objective of above discussion is to underline the recognition of importance of technology in international trade in WTO and the dissatisfaction of the developing countries in implementation of various WTO Agreements which often tend to be in favour of developed countries, and the need to take corrective measures for enhancing the trade capacities of developing countries.

TBT Agreement is another example which is often considered as a non-tariff barrier for export from developing countries due to stipulations of tech specifications and standards etc. on the products required in developed countries, and inadequate technical capacities and additional expenditures required to be incurred by firms in developing countries. The notifications were though envisaged as the primary instruments for ensuring transparency in the multilateral system. Total numbers of 6869 notifications have been made during 1995-2005, out of which 771 were made in 2005 including only 2 from India. India issued only 45 notifications during this period. These figures clearly indicate inequality in technical capacities and awareness about TBT, leave alone the capabilities to meet the specifications and standards stipulated by developed countries. TRIPS Agreement of WTO is still another example of concerns to technology transfer and access to technologies to developing countries and is being widely debated though several countries including India have modified their IPR regulations and laws to comply with WTO. India has taken several steps to modify its intellectual property laws, implementation and legal systems, to meet the TRIPS requirement and encourage innovations and research.

## **8. Region Trade Agreements**

A vast amount of literature is available about the objectives, performance, advantages and disadvantages of the Regional Trade agreements (RTAs). The objectives of the RTAs include deeper regional and economic integration, facilitating trade flows and investments, employment, capacity building, and industrial restructuring besides political and security considerations, within the overall multilateral trading system of WTO. Asia, particularly South Asia, is a relatively new comer after North America and European Union. There are more than 300 RTAs currently, out of which

around 75% are in the form of Free Trade Agreements (FTAs) in the world, with varying experiences in their implementation. No attempt is made here to discuss the details of these Agreements because of space constraint, except a brief discussion about RTA/FTA of India. It is more or less generally felt that these mechanisms have enhanced trade flows and investment flows among the partner countries, besides political and security etc. considerations, but studies on technological perspectives driving trade and investments are practically negligible.

Asian Development Bank (ADB) reaffirmed, in one of its studies, the need for technology transfer, infrastructure development and capacity building etc. to accelerate regional integration and capacity building etc to accelerate regional integration in Asia and proposed regional technical assistance to South Asia. FTAs grew from 1 in 1976 to 103 in 2007 including 37 concluded during 1976-2007, and 40 under negotiations. ADB observed that technological change and other efficiencies should strengthen the positive linkages between regional agreements and interregional FDI flows. Asian FTAs are designed to enhance inward FDI more than intraregional trade flows and link between FDI and technology transfer has been well established. Through trade liberalisation, countries are able to stimulate technological development, implying strong incentive for developing countries emphasizing technology transfer (such as ASEAN) to liberalise even unilaterally. For an Australia – PRC FTA, an increase in GDP of 3.3% and 6.7% for Australia and PRC respectively, were estimated. Also, establishing strong intellectual property protection laws and means to enforce them, was desirable, to take advantage of new technologies. Formal Free Trade Areas can help. When developing countries team up with developed countries in FTA, technology transfer is reported to be encouraged. For example, US-Singapore FTA tried to remove barriers to greater cooperation in education and research. ADB has recommended that Rules of Origin (ROO) should be as low as possible as well as symmetrical as “Abuses” of ROO is most common criticism. The ADB study has also graded various agreements in Asia, with respect to coverage in terms of trade in goods and services, rules of origin, government procurement, competition, FDI provisions, intellectual property protection, monitoring

and dispute settlement provision, and technical barriers to trade. India-Singapore FTA was least in ROO and IPR. Some of the above observations are however debatable.

India is currently engaged in 25 RTA/FTAs with various countries and regions. Overall, the experience and trade gains appear to have been positive so far. But, there is hardly any complementarity between the goods and services covered in operational RTA/FTA and the national R&D facilities and expertise available in the country, showing a gap in products and trade policies with the technology related infrastructure essential to support the industry and the exports on long term basis. Though there might be increase in trade with partner countries on short term basis. Several Indian corporates seem to have invested and set up production facilities in partner countries in areas such as tyres, auto-components, textiles, pharma, steel, finance, tourism, etc. mainly because of markets or other comparative advantages such as cheaper costs. There are limited R&D facilities in most of these sectors in India or the host countries. Thus, there is a complementarity gap between trade & investment and technology. These RTA/FTAs could be more productive if there is some complementarity between products covered and domestic technological capabilities. Technology component could be more critical in case of RTA/FTAs with developed or advanced developed countries, and issues such as IPR and technology transfer could be more pronounced. The technology strategies for FTA/RTA should also be different for developing and developed countries, and efforts should be made domestic capability building on long term basis.

## **9. New Industrial Policy (NIP)**

New Industrial Policy (NIP) in 1990-91 essentially aimed at enhancing the growth and international competitiveness, provide employment, encourage regional and backward area development, optimally utilising domestic resources etc through gradually and cautiously opening up the economy to international players, loosening regulatory or control mechanisms, public disinvestments and encourage privatisation, enhancing indigenous technological and management capabilities, upgrading skills and educational standards, easier flows of foreign technologies and collaborative arrangements, and so on. Economies of scale, expansion and diversification,

modernisation, and application of new technologies, were encouraged. Encouraging exports became a major thrust area. In the initial period, the industry faced considerable difficulties in adjusting to the new policy environment but has successfully restructured itself to face the international competitiveness and sustainable growth. Sectoral regulatory and promotional agencies to oversee the implementation of policies and hand holding were set up.

Financial and stock markets were reformed, and new instruments of financing were evolved to meet the investment needs. In fact, domestic markets became international markets and the companies had to compete with international products and services at home. Venture Capital Companies and Private Equity Companies have been encouraged. Recently, public - private partnership arrangements have been vogue. The list of reserved items for MSMEs has been gradually reduced to negligible from about 1200 products. The service sector grew at a much faster rate, and IT and computer software industry established itself as a leading player in the world. Microfinancing is becoming increasingly popular.

Many of the firms started strengthening their R&D and technological capabilities for innovations and producing products and services meeting cost and quality needs in international markets, though and significant development of new products is still to come. The Indian industry is now fairly matured and is preparing to ride the value chain through innovations, new business models, entrepreneurship, and management capabilities. The industry is now outward oriented than inward looking in several sectors. As such, it has been able to withstand the current recessionary trends with much less pains than that in several other countries. Support measures and financial packages announced by the government have also started to show the revival of the economy.

### **MSMEs**

Medium, small, and micro enterprises have played a crucial role in development of the country during past 50 years, with conscious policy support and protective

measures to them. This sector constitutes about 95% of industrial units, 8-9% of GDP and about 45% of total manufacturing output, and exports of about 40% of total exports. With about 13 million units employing over 41 million people, its employment potential is next only to agricultural sector.

Removal of quantitative restrictions in the early 2000s and reduction of import duties in the last ten years have opened the SMEs to severe competition as well as foreign market.

For manufacturing enterprises, investment ceiling for plant, machinery or equipment is revised to Rs. 2.5 mn to Rs. 50 mn for small enterprises and Rs. 50 mn to Rs. 100 mn for medium enterprises. MSME development Act 2006 was announced. Several policy makers and institutional mechanisms have been recently evolved to promote and support MSMEs, including:

- SME fund of US \$2.27 b
- Facilitation of Technology transfer
- Fund for Regeneration of Traditional Industries
- Guarantee covering under Credit Guarantee Fund
- Limited Liability Partnership
- Emphasis on bi- lateral / multilateral partnership at multiple levels
- Technology up-gradation fund and quality improvement support & assistance
- National Manufacturing Competitiveness Programme (NMCP) – with ten point initiatives
- A network of 30 MSME Development institutes with 28 branches, 4 MSME Testing Centres, 7 MSME Field Testing Stations, 6 technology Development Centres, 2 footwear Training Institutes, 10 Hand Tool Development Centres
- SIDBI is an exclusive bank for SMEs

- Cluster Development Programme
- Technology business Incubators, S&T Parks, S&T Entrepreneurship Development and Entrepreneurship Training Institutes

These investment, trade, industrial, and technology policies have promoted and supported the MSME sector, enabling it to reorient to the globalising policies and international competition.

## **10. National Innovation System**

There is no formal innovation policy or innovation system officially evolved so far, though there is strong S&T system and implementation mechanisms at national and regional levels which include promotion and encouragement for technological innovations, for better returns on investments in S&T. The national investment on R&D activities was Rs. 21,639,58 crores in 2004-05, which is 0.8% of GNP as against 2-3% in most developed countries. Industry accounts for about 20% of total R&D expenditure, which was 0.47% of its sales turnover in 2002-03. As on 1<sup>st</sup> April 2000, nearly 2.96 lakhs personnel were employed in the R&D establishments in the country, and India had 110 researchers per million populations during 2000. 2469 patents were sealed in the year 2003-04, out of which 1078 were sealed by Indians. There were 320 universities / deemed universities, 11 institutes of national importance and 16,885 colleges during 2003-04, imparting higher education in the country. Besides there are about 500 R&D organisations, and several other specialized institutions and agencies including industrial associations which are active in promotion of innovation capacities. Industry is increasingly becoming conscious towards the role of innovation capacities in global competitiveness and business strategies for international markets. Recently in 2007 an Innovation Act has been drafted by DST to promote and support innovations in the country.

## 11. FDI Policy

In 1991, liberalization of FDI policy was introduced and FDI upto 51% was allowed in 35 priority sectors which were increased to 74% in many sectors and to 100% in some select sectors. FDI was further allowed to increase to 100% in most sectors in the year 2000. During the period 2000 - 2006 more new sectors were opened for FDI and procedures further simplified. Today, FDI is liberally permitted in most sectors, except a few.

Global FDI Inflows in 2007 were US \$1833 b including US\$1248 b for developed economies and US \$500 b for developing economies. FDI in-flows and out-flows for select countries are given in Table 7, showing that in-flow in India increased from US \$7.61 b in 2005 to US \$22.95 b in 2007, and FDI outflows from US \$2.98 b to US \$13.65 b. Table 8 Shows that service sector attracted maximum inflows followed by computer software and hardware. Thus, this appears to be insignificant relation or no relation between sectors of exports and sectors of FDI in-flows. This however, needs to be examined in detail, and may require a review of FDI policies.

**Table 7: FDI Flow**

	FDI INFLOWS (US \$b)		FDI OUTFLOW (US \$b)	
	2005	2007	2005	2007
<b>Brazil</b>	<b>15.07</b>	<b>34.56</b>	<b>2.52</b>	<b>7.07</b>
<b>Russia</b>	<b>12.89</b>	<b>52.48</b>	<b>12.37</b>	<b>45.67</b>
<b>India</b>	<b>7.61</b>	<b>22.95</b>	<b>2.98</b>	<b>13.65</b>
<b>China</b>	<b>72.41</b>	<b>83.52</b>	<b>12.27</b>	<b>22.47</b>

**Source:** Agarwal, S.P; *An Empirical Study on Technology, FDI and Exports in India and China*, International Conference on Liberalising Research in Science and Technology, IIT, Kanpur, India, 4-6 February, 2009.

Indian corporates have been recently active in foreign acquisitions, and the policy encourages the same. Fig - 1 shows the actual outward FDI and No. of approvals for

the period 1996-2008. Table 9 gives geographical distribution of approvals of outward FDI from India as in 2006. It shows that the Indian corporates have been making increasing acquisitions in more advanced countries. Technology, markets, brands, manufacturing capabilities and expansions, and customer segment are some of the main objectives. According to WIR 2008, India has been rated as the second most preferred destination for FDI, the first being China, Table 10 shows the cross border M&A during 2005-08 for BRIC countries, indicating that the purchases have increased from 122 to 194 in numbers, and investments from US \$4.96 to \$30.4 billion.

**Table 8: Sectors attracting Highest FDI Equity Inflows (India)**

Ranks	Sector	2005-06 (April-March)	2006-07 (April-March)	2007-08 (April-March)	2008-09 (April – Sept.)	Cumulative Inflows (April '00 to Sept. '08)	% age to total Inflows (In terms of rupees)
1.	SERVICES SECTOR (financial & non-financial)	2,399 (543)	21,047 (4,664)	26,589 (6,615)	10,928 (2,576)	66,625 (15,634)	20.87 %
2.	COMPUTER SOFTWARE & HARDWARE	6,172 (1,375)	11,786 (2,614)	5,623 (1,410)	5,975 (1,400)	38,142 (8,678)	11.95 %
3.	TELECOMMUNICATIONS (radio paging, cellular mobile, basic telephone services)	2,776 (624)	2,155 (478)	5,103 (1,261)	8,753 (1,954)	25,501 (5,796)	7.99 %
4.	CONSTRUCTION ACTIVITIES (including roads & highways)	667 (151)	4,424 (985)	6,989 (1,743)	7,272 (1,722)	20,657 (4,885)	6.47 %
5.	HOUSING & REAL ESTATE	171 (38)	2,121 (467)	8,749 (2,179)	6,807 (1,624)	17,969 (4,335)	5.63 %
6.	AUTOMOBILE INDUSTRY	630 (143)	1,254 (276)	2,697 (675)	2,537 (606)	12,392 (2,842)	3.88 %
7.	POWER	386 (87)	713 (157)	3,875 (967)	2,285 (557)	11,914 (2,762)	3.73 %
8.	METALLURGICAL INDUSTRIES	6,540 (147)	7,866 (173)	4,686 (1,177)	3,314 (790)	10,662 (2,553)	3.34 %
9.	PETROLEUM & NATURAL GAS	64 (14)	401 (89)	5,729 (1,427)	886 (199)	9,131 (2,180)	2.86 %
10.	CHEMICALS (other than fertilizers)	1,731 (390)	930 (205)	920 (229)	1,816 (427)	7,957 (1,811)	2.49 %

*Note: Cumulative Sector- wise FDI inflows (from April 2000 to September 2008) - Annex-'B'.*

*Source: [http://www.dipp.nic.in/fdi\\_statistics/india\\_fdi\\_index.htm](http://www.dipp.nic.in/fdi_statistics/india_fdi_index.htm)*

## **12. MNCs and Internationalisation of R&D**

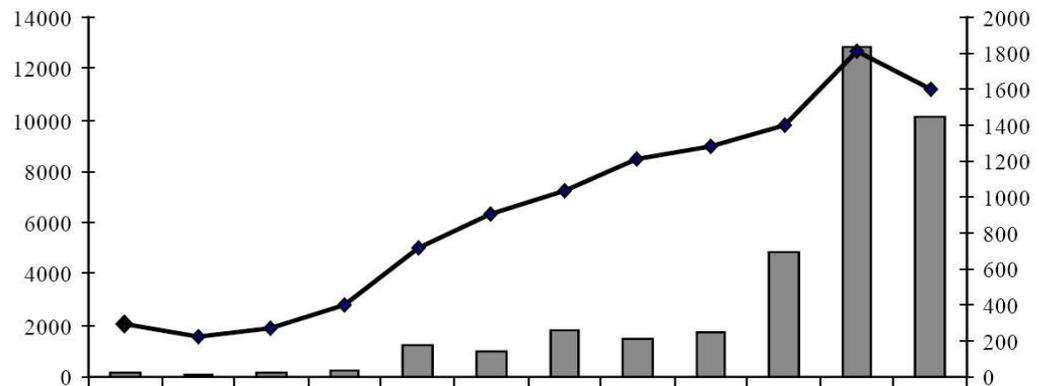
### **Foreign Companies in India**

Currently, many 'Fortune 500' companies have established their operations in India to leverage India's strengths. Approximately, 220 out of the 'Fortune 500' companies, from countries like Canada, France, Germany, Italy Japan, Netherlands, South Korea, Switzerland, Sweden, UK and USA, have their well established Business in India. Over the decade, this number of foreign companies in India has increased significantly at the average rate of 10 %. Number of foreign companies increased from 956 to 2040 during period of 1999 to 2006. There were 329 companies from UK, 437 from USA, 157 from Japan, 80 from France, 80 from Germany and 39 from Italy; out of the total of 2040 foreign companies in India in 2006 (Ministry of Company Affairs, Govt. of India). The foreign companies were mainly in electrical equipment, transportation industry, service sector, telecommunications, chemicals, and pharmaceuticals.

### **Foreign R&D Centres**

Internationalization of R&D has emerged as an important mode to access the global pool of knowledge. Globalisation and liberalisation policies of India have accelerated the internationalisation of productive services and technologies, as well as capital flows. Many large companies and trans-national corporations have now opened up R&D centres or developed R&D partnerships in developing countries such as India for competitive advantage. India is now being considered a hub for foreign R&D. R&D and R&D capabilities are key devices for enhancing innovations and competitiveness in a knowledge based economy such as India. India has been experiencing an increase

## Outward FDI by Indian Enterprises, 1996-2008 (Million dollars and numbers)



Actual Outward FDI	205	121	143	271	1212	982	1799	1497	1768	4870	12880	10114
No. of Approvals	290	228	275	395	714	908	1034	1214	1281	1395	1817	1595

**Note:** \*for April-December 2007.

**Source:** Author based on Ministry of Finance and RBI data.

**Source:** [http://www.ris.org.in/dp140\\_pap.pdf](http://www.ris.org.in/dp140_pap.pdf)

**Fig.1**

In inflow of funds in the form of Foreign Direct Investment for research and development activities. In the era of globalization, the phenomenon of globalization of production is reshaping the international economic landscape.

Types and ways of establishing linkages with the resource centres in the host countries vary from contract research to setting up dedicated R&D centres. Lately, world leaders in high-tech areas are targeting developing countries in Asia for setting up their R&D centres. China and India are emerging as the most preferred destinations for MNCs.

The present trend of internationalization of R&D, however, goes much beyond this practice. It is more about attaining or retaining global competitiveness by having access to R&D infrastructure and capabilities from multiple sources. R&D off shoring

started in India way back in 1984 with Texas Instruments setting up its first R&D centre in Bangalore. As per Zinnov's estimates the total number of R&D centres in India till December '08 were about 781 R&D centres of 671 MNCs. Most of the companies who wanted to take advantage of India's experience along with the cost and vast availability of talent had already set up their centres by 2005.

**Table 9:**

**Geographical Distribution of Approvals of Outward  
FDI from India, 2006**

(million US \$)

	<b>Upto 1990</b>	<b>1991-95</b>	<b>1996-02</b>	<b>2002-06</b>
South-East and East Asia	80.79	191	703.6	1486.46
South Asia	20.91	59.11	164.53	108.21
Africa	37.83	63.02	734.36	1569.82
West Asia	21.54	95.38	410.89	513.62
Central Asia	23.2	13.99	38.28	138.67
Central and East Europe	6.56	37.31	1750.03	1081.9
Latin America & the Caribbean	0.58	8.36	253.18	454.18
Developing Countries	191.52	468.21	4054.91	5352.92
% share in total	(86.09)	(63.80)	(63.33)	(46.20)
Western Europe	17.29	149.4	789.52	4084.23
North America	13.51	110.79	1546.41	1632.58
Developed Countries	30.89	256.6	2348.18	6233.91
% share in total	(13.89)	(34.97)	(36.67)	(53.80)
<b>Total</b>	<b>222.46</b>	<b>733.82</b>	<b>6403.09</b>	<b>11586.83</b>

*Source:* RIS Database.

During the period 2005-2008 witnessed small to mid-sized companies setting up centres in India. Bangalore, Delhi, Mumbai, Pune, Hyderabad and Chennai have so far been the most preferred destinations for R&D in India. Factors such as the combined presence of foreign companies, research labs and educational institutes have made these locations attractive centres for R&D operations. Most foreign companies have their in-house R&D centres in manufacturing facilities.

There are more than 200 foreign R&D centres mainly in sectors such as agriculture, computer hardware & software, telecom, biotech, pharma, and automobiles, spread across the country, including centres at academic institutions, stand alone and in collaborative models. The total investments were estimated at about US \$30 billion in 2003, while the potential is estimated at US\$30 b in 2010. These centres have

employed about 22980 R&D people in India but scientists and engineers need to be trained in areas such as computer science, bio-tech, engineering and agriculture, to meet growing demand. About 300,000 researchers were estimated to be needed during 2006-10. The main attractions for foreign R&D centres included availability of skilled and trained human resource, large markets, stable political system, and regulatory including legal systems. However, the impact of these foreign R&D centres on domestic technological capabilities is not precisely known, and there is no systematic information or data base in the government, which is needed. (IIFT study, 2006)

### **13. Competitiveness**

Competitiveness can be defined in many ways and may mean differently for different people. However, according to Global Competitiveness Report, 2008, competitiveness can be defined as the set of institutions, policies, and factors that determine the level of productivity of a country.

Twelve pillars of competitiveness include institutions, infrastructure, health and primary education, higher education and training, technological readiness, business sophistication, and innovation. Thus, technological readiness, innovation capabilities and educational levels and institutions are important driving factors for competitiveness, among others. Global competitiveness ranking of Brazil, Russia, India S. Africa and China (Table 10) among 134 countries for the year 2008-09 generally indicates a direct relationship between innovation capabilities, technological readiness and global competitiveness, except in case of India. This Table also indicates that innovation capabilities need to be synergized with other factors such as company operations and strategies, infrastructure and policies etc for maximizing returns on innovations. The global competitiveness index varies from 30 for China to 46 for Brazil while innovation index varies from 29 for China to 48 for Russia, institutions index 112 to 49, innovation sophistication factor from 27 for India to 73 Russia and GCI 30 to 51 for S. Africa among 134 countries.

**Table 10: Cross Border M&As 2005-08****(US \$b)**

	<u>Sales</u>		<u>Purchases</u>	
	2005	2007	2005	2007
<b>Brazil</b>	<b>3.09</b> <b>(51)</b>	<b>8.6</b> <b>(135)</b>	<b>2.7</b> <b>(30)</b>	<b>11.7</b> <b>(58)</b>
<b>Russia</b>	<b>2.8</b> <b>(90)</b>	<b>23.5</b> <b>(136)</b>	<b>21.9</b> <b>(67)</b>	<b>14.2</b> <b>(94)</b>
<b>China</b>	<b>11.6</b> <b>(258)</b>	<b>15.5</b> <b>(274)</b>	<b>9.5</b> <b>(102)</b>	<b>4.4</b> <b>(122)</b>
<b>India</b>	<b>3.7</b> <b>(121)</b>	<b>5.6</b> <b>(167)</b>	<b>4.96</b> <b>(122)</b>	<b>30.4</b> <b>(194)</b>

**14. Concluding Remarks**

The planned developmental model based on protective or restrictive policy environment primarily aimed at developing domestic scientific, industrial and manufacturing capabilities and MSMEs mainly in public sector, after independence till 1991, and liberalising and globalising policies, gradual and cautious, after 1991, primarily aimed at privatisation, exports, and international competitiveness, appear to have resulted in the fast economic growth of about 9% in last five years and about 7% in 2008-09. Exports are around 1% of world exports, FDI of about \$50 b per year is expected and India is rated as the second most attractive destination for FDI in the world. The corporates have shown dynamism, entrepreneurship, new business models and strategies, supported by conducive S&T, industrial, investment and trade promotion policies. Companies are now aggressively looking outward rather than domestically alone. However, manufacturing is yet to become more technology and innovation oriented to produce new products and high technology based exports. The R&D expenditures continue to be small and need to be increased through new collaborative and partnership arrangements with in the country and abroad, Perhaps, more effective utilisation of R&D investment is more important than the absolute amounts, and new

innovation approaches are required. Catalytic technology financing mechanisms are necessary.

The trade and investment policies should encourage technology transfers and commercialisation of technologies from R&D processes / products available in more advanced countries in current recessionary trends. The corporates may build long term strengths and competitiveness.

Export promotion policies have been mainly toward subsidising physical inputs and output such as raw materials and components, loans, market development, and so on, and thrust sectors continue to be generally low technology based. Since, the manufacturing is maturing, there is a need to be more liberal and encourage and support capacity building and skill development on continuing basis, making easier access to technologies and know how available in new and advanced technologies. Probably a mix of traditional sectors with new technologies and high technology based industries may be developed or encouraged for sustainable development. A differential approach for export promotion may be needed, based on technology intensities.

FDI policies do not seem to have yielded the desired objectives satisfactorily as far as technological and management capacity building or enhancing exports are concerned, and the same need to be reviewed. Foreign R&D centres need to be more effectively linked in the national innovation system. There might have been, however, some spill over advantages to domestic industry.

The recommendations of the manufacturing competitiveness council made to the Prime Minister recently in 2008 deserve greater attention.

India is an active member of various international financial or investment organisations, trade promotion agencies including WTO, and UN systems, etc. It is also engaged in FTA / RTAs with various developing and developed countries and regions. Such arrangements are often among unequal partners which many have their own strengths and weaknesses. It is therefore important that detailed research and studies are made to identify the strengths, weaknesses, and competitive advantages, and

decide the scope of such Agreements. Developing countries have often expressed their dissatisfaction with technology transfers, technical capacity building assistance, technical information flows and skills development etc with WTO system, for example. A closer coordination between innovation policies and trade and investment policies is needed.

Developing and supporting new start-ups in high technologies or new areas is important. The banks and financial institutions need to be more development and risk oriented to support technology based ventures. Finally, there is a need to review the existing policies and avoid overlapping as far as possible, for encouraging innovation capacities. Conducive trade and investment policies are critical for nurturing and supporting innovations.