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## **ATTRACTING FDI AND TECHNOLOGY FLOWS IN ASIA AND THE PACIFIC: AN ANALYSIS OF THE POLICY PERSPECTIVES**

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### **1. Introduction**

The recent acceleration of private foreign investment, resulting from the process of globalisation, is envisaged to contribute to two principal determinants of the catching up process of the developing economies—capital accumulation and technology transfer. The optimism associated with the foreign direct investment (FDI) is that unlike most other capital flows, FDI does not represent a fixed charge on foreign exchange reserves. Secondly, it is a less volatile source of financing for the accumulation process, and finally, it has direct links to economic growth than other cross border flows. Most importantly, it facilitates the transfer of technology and generates spillover effects into other sectors.

Foreign direct investment brings to the country not only capital and foreign exchange, but also it facilitates the import of new

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technology in the form of new products and new production processes. The greatest benefit to the host country is the access to the knowledge that helps overcome the managerial and technological gaps. New production techniques accompany the inflow of private capital and facilitate diffusion of technological knowledge in the economy. In addition, foreign investment may lead to acquiring new skills through training imparted to the local workforce, and knowledge gained by these workers can be transmitted to other members of the labour force or these workers later may be employed by local firms. Through externalities and spillovers, technology transfer thus improves the international competitiveness of an economy and contributes to the process of economic development.

All these arguments carry considerable weight. Therefore, it is necessary to deliberate on ways and means of promoting technological flows in association with the flows of investible resources. Given the adoption of private sector-led strategy by the governments in the Asia-Pacific region, it is also substantive to find how the private sector could ensure that the needed technology flows can be associated with the private capital flows.

The paper starts with an overview of the recent FDI flows, both in and out, in terms of countries and economic sectors (Section II). The dynamics of technology transfer and FDI flows are analysed in Section III. The nature, mode and appropriateness of technology transfer constitute important elements of the technology transfer issues. The policies and institutional arrangements put in place by the host countries in the Asia-Pacific region to attract FDI flows and encourage technology transfer are discussed in Section IV. The final section draws together important findings and proposes some modalities and incentive mechanisms for promotion of domestic and outside foreign investment and technology transfer.

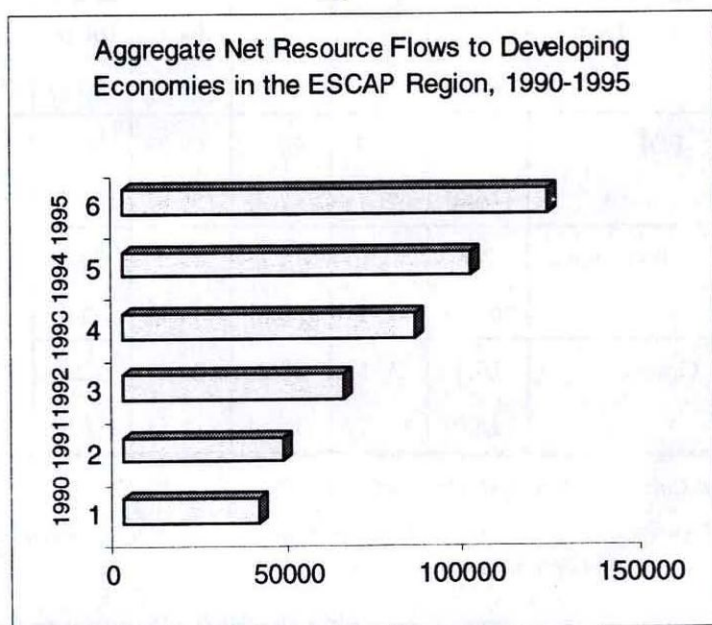
## 2. Recent FDI Flows: An Overview

### 2.1 Recent Experience with Private Investment in ESCAP Region<sup>1</sup>

An unprecedented surge at all levels of financial and investment inflows had a sway over the globe, particularly in some Asian economies during the 1990s. The expeditious and steadfast convalescence of long term financial flows especially to the developing countries, in its entirety, may be imputed to the growth in private capital flows.

The developing economies in the ESCAP region witnessed a threefold increase in the total net resource flows, from 38.23 billion US dollars in 1990 to 120.78 billion dollars in 1995 (Figure-1).

Figure- 1



<sup>1</sup> Unless otherwise mentioned, the data for this section are used from UNCTAD (1997): "World Investment Report, 1997," New York and Geneva: United Nations.

During the 1990s, aggregate net resource flows to all developing countries witnessed more than 200 per cent increase in value terms (Table-1).

**Table-1 : Aggregate Net resource Flows to Developing Countries and the Share of Developing Economies in the ESCAP Region**

(Value in billion US dollars)

	1990	1991	1992	1993	1994	1995
Total Flows	101.9 (37.6)	127.1 (35.8)	155.3 (40.4)	207.2 (40.2)	207.4 (47.8)	231.3 (52.2)
Long-term Debt	43.8 (45.0)	47.0 (52.1)	62.7 (47.8)	64.1 (31.0)	60.0 (50.8)	86.2 (52.9)
FDI	25.0 (46.0)	35.0 (41.1)	46.6 (47.9)	68.3 (56.8)	80.1 (55.2)	90.3 (61.7)
Portfolio Investment	3.7 (64.9)	7.6 (13.2)	14.1 (39.0)	45.6 (44.1)	34.9 (53.9)	22.0 (61.8)
Grants	29.4 (16.0)	37.5 (14.7)	32.0 (15.3)	29.4 (15.3)	32.5 (16.9)	32.9 (17.6)

Source: Calculated from ESCAP (1997)

Note: Figures in parentheses are the share of developing countries within ESCAP region expressed in percentage points.

The developing economies within the ESCAP region registered an increase of their share from 38 to 52 per cent between 1990 and 1995, as did their shares of FDI from 46 to 62 per cent. The most

notable feature is that the dominant source of external finance is *not* the long-term debt, as was the case in early 1990s, but FDI (Table-2); FDI now accounts for almost half of all inflows.

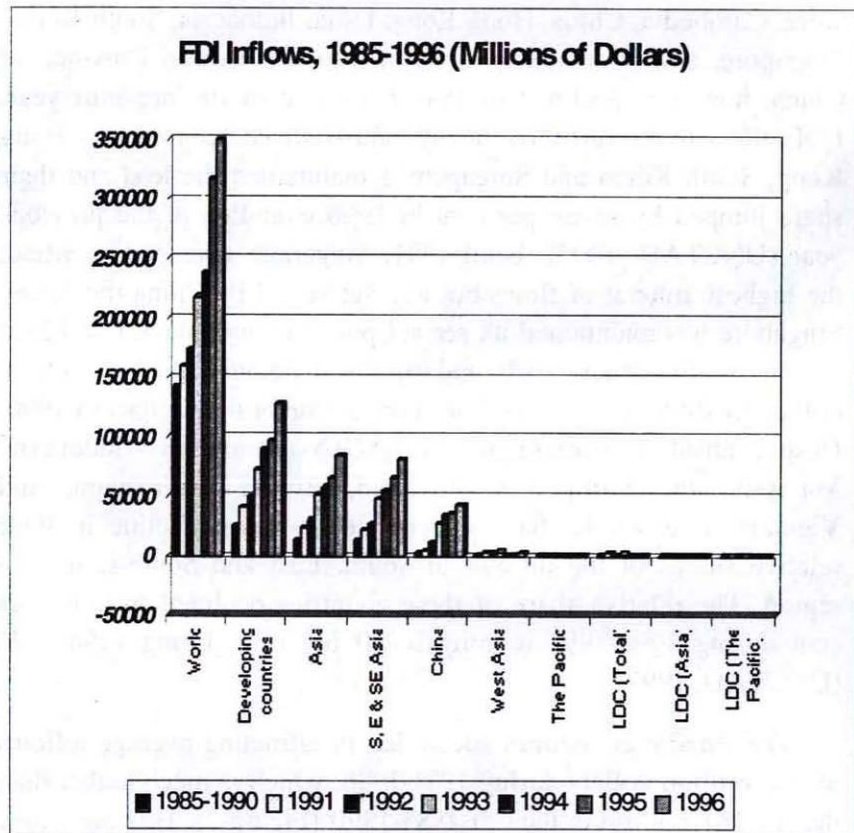


Figure- 2

The inflows of FDI into *South, East and South-East Asia* rose to a record high, from 21.22 billion dollars in 1991 to 81.24 billion dollars in 1996, representing an increase of 382 percent (Figure-2). In absolute terms, this represents nearly two-thirds of all developing country FDI inflows (128.74 billion in 1996). Among the developing

countries, *China* remains the largest recipient with an average inflow of 25 billion dollars during 1990-1996. During the 1991-1996 period, the countries that showed steady growth in FDI inflows were: Cambodia, China, Hong Kong, India, Indonesia, South Korea, Singapore, and Vietnam. Investment into the Taiwan Province of China, however, declined in 1996 from that of the previous year. FDI inflow in the rest three newly industrialised economies -- Hong Kong, South Korea and Singapore -- maintained the lead and their share jumped by seven per cent in 1996 over that of the previous year (UNCTAD, 1997). Until 1991, Singapore managed to attract the highest amount of flows but was surpassed by China thereafter. Singapore has maintained its second position since then. Combined inflows to the other newly industrialised countries, at six billion dollars in 1996, were below Singapore's nine billion dollars in 1996. Despite absolute increase in FDI, *ASEAN economies* -- Indonesia, Malaysia, the Philippines, Thailand, Brunei Darussalam, and Vietnam as a whole, have experienced a sharp decline in their relative shares of the inflows in South, East and South-East Asia region. The relative share of these countries declined from 61 per cent during 1990-1991 to roughly 30 per cent during 1994-1996 (UNCTAD, 1997).

*The Pacific* economies succeeded in attracting average inflows of 300 million dollars during 1991-1996, which is much higher than that of 181 million dollars in 1985-1990 (Figure-2). However, they experienced a decline to 375 million dollars in 1996, from a peak of 590 million dollars in 1995. Papua New Guinea continued to be the largest host country in the Pacific island economies (UNCTAD, 1997).

This inflow of private capital has not been evenly distributed. According to ESCAP (1997), the flow concentrated in East Asia, primarily in China. More than one-fifth of the total portfolio inflow

in the region has concentrated in only five economies -- India, Malaysia, the Philippines, Republic of Korea, and Vietnam. In the rest of the ESCAP region, the flow is rather negligible.

The 48 least developed countries received a mere 0.45 per cent of world FDI flows (1.6 billion out of 349 billion dollars) in 1996. Within the LDC group, FDI flows varied widely across regional groupings or individual countries, as well as from year to year, with disinvestment or large repatriation of earnings in one year followed by positive flows the next (Figure-2).

## 2.2 FDI Outflows

The outward investment in Asia has registered a gradual upward trend from eight billion dollars in 1985 - 1990 to 30 billion dollars in 1991-1996 (Figure-3).

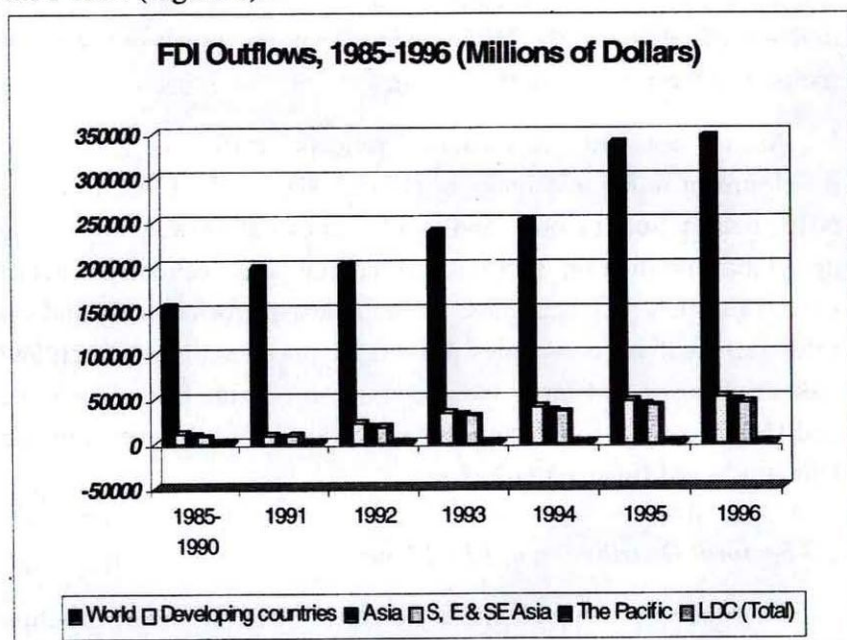


Figure-3

One of the important features of the region's outward investment is its geographical diversity. Outside the region, North America, Australia and Latin America remain the Asian TNCs main destination. They are also expanding in European Union economies and in Africa. Much of the outward investment flow has also occurred within the Asian region. Indeed there has been a rapid growth in the intra-regional FDI flows in the countries of East and South-East Asia since mid 1980s, reflecting growing importance of economic co-operation and economic integration among these countries. For a long time, Japan has been a major investor in the Asia Pacific region since early 1970s, with Hong Kong, Taiwan Singapore, and South Korea joining the league since mid 1980s (ADB, 1997). This new destination of the FDI flows resulted in extensive industrial restructuring and a sophisticated sub-regional division of labour or the "flying geese" pattern (analysed later) of industrial development in the region.

Asian outward investment reflects different stages of development in home economies (UNCTAD, 1997). TNCs from the NIEs, mainly South Korea, and to a lesser extent Taiwan, are setting up global production facilities in capital and technology based industries such as electronics, automobiles, petrochemicals and oil refineries as these economies possess advanced skills, research and industrial bases and large indigenous firms. Firms from Singapore and Hong Kong are investing in more value added services, ranging from trade and finance to tourism.

### *2.3 Sectoral Distribution of FDI Flows*

There are no comprehensive statistics related to the distribution of FDI inflows or stocks by industry of the region. The only level of



disaggregation is sectoral level. Unfortunately, data on sectoral distribution of FDI are also scanty, and affected by distortions.<sup>2</sup>

In the East Asian countries, traditionally the manufacturing is seen to attract the largest share of inward FDI flows. For example, in the Republic of Korea and Taiwan over 80 per cent of Japanese FDI has been in manufacturing, mainly comprising chemicals, electronics, textiles and electrical products. Similarly, 60 per cent of Japanese FDI in four large members of ASEAN -- Indonesia, Malaysia, Philippines and Thailand -- and in China came in manufacturing (Chen, 1993). In Hong Kong and Singapore, on the contrary, the attention of Japanese FDI has been more on the service sectors. In fact, since 1980s, there has been a marked increase of FDI in the non-manufacturing sectors, especially in trade, banking and insurance and services. It seems to have been due to structural transformation of the host countries, on the one hand, and relaxation of restriction on FDI in services, on the other. Between 1982 and 1986, there was almost even distribution of FDI between manufacturing and services in the Republic of Korea. However, manufacturing became more prominent than services between 1987 and 1991 because of sharp increase of FDI in electrical, electronics and chemical products (Chen, 1993).

In Indonesia, Philippines, Thailand and Malaysia, a broadly identical trend of sectoral distribution of FDI is noted (Yue, 1993) during mid-1980s and early 1990s, with manufacturing claiming the largest share of FDI inflows followed by services, agriculture, fisheries and forestry, construction and public utilities. Within

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<sup>2</sup> There is statistical distortions arising from incomplete coverage of some sectors and different realisation rates achieved by different sectors. Again, the actual sectoral distribution does not necessarily reflect comparative advantage of the host country as the distribution is affected by selective FDI policies of the countries concerned.

manufacturing, the investment concentrated mainly in the chemicals, basic metal products, textiles and transport equipment.

However, a markedly different pattern can be noted in the sectoral distribution of FDI in the South Asian countries, reflecting their relative stages of industrial development and the impact of past economic policies. For example, FDI is heavily concentrated (90 per cent) in manufacturing, with services receiving only 5 per cent. In contrast, Pakistan, Sri Lanka and Bangladesh are seen to attract between 32 and 39 per cent of FDI flows into manufacturing, with services attracting 50 per cent, 58 per cent and 41 per cent respectively (Lall, 1993).

The composition of FDI within manufacturing also reflected relative stages of industrial development in these countries. Endowed with relatively advanced industrial base, India attracted most FDI into heavy industries. On the contrary, Bangladesh and Sri Lanka, lacking a strong industrial base attracted FDI flows mainly into simple export-processing activities like ready-made garments and other assembly activities.

### **3. Technology Transfer and FDI**

Technology is usually defined by economists as knowledge about production of a given commodity in different endowment situation, and ways and means of devising new ones. The developed countries are the prime source of technology because of huge R&D expenditure associated with it, which the developing countries are far from being able to bear. In the modern world, the fastest and most efficient way of accessing the technology is through transfer from the industrialised world to the developing ones. In this process, TNCs through private investments can, and indeed, are playing an important role.

Like other issues of economics, there are differences in opinion about the type, volume and conditions of technology transfer. These controversies generally depend on whether such transfers are on favourable terms to the host countries and whether such technologies are appropriate to their economic and social constraints and need. It is alleged that factor endowments in the technology-developing countries are different from those prevailing in the host countries, resulting in production bias that aggravates employment problems, worsens income inequality, distorts choice of technology by other firms (Lall and Streeten, 1977). The critics also argue that the prices for technology and know-how are frequently dictated by the TNCs on the basis of their superior strength and negotiating skills through taking advantage of imperfection in the technology market.

### *3.1 Evolution in Technology Transfer Paradigm*

Framework for analysing technology transfer underwent several rounds of changes, given that the transfer environment is full of conflicts. Compared to simple framework presented by Quinn (1969) for technology transfer revolving around the production presence of TNCs, current thinking reveals a number of important divergence (Cantwell, 1992; Ostry and Gestrin, 1993, Young *et al.*, 1993; Cusumano and Elnkov, 1994; Dunning, 1994) as shown in Lan and Young (1996):

- Technology is no longer confined to the technological knowledge associated with production, but includes organisational know-how in such fields as finance, marketing and management skills.
- Production and innovation are separated. Greater emphasis is, therefore, placed on quality rather than the quantity of FDI in evaluating technology transfer to host countries (Dunning, 1994).

- The dynamics of international transfer has widened from a one-way flow from home to host countries to a global and interactive process of technology generation and application. Technology transfer not only occurs after maturity, but also appears at innovation within innovation-network model (Ostry and Gestrin, 1993). Technology generation and diffusion may take place simultaneously. FDI can perform two roles, either as a “downstream distributor of technology” or an “upstream hunter of technology.”
- Accessing technology is both difficult and expensive. Costs include not only direct costs such as royalty payments and tax concessions, but also a range of indirect costs such as communication and training costs derived from resistance to foreign technology, lower level of entrepreneurship, education or absorptive capacities, etc..
- The world-wide liberalisation of FDI policies has changed the international business environment. The policy emphasis has shifted from focusing on “firms’ obligations” and “governments’ rights” to one of emphasising “firms’ rights” and “government obligations”. In other words, with increasing trend towards globalisation and open-market economic policies, the private sector is assuming the lead role in economic management with the government playing more of a supporting role.

### 3.2 *Dominant Modes of Technology Transfer*

The economic growth of every nation is inextricably linked to successful international transfer of technology. There are different modes of international transfer of technology. These include: (i) import/purchase of capital goods, (ii) foreign direct investment, (iii)

licensing agreements, (iv) turnkey projects, and (v) technical assistance and co-operation. No single method of technology acquisition is best for all countries. Depending upon each country's technological needs, capabilities and market conditions, the effective method of technology transfer tends to be different<sup>3</sup>. For example, in the early years of industrialisation, Japan built her technological capabilities primarily through licensing, turnkey projects and reverse engineering of imported inputs and goods supported by overseas on-the-job training (JOT) and study and analysis of foreign technological know-how (Kakazu, 1990). In the Republic of Korea, on the other hand, turnkey plants and machinery imports played the dominant role, followed by licensing agreements and foreign direct investment as avenues of technology transfer. While FDI is noted to have played a more important role than other mode of technology transfer in Singapore and Thailand, heavy reliance on licensing, and technical agreements with the multinationals (MNCs) is marked in India and Indonesia (Dahlman *et al* 1987). Historical experience thus suggests that the most successful and effective mode of technology transfer involves a combination of all of the various available avenues of transfer.

An overriding consideration determining the mode of technology transfer is the cost involved in such transfers. For example, embodied technology transfer through capital goods imports is considered the most important and the cheapest source of technology acquisition for the developing Asian economies (Kakazu, 1990). However, this mode of technology acquisition requires established local engineering

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<sup>3</sup> Further, as technology and economic conditions change, new modes of technology transfer are developed and used. A comprehensive discussion of the various modes and models of technology transfer is available in Dahlman, 1994 and Lan, P. *et al.*, 1996.

capabilities to perform reverse engineering, i.e. disassembling and reassembling imported machinery.

Licensing arrangements, though suit local needs are relatively more costly and involve more complex and time consuming process. Turnkey projects are the easiest way of technology acquisition, but this mode is not very helpful for building local technological capabilities.

Foreign direct investment, particularly in the form of joint ventures, has become an increasingly important source of technology acquisition in most Asian economies in the recent years. By attracting FDI a country acquires not only needed capital and hardware technology but also software managerial skills and marketing know-how. It is important to distinguish two aspects of technology transfer by the multinationals through FDI. First, there is the direct effect on the affiliate in the host country and on the host economy through technology transfer by the parent company. Second, there is an additional positive spillover effects through demonstration to other producers in the host economy of new technologies and management methods. This is the indirect effect of stimulating local firms in technology acquisition and improvement through competition.

The indirect benefits of externalities, generally referred to as "spillovers" may occur in many ways. The MNCs may increase the degree of competition among firms in the host country market and thereby force the inefficient domestic firms to become more productive and efficient through investing in physical or human capital. The MNCs may also undertake the training of labour and management which cannot be replicated in domestic firms or purchased from abroad. Another important avenue for positive spillover effects is the upgrading of local production facilities and suppliers of services to meet the higher standards of quality control,

reliability and speed of delivery required by the technology and operating procedures of the foreign-owned companies<sup>4</sup>.

It is relevant to note that despite playing an important role as a vehicle of technology transfer FDI faces some serious criticisms as well. For example, the MNCs are held responsible for creation of an enclave industrial structure, particularly through making highly capital-intensive investments in the free trade zones, control of local industries and markets by foreign capital, exploitation of natural resources, and reluctance on the part of the foreign investors to transfer core technology and management know-how. These are highly controversial issues attracting attention of large number of researchers arguing both for and against MNCs as modes of technology transfer to the developing nation<sup>5</sup>.

### *3.3 Modes of Technology Transfer in the Asian and Pacific Countries and the Role of FDI Flows*

Asian economies followed very different technology strategies commensurating the differences in their national innovation system<sup>6</sup>. A very significant difference in this respect relates to the extent to which the countries of East and Southeast Asia, in particular, have relied on FDI as a mode of technology acquisition. Singapore, for example, has relied the most on FDI, which is indicated by the fact that the stock of foreign capital in the country's economy is 91.7 per cent of GDP. At the other extreme, the share of foreign capital stock to

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<sup>4</sup> An elaborate discussion on the role of MNCs in technology transfer and on the potentials for spillovers to the local firms, is available in Yoon, H. et.al. (1995).

<sup>5</sup> See, for a recent survey of literature providing an up-date on the nature of controversies Enos, *et al* (1997), Kakazu, H. (1990) and Lan Ping, *et al* (1996).

<sup>6</sup> A country's "national innovation system" is defined broadly to include FDI policies and the network of public and private institutions and agents supporting or undertaking scientific and technological activities including R & D activities, technology diffusion and creation of technical human capital.

GDP is only 4.9 per cent in Taiwan and a meagre 2.1 per cent in the Republic of Korea (Dahlman, 1994). In Hong-Kong, this share is reported to have been 22.2 per cent in the recent years.

All these four countries, however, displayed remarkable similarity in their technology acquisition efforts by relying very heavily on technology licensing to acquire new knowledge and skills. In Singapore and Hong Kong, the licensing is done largely between the subsidiaries of the MNCs and their parent companies. In Korea and Taiwan, on the contrary, such licensing is done by the domestic firms.

Very high dependence on the imports of capital goods has been another common technology strategy pursued by all these four East Asian countries. Again all four economies made extensive use of sending students abroad for higher studies in the science-oriented disciplines.

The major difference in the national innovation system of the four countries lies in their domestic technological efforts indicated particularly by their R and D efforts. For example, while Singapore and Taiwan spent 0.9 per cent and 1.2 per cent of their GNP on R and D respectively in 1990, Hong-Kong spends so little on R & D that there is no published figure on it. At the other end of the spectrum, the Republic of Korea spent 1.9 per cent of her GNP on R & D activities which is noted to be 20-30 per cent below the proportions spent by the OECD countries (Dahlman, 1994). Another notable feature of the recent domestic technology efforts made by these countries is that nearly 80 per cent of R & D activities is undertaken by the private sector since 1990 except in Taiwan where 50 per cent of her R & D expenses originate from the public sector. Finally, all these four countries made very high levels of investments in technical human capital which helped them to effectively acquire, assimilate and diffuse modern technology in their economies.



Next to the East Asian "Gang of Four", the Asian NIEs, especially, Thailand, Indonesia and Malaysia greatly benefited from large export-oriented inflows of FDI since mid-1980s. While the developing East Asian countries are noted to have attracted four waves of foreign investment in the post-World War II period, the third wave beginning in the mid-1980s (and preceded by the 1st and 2nd waves of 1960 and 1970 respectively) involved the transfer of labour intensive operations to East and Southeast Asia in the wake of appreciation of the yen and some currencies of the NIEs. Initially dominated by Japan, the wave eventually included substantial flows from the NIEs (Wells, 1993) and the regional ratio of inward foreign direct investment to GDP more than tripled (Petri, P.A., 1997). The fourth and the most significant FDI wave flowing to the Asian countries involves the current investment boom in China, with the net FDI inflows jumping from a figure of 3.5 billions in 1990 to 37.5 billions US dollar in 1995. According to the latest UNCTAD figures quoted in a local daily in Dhaka (*The Daily Star*, 31st December 1997), China attracted FDI inflow of record 42.3 billion US dollar in 1996. During the last few years, much of this FDI flow is going to Vietnam rather than to Thailand, Malaysia and Indonesia.

The international linkages played a historically important role in the Asian region's economic progress along the lines predicted by Kaname Akamatsu's "flying geese" model in the 1930s. According to this model, countries gradually move up in technological development by following the pattern of countries just ahead of them in the development process<sup>7</sup>. Under this scenario, Korea and Taiwan took

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<sup>7</sup> The shifts in the revealed comparative advantage in the "technology-intensive" and "labour-intensive" industries, indicated by the flying geese hypothesis between the two industry groups at the extremes of technology ladder is noted (Boro, 1996) to be reflected by the distribution of FDI by Japan, Hong Kong, Korea, Singapore and Taiwan among other countries in the Asian-Pacific region.

over leadership in textiles and apparels from Japan as Japan moved into the high-tech sectors of electronics, automobiles and other capital goods. A decade or so later Korea and Taiwan were able to upgrade to electronics and auto components manufacturing countries, with Thailand, Indonesia and Vietnam taking over textiles and apparels.

The technology strategies adopted by the countries of South-East Asia, especially Thailand, Indonesia and Malaysia exhibit strong similarities with those followed by the East Asian countries. All three countries acquired much of new technologies through licensing and royalty payments. While they also relied heavily on imports of capital goods, Malaysia invested heavily in tertiary education for development of technically qualified human capital. However, in terms of the overall domestic technical efforts, all three countries are yet to go a long way in developing R and D infrastructures and training higher level technical personnel, both of which are reflections of their relatively low level of industrial development compared to the "Gang of Four".

As noted earlier, China has been moving full speed ahead, taking large strides in acquiring Western technology, particularly by attracting FDI ever since broader opening of her economy to the West in the 1980s. In addition to licensing foreign technology at a very rapid pace (the stock of FDI to GNP rising to 5.5 percent in 1990 from almost a non-existent base prior to 1980s), China is also investing very heavily in building domestic technological capabilities. For example, China is reported to have 4500 R & D institutions, one million scientists and engineers involved in R & D, with over 45 percent of them being engaged in industrial research (Dahlman 1994)<sup>8</sup>.

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<sup>8</sup> For an up-date on the nature and magnitude of FDI flows and the attendant technology flows to north-east China, the reader is referred to (Ping et. al. 1996).

Although FDI flows across national borders have registered sharp rise in the 1990s, increasing by about four times the growth of world commodity trade, the countries of South Asia lagged far behind their other Asian neighbours. For example, in 1994, the inflows into South Asia were less than one quarter of the total FDI flows into 4 NIEs or the ASEAN - 4 individually (Lloyd, 1996). The dismal performance of the South Asian and Pacific countries in attracting FDI inflows in the 1980s and 1990s is attributed primarily to their historical preference for import substitution and inward-looking policies over the outward-oriented export promotion strategies. As a result, their domestic technological capability in terms of both availability of scientific manpower and R & D facilities is also limited. Although India has developed indigenous technological capability to the extent that she exports small-scale technologies abroad. However, being much less competitive in the international market, her products exhibit a puzzling gap between indigenous technological capability and product competitiveness

#### **4. Policies and Institutions Affecting FDI Flows and Technology Transfer**

There is an ongoing debate concerning which policy measures and institutional arrangements should be adopted by the developing countries to attract FDI flows and encourage the MNCs to directly transfer technologies and also to increase the potentials for spillover effects.

In order to encourage private financial and investment flows, the countries of Asia and the Pacific have put in place a diverse range of policy initiatives overtime. It is difficult to determine the relative importance of such policy mixes as all have played a part in attracting private investment flows, especially FDI. However, the recent upsurge of intra- Asian investment flows is commonly

ascribed to the policy reforms introduced in the following areas: (i) liberalisation of trade and investment regimes attracting FDI, (ii) improvement of macroeconomic performance, (iii) provision of elaborate support services and incentive package targeted to attract the foreign investment, and (iv) improvement of domestic technology effort to strengthen technology absorption capacity. We discuss these policies in turn.

#### *4.1 Liberalisation of Investment Regimes through Market-oriented Reforms*

With the pendulum surfing in favour of FDI as an instrument of economic growth<sup>9</sup>, the developing countries began courting it, especially in the face of rising real interest rates, the debt crisis, and the virtual disappearance of voluntary bank lending.

While various forms of restrictions relating to admission, establishment, ownership and control applying to FDI in the past began to be significantly liberalised by the Asian developing countries since mid-1980s, the relaxation of controls on inward FDI has been particularly rapid in the East Asian nations, followed by their Southeast Asian neighbours, particularly Indonesia, Malaysia, and Thailand. The relaxation measures included several elements, e.g., greater rights of establishments for foreign investors, removal of performance requirements on foreign corporations, privatisation, deregulation and reductions in administrative controls on capital and factor income movements. Further, exchange rate adjustments and

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<sup>9</sup> In the late 60s through the mid 1990s, the MNCs came under severe criticisms in the developing countries and were viewed as "suction pumps" designed to perpetuate an exploitative economic system. This period therefore witnessed a proliferation of restrictions on FDI inflows in the developing countries, with many of their critics (i.e. Caves 1982 and Oman 1993) providing necessary support to the move through highlighting various socio-economic costs associated with FDI.

liberalisation of commodity trade regimes at faster rate in these countries greatly facilitated intra-Asian FDI flows. The macroeconomic stability, high rates of output growth, outward orientation, and market-oriented government policies combined together to enhance investors confidence. Both location specific advantages and a favourable policy environment encouraged inter- and intra-regional mobility of capital and technology, positive interaction between trade and investment and created dynamic clusters of innovation and growth (Petri, 1997).

The speed of liberalisation of capital flows and trade in goods and services gained momentum in the South Asian countries in the 1990s. The Pacific economies followed other Asian neighbours and proceeded gradually with the foreign investment liberalisation measures (ADB, 1996/97).

The effective implementation of FDI policies is critically dependent upon having a favourable regulatory framework. There are evidences that bureaucratic bottlenecks often create long delays in approval of investment projects and in gaining access to utilities in the South Asian countries (Wadhva, C.D., 1996).

#### *4.2 Promotion of FDI through Incentives*

In addition to liberalisation of investment regimes, the Asian countries offer various incentives to attract FDI. These incentives are broadly grouped into three categories: fiscal, financial and others. Generally, these special incentives are widespread and used to attract FDI in specific industries or in some designated areas of the country, particularly export processing zones.

In the East Asian countries, the EPZs are termed as "export platforms" which are used to create an enclave economy hospitable to foreign investors and integrated into the global economy without

the problems of infrastructure, security, rule of law, and trade policies that plague the rest of the economy. The Asian countries introduced several variants of the export platforms including EPZs, bonded warehouses, special economic zones, and duty drawback systems. The Governments supported these institutions with appropriate macroeconomic policies that strengthened the incentives for labour-intensive exports particularly, through appropriate exchange rates. However, the efficacy of these incentive schemes in attracting FDI has been debatable on both theoretical and empirical grounds (Naya, S., 1990).

#### *4.3 Macroeconomic Policy Environment*

A stable macroeconomic environment, characterised by the absence of excessive monetary expansion and repressed financial systems, is a critical prerequisite for strengthening and maintaining the confidence of the foreign investors. Any economy suffering from the symptoms of chronic instability and indicating future problems of inflation, exchange rate fluctuations and overall poor performance scare away the foreign private investors of all categories. As noted earlier, a stable macroeconomic environment and high rates of growth of outputs and exports have been the important driving forces behind the great upsurge of FDI flows into the East Asian and some of the Southeast Asian countries in the 1990s. This is referred to as the domestic "virtuous circle" which asserts that the domestic policy reforms creating a market-friendly open economy attracts inflow of foreign investments including technology and management skills which increase the competitiveness of domestic production.

#### *4.4 Domestic Technology Absorption Capacity*

The development of technology absorption capabilities in the host countries is an important determinant of successful transfer of technologies through the MNCs or the TNCs.

Analysing the decisions of the TNCs regarding location of their R & D activities in a number of Asian-Pacific countries (Japan, Hong Kong, India, Indonesia, Malaysia, the Philippines, Singapore, Taiwan and Thailand), Kumar (1996) concludes that TNCs prefer to locate their R & D activities in the countries offering large markets, adequate technical resources and elaborate infrastructural facilities. The host Governments are suggested to adopt measures to enhance learning capabilities of the domestic firms. This implies increased investments in human resource development through education and training, in industrial research, and development of the state-of-the-art technology so that a virtuous circle of competition, productivity and technology growth takes place and generates a family of learning by doing spillovers. Empirical evidence available from other country case studies (i.e. Korea and Thailand) also suggests that in order to effectively acquire, assimilate and diffuse foreign technology, local technological conditions and capabilities must be developed to undertake the reverse engineering tasks and master embodied technology obtained through various modes of transfer (Lee, 1987).

Unfortunately, development of indigenous innovative capability which is critically dependent upon R & D efforts is still at very low levels in most of South Asian and Pacific island economies, especially compared to their East Asian neighbours. Republic of Korea's experience is often cited as a classical example of a close relationship between R & D efforts and technological capability. Korea's R and D expenditures doubled between 1984 and 1990 to exceed, 2 per cent of GDP and is still continuing to rise. And yet another useful lesson learnt from Korea's experience is the contribution of the private sector to R & D expenditures which rose from 32 percent in 1980 to 82 percent in 1986 (ADB, 1995).

In addition to low R & D efforts, lack of a conscious and aggressive technology strategy, dearth of skilled and technical personnel at various levels, lack of technical information systems, inadequate industrial linkages, unfavourable attitudes of the entrepreneurs, and bureaucratic regulations etc. are other major problems inhibiting growth of the national innovation system in many Asian developing countries. This suggests the need for transfer of technological capabilities from the developed Asian countries to those countries in need. The establishment of regional technology network system may perhaps play a vital role in this process. This is an area where private sector efforts need to be supported and co-ordinated jointly by the public sector and various regional development organisations.

## **5. Conclusions and Policy Recommendations**

In tandem with the marked increase in the foreign capital flows globally between 1980s and 1990s, many Asian countries have become recipients of large private financial flows, especially FDI, during the same period. Among various benefits brought to the recipient countries by such capital flows, transfer of technology to the host countries has figured prominently. Various forms of technology transfer have contributed to the recipients' technological modernisation and productivity growth, with FDI playing the dominant role in most of them. With the exceptions of Indonesia and Philippines where primary sectors absorbed 82 percent and 29 percent of inward FDI stock respectively, it has concentrated primarily in the manufacturing and service sectors in the other Asian countries.

While a mix of policies and incentives have been adopted by the Asian countries to attract FDI, a stable macroeconomic environment, liberalised trade and investment regime, a well-developed domestic



technological base and a host of fiscal, financial and other incentives have been the major attractions for the FDI flows. However, given the inter-country as well as intra-regional differences in the stage of development, market size, and domestic technological capabilities, some of the Asian countries (e.g., East and Southeast Asia) have been more successful and some (South Asia and Pacific islands) have been less successful in capturing FDI inflows. Both groups of countries now face formidable challenges to continue to maintain their shares of FDI flows and the direct technological benefits and indirect spillover effects accompanying them. For the less successful countries, the challenge is relatively more daunting in view of the fact that they have to increasingly depend on the private capital flows in the future since ODA is not expected to be enough and easily available as it was in the past. For the more successful countries, the challenge is to attract FDI flows to sustain the current flow. The implication is that both groups of countries in the Asian-Pacific region have to evolve appropriate investment and trade strategies both individually and jointly to enhance their prospects as the nerve centres of global economic activities.

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