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# RIS Discussion Papers

## Liberalization, Foreign Direct Investment Flows and Economic Development: The Indian Experience in the 1990s


Nagesh Kumar



RIS-DP # 65/2003



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RIS-DP # 65/2003

December 2003

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An earlier version of the paper was presented at the Workshop on Foreign Direct Investment and Economic Development organized by the World Bank Institute in Fukuoka, Japan on 18-19 June 2003. It has benefited from many useful comments of participants, in particular of Shujiro Urata, Yu Yongding and Chia Siow Yue and a discussion with K.J. Joseph. Jayaprakash Pradhan assisted with extracting a number of tables from RIS database. The usual disclaimer applies.

Liberalization, Foreign Direct Investment Flows and Economic Development: The Indian Experience in the 1990s

## 1. Introduction

Foreign direct investment (FDI) is now widely perceived as an important resource for expediting the industrial development of developing countries in view of the fact that it flows as a bundle of capital, technology, skills and some times even market access. Most of the developing countries, therefore, welcome multinational enterprises (MNEs) that are usually associated with FDI. India's case is a typical in this context. After following a somewhat restrictive policy towards FDI, India liberalized her FDI policy regime considerably since 1991. This liberalization has been accompanied by increasing inflows. The liberalization has also been accompanied by changes in the sectoral composition, sources and entry modes of FDI. The increasing recognition of India's locational advantages in knowledge-based industries among MNEs has also led to increasing investments by them in software development and in global R&D centers set up in India to exploit these advantages.

This paper reviews the Indian experience with FDI since the 1991in a comparative East Asian perspective. The structure of the paper is as follows: Section 2 summarizes the evolution of Indian government's policy towards FDI. Section 3 examines the trends and patterns in FDI inflows in the 1990s. It also comments on the determinants of FDI inflows in India. Section 4 examines the impact of FDI in terms of various parameters of development. Section 5 discusses the emerging trends in the MNE activities in knowledge-based industries in India viz. IT software and global R&D activities. Section 6 concludes the paper with some remarks on policy lessons.

## 2. Evolution of Government's Policy Towards FDI, 1948-2003

The Indian government's policy towards FDI has evolved over time in tune with the requirements of the process of development in different phases.[1] Soon after Independence, India embarked on a strategy of import substituting industrialization in the framework of development planning with a focus on encouraging and improving the local capability in heavy industries including the machinery-manufacturing sector. As the domestic base of 'created' assets viz. technology, skills, entrepreneurship was quite limited, the attitude towards FDI was increasingly receptive. FDI was sought on mutually advantageous terms though the majority local ownership was preferred. Foreign investors were assured of no restrictions on the remittances of profits and dividends and fair compensation in the event of acquisition. The foreign exchange crisis of 1957/58 led to further liberalization in the government's attitude towards FDI.

The government adopted a more restrictive attitude towards FDI in the late 1960s as the local base of machinery manufacturing capability and local entrepreneurship developed and as the outflow on account of remittances of dividends, profits, royalties, and technical fees, etc. abroad on account of servicing of FDI and technology imports grew sharply. Restrictions were put on proposals of foreign direct investments unaccompanied by technology transfer and those seeking more than 40 per cent foreign ownership. The government listed industries in which FDI was not considered desirable in view of local capabilities. The permissible range of royalty payments and duration of technology transfer agreements with foreign collaborators were also specified for different items. The guidelines evolved for foreign collaborations required exclusive use of Indian consultancy services wherever available. The renewals of foreign technical collaboration agreements were restricted. From 1973 onwards the further activities of foreign companies (along with those of local large industrial houses) were restricted to a select group of core or high priority industries. In the same year a new Foreign Exchange Regulation Act, (FERA) came into force which required all foreign companies operating in India to register under Indian corporate legislation with up to 40 per cent foreign equity. Exceptions from the general limit of 40 per cent were made only for companies operating in high priority or high technology sectors, tea plantations, or those producing predominantly for exports.

[1] See Kumar (1998b) for more details.



In the 1980s the attitude towards FDI began to change as a part of the strategy of modernization of industry with liberalized imports of capital goods and technology, exposing the Indian industry to foreign competition, and assigning a greater role to MNEs in the promotion of manufactured exports. The policy changes adopted in the 1980s covered liberalization of industrial licensing (approval) rules, a host of incentives, and exemption from foreign equity restrictions under FERA to 100 per cent export-oriented units. Four more export processing zones (EPZ) were set up in addition to the two existing ones, namely those at Kandla (set up in 1965) and at Santacruz (set up in 1974) to attract MNEs to set up exportoriented units. A degree of flexibility was introduced in the policy concerning foreign ownership, and exceptions from the general ceiling of 40 per cent on foreign equity were allowed on the merits of individual investment proposals. The rules and procedures concerning payments of royalties and lumpsum technical fees were relaxed and withholding taxes were reduced.

India's growth performance during the 1980s at an average of nearly 6 per cent was respectable and much better than that achieved during the previous decades. However, it was fuelled by excessive reliance on short-term external borrowings. The accumulated debt servicing burden had begun to strain the balance of payment towards the end of the decade. This was further accentuated by two major external shocks viz., the collapse in 1989 of the Soviet Union, India's major trading partner, and the Gulf War in 1990/1 leading to rise in oil prices besides adversely affecting the inflow of remittances by the non-resident Indians in the region. These developments pushed the country in a severe liquidity crisis with the foreign exchange reserves declining to cover just barely a month's imports. As a result the government had to negotiate a structural adjustment loan from the IMF. As a part of the conditionalities attached to the IMF's Structural Adjustment Programme, a package of economic reform was introduced in the middle of 1991 by the Government. Among the reform measures implemented included a departure from the restrictive policy towards FDI, a much more liberal trade policy besides reforms of capital market and exchange controls (see Kumar 2000c, among others, for details). The New Industrial Policy (NIP) announced on 24 July 1991 marked this departure with respect to FDI policy. The NIP and subsequent policy amendments have liberalized the industrial policy regime in the country especially as it applies to FDIs beyond recognition. The industrial approval system in all industries has been abolished except where it is required for strategic or environmental grounds. In order to bring greater transparency in the FDI approval system and expedite their

clearance, a system of automatic clearance was put into practice for FDI proposals fulfilling the conditions laid down, such as the ownership levels of 50 per cent, 51 per cent, 74 per cent and 100 per cent foreign equity allowed in sectors specified for each limit. The cases other than those following the listed norms are subject to normal approval procedures. A new package for enterprises in EPZs and 100 per cent export-oriented units was announced including automatic clearance for proposals fulfilling specified parameters on capital goods imports, location and value addition etc. The guidelines have been laid down for this approval process as well. The FERA of 1973 was amended in 1993 and restrictions placed on foreign companies by the FERA were lifted.

New sectors such as mining, banking, insurance, telecommunications, construction and management of ports, harbours, roads and highways, airlines, and defence equipment, have been thrown open to private, including foreign owned, companies. However, the extent of foreign ownership is limited in some of these service sectors, e.g. 49 per cent in banking, 26 per cent in insurance, 51 per cent in non-banking finance companies, 49 per cent in telecommunications, 74 per cent in internet service providers, 40 per cent in airlines, 74 per cent in shipping, 51 per cent in export-oriented trading, 49 per cent in broadcasting, 74 per cent in advertising, 51 per cent in health and education services. Foreign ownership up to 100 per cent is permitted in most manufacturing sectors – in some sectors even on automatic basis - except for defence equipment where it is limited to 26 per cent and for items reserved for production by small-scale industries where it is limited to 24 per cent. However, FDI above 24 per cent is permitted in small-scale industries (SSI) reserved items subject to a mandatory export obligation of 50 per cent of annual production; this export obligation also applies similarly to a large domestic enterprise. The dividend balancing and the related export obligation conditions on foreign investors, which applied to 22 consumer goods industries, were withdrawn in 2000.[2]

To sum up the liberalization of FDI policy include the followings:

- Pruning the negative list of industries requiring industrial approvals to a minimum that need to be regulated for security or environmental reasons;
- Expansion of the list of industries open to FDI except for a small negative list
- Gradually expanding the list of industries subject to automatic approval of FDI proposals fulfilling conditions laid down
- Removing the general restriction of 40 per cent on foreign ownership. Foreign ownership upto 100 per cent is permissible in most of the industries except for a small list subject to sectoral caps
- National treatment to companies with more than 40 per cent foreign ownership
- Gradual dismantling of the performance requirements that have been imposed by the government at the time of entry such as phased manufacturing programme (local content requirements), dividend balancing[3] and foreign exchange neutrality. Export obligations are now limited to companies entering the industries reserved for small-scale units or those entering the export processing zones or availing incentives meant for export-oriented units (see Kumar and Singh 2002, for more details).

## 3. Liberalization and Trends and Patterns in FDI Inflows

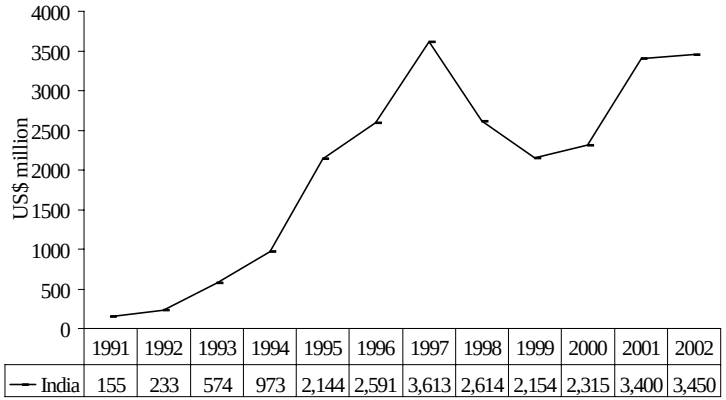
The economic reforms in general and liberalization of FDI policy in particular, have affected the magnitude and patterns of FDI inflows received by the country. FDI inflows received by India during the 1990s showed a marked increase till 1997 when they peaked at US$ 3.6 billion. However, in the subsequent period the inflows have stagnated at around US$ 2.5 billion despite progressive liberalization of policy regime. Since the year 2001, they have risen again to a level of about $ 3.4 billion (see Figure 1). The magnitudes of FDI inflows received by India would appear too small, especially if these are compared with those received by other countries in the region such as China (around $ 40 billion in the recent years). (This is commented upon later.)

In an analysis of the role of liberalization in explaining the rising inflows of FDI till 1997, Kumar (1998b) found that only a part of the increase in FDI inflows could be attributed to liberalization, and a part of the rise was explained in terms of a sharp expansion in the global scale of FDI outflows during the 1990s. Secondly, the decline in inflows since 1997 despite continued liberalization suggested that policy liberalization is not an adequate explanation of FDI inflows. Macroeconomic fundamentals of the host economies that emerge as the most powerful explanatory variables in the inter-country analysis of FDI

[2] Ministry of Commerce and Industry, Press Note No. 7 (2000 Series), 14 July 2000.

[3] Under this companies manufacturing consumer goods were required to balance the dividends repatriated abroad by export earnings.

**Figure 1: FDI Inflows in India, 1991-2002**

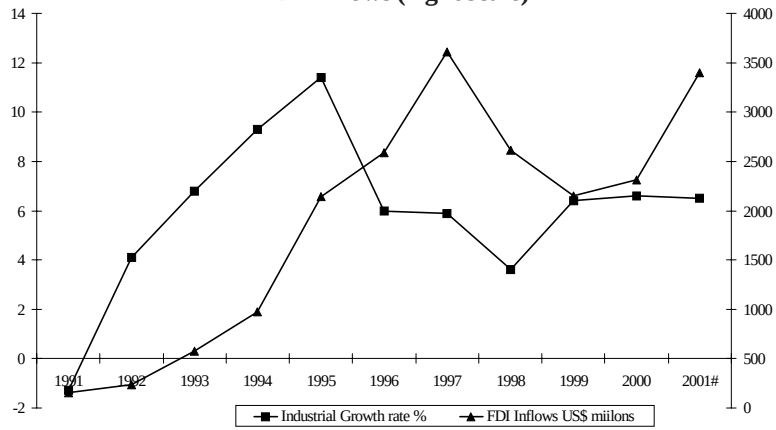



| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| India | 155 | 233 | 574 | 973 | 2,144 | 2,591 | 3,613 | 2,614 | 2,154 | 2,315 | 3,400 | 3,450 |

***Source:*** UNCTAD and Govt. of India.

inflows also explain the year-to-year fluctuations in FDI, although with a lag. This becomes clear from Figure 2 which plots FDI inflows during the 1990s against the fluctuations in the annual rates of growth of industrial output. One finds a good correspondence between industrial growth rate in a year and the

**Figure 2: Rate of Industrial Growth (left scale) and FDI Inflows (right scale)**




***Source:*** the author based on UNCTAD and Government of India data.



FDI inflows in the following year. The industrial growth seems to signal to the foreign investors about the prospects of the economy. Therefore, it appears that policy liberalization may be a necessary but not a sufficient condition for FDI inflows.

### *3.1. Liberalization and Changing Sectoral Composition of FDI*

The sectoral composition of FDI in India has undergone significant change in the 1990s. Table 1 presents sectoral distribution of FDI stock in India at three points of time, viz. 1980, 1990 and 1997 (that is the latest available year for the stock data). Three characteristics of FDI stock in India can be noted. First, the share of Mining & Petroleum along with plantation sector in FDI stock it has fallen markedly from 9 percent in 1980 to only 2 percent in 1997. Second, the bulk of FDI inflows in the pre-liberalization era were directed to manufacturing sector; it accounted for the bulk of FDI stock with nearly 87 percent share in 1980 that declined marginally to 85 percent in 1990. However, with the liberalization of FDI policy regime in the 1990s, FDI inflows have been received by services and infrastructural sectors. This has brought the share of manufacturing down to 48 percent by 1997. During the nineties services clearly emerged as a major sector receiving FDI. Power generation among other infrastructure sectors (included in Others) have also attracted substantial FDI during the 1990s bringing the share of others up to nearly 35 per cent from negligible share in 1980 and in 1990.

Among the manufacturing subsectors, FDI stock in 1997 is also more evenly distributed between food and beverages, transport equipment, metals and metal products, electricals and electronics, chemicals and allied products, and miscellaneous manufacturing unlike a very heavy concentration in relatively technology intensive sectors, viz. machinery, chemicals, electricals, and transport equipment upto 1990. The infrastructural sectors which have commanded nearly half of total approved investments in the 1990s had not been open to FDI inflows before and hence, could be attributed to the policy liberalization.

It may be useful to look at the distribution of inward FDI within the Services sector given its increasing importance in the FDI inflows during the 1990s. A look at the sub-sector break up of cumulative approvals of FDI during the 1991-2000 period, suggests that about 61 percent of approved service sector FDI during 1991-2000 has gone to telecommunications sector. Financial and banking sector stood as the second most important service sector host to FDI nearly claiming about 14 percent of total amount approved. Other important branches are hotel and tourism, and air and sea transport.

**Table 1: Industrial Distribution of India's Inward FDI Stock 1989-97**

(Rs. million)

| Industry Group | End March | | | | | |
|---|---|---|---|---|---|---|
| | 1980 | | 1990 | | 1997 | |
| | Value | % | Value | % | Value | % |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| I. Plantations | 385 | 4.13 | 2560 | 9.46 | 4310 | 1.18 |
| II. Mining | 78 | 0.84 | 80 | 0.30 | 410 | 0.11 |
| III. Petroleum | 368 | 3.94 | 30 | 0.11 | 3330 | 0.91 |
| III. Manufacturing | 8116 | 86.97 | 22980 | 84.95 | 175230 | 48.00 |
| 1. Food & beverages | 391 | 4.19 | 1620 | 5.99 | 24310 | 6.66 |
| 2. Textiles products | 320 | 3.43 | 920 | 3.40 | 10390 | 2.85 |
| 3. Transport equipment | 515 | 5.52 | 2820 | 10.43 | 24570 | 6.73 |
| 4. Machinery & machine tools | 710 | 7.61 | 3540 | 13.09 | 19310 | 5.29 |
| 5. Metal & metal products | 1187 | 12.72 | 1410 | 5.21 | 7600 | 2.08 |
| 6. Electrical goods & machinery | 975 | 10.45 | 2950 | 10.91 | 29400 | 8.31 |
| 7. Chemicals & allied products | 3018 | 32.34 | 7690 | 28.43 | 32530 | 8.91 |
| 8. Others | 1000 | 10.72 | 2030 | 7.50 | 27120 | 7.43 |
| V. Services | 320 | 3.43 | 890 | 3.29 | 54650 | 14.97 |
| VI. Others | 65 | 0.70 | 510 | 1.89 | 127170 | 34.83 |
| **Total** | **9332** | **100.00** | **27050** | **100.00** | **365100** | **100.00** |

***Source:*** *RBI Bulletin* (April 1985, August 1993, October 2000).



### *3.2. Liberalization and Changing Sources of FDI in India*

European countries had been major sources of FDI inflows to India until 1990. However, their relative importance has steadily declined in the post-liberalization period with the share of major European source countries (which include the UK, Germany, France, Switzerland, Sweden, Italy and Netherlands) coming down from 69 and 66 per cent of FDI stock in 1980 and 1990 to just 31 per cent by 1997. The decline in the relative importance of European countries as sources of FDI to India has been made more prominent by diversification of sources of FDI by the country over the 1990s.

The US has emerged as the most important source of FDI over this period with a share of nearly 19 per cent of stocks in 1992. In 1997 the share of the US at 13.75 per cent is, however, deceptive as a large proportion of the US FDI is believed to be routed through Mauritius making Mauritius appear as the largest source of investments in India with Rs. 65.46 billion or nearly 18 percent of total FDI stock in the economy in 1997 (Table 2). The emergence of Mauritius as the largest source of FDI can be explained

**Table 2: Source wise Distribution of India's Inward FDI Stock 1989-97**

(Rs. Crore=10 million)

| Country | 1992 | | 1997 | |
|---|---|---|---|---|
| | Value | Per cent | Value | Per cent |
| Mauritius | .. | | 6,546 | 17.93 |
| U.S.A. | 713 | 18.57 | 5,019 | 13.75 |
| U.K. | 1,545 | 40.23 | 4,379 | 11.99 |
| Germany | 476 | 12.40 | 2,078 | 5.69 |
| Japan | 213 | 5.55 | 1,958 | 5.36 |
| Netherlands | 164 | 4.27 | 1,175 | 3.22 |
| Switzerland | 185 | 4.82 | 785 | 2.15 |
| Singapore | .. | | 449 | 1.23 |
| Canada | 108 | 2.81 | 367 | 1.01 |
| Hong Kong | .. | | 346 | 0.95 |
| France | 19 | 0.49 | 329 | 0.90 |
| Sweden | 93 | 2.42 | 328 | 0.90 |
| Belgium | .. | | 257 | 0.70 |
| Iran | .. | | 140 | 0.38 |
| West Indies | .. | | 78 | 0.21 |
| Others | 324 | 8.44 | 12,276 | 33.62 |
| Total | 3,840 | 100 | 36,510 | 100 |

***Source:*** *RBI Bulletin*, October 2000.

by the Double Taxation Avoidance Agreement signed between Mauritius and India during the 1990s that enables foreign investors to minimize their tax liability given the tax haven status of Mauritius. Hence, foreign investors from other countries, principally the US, route their investments through Mauritius to take advantage of the tax treaty.

### *3.3. Liberalization and Mode of Entry: Greenfield vs. M&As*

An important feature of FDI inflows into India during 1990s is the emergence of mergers and acquisition as an important channel of FDI inflow. During the period 1997-1999, for instance, nearly 39 percent of FDI inflows into India have taken the form of M&As by foreign companies of existing Indian enterprises, whereas in the pre-reform period, FDI entry was invariably in the nature of greenfield investments (Table 3). This trend may have implications for the impact of FDI given limited potential of acquisitions compared to greenfield entry to add to the stock of productive capital, generate favourable knowledge-spillovers and competitive effects. (see Kumar 2000b, for more details).

### *3.4. FDI Inflows in India in a Comparative East Asian Perspective*

Although FDI inflows into Indian economy have increased considerably during the nineties following the reforms, India's share would appear too small, especially if it is compared with that of other countries in the region such as China. In 2001, India's reported inflows of about $ 3.4 billion represent a mere 1.7 percent of total inflows attracted by developing countries. In contrast, China received an estimated $ 46.8 billion of inflows in the same year representing nearly 23 percent total developing country FDI inflows. There are also other differences in the sectoral patterns and the acquisition modes among other characteristics. In what follows we take a brief look at the key differences and some possible explanations.

**Table 3: Share of M&As in FDI Inflows in India**

| Year | FDI Inflows ($ million) | M&A Funds ($ million) | Share of M&A (%) |
|---|---|---|---|
| 1997 | 3200 | 1300 | 40.6 |
| 1998 | 2900 | 1000 | 34.5 |
| 1999 (Jan-March) | 1400 | 500 | 35.7 |
| Total | 7500 | 2800 | 39.4 |

***Source*:** Kumar (2000b).



### *3.5 Magnitudes of FDI Inflows*

The comparison of about US$ 3.4 billion in annual inflows of FDI by India with US$ 45 billion of FDI inflows by China is often made. It has been pointed out however, that the figures of FDI inflows in India and China are not comparable because of several differences[4]. Firstly, the Indian figures of inflows do not follow the IMF's *BOP Manual* that is followed internationally. The principle difference is that Indian figures only count the fresh inflows of equity and do not take into consideration the reinvested earnings by foreign affiliates in the country nor the inter-corporate debt flows that are generally included while computing the FDI figures as per the IMF Guidelines. Therefore, the Indian figures tend to underreport the inflows. Secondly, FDI inflows in China are believed to be overestimating the real FDI inflows in view of round-tripping of Chinese capital to take advantage of more favourable tax treatment of FDI. Therefore, the figures of India and China are not strictly comparable and tend to overplay the difference between the intensity of inflows between the two countries. Finally, the size of the Chinese economy is much larger than the Indian economy and hence the figures should be normalized.

Table 4 puts the FDI inflows in India and China in a comparative perspective. The reported figure of FDI inflow in China in 2000 as a proportion of GDP is 3.6

**Table 4: FDI Inflows in China and India: A Comparative Perspective, 2000**

| | India | | China | |
|---|---|---|---|---|
| | Reported FDI* | Adjusted FDI# | Reported FDI | Adjusted FDI# |
| FDI net inflows (BoP, current US$Bn) | 2.3 | 8.0 | 39.0 | 20.0 |
| FDI net inflows (per cent of GDP) | 0.5 | 1.7 | 3.6 | 2.0 |

***Notes:*** * Figures published by official sources.
# Based on IFC's *World Business Environment Survey*, 2002. see Pfefferman 2002.

***Source:*** Srivastava (2003) based on World Bank, *World Development Indicators*, 2002 and IFC, *World Business Environment Survey: Economic Prospects for Developing Countries*, March 2002.

[4] It was first noted by IFC, Washington in 2002; see Pfefferman (2002).

per cent compared to 0.5 per cent in the case of India. However, when the Indian figures are revised by taking into account the reinvested earnings and inter-corporate debt and Chinese figures are moderated on account of possible round tripping of FDI inflows (using the estimates provided by the IFC), the gap in the FDI/GDP ratios narrows to 1.7 to 2.0 for India and China respectively.

The Indian Government has taken steps to revise the definition of FDI flows in the country. A Committee set up by the Reserve Bank of India in its report submitted in October 2002 had recommended the Indian definition brought on par with the global practice. In June 2003, the government of India announced that adoption of international norms led to near doubling of FDI inflow figures from US$ 2342 million to $4029 million in 2000/01 and from $3906 million in 2001/02 to $ 6131 million.[5]

Even after taking into account the measurement problems, FDI inflows in India are low compared to other economies in the region. Studies of determinants of FDI inflows conducted in the framework of an extended model of location of foreign production (see Kumar 2000a, 2002, for details), have found that a country's attractiveness to FDI is affected by structural factors such as market size (income levels and population), extent of urbanization, quality of infrastructure, geographical and cultural proximity with major sources of capital, and policy factors viz. tax rates, investment incentives, performance requirements. In terms of these, while India's large population base is an advantage, her low income levels, low levels of urbanization and relatively poor quality of infrastructure are disadvantages. Furthermore, the relative geographical and cultural proximity of her East Asian counterparts with major sources of capital such as Japan and Korea (also the US) for instance, may have put her at a disadvantage compared to them. Furthermore, unlike China and some other countries India has not employed fiscal incentives like tax concessions to attract FDI. India is also behind China by at least twelve years in terms of launching reforms. Finally the ability of China in attracting FDI inflows to quite a large extent owes to the large special economic zones which provided foreign enterprises better and specialized infrastructure and flexibility from the domestic regulations such as labour laws.

[5] See Government of India Press Note dated 30 June 2003, DIPP, Ministry of Commerce and Industry.



### *3.6 Sectoral Composition and Other Differences*

India's post-reform experience suggests that a substantial proportion of FDI has gone to services, infrastructure and relatively low technology intensive consumer-goods manufacturing industries compared to high concentration in technology intensive manufacturing industries in the pre-reform period. In China and other Southeast Asian countries, the bulk of FDI is concentrated in manufacturing. In the pre-reform period, FDI was consciously channeled into technology intensive manufacturing through a selective policy. In the post-reform period, however, opening up of new industries such as services and infrastructure to FDI has led to a lot of FDI going to them thus bringing down the share of manufacturing. Within the manufacturing too, now that there is no policy to direct the FDI to certain branches, consumer goods industries that did not have so much exposure to FDI have risen in importance. On the other hand while following in general a liberal policy towards FDI, China and other Southeast Asian countries have directed FDI to manufacturing with export-obligations and other incentives such as pioneer industry programmes. Hence, FDI also accounts for a relatively very high share of manufactured exports in these countries, as observed later. It suggests while according it a liberal treatment, a broad direction needs to be given to make FDI contribute more to the industrialization and building export capability. Specific promotion of export-oriented FDI may also be fruitful.

## 4. Impact of FDI Inflows on Indian Economy: Some Issues

Given their intangible assets, MNE affiliates can contribute to their host country's development with generation of output, employment, balanced regional development, technological capability and export-expansion, among other parameters. The lack of data on the economic activity of enterprises operating in India classified by nationality of ownership has constrained a fuller appreciation of the role played by FDI in the country's economic development. In what follows findings of existing studies and some observations based on comparisons of samples of enterprises are made to gather some idea of the impact of FDI.

### *4.1. Place of FDI in India: Shares in Sales, Capital Formation and GDP*

An idea of the relative importance of FDI in India can be had from the share of output or sales of foreign affiliates in output or sales of the industrial sector. A few attempts have been made in that direction. Kumar (1990a) had estimated that foreign controlled firms accounted for nearly 25 per cent of output of larger private corporate sector and 31 per cent in manufacturing sector in 1980-81.

**Table 5: Shares of Foreign Firms in Indian Manufacturing during 1990s**

| Year | *No. of sample firms* | | | *Share (%) of foreign firms in* | |
|---|---|---|---|---|---|
| | **Total** | **Foreign firms** | **Domestic firms** | **Total Value-added** | **Total Sales** |
| 1990 | 1378 | 126 | 1252 | 9.50 | 11.26 |
| 1991 | 1754 | 149 | 1605 | 9.77 | 11.77 |
| 1992 | 1991 | 158 | 1833 | 9.61 | 11.69 |
| 1993 | 2381 | 171 | 2210 | 9.77 | 11.88 |
| 1994 | 2987 | 178 | 2809 | 9.91 | 11.67 |
| 1995 | 3500 | 190 | 3310 | 9.25 | 11.03 |
| 1996 | 3649 | 195 | 3454 | 9.65 | 11.67 |
| 1997 | 3695 | 208 | 3487 | 10.77 | 12.64 |
| 1998 | 3695 | 216 | 3479 | 11.20 | 12.85 |
| 1999 | 3716 | 225 | 3491 | 12.12 | 13.66 |
| 2000 | 3726 | 224 | 3502 | 12.76 | 14.05 |
| 2001 | 2959 | 193 | 2766 | 12.63 | 13.77 |

***Source:*** RIS Database.

Arthreye and Kapur (1999) in an attempt to update Kumar's estimates following the same methodology found that foreign firms in 1990-91 accounted for about 26 percent of sales in manufacturing down from 31 percent in 1980-81. The declining trend of the share of foreign controlled enterprises over the 1980-1990 period has to do with the restrictive attitude followed by the government with respect to FDI during the period. Similar estimates for the post liberalization period are not available.

To examine the trends in share of foreign enterprises during nineties in Indian manufacturing we have computed share of foreign firms in total value-added and total sales in a sample of large private sector companies that are quoted at Indian stock exchanges and included in the RIS Database of compiled by extracting information of relevant companies from the Prowess (online) Database of the Centre for Monitoring Indian Economy (CMIE). The shares computed on the basis of the sample such as this are useful only to observe trends over-time as information is not available from official sources. Table 5 summarizes these shares and plotted in Figure 3. The shares of foreign enterprises in both value-added and sales reveal an increasing trend in the nineties particularly in the late nineties. Therefore, liberalization of policy seems to have led to a rise in the place of foreign enterprises in the Indian industry.

The growing importance of FDI inflows in the Indian economy can also be judged from the rising ratios of FDI inflows as a proportion of gross fixed



**Table 6: Rising Importance of FDI in Indian Economy**

| Indicator | 1990 | 1995 | 2000 | 2002 |
|---|---|---|---|---|
| FDI inflows as a percentage of gross fixed capital formation | 0.3 | 2.4 | 2.3 | 3.2* |
| Inward FDI stocks as a percentage of GDP | 0.5 | 1.6 | 4.1 | 5.1 |

* belongs to 2001.

***Source*:** author based on the UNCTAD data.

capital formation from 0.3 per cent in 1990 to 3.2 per cent and of inward FDI stock as a percentage of GDP rising from 0.5 to 5.1 per cent over the same period (Table 6).

### *4.2. FDI, Growth and Domestic Investment*

FDI inflows could contribute to growth rate of the host economy by augmenting the capital stock as well as with infusion of new technology. However, high growth rates may also lead to more FDI inflows by enhancing the investment climate in the country. Therefore, the FDI – growth relationship is subject to causality bias given the possibility of two-way relationship. What is the nature of the relationship in India? A recent study has examined the direction of causation between FDI and growth empirically for a sample of 107 countries for the 1980-1999 period. In the case of India, the study finds a Granger neutral relationship as the direction of causation was not pronounced (see Kumar and Pradhan 2002, for more details of the methodology and results).

Furthermore, it has been shown that some times FDI projects may actually crowd-out or substitute domestic investments from the product or capital markets with the market power of their well-known brand names and other resources and may thus be immiserizing (see Fry 1992, Agosin and Myer 2000, for evidence). Therefore, it is important to examine the impact of FDI on domestic investment to evaluate the impact of FDI on growth and welfare in host economy. Our study to examine the effect of FDI on domestic investment in a dynamic setting, however, did not find a statistically significant effect of FDI on domestic investment in the case of India (see Kumar and Pradhan 2002 for details). It appears, therefore, that FDI inflows received by India have been of mixed type combining some inflows crowding-in domestic investments while others crowding them out, with no predominant pattern emerging in the case of India.

To some extent the earlier observation that a growing proportion of FDI inflows in India is taking the acquisition route may also have something to do with this finding.

The empirical studies on the nature of relationship between FDI and domestic investments suggest that the effect of FDI on domestic investment depends on host government policies. Governments have extensively employed selective policies, imposed various performance requirements such as local content requirements (LCRs) to deepen the commitment of MNEs with the host

**Box 1: Performance Requirements and Building Competitive Manufacturing Capabilities in Auto Industry in India**

Like a number of other developing countries, India also employed PRs to build domestic manufacturing capability in the auto industry. The Indian government entered into a joint venture agreement with Suzuki Motor Corporation (SMC) of Japan to set up a manufacturing facility in early 1980s for production of small passenger cars in Gurgaon near Delhi. The Maruti-Suzuki joint venture in which both Government of India and Suzuki were equal partners followed phased manufacturing programme where it was required to increase the local content to 75 per cent within five years. In order to comply with the requirement, Suzuki started a programme of vendor development in India. Indian manufacturers of auto components were assisted by Suzuki to produce components of its designs and specifications. It also set up joint ventures with a number of them which involved transfer of technology. Furthermore, a number of Japanese OEM suppliers of SMC were prompted to licence technology or set up joint ventures with Indian component manufacturers to be able to supply to its Maruti venture. As a result a cluster of auto component manufacturers emerged around Maruti plant in Gurgaon and the proportion of local value addition steadily increased. However exports of cars or components were relatively insignificant. In the 1990s, as a part of the measures taken to deal with the foreign exchange crisis of 1991, government imposed condition of foreign exchange neutrality and dividend balancing on consumer goods industries that included passenger car manufacturers. These obligations pushed Maruti to obtain a product mandate from its Japanese partner for exporting compact cars to Europe following phasing out of the production of Alto model by it in Japan.

The extensive network of auto component manufacturers created as a result of the phased manufacturing programmes imposed on Maruti has laid down the foundations of internationally competitive auto component industry as follows. The subsequent entrants to the industry in the wake of liberalization of the FDI policy in the 1990s not only found a good base for their indigenization efforts but also to fulfill their export obligations easily as is evident from a case studies of Ford, GM and Daimler-Chrysler (see Kumar and Singh 2002). The export obligations prompted them to consider buying

*Box 1 continued*



*Box 1 continued*

some components from India for export to their operations in other countries. As the Ford's case points out, they were initially hesitant to import components from India fearing poor quality— apprehensions that were belied. Hence, following a visit in 2000 AD by a Ford team to components suppliers in India, a joint programme was launched with Automotive Component Manufacturers Association (ACMA) for sourcing components from the country for Ford. Ford set up two dedicated ventures in India to handle component sourcing. Ford has also undertaken growing exports of Ikon CKD kits to Mexico and South Africa. Thus while export obligations prompted Ford to discover an important sourcing base of quality components, from the host country point of view, they helped the country's auto component manufacturers develop their linkages with one of the world's largest manufacturers of automobiles that could be of long term interest. Similarly General Motors India (GMI) Ltd. claims to have helped its parent source components from India including a major export order from GM Europe that also helped GMI to meet its export obligation. GMI is also pursuing partnerships with Indian component suppliers for world-wide sourcing of components for GM overseas units from India. Daimler-Chrysler India has developed more than 20 joint ventures for manufacture and export of auto components to the Daimler-Chrysler plants in Germany to fulfil its export-obligation.

The exports of components by these major producers has prompted interest by other auto producers in Indian supply capabilities even though the PRs have been abolished. According to recent reports, about 15 of the top auto majors have already set up international purchasing offices in India. In May 2003 CEOs of 30 Indian auto component producers were invited by Navistar, Caterpillar, Ford and Delphi to visit the US to discuss global outsourcing possibilities. The auto components exports from India fetched US$ 375 million in 2002/03. Following the sudden interest of auto majors in sourcing from India, the exports are likely to increase nearly four times to $ 1.5 billion in the current year.

Therefore, PRs imposed on the auto industry in the form of export obligations and phased manufacturing programmes until recently have been successful in meeting the government policy objectives viz. development of local manufacturing base while preventing heavy drain of foreign exchange on imports. Even though the PRs have been abolished the export and import figures in the car industry in March 2002, for instance, were balanced at around Rs 21 billion. Also most manufacturers had achieved high levels of localization of production. For instance, as of March 2002, Ford had achieved an indigenisation level of 74 per cent, GM had 70 per cent and 64 per cent for Astra and Corsa respectively, Mercedes and Toyota had close to 70 per cent and Honda had reached a level of around 78 per cent indigenization, given the development of local base of OEM suppliers. Furthermore, the export obligations helped in overcoming the information asymmetry regarding the host country capabilities and led to a fuller realization of the export potential through MNEs with establishment of vendor-OEM linkages between Indian component producers and global auto majors that would be of long-term value.

***Source:*** Kumar 2003a.

economy. The Indian government has imposed condition of phased manufacturing programmes (or local content requirements) in the auto industry to promote vertical inter-firm linkages and encourage development of auto component industry (and crowding-in of domestic investments). A case study of the auto industry where such policy was followed shows that these policies (in combination with other performance requirements, viz. foreign exchange neutrality), have succeeded in building an internationally competitive vertically integrated auto sector in the country (see Box 1). The Indian experience in this industry, therefore, is in tune with the experiences of Thailand, Brazil and Mexico as documented by Moran (1998).

### *4.3. Exports and Balance of Payments*

A number of developing countries have used FDI to exploit the resources of MNEs such as globally recognized brand names, best practice technology or by getting integrated with their global production networks, among others, for expanding their manufactured exports.

The early studies analyzing the export performance of Indian enterprises in the pre-liberalization phase had reported no statistically significant difference between the export performance of foreign and local firms (Kumar, 1990a; Kumar and Siddharthan, 1994). Sharma (2000) in a study using a simultaneous equation model examining the factors explaining export growth in India over 1970-98 period found FDI to have no significant effect on export performance although its coefficient had a positive sign. Obviously in a highly protected setting, both local and foreign firms found it more profitable to concentrate on the domestic market. For the post reform period, Agarwal (2001) found a weak support for the hypothesis that foreign firms have performed better than local firms in India in the post reform period 1996-2000 although the estimates were not robust across various technology groupings and the foreign ownership dummy turned out to be significant at ten-percent level only in the case of medium-high-technology industries. Controlling for several firm-specific factors, fiscal incentives, and industry characteristics, Kumar and Pradhan (2003) in a recent study analyzing the export orientation of over 4000 Indian enterprises in manufacturing for the 1988-2001 period find Indian affiliates of MNEs appear to be performing better than their local counterparts in terms of export-orientation overall although with some variation across industries. In light of the findings of earlier studies relating to pre-liberalization period of no significant difference in the export orientation of foreign and local enterprises, it would appear that reforms have prompted foreign MNEs to begin to explore the potential of India as an export-platform production in a modest manner.



The studies analyzing the determinants of the patterns of export-orientation of MNE affiliates across 74 countries in seven branches of industry over three points of time have shown trade liberalization to be an important factor in explaining export-orientation of foreign affiliates. Furthermore, in host countries with large domestic markets, the export-obligations have been found to be effective for promoting export-orientation of foreign affiliates to third countries (see Kumar 1998c). From that perspective the liberalization of trade regime during the 1990s in India may have facilitated the export orientation of foreign affiliates as borne out from the above.

Export-obligations have also been employed fruitfully by many countries to prompt MNE affiliates to exploit the host country's potential for export platform production. For instance in China which has succeeded in expanding manufactured exports with help of MNE affiliates, regulations stipulate that wholly owned foreign enterprises must undertake to export more than 50 per cent of their output (Rosen 1999:63-71). As a result of these policies, the proportion of foreign enterprises in manufactured exports has steadily increased over the 1990s to 44 per cent. MNE affiliates account for over 80 per cent of China's high technology exports (See UNCTAD 2002:154, 163). India has not imposed export obligations on MNE affiliates except for those entering the products reserved for SMEs. However, indirect export obligations in the form of dividend balancing have been imposed for enterprises producing primarily consumer goods (since phased out in 2000). Under these policies, a foreign enterprise is obliged to earn the foreign exchange that it wishes to remit abroad as dividend so that there is no adverse impact on host country's bop. Some times a condition of foreign exchange neutrality has been imposed where the enterprise is required to earn foreign exchange enough to even cover the outgo on account of imports. Therefore, these regulations have acted as indirect export obligations prompting foreign enterprises to export to earn the foreign exchange required by them. The available evidence suggests that such regulations have prompted foreign enterprises in undertaking exports. In the case of auto industry, the case study presented in Box 1 shows that in order to comply with their export commitments to comply with foreign exchange neutrality condition, foreign auto majors have undertaken export of auto components from India which have not only opened new opportunities for Indian component manufacturers but also in that process found profitable opportunities for business. Hence, exports of auto components from India are now growing at rapid rate exceeding the obligations several times over. These regulations have acted to remove the information asymmetry existing in the minds of auto majors about

the poor quality of Indian components. In that respect India's experience is very similar to that of Thailand that has emerged as the major auto hub of Southeast Asia (as documented by Moran (1998) and Kumar 2003a).

Another case study of a consumer goods MNE, summarized in Box 2 shows that even the indirect export obligations such as foreign exchange neutrality and dividend balancing could be effective in prompting MNEs to exploit opportunities for export oriented manufacture. In this case, Pepsi develop a model of contract farming in Punjab with new technology brought in for growing horticulture products of requisite quality and specifications in the country. This way the indirect export obligations have helped the country benefit from not only export earnings but also from transfer and diffusion of new technology among farmers.

### *4.4. R&D, Local Technological Capability and Diffusion*

For the overall sample of manufacturing, foreign firms appear to be spending more on R&D activity in India than local firms although gap between their R&D intensities has tended to narrow down vanishing by 2001 (Table 7). A study analyzing the R&D activity of Indian manufacturing enterprises in the context of liberalization has found that after controlling for extraneous factors,

**Table 7: R&D Intensity of Indian Manufacturing Enterprises Based on Ownership, 1990-2001**

| Year | R&D intensity (%) | | |
|---|---|---|---|
| | All firms | Foreign Firms | Domestic Firms |
| 1990 | 0.053 | 0.114 | 0.046 |
| 1991 | 0.082 | 0.086 | 0.082 |
| 1992 | 0.148 | 0.213 | 0.139 |
| 1993 | 0.201 | 0.365 | 0.178 |
| 1994 | 0.217 | 0.378 | 0.196 |
| 1995 | 0.272 | 0.377 | 0.259 |
| 1996 | 0.312 | 0.376 | 0.303 |
| 1997 | 0.413 | 0.447 | 0.409 |
| 1998 | 0.341 | 0.559 | 0.309 |
| 1999 | 0.352 | 0.477 | 0.332 |
| 2000 | 0.311 | 0.386 | 0.298 |
| 2001 | 0.343 | 0.320 | 0.346 |

***Source:*** RIS Database



**Box 2: Export-Obligations and Technology Diffusion: Pepsi Foods and Contract Farming in Punjab**

Pepsi Foods Limited was established in late 1980s as a joint venture among PepsiCo Inc., USA, Voltas (a Tata group company, India) and Punjab Agro Industries Corporation (PAIC). Apart from the joint venture requirement, the company was also supposed to meet an export obligation, besides a dividend balancing requirement being a consumer goods producer. Subsequently it became a wholly owned subsidiary of PepsiCo. It manufactures soft drinks and snack foods, apart from running a few fast food restaurant chains with an annual turnover of Rs. 40 billion and exports around Rs. 4 billion approx, according to company sources.

As per their FDI approval terms, there was an export commitment of Rs. 2 billion in 10 years besides other export obligations attached to capital goods imports. Being a company whose main business was bottling of soft drinks for domestic market from imported concentrate, meeting the export obligations was a formidable challenge. This challenge was turned into an opportunity with pioneering approach to contract farming and a rewarding business proposition besides helping thousands of farmers improve their earnings, as observed below.

Pepsi proposed to meet the export obligation by undertaking exports of tomato puree and other processed foods. In 1989 when Pepsi set up tomato and food processing plants in Punjab, it faced problems of raw materials supply. For example, for tomatoes Punjab had only table varieties (not processing ones) available over a 25-28 days period, and inadequate amount in any case. Pepsi had a huge plant and it needed tomatoes over a minimum 55 days time frame. To resolve these problems Pepsi thought of contract farming of improved varieties that would fit its quality requirements. An R&D team – consisting of 3 scientists brought by Pepsi from its headquarters and scientists from Punjab Agricultural University, PAU – was formed to develop technology to improve productivity and decrease cost of production of tomato. A Pepsi team under the direction of PAIC first educated farmers about the benefits of contract farming and then introduced it. Contracted farmers were provided seeds/ plantlets at the doorstep with written instructions in local language, were loaned some equipments and provided regular crop inspection and advisory services on crop management and offered procurement of a certain quantum of output at a pre-agreed price. This process has led the tomato yield per hectare rising from 16 to 52 MT in Punjab over 1989-1999, according to the Company besides helping the Company in getting assured supply of raw materials. Contract farming by Pepsi Foods - with initial R&D inputs and regular fine-tuning later in experimental trials - has now extended to some other crops (potato, basmati rice, chilly, peanuts, garlic, groundnut etc.) and several other States also. The technology has also spread to non-Pepsi growers – buying from the company's nursery and other extension services without any buy-back arrangement – implying benefits to a broad-based spectrum of users. Thus export-obligation imposed on Pepsi has enabled to evolve a mutually rewarding partnership among the farmer, PAU, PAIC and Pepsi and has fueled a horticultural revolution in Punjab, with significant improvement in yields and technology. Although the export obligation was over by 1996, the company's exports have continued and are booming and have become a thrust area with the company entering exports of other agricultural commodities such as rice.

Sources: Kumar and Singh 2002

MNE affiliates reveal a lower R&D intensity compared to local firms, presumably on account of their captive access to the laboratories of their parents and associated companies. The study also observed differences in the nature or motivation of R&D activity of foreign and local firms. Local firms seem to be directing their R&D activity towards absorption of imported knowledge and to provide a backup to their outward expansion. MNE affiliates, on the other hand, either focus on customization of their parents' technology for the local market (Kumar and Agarwal 2000).

With respect to contribution of FDI to local technological capability and technology diffusion, the studies find a mixed evidence. Fikkert (1994)'s study covering 305 Indian private sector firms showed that firms having foreign equity participation have an insignificant direct effect on R&D but they tend to depend significantly more on foreign technology purchases which in turn tend to reduce R&D. In view of these findings, Fikkert concludes that 'India's closed technology policies with respect to foreign direct investment and technology licensing had the desired effect of promoting indigenous R&D, the usual measure of technological self-reliance'.

On the knowledge spillovers from foreign to domestic enterprises, the evidence suggests that they are positive when the technology gap between foreign and local enterprises is not wide. When the technology gap is wide, the entry of foreign enterprises may affect the productivity of domestic enterprise adversely i.e. there could be negative spillovers.

Some governments have imposed technology transfer requirements on foreign enterprises, e.g. Malaysia. However, such performance requirements, however, do not appear to have been very successful in achieving their objectives (UNCTAD 2003). Instead other performance requirements such as local content requirements or domestic equity requirements may be more effective in transfer of technology. The case studies presented in Boxes 1 and 2 show that local content requirements and export performance requirements prompted foreign enterprises to transfer and diffuse some knowledge to domestic enterprises in order to comply with their obligations. Similarly the domestic equity requirements may facilitate the quick absorption of the knowledge brought in by foreign enterprises which is an important pre-requisite of the local technological capability, as is evident from case studies presented in Box 3. Some have expressed the view that domestic equity requirements may adversely affect the extent or quality of technology transfer (Moran 2001). However, it



**Box 3: Local Learning in Joint Ventures: A Case Study of Two Wheeler Industry**

Joint ventures between MNEs and local enterprises in developing countries could be instrumental in learning and technology absorption by the local partners and hence could contribute significantly to building of local technological capability. The evidence on learning and absorption of knowledge by local partners is clear from following two cases. In both the cases the local partners were able to put in the market new products developed by them after the joint venture ended, suggesting the absorption of knowledge during their involvement in the joint venture that led them to design and produce new models independently.

TVS Motor Company Ltd. (formerly Ind-Suzuki Motorcycles Ltd.) started as a joint venture between Sundaram Clayton Group and Suzuki Motor Corporation in 1982 to produce motor cycles. In 2000/01 it produced 1,39,000 scooters, 3,58,000 motorcycles and 3,69,645 mopeds. During the past two decades, the local partners in the joint venture absorbed technology and knowledge brought in by Suzuki and built capability to design and develop new models of two-wheelers. In 2001 Sundaram Clayton and Suzuki disengaged in an amicable manner and the company was renamed as TVS Motor Company run entirely by Sundaram Group. Subsequent to the departure of Suzuki, TVS has launched its own and indigenously developed 110cc four-stroke motorcycle TVS-Victor. Victor was developed completely by company's in-house R&D team comprising of 300 people within 24 months with an investment of Rs 250 million. The new product has been described as a 'stunning success' by business press having captured a 16 per cent share of the market and has given to the company a new confidence in its ability to develop and market new products on it own. The company has decided to double its R&D spending in 2002 to 3.6 per cent of sales and has a number of new product launches up its sleeve and an ambitious expansion plan including establishing its presence in Asian markets such as Thailand, Vietnam and Indonesia.

The second case study relates to Kinetic Motor Company Ltd. (formerly Kinetic Honda Ltd) that started as a joint venture between Kinetic group and Honda Motor of Japan in 1984 for manufacture of advanced scooters in India. In 1998 the Honda partnership was realigned as a technical collaboration as Honda pulled out from the joint venture to launch its own wholly owned subsidiary. On the basis of learning and knowledge it absorbed during the partnership with Honda, Kinetic has launched several new products. These include recently launched Kinetic Nova, a four stroke 115 cc scoter with a breakthrough design and best in class performance. It competes directly with the erstwhile joint venture partners Honda's Activa, a 102cc auto geared scooter. It is also launching a 65cc scooterette Zing custom designed for college goers. Like TVS, Kinetic is also planning a major export push with a 50 per cent export growth in 2002.

These two cases do suggest that joint ventures provide opportunities for local partners to absorb knowledge brought in by the foreign partner with which they are able to stand on their own feet.

***Sources:*** Kumar and Singh 2002.

has been shown that MNEs may not transfer key technologies even to their wholly owned subsidiaries abroad fearing the risk of dissipation or diffusion through mobility of employees. Furthermore, even if the content and quality of technology transfer is superior in the case of a sole venture than in the case of a joint venture, from the host country point of view, the latter may have more desirable externalities in terms of local learning and diffusion of the knowledge transferred (Kumar and Singh 2002).

A recent trend in FDI is that of globalization of R&D activity including other knowledge based activities such as development of custom software, business process outsourcing. After the potential of India as a competitive location for software development was established by the mid-1990s, MNEs began to enter for setting up their dedicated software development centers in the country. It is discussed later.

### *4.5. Firm Size, Profitability and Efficiency*

Foreign affiliates have generally been larger than their local counterparts. This is to do with their strategy to employ non-price rivalry such as product differentiation that have substantial economies of scale (Kumar 1991). As Table 8 shows even with our sample based on the Prowess database, the average size of foreign firms is larger than that of domestic firms.

The early studies of profitability in Indian industry suggested that foreign affiliates had higher profit margins on sales than their local counterparts in most branches of Indian manufacturing (Kumar 1990a). A further analysis of the determinants of profit margins of foreign and local firms suggested that the higher profitability of foreign firms was more due to their preference to focus on the less price elastic upper ends of the market with product differentiation and leaving more price competitive lower ends of the market for local firms. The study did not find any evidence of their higher profitability to be due to their better efficiency of resource utilization (Kumar 1990b). The trend of higher profit margins of foreign firms is also corroborated by the sample of larger firms that is used for this study even in the post-liberalization period summarized in Table 8. Table 8 also suggests that foreign affiliates have not only enjoyed consistently higher profit margins, their profit margins have been more stable compared that of local firms.



**Table 8: Average Firm Size in Indian Manufacturing, 1990-2001**

| Year | Average Sales (Rs. Crores) | | | Profit to sales ratio (%) | | |
|---|---|---|---|---|---|---|
| | All firms | Foreign Firms | Domestic Firms | All firms | Foreign Firms | Domestic Firms |
| 1990 | 97.3 | 119.8 | 95.1 | 3.8 | 6.2 | 3.5 |
| 1991 | 90.3 | 125.1 | 87.0 | 3.7 | 7.0 | 3.3 |
| 1992 | 95.9 | 141.3 | 92.0 | 3.6 | 6.5 | 3.2 |
| 1993 | 92.8 | 153.4 | 88.1 | 3.4 | 6.0 | 3.1 |
| 1994 | 88.2 | 172.7 | 82.8 | 5.1 | 7.4 | 4.8 |
| 1995 | 94.3 | 191.6 | 88.7 | 6.7 | 9.0 | 6.4 |
| 1996 | 113.3 | 247.3 | 105.7 | 6.3 | 8.0 | 6.0 |
| 1997 | 119.8 | 269.0 | 110.9 | 4.6 | 7.8 | 4.1 |
| 1998 | 130.0 | 285.8 | 120.3 | 3.2 | 8.0 | 2.5 |
| 1999 | 134.9 | 304.3 | 124.0 | 1.6 | 7.6 | 0.7 |
| 2000 | 149.3 | 348.9 | 136.5 | 1.6 | 8.0 | 0.6 |
| 2001 | 187.5 | 395.6 | 172.9 | 1.4 | 7.9 | 0.3 |

***Source:*** RIS Database.

## 5. FDI and the Knowledge-Based Economy in India: Software and Global R&D Hub

### *5.1.FDI and Indian Software Industry: Role and the Distribution of Gains*

The rise of the IT software and services industry (henceforth software industry) over the 1990s represents one of the most spectacular achievements for the Indian economy[6]. The industry has grown at an incredible rate of 50 per cent per annum over the past few years, is highly export-oriented, has established India as an exporter of knowledge intensive services in the world, and has brought in a number of other spillover benefits such as of creating employment and new pool of entrepreneurship. The evolution of India as an exporter of these knowledge intensive services has also created much interest in the development community worldwide. The Indian software industry has grown at a phenomenal compound annual rate of over 50 per cent over the 1990s from a modest export revenue of US $ 100 million in 1989/90 to evolve into nearly $ 10 billion export earning by 2002. The industry has set itself a target of $ 50 billion of exports by 2008 and is confident of achieving it despite recent slow down in technology spending in some of the key markets such as the US.

The Indian export success in the software industry is primarily driven by local enterprise, resources and talent. The role played by MNEs in software development in India is quite limited. Although all the major software companies have established development bases in India, their overall share in India's exports of software is rather small at 19 per cent. MNEs do not figure among the top seven software companies in India, ranked either on the basis of overall sales or the exports. Among the top twenty software companies too, no more than six are MNE affiliates or joint ventures. Seventy nine of the 572 member companies of Nasscom are reported as foreign subsidiaries. Some of these are actually subsidiaries of companies promoted by nonresident Indians in the US while some others were Indian companies to begin with but have been subsequently taken over by foreign companies. The foreign subsidiaries include software development centres of software MNEs and also subsidiaries of other MNEs that develop software for their parents' applications e.g. subsidiaries of financial services companies such as Citicorp, Deutsche Bank, or telecommunication MNEs such as Hughes, Motorola, among others. In addition MNEs have set up 16 joint ventures with local enterprises such as British Aerospace with Hindustan Aeronautics, Bell South with Telecommication Corporation of India, British

[6] This discussion draws upon Kumar 2001a.



Telecom with the Mahindra Group, among others. In all, 95 companies have controlling foreign participation. The bulk of the entries took place since 1994 by which time India's potential as a base for software development was already established and not the other way round.

Despite the entry of all major IT MNEs in to the country and the forming of subsidiaries and joint ventures for software development, the FDI inflow has not been substantial. Total subscribed capital of 79 foreign subsidiaries that have been set up in the country by 1999 is Rs 4713 million (or US$ 115 million at the Rs 41 to a $ exchange rate). So the total inflow of FDI by the MNE subsidiaries over the past one and a half decade of development of industry is no more than $115 million, not a considerable amount in comparison of the annual inflow of about $3 billion worth of FDI that India has received in the past few years.

Furthermore, the distribution of gains of from the activity of MNE subsidiaries in software industry between home and host countries seems to be grossly in favour of the former. Apparently some of the MNE subsidiaries in software development are doing pioneering work for their parents. For instance, Oracle Software Development Center located in Bangalore has been responsible for designing the 'network computer' introduced by Oracle entirely. SAP of Germany has recently launched its internet-enabled distributor reseller management (DRM) solutions for high-tech industry developed entirely at SAP Labs, India, a Bangalore-based subsidiary of SAP. Many other design centres of MNEs in India are doing highly valuable development work for them. However, the Indian subsidiaries of these MNEs do not share the revenue streams generated by their developments worldwide. MNEs tend to invoice the exports of their subsidiaries to them at cost plus 10-15 per cent. Therefore, the distribution of gains is grossly in favour of the home country of MNEs and against the host country, that is India in this case.

Most of the export-oriented software companies operate as 'export enclaves' with little linkages with the domestic economy, if at all. MNE subsidiaries in software development, in particular, derive almost all of their income from exports to their parents. Hence, hardly any vertical linkages are developed with the domestic software market or the rest of the economy. The enclave nature of operation generates very few knowledge spillovers for the domestic economy. The bulk of the work done is also of highly customized nature having little applications elsewhere. Given the high salaries and perks

of foreign travel, the movement of personnel from these companies to domestic firms also does not take place. The employees of export-oriented firms are generally lured by foreign companies. However, there is considerable movement of personnel from domestic market-oriented firms to export-oriented firms or foreign subsidiaries. A survey of the software industry suggested that 45.6 per cent of the professionals were recruited by software firms from other companies. The domestic market also supports the exports of products that are first tried locally and are improved on the basis of feedback data generated before being exported. In terms of technological complexity and sophistication, some projects in the domestic market are more advanced and challenging than export projects.

***5.2. FDI and Global R&D Activity in India***

Although the R&D activity of domestic market-oriented MNE affiliates is not high compared to their local counterparts as observed above, MNEs are increasingly looking to India because of her relatively well developed scientific and technological infrastructure and resources for setting up global and regional R&D centres that provide solutions to specific R&D problems for their global operations, besides research collaborations with Indian enterprises having complementary capabilities. This trend has been encouraged by the development of communication and information technologies (ICT) that allow efficient communication between research groups based in different places across the continents through dedicated networks. This enables MNEs to fragment R&D projects into smaller subprojects some of which could be subcontracted to units located in developing countries having particular skills in that particular branch of knowledge. The internationalization of R&D conducted in this manner involves little risk of dissipation or diffusion of technology to competitors because of high specificity of the subproject.

A quantitative analysis of the factors explaining the locational pattern of overseas R&D by US and Japanese MNEs suggests that countries that are characterized by a larger scale of technological activity and abundant cheap but qualified R&D manpower are most likely to play host to MNEs' overseas R&D activity (Kumar 2001b). As observed earlier the Indian government has invested cumulatively in building centers of excellence in different branches of science and technology. These centers coupled with the relative abundance of qualified but cheap R&D manpower has begun attract MNEs to it for setting up global or home-base augmenting R&D centers. Over the past five years, nearly 100 MNEs have set up R&D centers in India. These include GE's $80 million technology center at Bangalore that is the largest outside the US and employs 1600 people. The list of MNEs that have set up global R&D centers



in India includes Akzo Nobel, AVL, Bell Labs, Colgate Palmolve, Cummins, Dupont, Daimler-Chrysler, Eli Lilly, GM, HP, Honeywell, Intel, McDonald's, Monsanto, Pfizer, Texas Instruments, Unilever, among many others.

According to some reports the Indian R&D centres of the US MNEs have begun to generate substantial intellectual property for their parents and have filed more than 1000 patent applications with the US Patent and Trademark Office mostly during the past two years, viz. 2002 and 2003. The Indian centres of multinational technology companies expect to double the number of their employees from 40,000 in 2003. The Indian R&D centres of MNEs have begun to play an important role in knowledge generation for their parents. For instance, 30 per cent of all software for Motora's latest phones is written in India.[7]

A look at the illustrative cases of global R&D centres, R&D joint ventures and contracts set up by MNEs in India suggests that most of the R&D centres have been motivated primarily by the abundance of highly talented R&D personnel in India at much lower cost than prevailing in the Western world (see Kumar 1999, for more details). An Indian engineer, for instance, costs $ 10,000 per year compared to one with a similar profile in the US for $ 60,000 pa.

Second, existence of a few internationally renowned public funded centres of excellence, e.g. Indian Institute of Science (IISc), National Chemical Laboratory (NCL), and Indian Institute of Chemical Technology (IICT) have helped India to attract R&D investments from MNEs. Actually, the Indian research centres of Astra AB and Daimler-Benz were specifically attracted to Bangalore by the prospects of collaboration with IISc. Astra has actually endowed a Chair at IISc to cement its relationship with it and Benz research centre has contracted a project in avionics to IISc. Encouraged by its research contracts with IICT and NCL, Du Pont has set up a separate India Technology Office at its headquarters to systematically target India for its technology search activity. Another feature of these investments is that these are all concentrated in a few Indian cities such as Bangalore or Hydrabad because of high concentration of innovative activities in these areas. Bangalore has also been chosen by a number of ICT MNEs as their base for software development and is widely referred to as India's Silicon Valley.

To sum up, the foregoing discussion on FDI's role in software industry and R&D activity suggests that India's success owes largely to the cumulative investments made by the government over the past five decades in building

[7] As reported in *The Hindu* 16 December 2003 citing *New York Times* source.

what is now termed as national innovation systems. These include resources in development of a system of higher education in engineering and technical disciplines, creation of an institutional infrastructure for S&T policy making and implementation, building centres of excellence and numerous other institutions for technology development, among other initiatives. The Indian government recognized the potential of the country in computer software way back in the early 1970s and started building necessary infrastructure for its fruition, in particular, for training of manpower. The government also facilitated technological capability building with investments in public funded R&D institutions and supporting their projects, by creating computing facilities, and developing infrastructure for data transfer and networking. The patterns of clustering of the software development activity and in particular the case study of Bangalore provides a further evidence to the contention that public funded technological infrastructure has crowded in the investments from private sector in skill intensive activities such as software development. It would appear from this that investments made by governments in national innovation systems have substantial positive externalities.

## 6. Concluding Remarks and Policy Lessons

This paper has overviewed the evolution of Indian government's attitude towards FDI, examined the trends and patterns in FDI inflows during the 1990s and has considered its impact on a few parameters of development in a comparative East Asian perspective. The Indian government policy towards FDI has changed over time in tune with the changing developmental needs in different phases of development. The changing policy framework has affected the trends and patterns of FDI inflows received by the country. Although the magnitude of FDI inflows has increased, in the absence of policy direction the bulk of them have gone into services and soft technology consumer goods industries bringing the share of manufacturing and technology intensive among them down in sharp contrast to the East Asian countries. Although the importance of FDI as a source of capital and output generation has risen, its impact on direct investment and growth is mixed as some FDI inflows possibly crowd-in domestic investments while some others crowd it out. Policies like local content regulation where pursued (as phased manufacturing programmes in auto industry) have yielded desirable results. India's experience with respect to fostering export-oriented industrialization with the help of FDI has also been much poorer than that of East Asian economies. However, recent analysis suggests that MNEs are beginning to take a serious look at the India's potential as base for export-oriented manufacture. As in the case of the East Asian countries, the performance requirements such as export-obligations wherever imposed (as indirect export-obligations such as dividend-balancing on consumer goods



industries) have helped in promoting MNEs to consider using India as a sourcing base thus helping solve information asymmetry or the perception gap on the country's potential.

In terms of technology and R&D, the manufacturing affiliates of MNEs in India seem to be spending a relatively smaller proportion of their turn-over on R&D activity after controlling for extraneous influences. It also appears that R&D activity of MNE affiliates is geared for customization of their technology for local markets or to work on assignments by their parents in contrast with the focus of the R&D activity of local enterprises on technology absorption and external competitiveness. The case study evidence suggests that joint venture requirements and vertical inter-firm linkages may facilitate diffusion of knowledge-brought in by MNEs.

India is also attracting increasing attention from MNEs as a base for their knowledge-based activities such as software development and global R&D activity. A case study of the MNEs involvement in knowledge-based activities suggests that India's success owes largely to the cumulative investments made by the government over the past five decades in building what is now termed as national innovation systems including resources in development of a system of higher education in engineering and technical disciplines, creation of an institutional infrastructure for S&T policy-making and implementation, building centers of excellence and numerous other institutions for technology development, among other initiatives.

MNE affiliates in India generally enjoy much better and stable profit margins compared to local enterprises largely due to their ability to exploit economies of scale with larger scales of operations and their strategy to focus on less price sensitive upper segments of markets than because of greater efficiency per se.

***Policy Lessons***

In general, the above analysis brings out the role of government policy in attracting and benefiting from FDI inflows for development. In light of this discussion we may now draw a few policy lessons for India and other similarly placed developing countries.

First of all, liberalization of FDI policy may be necessary but not sufficient for expanding FDI inflows. The overall macroeconomic performance continues to exercise a major influence on the magnitude of FDI inflows by acting as a

signaling device for foreign investors about the growth prospects for the potential host economy. Hence, paying attention to macroeconomic performance indicators such as growth rates of industry through public investments in socio-economic infrastructure and other supportive policies and creating a stable and enabling environment would crowd-in FDI inflows. Studies have shown that policies that facilitate domestic investments also pull in FDI inflows. While investment incentives may not be efficient, active promotion of FDI by developing certain viable projects and getting key MNEs interested in them could be useful in attracting investments in desirable directions.

The evidence presented in the paper and elsewhere suggests that the government policies play an important role in determining the developmental impact of FDI and in facilitating the exploitation of its potential benefits by host country's development. The approval policy followed till 1990 has channeled FDI into the areas where capabilities needed to be built. The various performance requirements such as phased manufacturing programmes, export performance requirements and domestic ownership requirements have also been employed by the government to achieve her developmental policy objectives. Even with liberalized policy some policy direction to FDI is desirable as has been demonstrated by the case of East Asian countries.

One way to maximize the contribution of FDI to the host development is to improve chances of FDI crowding-in domestic investments and minimize the possibilities of it crowd-out domestic investments. In this context, the experiences of Southeast Asian countries such as Malaysia, Korea, China, Thailand in channeling FDI into export-oriented manufacturing through selective policies and export performance requirements imposed at the time of entry deserve careful consideration (see Kumar 2003a for evidence). The export-oriented FDI minimizes the possibilities of crowding-out of domestic investments and generates favourable spillovers for domestic investments by creating demand for intermediate goods. Another policy that can help in maximizing the contribution of FDI inflows is to push them to newer areas where local capabilities do not exist as that minimizes the chances of conflict with domestic investments. Some of the countries like Malaysia have employed pioneer industry programmes to attract FDI in industries that have the potential to generate more favourable externalities for domestic investment (see UNCTAD 1999, 2001, for examples). Similarly because MNE entry through acquisition of domestic enterprises is likely to generate less favourable externalities for domestic investment than greenfield investments,



some governments discourage acquisitions by foreign enterprises (see Agosin and Mayor 2000, for examples).

Another sphere where governmental intervention may be required to maximize gains from globalization is in diffusion of knowledge brought in by foreign enterprises. An important channel of diffusion of knowledge brought in by MNEs in the host economy is vertical inter-firm linkages with domestic enterprises. Many governments –in developed as well as developing countries alike- have imposed local content requirements on MNEs to intensify generation of local linkages and transfer of technology (see Kumar ibid. for evidence). The host governments could also consider employing proactive measures that encourage foreign and local firms to deepen their local content as a number of countries, e.g. Singapore, Taiwan, Korea and Ireland have done so successfully (see Battat, *et al.* 1996). The knowledge diffusion could also be accomplished by creating sub-national or sub-regional clusters of inter-related activities which facilitate the spillovers of knowledge through informal and social contacts among the employees besides traditional buyer-seller links. UNCTAD (2001) also highlights the policy measures employed by different governments in promoting linkages.

Investments made by governments in building local capabilities for higher education and training in technical disciplines, centers of excellence and in other aspects of national innovation systems have substantial favourable externalities as is demonstrated by the case study of FDI in India's knowledge-based industries.

Finally, in light of the above, it is clear that it is of critical importance for the host governments to preserve the policy flexibility to pursue selective policy or impose performance requirements on FDI, if necessary. Some of the performance requirements have already been outlawed by the WTO's TRIMs Agreement. Attempts are being made by developing countries to expand the scope of international trade rules beyond what is covered under TRIMs and GATS and further limit the policy flexibility available to developing countries by creating a WTO's multilateral framework on investment.[8] The governments of the region, therefore, need to coordinate their approach to the ongoing WTO discussion in such a manner so as to not curtail their policy flexibility.

[8] see Kumar (2003b) for a more detailed discussion on this.

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