Development Research Group

Study
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FOREIGN COLLABORATION UNDER LIBERALISATION POLICY

Patterns of FDI and Technology-transfer in Indian Industry since 1991

K.K. Subrahmanian
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Issued for Discussion

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K.K. Subrahmanian

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INTRODUCTION

In recent years, there has been a resurgence in the investment flows and technology transfer through foreign direct investment (FDI) to the developing world. The data indicate that developing countries today receive twice as much as the value of world FDI flow was in mid-eighties[1]. Several factors may have influenced in shaping this trend. Among these, liberalisation of FDI policy by the host countries is generally regarded as very important[2]. *Prima-facie,* there is an association between the liberalisation of policy frameworks and the recent FDI boom in developing countries. Today, the transnational corporations (TNCs) and other investors are more attracted to deploy their tangible and intangible assets in the developing countries with a view to increase their competitiveness and profitability, and the developing countries consider the increased FDI inflow as necessary for strengthening their resource-base and macro-economic stability, and improving their overall economic performance. It seems, therefore, useful to study current patterns and determinants of FDI in order to understand the dynamic role of foreign direct investment under liberalisation policy in a developing country. The present study is an attempt in this direction by taking India as a country-case.

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To elaborate, some significant developments in the recent decades have created a new setting for FDI inflows and technology transfer into developing countries. For example, the development of new and 'emerging' technologies (e.g. micro-electronics, informatics, and genetic engineering) has revolutionised the structure and organisation of production and trade in a manner requiring increased international integration and heightened role of the TNCs. Similarly, in the unipolar world of today, the flow of commercial loans and foreign aid to developing countries is declining which has raised the relative importance of TNCs as a source of investment funds. These developments coincided with the disillusionment of countries with their strategies of prolonged protection and excessive state-control, and consequential movement towards economic liberalisation and macro-economic and "structural adjustment". Many of the developing countries found it advantageous to draw on TNCs for getting access to investible resources, advanced technologies, modern skills, management practices and external markets. This point has received credibility when some newly industrialising countries (NICs) followed market-guided and outward-oriented strategies and allowed FDI to play a dynamic role in bringing about dynamism in industrialisation and international trade.

India is one of the developing countries, which have introduced liberalisation policy and as its part relaxed the FDI regulatory framework on a selective basis with reference primarily to the industrial sector since 1991. Such a positive and 'open-door' policy of India towards foreign investment and technology transfer is in contrast to the earlier ambivalent and restrictive approach.

A. ANALYTICAL ISSUES AND FRAMEWORK

There has been an unprecedented growth in the inflow of foreign investment – direct as well as portfolio – and technology transfer into the country since 1991. However, this feature has some distinct elements. For example, the best response to liberalisation so far has been largely from foreign institutional investors (FIIs) in terms of portfolio investment especially, in subscribing to Global Depository Receipts (GDRs) floated by Indian corporate houses abroad and also with large investments in Indian stock market. The response of

TNCs in terms of FDI inflows has been, on the other hand, rather cautious, although the annual inflows of foreign equity investment under liberalisation look impressive relative to the position in the earlier periods of restrictive policy regime. However, the actual inflow has been far less than the potential of India now as a host country (Government of India, 1993). The current trend in the FDI inflows raises some policy questions. Could one ask whether there are still major obstacles to the inflow of foreign direct investment into India which need to be eliminated quickly by further policy reforms? If so, what type of reforms is required?

An exploration into the rationale and scope of further policy reforms is, therefore, in order. But it is necessary that such an exercise is also based on the analysis of some critical issues connected with the current FDI inflows. These analytical issues include patterns, impact and determinants of FDI under liberalisation framework. The study of impact, as integral part of the patterns, is critical because further policy reforms have to be designed in the light of the observed impact of FDI on the dynamics of development. To the extent that the impact is influenced by the patterns – organisational-mix, ownership-control, sectoral distribution, market orientation etc. – of FDI, an analysis of the latter would also be of policy relevance. To chart out the directions for policy reforms it is necessary to identify the major determinants of FDI inflows into developing countries.

To illustrate the point, let us grant that India needs high and advanced technology-use in production and marketing for improving efficiency and competitiveness and it would, therefore, be analytically useful if sectoral pattern of FDI is one that is biased in favour of technology-intensive sectors. Besides, the behavioural pattern of FDI should be such that it helps strengthening the national technological capability. The recent contributions (e.g. Enose, 1992 and Lall, 1992) to the literature on the technological capability of developing countries suggest that the process of becoming and remaining technologically efficient is complex and that the relationship of FDI with it is not always straight-forward and linear. Therefore, the nature of the relationship - complementary *vs.* competitive – between FDI, as the chosen mode of technology transfer and the domestic technological efforts, needs a closer examination as a part of the impact study. Yet another dynamic aspect of

development in the Indian context needing an assessment in the backdrop of policy reforms, is the FDI impact on export promotion. The point for emphasis is that market inefficiencies/failures are plausible in relation to FDI necessitating policy intervention for ensuring the compatibility of FDI behaviour with the national interests.

What are the implications of current patterns and impact of FDI for further policy reforms? Herein lies the significance of assessing the determinants of FDI inflows into developing countries. The point needs an elaboration. Viewed in the analytical framework based on the eclectic theory (Dunning, 1973, 1979 and 1980) of foreign direct investment, technology is a firm-specific ownership-advantage, which along with location-influences, acts as a major determinant of FDI in particular sectors in a particular country. Therefore, a host country can modify its location advantage/disadvantage in relation to advanced technologies by providing for sector-specific or technology-based incentives and induce/strengthen market signals to guide FDI into desired directions and behavioural patterns.

FDI inflows can be directed to desired directions through administrative fiats in a regulatory policy regime. In a liberalised environment the same objective will have to be pursued indirectly by modulating market signals through incentives and other stimulating measures. However, a close understanding of the behaviour of FDI is required for designing appropriate market-influencing measures. Here, the study of current patterns, impact and determinants of FDI assumes significance in that it would provide insights into the dynamic role of FDI and help design required types of discriminatory incentives and support measures.

The study of the issues outlined above is of academic interest and of relevance to the policy-makers and decision-makers in industry. However it is important to note that the ongoing process of liberalisation does not connote the absence or even irrelevance of policy intervention; all it implies is that there will be greater play of market forces. A close study of the experience of some Asian NICs would suggest that simple 'openness' and passive reliance on market forces may not be the best strategy for development. It is instructive to note in particular, that South Korea and Taiwan allowed FDI to play a larger role

as an important input into industrialisation, but the governments did intervene and took initiatives in creating conditions for internalising TNCs' "ownership advantages" and stimulating the process of 'domestic' learning for improving the countries' competitiveness. Although the World Bank study on East Asian Miracle (World Bank, 1993) has generally drawn negative conclusions on the role of selective interventions to promote industrial development, these are not wholly accepted and are, in fact, questioned (Lall, 1994). Therefore, the present study recognises some plausible failures/inefficiencies of market and liberalisation and examines the rationale and scope of selective policy interventions in the form of supportive measures for increased inflows and effective use of FDI as an input to speedy industrialisation of the country.

B. OBJECTIVES, METHODOLOGY AND DATA SOURCE

In the light of the foregoing discussions the study is set to meet the following broad objectives :

(1) to analyse trends in the growth and patterns of investment flows and technology transfer into India during 1980-95 with the focus placed on the period since 1991;

(2) to examine the FDI impact on some dynamic aspects of development *viz.*, national technological capability and export promotion;

(3) to make an empirical assessment of the determinants of FDI inflows into developing countries; and

(4) to draw some implications of the findings of the study on further policy reforms in regard to FDI inflows and technology transfer into India.

Invariably, the methodology employed for analysing each objective is different. The patterns of FDI inflows are depicted by analysing the relevant data with the help of some standard tools of descriptive statistics. The impact study is based on the empirical verification of certain *a-priori* propositions (working hypotheses) using OLS regression method. The determinants of FDI is assessed on the basis of a cross-sectional econometric study modelled in the analytical framework of the eclectic theory.

The required data for the analysis are collated from published sources. The analysis of trends and patterns of FDI is based on the published data on annual approvals and actuals of foreign collaboration. The impact study makes use of the balance sheet data of the large and medium public limited companies compiled by the Reserve Bank of India. The data required for the empirical assessment of the general determinants of FDI are collated from U.N. Statistical Year Book, World Development Tables, World Investment Reports and other relevant international publications.

Although the study analyses some critical issues connected with investment inflows and technology transfer through foreign collaboration into India since 1991, the lack of data has not facilitated a precise treatment of FDI inflows. The term foreign collaboration connotes a formal arrangement for foreign equity capital and/or transfer of foreign technology from outside the country. A distinction can be made often between financial collaboration and technical collaboration. Although at a conceptual level, financial collaboration refers to the inflow of financial investment, more often than not it is accompanied by a contract for technology-transfer and thereby, it becomes financial-cum-technical collaboration. Therefore, one needs to distinguish three types of foreign collaboration *viz.*, (1) pure financial collaboration entailing inflow only of equity capital, (2) pure technical collaboration involving only transfer of technology, and (3) financial-cum-technical collaboration involving equity-capital inflows and technology transfer, from foreign sources. The first type, however, is limited in practice. In the study, therefore, all foreign collaboration cases are treated as representing cases of foreign technology-transfer.

Due to data inadequacy, it has not been possible to measure FDI inflows with the precise meaning it has. In the study, foreign financial collaboration, which invariably involves the inflow of foreign equity investment, is taken as a proxy for FDI when dealing with trends and patterns. Also, for brevity the term foreign investment is used to refer foreign equity investment, both foreign majority and foreign minority participation. Here, investment by FIIs in the Indian stock market and subscriptions to GDRs floated by Indian corporate houses abroad are excluded from the scope of the study. When the study deals with the FDI-impact, however, the term FDI is used with a greater degree of precision. Here, only such financial collaborations, where foreign

equity holding in the firm is adequate to qualify as foreign associate, are covered in the analysis. A firm is assumed as an associate of foreign firm if more than 25 per cent of the equity is in the hands of the foreign firm.[3] Needless to say, the concept of FDI as used here may not necessarily correspond to the treatment given to the term in other studies.

Admittedly, the study has limitations arising from the lack of uniformity in the treatment of the concept of FDI and its weak data base. Yet, the findings do give clues to drawing of major issues for policy reforms. The study serves to mould market signals for attracting investment inflows and technology transfer through FDI in a manner that is consistent with the dynamics of technological transformation and economic development with a national flavour in the contemporary world of increasing international integration.

C. A SYNOPTIC VIEW

The introductory section of the study ends with the listing of the presentation of research findings. This also serves to provide a synoptic view of the study. The next section outlines some salient features of the prevailing policy environment in the country in a historical perspective. The emphasis is on the openness in the policy changes introduced since 1991 within the contours of continuity. It also helps to assess as to how unfavourable the Indian policy environment is as compared to that of China and other competing countries in Asia. Section 3 analyses patterns of investment inflows and technology transfer. In particular, it portrays patterns in the annual approvals of foreign collaborations, distribution of FDI inflows by country-sources and by major industrial sectors, tie-up of technology transfer with foreign ownership and control, and the terms and conditions of collaborations, under the liberalisation policy as compared to the earlier regulatory policy regime. This is followed by section 4 on FDI-impact. Here, empirical evidence on the complementary relationship between firms' expenditures on foreign technology transfer and domestic research and development (R&D) is examined to comment upon the contribution of technology transfer especially, through FDI in strengthening national technological capability. As a part of the impact study there is also an attempt to verify empirical foundations of the *a priori* proposition that FDIs (TNCs) have better export performance as compared to local counter-parts.

The impact study uncovers some discouraging features of the behavioural patterns of foreign collaboration which merit consideration in the design of further policy reforms. Section 5 dealing with the empirical assessment of the determinants of FDI inflows into developing countries seeks to verify the view-point (UNCTC, 1992) that economic policies are not as important as the economic environment, understood to include domestic market size, cost-conditions, infrastructure and macro-economic conditions, as the determinants of FDI-inflows. In the light of the empirical findings, the last section draws some conclusions on the rationale and scope of policy interventions in terms of supportive measures for the increased FDI inflows and effective use as a dynamic force to speed up Indian industrialisation.

Section 2

THE POLICY ENVIRONMENT

An important feature of India's industrial development since 1991 has been the unprecedented growth of foreign collaboration, the formal channel for foreign investment inflows and technology transfer into India from industrialised countries. Consequent upon the introduction of structural adjustment and economic reform programmes, there have been major changes in the country's economic policies that influence the shape and scope of industrial investment, including foreign investment. In particular, the liberalisation of policies on foreign investment, foreign technology collaboration, foreign trade and foreign exchange constituting, what can be called, the policy environment, have been exerting positive influence on foreign firms' decisions on investment and business operations in the country. Therefore, a review of the prevailing policy environment is made here to provide the background, against which the prevailing patterns and determinants of investment inflows and technology transfer into the country can be analysed. The review is based mainly on the analysis of the information on policies as compiled in Jain (1994).

On a pragmatic consideration, the review is restricted to the analysis of those critical elements of policy environment which directly influence

investment flows and technology transfer through FDI into the country. In the main, it deals with policies and procedures on the entry, operating environment and returns and repatriations of foreign investment. The review is made in a historical perspective as the policy environment in a particular period cannot be appreciated in isolation from what it was before. Besides, it also provides a comparative picture of the country's policy environment relative to that of some Asian countries competing with India in seeking foreign investment.

A. FOREIGN COLLABORATION POLICY

The foreign collaboration policy in post-independent India has evolved mainly from developments in the industrial policy. Initially, the basic approach, as outlined in the Industrial Policy Resolution of 1948 and further amplified in the Prime Minister's Statement of 1949 on foreign investment, was that the participation of foreign capital and enterprise particularly as regards industrial techniques and knowledge is of value to the rapid industrialisation of the country but the conditions under which they may participate should be carefully regulated in the national interest. As foreign investment was considered 'necessary', foreign investors were assured of non-discriminatory treatment on par with domestic enterprises, facilities for repatriation of profit and capital, and compensation in the event of compulsory acquisition. However, it was provided that as a rule, the major interest in ownership and effective control would always be in Indian hands. This policy provided for long a regulatory framework and a basis for the requirement of government's prior approval on a case-by-case basis for the entry of foreign investment and technology transfer into India.

The Industrial Policy Statement of 1991 also states as one of its objectives that "foreign investment and technology collaboration will be welcomed to obtain higher technology, to increase exports and to expand the production base." In pursuit of this objective, the government has decided to take initiatives of introducing changes in policies relating to foreign investment and foreign technology agreements. As a result, the industrial policy statement of 1991 has heralded an 'open-door' policy on foreign investment and technology transfer. It is officially claimed that the government policy will be

continuity with change. In order to appreciate the changes introduced since 1991, it is necessary to keep in perspective the nature of the earlier policies.

Policy Phases

Viewed in a historical perspective, the Indian policy on foreign collaboration could be seen as ambivalent and swinging between regulation and liberalisation. So far, there have been four such 'swings' or phases, *viz*:

(1) "cautious welcome" policy until the mid/late sixties;

(2) "selective and restrictive" policy from the mid/late sixties to the end of the seventies;

(3) "partial liberalisation" policy marked by selective relaxation of controls during the eighties; and

(4) "liberalisation and open-door" policy since 1991.

Each of the phases marks different degrees of freedom/regulation on the entry of foreign investment and foreign technology collaboration.

As the literature (e.g. Kidron, 1965, RBI, 1968 and 1985) is rich with discussions on the evolution of foreign collaboration policies prior to 1991, a detailed review of their characteristics here would be repetitive. It is enough if we note some relevant points. Each policy swing in some sense reflected the government's particular types of responses to the foreign exchange crisis in the respective periods, though many factors may have been at work causing the policy swings. The point for emphasis is the undercurrent of balance-of-payments crisis in shaping the country's attitude and policy towards foreign investments.

To illustrate, the initial caution on foreign investment began to loose its rigidity with the on-set of foreign exchange crisis of 1957-58 and the government began to relax its stance towards foreign direct investment. Thus, in the second half of the "cautious welcome" policy phase there was a pick up in the number of foreign collaboration approvals.

As the foreign exchange situation assumed crisis proportions in the late sixties and there were increased outflows on account of foreign collaborations, the government began to take a restrictive stance on foreign collaboration. In particular, the enactment of Foreign Exchange Regulation Act (FERA), 1973 became the key to guiding and controlling FDI inflows. Thus, came into being the phase of tight regulation and selective policy in the seventies[4]. A highly restrictive and selective policy implemented by an administrative system based on discretionary power prevailed throughout the seventies.

In the wake of the second oil crisis and India's failure to boost its manufactured exports, the foreign exchange position began to deteriorate by the early eighties. The government adopted a multi-pronged strategy for promotion of exports including encouraging TNCs to undertake export-oriented manufacturing. The eighties thus witnessed selective efforts to attract FDI especially, in high technology areas and exports. Many restrictions on large houses and FERA companies were removed signalling a less restrictive policy environment for private investment including, foreign investment. The eighties was in a way the forerunner of the liberalisation policy of the nineties.

As the economy slipped into serious external crisis at the beginning of the nineties, the response of the government was to go in for a comprehensive macro-economic and structural adjustment with economic reforms and globalisation as key elements since July 1991. This phase in India's foreign collaboration policy is characterised by transparency and 'openness' and is intended to seek increased foreign direct investment. The degree of openness is seen in terms of the entry policy on (1) sectors open to FDI, (2) level of foreign equity participation, and (3) transparency in approval procedures.

FDI under the ongoing policy phase is permitted in almost all manufacturing industries (except six specified industries of strategic concern reserved for the state). The enlarged spheres for FDI entry now include mining, oil exploration, refining and marketing, power generation, and telecommunication which were earlier reserved for the state sector. Under the new policy, foreign direct investments are also permitted in tourist and hotel industries and trading companies engaged in exports in the service sector. Clearly, the sectors opened to FDI now are much larger as compared to the earlier policy.

How does the 'openness' in Indian policy in terms of the sphere of operation compare with policies of major competing countries? In China FDI (joint-ventures) is encouraged in most manufacturing and agricultural activities. Another country that has opened agriculture to FDI is Thailand. Generally, however, FDI is not permitted in agriculture and mining in most other competing Asian countries. Generally, manufacturing industries are open to FDI in all the countries under review. In the case of service industries there are wide variations. On the one hand there is China, where all service industries (except hotels) are closed to foreign investment, and on the other side there is Thailand, where FDI is permitted in almost all service industries. India, like most other Asian countries stands in between the two extreme policy stances.

The most striking feature of the present liberalisation policy in India is the freedom provided to the level of foreign equity participation. In the earlier policy phases, the attitude was quite rigid with respect to foreign equity ownership and control. It was insisted that FDI should be accompanied by technology transfer agreements. And, foreign ownership exceeding 40 per cent of equity was granted only in exceptional cases. In striking contrast, under the liberalisation policy it is not necessary that FDI is accompanied by foreign technology agreements. And FDI is given automatic approval up-to 51 per cent foreign equity in the listed priority industries (now numbering 35), which cover most manufacturing activities including software development and those related to hotel and tourism. Besides, there is no upper bound for foreign equity; even 100 per cent foreign equity is permitted with prior clearance. Permission is given freely to 100 per cent foreign equity in the power sector and wholly export-oriented industries. Further, the government has presently a liberal approach towards non-resident Indians (NRIs) investment: NRIs and overseas corporate bodies (OCBs) can invest upto 100 per cent in high priority industries. Clearly, the change in the government's attitude is basic in the sense that FDI is also looked upon as a channel of financial resources for investment independent of foreign technology transfer, and foreign majority equity (and hence foreign control) is freely allowed to attract FDI inflows into priority industries.

To put the Indian policy in a comparative perspective, it must be noted that in China foreign majority ownership is decided on case-by-case basis with

100 per cent foreign ownership permitted in export-oriented and high-technology industries. In Malaysia foreign ownership is permitted in export-oriented and high-technology industries, though the guidelines in this regard are flexible. In Indonesia, a minimum 20 per cent local participation is insisted upon in all foreign investments with local equity holding being increased to 51 per cent within 20 years. In Thailand, foreign majority participation is prohibited in Category A industries (e.g. rice farming, professional services) and restricted in Category B (e.g. pharmaceutical products, trade, hotel etc.) and foreign direct investment (including foreign majority equity) can enter even without permit in Category C industries which include nearly all manufacturing activities. In South Korea, there is no restriction on foreign participation in equity capital with prior approval.

Generally, a large number of Asian countries permit foreign majority ownership in manufacturing but limit foreign ownership to minority in service industries. Thus, India's policy compares perhaps better than those of her major competitors like China and Malaysia to the extent that in a large number of manufacturing industries (including some service industries) foreign majority ownership is freely allowed without any restriction. It is instructive that India's automatic approval of equity up to 51 per cent is a unique process, which goes a long way in making Indian policy on FDI transparent. This leads us to the examination of the transparency in approval procedure.

Most countries have an approval requirement for the entry of foreign direct investment. In India, one of the irritants in the earlier policy phases has been the cumbersome procedures involved in the implementation of the regulatory policy. Apart from the delays, the bureaucratic discretion has been in-built into the procedure of granting approval on a case-by-case basis. As compared to the earlier policy phase, a distinctive feature of the liberalisation policy phase is the simplification of procedures. In particular, there is the process of automatic approval of cases satisfying certain parameters, which are clearly laid down. Transparency is the hall mark of the automatic approval process. There are no bottlenecks of any kind. The automatic approval is available from the Reserve Bank of India within two weeks of application. In fact, India's automatic approval is the only one of its kind. South Korea is the only

other country, where automatic approval system exists, though it is confined to minority interest under certain conditions. It must be noted that South Korea has a well-defined regulation governing foreign investment and its "negative list system" with prohibited and restricted sectors, reflects the stability and transparency so important to an attractive FDI policy.

In India, all cases other than those coming under the parameters of automatic approval require prior scrutiny, and clearance of the Government. Such proposals are cleared by Foreign Investment Promotion Board (FIPB) or the Secretariat for Industrial Approval (SIA) set up specially for speeding up the approval process. The procedures for prior clearance are also simplified and the time involved in the decision-making is much shorter relative to the earlier period. It must also be appreciated that the approval requirement in China is higher and more rigid than in India.

Indian policy on transfer of technology has also been made very liberal since 1991. Like FDI, there is the provision for automatic approval for technology agreements related to high priority industries within specified parameters. Similar facilities are available for other industries as well if such agreements do not require the expenditure of foreign exchange. Other liberalisation measures include, the freedom to use foreign trade names in the domestic market which was not allowed earlier. The hiring of foreign technicians and foreign testing of indigenously developed technologies do not require prior clearance as prescribed earlier. In short, as against the earlier practice of getting government's prior approval involving endemic delays and uncertainty, the firms are at present free to negotiate terms of technology transfer with their foreign counterparts according to their own commercial judgements.

In a nutshell, the sweeping changes introduced since 1991 mark a radical departure from the past and reflect a positive approach towards foreign collaboration. The changes provide freedom to foreign investors to enter into Indian industry. In terms of openness to FDI entry, the prevailing Indian policy is not unfavourably placed in terms of competitiveness with other major FDI-receiving countries in Asia.

B. OPERATING ENVIRONMENT

The discussion here is confined to policies and practices relating to industrial investment, foreign trade, foreign exchange, protection of property and other basic rights, investment incentives etc., all of which constitute the critical elements of the operating environment for foreign investment in India. The objective is to see if the changes introduced under the ongoing economic reforms provide adequate freedom for business operations on the basis of market forces.

Industrial Licensing and Controls

There is an industrial licensing requirement, understood in its simple sense of registration, in almost all Asian countries. In India, however, industrial licensing has been a policy tool to regulate the development of industries for meeting the goals of national growth along with some social objectives as desired by the government. Under the Industries Development & Regulation Act of 1951, enacted for implementation of the industrial policy and programmes, no entity other than the Central Government can establish a new industrial undertaking or produce new article, or expand the existing capacity, or carry on business or change location except under and in accordance with a licence issued on that behalf by the Central Government. Along with the industrial licensing the entrepreneur has to meet with regulations on a number of related issues (e.g.capital issues, import of capital goods and technology etc.) and obtain various 'permits' to operate industrial projects.

The working of industrial licensing system has been a subject of incisive analysis and critical review by many official committees and independent studies, which have generally concluded that the licensing system, euphemistically called the "licence raj", has been a major impediment to industrial investment (including foreign investment) and growth. In particular, the licensing and other regulatory rules had consequential effects in terms of sub-optimal capacities, dis-advantageous locations, backward technologies, high cost of production, low levels of quality, and lack of competition. Therefore, the system has been put to several modifications including broad-banding and selective de-licensing from time to time with a view to making it less and less inhibitive to industrial growth and competitiveness.

The industrial policy statement of 1991 has made a major departure from the past by doing away with industrial licensing for all industries except a few specified industries (now 15 in number) of security and strategic concerns, social reasons, overriding environmental reasons and items of elitist consumption, where licence is compulsory. Industries reserved for public sector have been reduced (now six in number), though the reservation continues in the small scale sector. Barring these, the entrepreneurs are free to establish and operate industries according to their own judgements and without any interference from the government subject to the compliance of certain zoning guidelines on location.

The limitations on big business-houses and FERA companies on their diversification and expansion, have also been removed. In particular, the restrictive clauses of the FERA, which used to hinder the establishment and expansion of foreign companies, have been removed. Similarly, the ongoing liberalisation process has streamlined the Monopolies and Restrictive Trade Practices (Prevention) Act (MRTP), which had earlier created a host of administrative hassles and curbed the expansion and consolidation of large business houses – both Indian and foreign. Besides, many reform measures such as the withdrawal of the condition of phased manufacturing programme (local content stipulation) and removal of restrictions on large business houses and foreign firms to become partners in small scale enterprises, have all enlarged the scope for FDI in Indian industries. Thus, the changes introduced in the policy and procedures within the contours of 'continuity' have unshackled the industry from industrial licensing and other myriad administrative and legal controls.

Although industrial projects are liberated from the regulations and bureaucratic controls of the Central Government, the entrepreneurs still have to deal with numerous controls and an uncoordinated bureaucratic machinery of the states, where the industries are located. The subject matters requiring 'clearances' from various State Government departments range from land acquisition and environmental clearance for plant location to accessing water and electricity for its operation, and to excise and other licenses for the sale of goods. There is a widely held view that the operating environment for private investments is still uncertain, as the spirit of de-regulations and reforms initiated

at the Centre has not in effect percolated to the states. There are, of-course, variations in the "investment friendliness" across the states in the sense that some states are rapidly changing policies and simplifying procedures to attract industrial investment.

Foreign Trade and Foreign Exchange Policy

Another critical element in the operating environment is the foreign trade (import-export) policy. For a long time, India's industrial strategy has rested on the protectionist policy implemented mainly through a system of import control and licensing in relation to foreign trade in capital goods and components, intermediates, raw materials and finished goods. The restrictive trade policy regime has been yet another subject of serious criticism and reviews by official committee and individual studies. Therefore, government started relaxing import controls selectively in the eighties and took the process further in early 1990 by substantially freeing imports and exports from discretionary controls.

Thus the period since 1991 has seen many trade policy changes. In particular, the Export-Import Policy (EXIM policy) of 1992-93 has helped to plug several lacunae in Indian foreign trade policies and procedures by eliminating to a substantial extent quantitative restrictions, licensing and discretionary controls. The changes include de-licensing and substantial reduction of tariffs on import of capital goods, raw materials and components, re-classification of tariff categories, and permission to foreign companies engaged in manufacturing and trading activities to open branch offices in India. As a result, all goods can now be freely imported and exported except two negative lists. The change in the policy attitude reflects the government's commitment to the idea that foreign trade flourishes in an atmosphere of freedom.

Allied to trade reforms has been the changes introduced in the foreign exchange regulations. The amendment to FERA has removed a major hurdle to the FDI inflows into the Indian industry. The operating environment has received a major fillip with the introduction of a single market determined exchange rate for the rupee since March 1993. All import and export transactions are now conducted at the market rate of exchange. The market

rate also applies to other transactions like payments in respect of repatriation of dividends, lump-sum fees and royalties and foreign travel. And for the first time in independent India, the government introduced current account convertibility in 1994.

Capital and Credit Market

Yet another critical element of the operating environment is the capital and credit market. The reforms in the capital market have gone a long way in removing the major constraints of the earlier period. The securities market operations are now guided by the autonomous Securities & Exchange Board of India (SEBI), which, however, is not a controlling authority. Under the guidelines of SEBI, companies have been given freedom to carry on their independent financial decisions without government approvals. Thus, companies have the freedom to decide the price of issues. Mergers, acquisitions and disinvestments of a part of the business are no longer subject to government approval. FII, NRI and other foreign entities have been allowed to make investment in the Indian securities market. Indian companies have been allowed to raise funds from the international market. The capital market in India is moving towards a paperless share and trading system.

Some welcome changes in the monetary policy have helped improve the operational environment. The easing of Statutory Liquidity Ratio and Cash Reserve Ratio (SLR and CRR) limitations on the banks has increased the availability of commercial credit. There has been some deregulation of the administered structure of interest rates. The reduction in interest rates over the years has reduced the cost of capital as the interest on term loans by financial institutions has also come down, though lending rates in India are still far higher than in most other Asian countries.

There have been reforms in the fiscal policy as well. In particular, the fiscal policy is now characterised by product orientation and reduced excise and customs duties as compared to the earlier periods. For example, peak customs tariff rate has been scaled down to 50 per cent and in the case of capital goods it is only 25 per cent. For capital goods imports under the International Reimbursement Scheme, the tariff rate is still lower at 15 per cent.

Protection of Property and Other Basic Rights

The protection of private property rights – physical as well as intellectual – and other basic rights constitutes yet another aspect of the operating environment for foreign direct investment. In India, there are no statutory guarantee against expropriation but, as stated earlier, the Indian policy from the very beginning has assured compensation in the event of compulsory acquisition. Besides, India has become a member of the Multilateral Investment Guarantee Agency (MIGA) which protects investors by way of insurance for non-business risks including expropriation. Further, the country is in the process of entering into investment guarantee agreements on bilateral basis with specific countries with the result that foreign investments from the respective countries stand protected.

As regards intellectual property rights there is protection in terms of patents, trade marks etc. The protection under the Indian Patent Act, however, is for shorter duration and the protection to process patents is not available to some industries (e.g. food products, pharmaceutical products) and hence is considered weak. However, the Patent Law in India is being revised in conformity with the required standards of the World Trade Organisation. The position is also similar with respect to the protection of trade-marks and other trade related intellectual property rights.

The country is also liberal in regard to protection of employment of aliens in the sense that specific permission of the Reserve Bank of India is required for employment of foreign national in India only if such foreign employees seek to repatriate their employment income. Employment of foreign technicians for short duration on repatriable salary is also allowed.

Investment Incentives

Finally, there is the investment incentive programme, which renders the operating environment attractive to industrial investment in the country. In India various state governments offer fiscal concessions and other incentives to attract entrepreneurs for location of their investment in the respective states. The type of enterprises and industrial sectors eligible for such investment incentives differ from state to state. Although there is no special treatment to foreign investment explicitly in terms of incentives, foreign investments are

eligible for investment incentives open to the private sector. In fact, state governments are vying with each other in attracting large industrial and infrastructure investments into their respective states and foreign investors are better placed to avail of such incentives. The state government incentives apart, the central government has also investment incentive programme.

While a detailed listing of the incentives is beyond the scope of the study, it must be noted that the incentives are mainly in the form of tax holidays and tariff reductions for encouraging industrial investment in selected sectors and locations. Foreign investments are eligible for such incentives as the government policy is to create a "level playing field" for all business irrespective of their being domestic or foreign firms or in public or private sector. In fact, some of these incentives have in-built advantages in favour of large foreign investments. In the main, the incentives of specific interest to foreign investors include (1) exemption from capital gain tax on the transfer of capital assets and shares to Indian subsidiaries; (2) exemption from corporate income tax for initial years (tax holidays) in 100 per cent export-oriented undertakings and units located in export processing zones; (3) reduction in income tax rate and preferential treatment to foreign companies in specified areas (e.g. petroleum exploration); and (4) exemption from corporate income tax on profits from exports of commodities, software and technical services. Further, there are special incentives for investment in the power sector in the form of assured post-tax returns on investment apart from other incentives like tax holiday, import of power plant at concessional import duty etc. In short, the investment incentive programme makes the operating environment in the country attractive to private investment and in particular, foreign direct investment.

A question still remains. How attractive is the operating environment in India as compared to the major FDI-receiving Asian countries? A comparative analysis of the operating environment in detail in different Asian countries is beyond the scope of the present study. Even a cursory look at the operating environment in countries like China, Malaysia, Indonesia, Thailand and South Korea would show that Indian environment cannot be judged as relatively unfavourable to foreign investment.

To illustrate, as against the situation of no restriction and no import licence for the import of capital goods, raw material etc. in India, imports and exports

of certain items are canalised through government agencies in China. Although imports license is not required for all imports and a foreign firm has the right to decide to buy its machinery from within or outside, the government usually insists for the preference to be given to Chinese parties. In South Korea, foreign investors can usually import their requirements of capital goods, raw material etc., and with no limits if the project is export intensive; all imports, however, require specific licence. In Malaysia, Thailand and Indonesia the firms are free to import capital goods etc., and there is no requirement of import licence. As regards protection of basic rights, the Indian Patents Act after the proposed revision would be comparable with that in China, Korea and Malaysia. The provision for employment of aliens in India cannot be said to be stricter than in China and other countries. In Malaysia and Indonesia, employment of aliens are allowed only where there is shortage of trained locals.

Generally, the programme of investment incentives in India is comparable with China or Malaysia or Thailand in the sense that these incentives are selective and intended for encouraging exports or high technology development. There are, of-course, differences in specifics in as much as China treats capital gain as ordinary income or tax holidays from the year of profit-making rather than from the commencement of business. In South Korea, tax reduction incentives are not of much significance. Indonesia does not offer any tax incentives.

All considered, the operating environment prevailing now for foreign investment in India is generally conducive except that some specifics like the capital gain tax or custom duty rates on imports perhaps require a closer examination if there should be further policy reforms.

C. RETURNS AND REPATRIATION

It needs no emphasis that the rate of return on investment is a summary index of the determinant of FDI inflows into particular country locations. Given the conditions of relatively free entry and conducive operating environment with a relatively favourable economic environment, understood in terms of market size, factor-price, and macro-economic conditions, it is reasonable to assume that the rates of return should be relatively favourable for attracting

FDI inflows into India as compared with most other Asian countries. Yet, there is the question of policy that has influence on the repatriable net return. Here, a look at the Indian policies relating to taxation and repatriation of investment income and capital becomes relevant.

Taxation

India is proverbially known as a highly taxed nation on income, including corporate profits. Besides, the rate of corporate taxation on foreign branches has been higher than that of locally incorporated companies. As a part of the economic reforms several steps have been taken in the direction of rationalisation and simplification of both direct and indirect tax structures after 1991. As a result, there has been considerable reduction in the tax burden leading to higher rates of post-tax return (income) on investment. Besides, as stated earlier, there are tax holidays, and other concessions as elements of investment incentives. Further, India has tax treaties with nearly 30 countries providing for lower rates of withholding tax on dividends and income of non-residents. All these render the net return on foreign investment higher now than in the pre-1991 period.

The more relevant question, however, is the comparability of Indian tax rates with major countries competing with India for FDI inflows. For such a comparative analysis, what matters is the effective tax rate, which, however, would vary from company to company even within a country, and therefore comparisons of tax rates across the countries become difficult and often are confusing. Nevertheless, a rough comparative picture, as reflected from the data on maximum taxable rate in some Asian countries (see Table 2.1) shows that India is a country with relatively higher tax burden in comparison with China and Thailand.

The higher incidence is confined not merely to corporate taxation but also to withholding tax on income payments to non-residents in terms of dividend, interest and royalty.

Repatriation

Finally, the policy on repatriation of profits (income) and capital exerts influence on foreign investment decisions in a particular country. The Indian policy

Table 2.1

Comparison of Tax Rates

Country	*Corporate tax on locally incorporated companies*	*Tax on investment income of the non-residents*
India	43%*	dividend 20% interest 20% royalty 30%
China	33% 15% in Special Zones	dividend 20% interest 20% royalty 20%
Korea (South)	36.5%	dividend 20% interest 15% royalty 15%
Malaysia	35%	dividend nil interest 31% royalty 31%
Indonesia	35%	dividend 15% interest 10% royalty 15%
Thailand	30%	dividend 25% interest 25% royalty 15%

* Including 7.5% surcharge.

Sources: Compiled from various sources.

from the very beginning, as stated earlier, assured repatriation of investment income and capital. However, approval of the Reserve Bank is required for outward remittance. On disinvestment, capital, including appreciation in value, can be repatriated subject to the sale price being considered reasonable by

the Reserve Bank. The basic policy of free repatriation still continues; in fact some modifications have been introduced to smoothen the process of approval in the post-liberalisation period. For instance, the Industrial Policy Statement of 1991 provided for monitoring of foreign exchange outflows so as to ensure that the foreign exchange outflow on account of dividend income payments are balanced by export earnings over a period of time. As a part of continuing liberalisation, the "dividend balancing" condition has been withdrawn except in the case of industries in consumer goods sector.

India's policy on repatriation is not very much different from most other countries in Asia. In China and Malaysia too approval is required for repatriation. In fact, the policy is more stringent in China in the sense that approval is given only out of net foreign exchange earnings. In South Korea, approval is not required for remittance of investment income if it is in accordance with approved remittance scheme; but approval with respect to the fairness of sale price is required for repatriation of capital. In Thailand, there is no control and no approval is required. Viewed in a comparative perspective, the Indian policy on repatriation can be considered comparable with most Asian countries.

Thus, a cross-sectional comparison of the various aspects of the current Indian policy regime on FDI (for easy reference presented in a tabular form as Appendix A. Table II.1) indicates that in terms of the 'openness' of FDI policy environment, India does not rank much below the other FDI-seeking countries in Asia.

Section 3

FOREIGN COLLABORATIONS : TRENDS AND PATTERNS

The inflow of foreign investment, and the transfer of technology into the country, as mentioned earlier, take place mainly through foreign collaboration. The approval of a designated authority has always been necessary in all cases of foreign collaboration. Therefore, trends in the inflows of foreign investment are traced from the data on annual approvals of foreign collaborations. The total of all foreign collaborations – financial as well as

technical – approved annually is taken to reflect trends in technology-transfer from abroad. Here, a caveat needs to be introduced. The approval reflects expected inflows and should not be confused with actual inflows. Further, growth rates estimated in the study should be interpreted with caution as there may be a bias of the rising base.

A. TRENDS IN FOREIGN COLLABORATION : GROWTH PHASES

The data on annual approvals of foreign collaborations (Appendix B.Table III.1) depict four distinct growth phases. The first phase until the mid-sixties is marked by sluggish growth. This is followed by the second phase of stagnation in growth until the end of the seventies. The third phase during the eighties has witnessed gradual recovery in growth. Finally, there is the ongoing fourth phase of rapid growth beginning from 1991. The annual approval of foreign collaboration averaged 244, 239, 724 and 1627 cases respectively during the four growth phases. (see Table 3.1).

Table 3.1

Growth Phases in Foreign Collaboration Approvals

Phases	*Average annual number of approvals*		
	All collaboration	*Financial collabortion*	*Col.3 as % col.2*
1	2	3	4
I. 1956-65	244	n.a.	n.a.
II. 1966-79	239	40	16.73
III. 1980-90	724	174	24.03
IV. 1991-95	1,627	837	51.44

Further, the proportion of cases involving financial collaboration in the total approvals has increased from an annual average of 17 per cent in the second

phase to 24 per cent in the third phase and further to 51 per cent in the fourth phase.

Although data on the number of approvals alone do not provide a strong empirical base for drawing meaningful conclusions, two inferences may be drawn on the trends of FDI-inflows. First, foreign investment inflows and technology transfer tend to move in tune with the policy regime. Second, economic liberalisation tends to improve the interrelationship between technology-transfer and foreign investment. That is to say, liberalisation tends to tilt relatively, the balance away from less-packaged form (licensing agreement) to highly-packaged form (FDI), especially in terms of transfer of technology from developed countries.

The data on approved foreign investment-inflows (see Appendix B Table III.2) show the trend of growing response of foreign investors to liberalisation policy. As shown in Table 3.2, the annual average amount of foreign equity investment approved since 1991 (i.e, the post-liberalisation period) is about thirty-five times higher than the corresponding figure for the eighties (pre-liberalisation period). Apparently, the immediate effect of the liberalisation policy has been encouraging in the sense that it has raised the prospects of receiving larger FDI-inflows into the country.

Table 3.2

Approved Amounts of Foreign Equity Investment

Period	*Annual Average*	
	Amount in US $ million	*Amount in Rs.crore*
1970-1980	n.a	5.68
1981-1990	94.98	121.10
1991-1995*	3,284.00	10,624.20

* Excludes approvals for investments by NRIs under 40% and 100% schemes.

However, India's record in attracting FDI through liberalisation policy is relatively poor when a comparison is made with the quantum of FDI inflows into China[5]. There is also a view that both in terms of absolute value and growth rate, FDI flow position in India is far below what probably is required (Bhattacharyya, 1994)[6]. There are also concerns about the considerable difference between FDI approval values and actual inflows, and the gap between the estimated need and the actual flow of FDI. To gain some insights into these, the data on actual inflows are presented below in Table 3.3. The actual inflow has increased at an annual average growth rate of 90 per cent between 1991-1995. However, there is a wide gap between approval and actual inflow of foreign investment. But this needs to be interpreted with caution. The ratio of actual inflow in a year as a percentage of approved amount in the same year could fluctuate and be wide, depending upon the time-lag and investment spread-out in industrial projects. Hence, there may be bias in the actual to approval ratio estimated in the Table. If a one year lag between approval and actual inflow of investment is assumed and the ratio is estimated as the amount of actual inflow in a year as a percentage of amount approved in the previous year, the picture that emerges is not discouraging : it being 32 per cent, 27 per cent and 46 per cent in 1993, 1994 and 1995 respectively.

Table 3.3

Foreign Direct Investment : Actual Flow During 1991-1995

Year	*Actual* U.S.$ (million)*	*Actual change yearly %*	*Approved* U.S.$ million*	*Actual as % approved investment*
1991	154.5		324.8	47.6
1992	233.1	50.9	1,781.3	13.1
1993	573.8	146.2	3,558.5	16.1
1994	958.5	67.0	4,331.7	22.1
1995	1,986.4	107.2	11,245.0	17.7
Total	3,906.3		21,241.3	
Annual average	781.3	92.8	4,248.3	18.4

* Include data on NRI investments under the 40% and 100% schemes.

However, if the view is that for a given period of analysis, the yearly fluctuations in the time lags of projects would get normalised, the average of year to year ratios for the period as a whole, should be considered as relevant. Thus viewed, the average figure of 18 per cent for the post-liberalisation period may be a cause for concern but it must be noted that it does not compare very unfavourably with the situation that prevailed in the early years of reforms in China[7]. For the present, it is reasonable to believe that the response of foreign investors to India's liberalisation policy since 1991 in terms of actual inflows of foreign equity investment is cautious. Does this mean that there is a case for further liberalisation and opening up by India in order to raise the level of actual FDI inflows? Clearly, for answering this question a detailed analysis of current patterns of FDI inflows is required. This is done by examining the patterns in sources and uses of foreign investment inflows – the only indicators which, as of now, are readily available for the purpose.

B. PATTERNS OF FOREIGN INVESTMENT INFLOWS

With the simplification of procedures, foreign investment inflows into the country consist of cases (1) with prior clearance of the Government i.e. FIPB or SIA, (2) receiving automatic approval of the Reserve Bank of India, and (3) non-resident Indian direct investment approval by RBI. First, we consider the pattern of distribution of FDI inflows across these types.

Pattern of FDI Distribution by Type of Approval

The data presented in Table 3.4. provide some interesting pointers. The NRI direct investment is second in importance in the total FDI-inflows in every year and during the whole period of post-liberalisation. This is strikingly different from the pattern of foreign investment in China, where the major source and the bulk of foreign investment originate from overseas Chinese businessmen in Hong Kong, Macao and other places[8].

Therefore, it is possible to argue for more effective measures to mobilise NRI direct investment notwithstanding the existence of a number of schemes with various attractive features to attract large inflows from NRIs.

Second, the distribution pattern marked by the largest share under FIPB/SIA prior clearance and the insignificant share under the RBI automatic approval route in each year tempts one to draw interesting inferences, though the proportionately large share of the former, in part, could reflect the large-sized investments in a few sectors like power and hydro-carbon. It seems, foreign investors' preference is to have investments that do not come under the purview of clause 5 (i) & (ii) of the Industrial Policy Statement of 1991. That is to say, the revealed preference of foreign investment is to move into areas other than the listed priority sectors and having the condition of limiting foreign equity up-to 51 percent, though such cases require government's prior scrutiny and approval. In other words, market signals are for more investment in non-priority areas: this is probably because the market size is large and profitability is high.

Table 3.4

Actual Flows : Share of Different Approval Sources

(per cent)

Sources of approval	*1991*	*1992*	*1993*	*1994*	*1995*
FIPB / SIA (Government)	54.37	70.23	54.55	49.85	60.74
RBI (automatic route)	0.00	6.99	13.35	12.06	8.32
NRI (Direct investment : 40% scheme + 100% scheme)	45.63	22.78	32.10	38.09	30.94
Total	100.00	100.00	100.00	100.00	100.00

There is an interesting characteristic to the observed pattern of the proportionately large share of FIPB/SIA approval. Even under the liberalisation policy it is important to note that the Government has been evaluating foreign investment proposals case-by-case in non-priority areas, and in relation to foreign absolute ownership control. While this procedure should theoretically entail procedural delays in prior scrutiny and clearance by FIPB/SIA, there is little evidence of bureaucratic hurdle in getting prior clearance of the

government for foreign investment as foreign investors need only to justify and make clear their intentions of doing business in India. That the proportion of proposals cleared by FIPB/SIA every year has been more than one half of the total foreign investment inflows lends support to this view.

The small share of FDI inflows through the RBI automatic approval route raises some policy questions. Since in practice, it is an insignificant route, one could envisage either the reintroduction of a single agency for screening and clearance of all cases of foreign investment or adoption of a totally open-door FDI policy. It is perhaps useful to envisage greater transparency by adopting a "negative list" approach instead of "positive list" approach. Under the negative list approach the Government could declare from time to time specified areas, where foreign investment will not be permitted without prior clearance, and foreign investment-inflows get automatic approval in all cases other than the negative list with transparency.

Critics of such an approach point out that it could well turn out to be a regressive step, as it may send wrong signals to the foreign investors that they are not treated at par with the Indian business community. It must, however, be appreciated that a change over from "positive list" approach to "negative list" approach is one of the suggestions in the submissions made by Germany and Japan to the Government of India on the changes perceived to be required for facilitating FDI inflows (Bhattacharyya, 1994). Also, South Korea, which had operated with a negative list, did attract considerable amount of foreign investment.

There could also be a criticism that the provision of negative list would take away the opportunity to have negotiation with prospective foreign investors for settled foreign stake and about areas of investment consistent with the national interests. However, the large share of FIPB/SIA approval in the total inflows since 1991 indicates that the scope for such a negotiation in itself does not necessarily serve fully the desired objective. Besides, the attempt at eliminating foreign control or directing foreign investment into desired direction by bureaucratic regulations at the entry-point of foreign investment has proved perverse and ineffective in practice. There are a number of other explicit and implicit ways and means for correcting inefficiencies / failures of market in serving the national interest. All considered, the patterns emerging from the distribution of foreign investment by type of sources do suggest the need for fine-tuning the policy on the entry of foreign investments into the country.

Pattern of Foreign-Ownership

There is a suggestion in the foregoing discussion that foreign ownership control is a subject of concern. The pattern of foreign ownership-control in Indian industry as being shaped by the liberalisation policy may, therefore, be examined. In the absence of data, a detailed analysis is not attempted. The scattered pieces of evidence show that there is a sign of increasing foreign majority-ownership in Indian industries.

To illustrate, the Reserve Bank has approved more than 150 cases of the existing firms seeking increased foreign equity during the three-years between August 1991 and September 1993. Of these, around 50 per cent cases are for increasing foreign ownership to more than 50 per cent equity. The country-wise break-up (Table 3.5) suggests the increasing quest of the firms based in the United States, the United Kingdom and Germany for acquiring foreign ownership control in their existing associates in India.

Table 3.5

Country-wise Break-up of Existing Companies Raising Foreign Equity

Country	*Number of companies with increased foreign equity of more than 50%*
1. United States	19 (27%)
2. United Kingdom	15 (21%)
3. Germany	13 (18%)
4. Switzerland	4 (6%)
5. Netherlands	3 (4%)
6. Japan	3 (4%)
7. France	2 (3%)
8. Finland	2 (3%)
9. Australia	2 (3%)
10. Other countries (1 case each)	8 (11%)
Total	70 (100%)

Note : Figures in parentheses indicate percentage to total.

Source : Answer to Rajya Shabha Unstared Question 1002, *Economic Trends*, December 1993.

Another piece of evidence of the increasing quest for foreign ownership-control is seen in the permissions granted to foreign companies to set up wholly-owned subsidiaries. The country-wise break-up of 30 cases so permitted until December 1993 (Table 3.6) again reveals the preference of the United States in acquiring absolute ownership control of the enterprises in India.

The data on foreign equity range in the firms under foreign collaboration (Table 3.7) give some insights into the pattern of foreign ownership during the post-liberalisation period as compared with the pre-liberalisation period. The proportion of firms with foreign ownership range of 50 per cent and above during the three years of the post-liberalisation period is seven times higher than the corresponding figure during the three years in the pre-liberalisation period. The relevant shares are 36 and 5 per cent respectively.

Table 3.6

Country-wise Break-up of Wholly-Owned Subsidiaries Permitted Until December 1993

Country	*Number of companies*	*Percentage share*
United States	13	43.2
United Kingdom	2	6.7
Singapore	5	16.7
Switzerland	2	6.7
Hong Kong	2	6.7
Others (1 in each country)	6	20.0
Total	30	100.0

Source: Answer to Rajya Shabha Unstared Question 553, *Economic Trends*, December 1994.

In a sense, the relatively large proportion of firms with foreign majority ownership after the liberalisation policy is not a revealing finding. After all, this is what was expected. Clearly, a number of TNCs taking full advantage

of the new rules under the liberalisation policy increased their stake in their existing associates and also bargained and secured Government's approval for majority ownership stake in their new associates in India. Thus, foreign majority ownership is now being widely found especially since there is no upper bound to foreign ownership. The consequence of the increasing incidence of foreign ownership control in the Indian industry needs to be noted. There is a potential increase in the direct cost in terms of outward remittances as well as in the indirect cost in terms of transfer-pricing and other known restrictive practices. Besides, there is a possible rise in external dependence. This phenomenon cannot be handled merely by restricting entry of FDI inflows. A more comprehensive policy is, therefore, needed for the purpose.

Table 3.7

Foreign Equity Range in Firms
(number of firms)

% range	*Pre-liberalisation period(1988-1990)*		*Post-liberalisation period (1991-1993)*	
	No.	*%*	*No.*	*%*
Up to 25	170	27.2	445	26.4
26 - 39	100	16.0	223	13.3
40 - 49	324	51.8	421	25.0
50 - 59	12	1.9	417	24.8
60 - 74	9	1.4	50	3.0
> 75	10	1.6	127	7.5
Total	625	100.0	1,683	100.0

Source : Department of Science & Industrial Relation, Ministry of Science & Technology, Government of India.

Table 3.8

Foreign Investment Approvals (amount in US $): Share of Countries

(per cent)

Country of origin	*1981-1990*	*1991-94**
United States	25.53	30.28
United Kingdom	7.08	7.48
Germany	18.00	3.22
Japan	8.43	5.04
France	3.46	0.99
Switzerland	3.16	4.62
Italy	4.70	2.26
Netherlands	1.45	2.56
Australia	0.49	1.81
Singapore	0.78	1.44
Malaysia	0.14	0.41
Hong Kong	0.41	1.24
NRI**	9.66	7.30
Others	16.90	31.36
Total	100.00	100.00

Note : * Data on 1994 relate to January-November.

** NRI investment here are exclusive of NRI direct investment approved by RBI under 40% and 100% schemes.

Source : India Investment Centre and SIA News letter.

Pattern of Originating Countries

The pattern of foreign investment-flow could also be examined with reference to the country of origin, essentially to see if there is any change in the preference-pattern of countries for investment during the liberalisation regime as compared with the earlier policy regime.

Table 3.8 gives percentage share of major country-sources in the total foreign investment approvals during the 1981-90 (pre-liberalisation) and 1991-94 (post-liberalisation) periods. In both the periods, the United States, the United Kingdom, Germany, Japan, Switzerland and France constituted the major country sources of foreign investment-flow. In the latter period, however, a change in the pattern of country-sources is observed in the sense that the relative shares of Germany, Japan and France have declined.

Table 3.9

Top Ten Industries Receiving FDI Approval Between August 1991 and June 1995

Industry	*Amount (Rs. million)*	*% share*
1. Fuels (incld.Power)	99,601.85	28.39
2. Chemicals	29,314.09	8.36
3. Service sector	868.74	7.66
4. Metallurgical	25,802.64	7.36
5. Electrical equipment	22,799.82	6.50
6. Telecommunications	22,418.23	6.39
7. Food processing	20,912.99	5.96
8. Transportation	18,407.78	5.25
9. Hotel & Tourism	17,187.22	4.90
10. Textiles	13,710.87	3.91

Table 3.10

Sectoral Distribution of FDI

(per cent)

	Sectors	*FDI outstanding by March 1990*	*FDI inflows August 1991 – June 1995*
I.	Plantation	9.5	—
II.	Mining	0.3	—
III.	Petroleum	0.1	28.4
IV.	Manufacturing	84.9	58.8
	Food & beverages	7.0	8.2
	Textiles	4.0	3.9
	Transport equipment	12.3	5.3
	Machinery & mach.tool	15.4	4.5
	Metals & its products	6.1	7.9
	Electrical goods	12.8	2.9
	Chemicals and allied	33.4	9.8
	Others	8.8	6.3
V.	Services	5.2	13.0
	Total	100.0	100.0

It is the United States, which has responded very positively and raised substantially its relative share in the total foreign investment-inflows into the country. The increasing share of NICs like Singapore, Hong Kong, and Malaysia is also an interesting feature of the new pattern.

Use-Pattern of Foreign Investment : Industrial Sectors

The sectoral distribution of foreign investment-inflows approved between August 1991 and June 1995 is given in Appendix B Table III.3. The analysis

of top ten beneficiaries of FDI-inflows (Table 3.9) indicated its concentration in a few sectors. The fuel industry (power and oil refining) form the single largest share of 28 per cent. Interestingly, four industries together share more than fifty percent of the total inflow.

The reclassification of data (Table 3.10) to get the sectoral distribution of FDI comparable to the pattern of FDI-stock before liberalisation policy, has revealed striking differences. In particular, the relative importance of manufacturing sector has declined with the opening up of infrastructure and service sectors to foreign direct investment under the liberalisation policy. And, within the manufacturing itself the preference pattern of FDI is shifting away from heavy capital goods industries to light industries.

C. PATTERNS OF TECHNOLOGY TRANSFER

The patterns observed in regard to foreign investment-flow would be generally present in technology-transfer as well. For, the former is also a mechanism for the latter and further, the inter-relationship between foreign investment-inflows and technology-transfer is stronger in the post-liberalisation period. A caveat, however, must be filed. The liberalisation regime has stimulated a tendency to view foreign-investment simply as resource-flow for supplementing foreign aid and borrowing to help bridge the Balance of Payments gap rather than as a means of acquiring access to modern technology(Kumar,1994) Nevertheless, the patterns observed in foreign investment-flow are broadly valid in regard to technical collaboration.

The contours of the patterns of technology transfer may be viewed in the context of the provision of automatic approval of technology-agreements in priority areas with specified parameters (e.g. maximum limits for royalty, and lump-sum payments) and the freedom given for hiring of foreign technicians. Enterprises are now made free to negotiate terms and conditions of technology-transfer according to their commercial judgements. This is distinctly different from the earlier regimes when the terms and conditions of technology-transfer were determined by the Government using *ad hoc* rules and discretion, which allegedly led to the transfer of outdated technologies and technological stagnation of Indian industry. The change in policy and transparency in

procedures introduced since 1991 would have salutary effects in that the Indian industry would have access to advanced technologies and are enabled to raise their productivity and competitiveness.

In the absence of information a detailed analysis of technology transfer is not feasible. The attempt here is therefore limited to giving a comparative picture of some major terms and conditions which invariably affect the cost of technology-transfer under the liberalisation policy as compared with the earlier regulatory regime.

'Packaging' of Technology with Equity

It is now well documented in the literature that TNCs generally prefer 'packaging' of technology transfer with equity stake and the prevalence of this practice raises the cost of technology transfer to the host country. Therefore, the exploration of transfer of technology in less-packaged forms like the simple licensing agreement or outright purchase is often suggested to be a better option. However, the scope for seeking such alternatives would depend upon the state of art of technology and the nature of the industry.

The analysis of foreign collaboration cases (Table 3.11) approved during the post-liberalisation period (1991-1993) and during the pre-liberalisation period (1988-1990) indicate the relatively high proportion of collaborations with foreign equity in the former in almost all industries and in the aggregate. In other words, industries which used to import technology in less packaged form during pre-liberalisation period have shown higher propensity to seek packaged form of transfer during the post-liberalisation period.

Further, the proportion of agreements with provisions for lump-sum payment, which is partly the reflection of outright purchase of technology, is also lower during 1991-93. Here again, the tendency is seen in almost every industry. These pieces of evidence suggest the increasing incidence of highly 'packaged' form of technology transfer under the liberalisation policy. The implication on the cost of technology transfer is obvious. The cost also depends upon the duration, rate of royalty, fees etc., approved in the collaboration agreements.

Table 3.11

Proportion of Agreements in the Total with 'Packaging'

(per cents)

Industry	*With foreign equity*		*With lump-sum payment*	
	1988-90	*1991-93*	*1988-90*	*1991-93*
Alternative/Renewable energy	71.4	57.9	85.7	52.7
Chemicals	27.1	32.7	83.2	69.0
Electrical & electronics	27.5	36.1	75.2	68.0
Industrial machinery	13.9	22.6	77.7	67.9
Mechanical engineering	21.9	34.8	82.0	62.3
Machine tools	18.6	40.5	81.4	64.9
Metallurgical	12.4	38.1	85.1	72.2
Textiles	40.9	36.1	65.9	80.2
Transport	18.8	24.1	66.7	60.5
Consultancy & services	40.9	68.6	52.8	31.2
Miscellaneous	42.8	54.1	63.2	48.2
Total	27.2	42.2	74.0	57.6

Source: Department of Science & Industrial Research, Ministry of Science & Technology, Government of India.

Duration of Agreements

The distribution of agreements in different ranges of duration (Table 3.12) suggests the relatively higher cost-incidence of technology transfer under the liberalisation policy as compared to the earlier regulation policy.

The proportion of agreements with duration of 10 years and more is more than three times higher during the three years of post-liberalisation period as compared to the corresponding period in the pre-liberalisation phase : the

Table 3.12

Classification of Agreements by Duration

(percentage of firms within a particular category of duration)

Industry		*No duration*	*Less than 10 years*	*10 years and more*
1. Alternative/Renewable energy	A	0.0	71.4	28.6
	B	5.3	57.9	36.8
2. Chemicals	A	4.1	80.1	15.8
	B	0.3	57.1	42.5
3. Electrical & electronics	A	13.0	76.6	10.4
	B	0.2	56.8	43.0
4. Industrial machinery	A	17.1	70.5	12.4
	B	0.5	58.3	41.2
5. Mechanical Engineering	A	19.3	71.2	9.4
	B	0.3	52.4	47.4
6. Machine Tools	A	34.9	53.5	11.6
	B	0.0	51.4	48.6
7. Metallurgical	A	19.0	72.7	8.3
	B	0.6	64.8	34.7
8. Textiles	A	20.5	70.5	9.1
	B	0.0	56.6	43.4
9. Transport	A	15.6	77.1	7.3
	B	0.0	58.5	41.5
10. Consultancy & other services	A	13.4	74.8	11.8
	B	0.2	86.8	13.0
11. Miscellaneous	A	20.6	70.4	9.0
	B	0.5	69.2	30.3
All industries	A	15.6	73.4	11.0
	B	0.4	63.8	35.8

A = Relate to 1988-90 (pre-liberalisation period)

B = Relate to 1991-93 (post-liberalisation period)

Source: As in Table 3.11.

respective figures being 36 and 11 per cent. Interestingly, the higher duration is found in every industrial sector. Evidently, TNCs tend to establish technology-relationship with their Indian associates for longer duration under the liberalisation policy. This probably has the potential benefit of the Indian industry's getting access to improvements in technology on a continuous basis but has also the potential of raising the incidence of remittances from the country. The magnitude of remittance-outflows will depend upon the pattern of royalty rate-structure.

Pattern of Royalty Rates

The classification of collaboration agreements by royalty rates (Table 3.13) shows that post-liberalisation period has larger proportion of agreements in the range of "above 5 per cent" royalty as compared to the pre-liberalisation period. The proportion of agreements in the range of "up to 3 per cent" royalty rate is relatively low during the post-liberalisation as compared to pre-liberalisation period.

Clearly, technology-transfer under the liberalisation policy has higher cost potential as compared with the regulatory regime. However, the higher cost by itself need not be a source of worry if industries acquire advanced technologies and improve productivity and competitiveness. Besides, the burden of increased remittance outflow will depend on the export performance of the Indian industry. This takes us to examine the pattern of export clauses in the collaboration agreements.

Pattern of Export Clauses

The incidence of different types of export-clauses in technology agreements approved during the three-years of the pre-liberalisation (1988-90) and post-liberalisation regime (1991-1993) can be traced from the data presented in Table 3.14. They show that the share of agreements with clauses committing 100 per cent export is proportionately less during the post-liberalisation as compared with the earlier period. The pattern is similar in regard to the commitment of buy-back arrangement and export-orientation. On the other hand, technology agreements approved during the post-liberalisation regime have relatively larger proportion of export-restraining clauses (such as

Table 3.13

Percentage Share of Firms Within Particular Royalty Range

Industry		*No royalty*	*up to 3%*	*3.1to 4.9%*	*5%*	*above 5%*
Alternative/Renewable Energy	A	42.9	28.6	0.0	0.0	14.3
	B	63.2	21.1	0.0	31.6	10.5
Chemicals	A	34.9	16.8	5.8	11.0	1.4
	B	33.2	11.4	5.1	11.2	5.6
Electrical & electronics	A	54.5	19.4	7.0	25.3	2.8
	B	55.9	9.6	8.0	25.5	12.7
Industrial machinery	A	57.1	7.9	8.2	36.0	5.0
	B	61.1	6.6	7.1	37.2	10.2
Mechanical engineering	A	56.2	15.9	11.2	26.2	3.0
	B	58.4	8.6	8.9	28.3	12.6
Machine Tools	A	41.9	4.7	4.7	25.6	7.0
	B	67.6	10.8	10.8	32.4	13.5
Metallurgical	A	30.6	13.2	4.1	13.2	0.0
	B	31.8	13.6	2.3	8.5	7.4
Textiles	A	47.7	15.9	2.3	22.7	6.8
	B	33.7	8.4	2.4	14.5	8.4
Transport	A	54.2	24.0	11.5	15.6	3.1
	B	55.9	15.9	12.8	23.1	4.1
Consultancy & other services	A	24.4	11.0	3.9	5.5	3.9
	B	16.7	4.7	1.4	8.1	4.5
Miscellaneous	A	36.3	15.5	4.9	13.7	2.3
	B	30.6	6.8	3.5	11.3	9.1
All Industries	A	45.9	15.1	6.8	21.8	3.0
	B	40.7	8.7	5.5	17.8	8.7

A = Relate to 1988-1990 (pre-liberalisation period)

B = Relate to 1991-l993 (post-liberalisation period)

Source : As in Table 3.11

differential royalty for exporting, more than 5 per cent royalty for export, and more than 40 per cent foreign equity ownership for export) as compared with the earlier regime.

Overall it seems that the pattern of export clauses in the collaboration agreements approved during the post-liberalisation period is one, which is more export-restrictive as compared with the pattern observed during the pre-liberalisation period. It could be said that comparison between the two periods is not appropriate, as foreign collaboration during the pre-liberalisation period was encouraged only in the technology-intensive and export intensive industries and therefore in terms of percentage of the total the share of export related cases obviously would be higher during the pre-liberalisation period. However, the point still remains that the pattern of export clauses in the agreements approved after the liberalisation is not encouraging whereas, one of the *a-priori* assumptions of the liberalisation policy is that there would be new possibilities for promotion of exports.

Table 3.14

Pattern of Export Clauses in Technology Agreements
(percentage distribution of different types of clauses)

Export-clause	*Number of agreements*		*Percentage in total*	
	1988-1990	*1991-1993*	*1988-90*	*1991-1993*
Differential royalty	118	700	14.99	22.27
Buy-back arrangement	37	32	4.70	1.02
Export-oriented cases	285	530	36.21	16.86
More than 40% F.E.	38	972	4.83	30.93
More than 5% royalty	84	538	14.44	0.76
100% export-oriented	119	347	15.12	11.04
Total agreements	787	3,143	100.00	100.00

Source : As in Table 3.11

Section 4

IMPACT OF FOREIGN COLLABORATION : SOME PORTENTS

It is too early to attempt an assessment of the impact of foreign collaboration under the liberalisation policy in view of the limited experience that we have with it. Yet, a broad look at the various developments in relevant economic variables would be of help in thinking on policy matters. For example, the growth of industrial output and foreign currency reserves in the recent years has often been viewed as a salubrious influence of the ongoing reform process. The consequential increases in foreign direct investment and technology-transfer in particular, are perceived to have helped capital accumulation, technological progress, and international competitiveness, heralding the onset of globalisation of India's development. The empirical basis of this view-point, however, needs to be tested by an impact study. But due to data constraints, this task is rendered somewhat difficult and therefore, we have confined our analysis to trace signs of the impact of foreign collaboration on (a) national technological capability and (b) export performance, of the Indian industry. Towards this end, an attempt is made here to analyse technological efforts and export behaviour of medium and large public limited companies in the Indian corporate sector which are the two important dimensions of industrial development of the Indian economy. Given the short-period of coverage, however, the results would reflect only the marginal fringe of the impact.

A. NATIONAL TECHNOLOGICAL CAPABILITY

In a developing country context it is often said that "industrialization is a process of acquiring technological capability in the course of continuing technological change." (Pack and Westphal, 1986). Therefore, the influence of foreign direct investment and technology transfer in enhancing the national technological capability deserves special consideration. It needs no emphasis that the transfer of technology from external sources facilitates industrial activity on a higher level of production function and raises levels of productivity and growth at a point of time in a developing country. However, technology transfer is only one element of the technological capability and by itself is not adequate

to ensure the dynamics of technological progress. It has to be backed up with domestic technological efforts on a continuous basis to make the imported technology appropriate to local conditions and also to develop new processes and products in tune with changing factor and product market conditions and technological opportunities. Thus viewed, technological capability building of a developing nation in the contemporary world is a combined process of technology-import from external sources, domestic technology-efforts (e.g. R&D), and the relationship between the two. However, such a relationship is a complex one (Blumenthal, 1979). Technology-import may stimulate or substitute domestic technology-efforts. And, it is the complementary relationship between technology-import and domestic R&D that helps enhance the national technological capability.

Technology-Import and Domestic R&D : The Relationship

To elaborate, an economic unit (say, the firm) imports technology from developed country sources, as there is a favourable initial time-cost trade off in favour of imported technology as compared to the development of indigenous technology. However, investment on domestic R&D and other domestic technological efforts becomes necessary to assimilate and adapt imported technology to local conditions. More often than not, this combined process of import and local adaptation leads to the development of modified/ new technology, which the firms tend to export to other countries. Thus, a firm adopting an import-adapt technology strategy and seeking complementarity relationship between technology-import and domestic technology-efforts not only ensures the efficient use of the imported higher spectrum technology but also enhances its own technological capability in a dynamic sense and thereby, the national technological capability.

The stimulus for seeking this complementary relationship arises from the differences between the developed and developing countries mainly in relation to the scale of production, the climatic conditions, the income levels, the factor market conditions, the consumers preferences, raw material and the input supplies and other characteristics. Many of these differences, however, are artificial and created mainly by the host country's industrialisation strategy which is biased towards inward-orientation and which induces economic units

(e.g. firms) to reduce technological dependence with the avowed objective of building up national technological capability.

In contrast, the environment of outward-orientation and open-door policy may have a mixed influence on the firms' technology-behaviour. On the one hand, there are cost advantages in carrying out R&D activities in a developing country as a part of the globalisation of R&D by TNCs and hence, if results of such R&D are also utilised in the host country, there is a positive impact on the national technological capability. Besides, dynamic firms with long-run strategies will have an incentive to carry out domestic R&D under outward-oriented liberalisation policy, characterised by the absence of restriction on the diversification and expansion of firms unlike under inward-oriented policy regime.

On the other hand, the unrestricted freedom for technology import may influence technology-behaviour of firms in such a way that it tends more to substitute than complement domestic R&D efforts for many reasons. In the first place, the economic compulsions for seeking local sources of capital equipment, materials, intermediate inputs etc. through adaptation R&D are not as pressing as under inward-looking macro policy. Secondly, to the extent that there is no policy restriction on the quantum and terms of technology-import, firms can get basic design, know-how and eventual improvements from time to time, and the need to undertake domestic R&D and other technological efforts would be much less. Such a technological behaviour is more likely when technology-importing firms are under foreign control or when their objective is to maximise the benefit of domestic market in short-time. Thirdly, the cost of total expenditure – the sum of technology purchase payments and domestic R&D investment – may rise with the level of such R&D expenditures due to either internal cost of adjustment or increasing financing cost. In particular, when a firm has a fixed budget for technological improvement, then a unit of money spent on technology-import must necessarily reduce the amount, which can be spent on domestic R&D.

Thus viewed, the pattern of technology-import under the liberalisation policy may not on balance have a necessarily positive impact on the national

technological capability. There are, in fact, no empirical studies to comprehend the relationship between technology-import and domestic technology-efforts under liberalisation policy in the Indian context. All that the empirical studies attempted were to regress firm or industry level data on R&D expenditure (or some other measure of domestic technological effort), technology-import expenditure and other explanatory variables (e.g. firm-size) and to confirm the complementary relationship between the two. (e.g. Lall 1983, Katrak 1985, 1990, Subrahmanian 1987, 1991, Kumar 1987, and Sastry 1990). However, the period of these empirical studies happened to be the one prior to 1991, that is to say, prior to the ongoing liberalisation. The crucial question is whether there is any difference in the technological behaviour of firms now under liberalisation as compared to the earlier pre-reform period. To put if differently, we hypothesise that the relationship being established between technology-import (foreign collaboration) and domestic-R&D behaviour by firms since the liberalisation policy is complementary. In what follows we test its validity empirically.

Data and Methodology

The methodology used is the same as in earlier studies *viz.*, one of estimating through OLS regression equations the relationship between expenditures on technology-import and on domestic R&D incurred by sample firms. While this methodology has well known limitations[9] it gives some clue to the understanding of the problem. The data are as compiled by the Reserve Bank of India from the Annual Reports of medium and large public limited companies, which have reported both expenditures on domestic R&D and on technology-import for the period, 1991-92 to 1993-94. That is to say, companies, which reported expenditure on R&D and not the expenditure on technology-import, are excluded from the scope of the study. Similarly, technology-importing firms, which did not incur expenditure on domestic R&D, are also excluded from the scope. Further, the coverage is restricted to companies in 16 modern industry-groups *viz.*, transport equipment, electrical equipment, foundries, machinery (others), ferrous & non-ferrous metal products, chemical fertilizers, dyestuffs, man-made fibre, basic chemicals, medicines & pharmaceutical products, paints, other chemicals, cement, rubber and rubber products, paper and paper products and plastics.

A word of explanation on the variable used in the study for representing technology-import is necessary. A firm's expenditure on technology-import may be of many types and at least, two variants of technology-import (TM) need to be conceptualised and proxies used to represent them in the analysis. First, on the lines of some earlier studies (e.g. Fransman, 1984, and Sastry, 1990) the cost of imported capital goods (ICAP) is used as a proximate of technology-import as it represents the cost of the import of embodied technology. This is one technology-import variant (TM1). Alternatively, foreign payments on account of royalty, technical fees etc. (FROYTF) on account of transfer of disembodied technology through technical collaboration agreements (licensing agreements) can be used as another variant of technology-import (TM2).

The validity of the hypothesis is tested with the help of OLS multiple regression method on cross section data. The other explanatory variable included in the model is the size represented by net sales (S). The use of three-year average values is intended to eliminate the bias of yearly fluctuations. Regression equations are fitted to industry level data as well as company level data. Regression estimates are made for all companies taken together, and separately for foreign direct investment (FDI-firms) and locally controlled companies with technical collaboration (TC-firms). In the equation for the aggregate industry level analysis the number of firms (N) in each industry-group is also incorporated as an explanatory variable as the aggregates are likely to get effected by the number of firms. The relationship is estimated in log-linear forms of regression equations.

Regression Results : Industry Level Data

The results of the regression estimates at the industry level are reported in Table 4.1. The high value of adjusted R^2 and the statistical significance of F-ratio vouch for the high explanatory power of the model.

The coefficient of size variable (S) has taken positive sign and is statistically significant and thereby confirms the direct and positive influence of size on domestic R&D. The coefficient of technology-import, whether it is measured in terms of value of imported capital goods (TM1), or foreign payments on

royalty and technical fees (TM2), has negative sign, though its statistical significance is low. Thus, the empirical analysis at the aggregate industry level does not confirm the postulated complementary relationship between domestic R&D and technology import.

Table 4.1

Regression Estimates : Aggregate Industry level

Intercept	*Explanatory variables*				
	N *Number of firms*	*S* *Net Sales*	*TM1* *ICAP*	*TM2* *FROYTF*	
- 10.872	−0.001	+1.472	−0.194	—	$\bar{R}^2 = 0.80$
	(−0.370)	(+5.360)*	(− 1.233)		F = 25.29*
- 10.721	−0.002	+1.373	—	−0.080	$\bar{R}^2 = 0.82$
	(−0.420)	(+4.330)*		(− 0.508)	F = 22.72*

Figures in parentheses represent t-statistics

* Significant at 5 per cent level.

There are, however, some variations in the relationship across industries. Regression results for four industries (where enough observations were there to carry out regression analysis) are reported in Table 4.2.

The coefficient of net sales is positive in sign and significant in all equations and thereby confirm the positive effect of size on domestic R&D in Indian industries. However, the coefficient of technology-import variable TM1 is positive in three out of four industries but is not statistically significant in any of the industry equation. If technology-import is considered in terms of TM2, the coefficient has taken positive sign in the case of two out of the four industries and its value is significant in the electrical machinery. The hypothesised complementarity relationship between technology-import and domestic R&D is thus found valid in that industry. However, the coefficient is

Table 4.2

Regression Results : Particular Industry Levels

	Intercept	*Explanatory variables*			
		S (Net sales)	*TM1* (ICAP)	*TM2* (FROYTF)	
1. Motor vehicles					
	−6.99	0.99 (3.75)*	0.19 (1.51)	—	$\bar{R}^2$ = 0.69 F = 24.0
	−7.63	1.12 (5.10)*	—	0.09 (0.47)	$\bar{R}^2$ = 0.63 F = 19.0
2. Electrical Machinery					
	−7.16	1.04 (4.25)*	0.17 (1.21)	—	$\bar{R}^2$ = 0.45 F = 31.0
	−3.87	0.68 (3.27)*	—	0.41 (2.36)*	$\bar{R}^2$ = 0.50 F = 27.0
3. Machinery (others)					
	−5.71	1.10 (4.88)*	−0.11 (−0.86)	—	$\bar{R}^2$ = 0.51 F = 24.0
	−7.78	1.18 (3.79)*	—	−0.01 (−0.08)	$\bar{R}^2$ = 0.50 F = 21.0
4. Medicines & Pharmaceuticals					
	−4.81	0.91 (3.17)*	0.03 (0.17)	—	$\bar{R}^2$ = 0.32 F = 34.0
	−2.25	0.90 (2.10)*	—	−0.28 (−0.92)	$\bar{R}^2$ = 0.12 F = 19.0

Figures in parentheses are t-statistics.

* Significant at 5 per cent level.

not statistically significant in other industries. It is important to note that the coefficient of technology-import variable (TM2) is not significant (it has negative sign) in medicine & pharmaceutical industry where FDI is substantial. There is a suggestion here that the presence of FDI in the industry does not contribute towards the national technological capability building. On the whole, the analysis at the levels of particular industries also does not give empirical support to the hypothesised complementarity relationship of technology-import with domestic technological efforts under the policy liberalisation.

Regression Results : Company Level

Moving on to the analysis at the company level, the estimated coefficients of (1) firms taken together incurring expenditures on domestic R&D and also payments on technology-import (TM1) in the form of capital goods import, and (2) firms incurring expenditures on domestic R&D and also payments on technology-import (TM2) in the form of royalty and technical fees are reported in Table 4.3.

The adjusted R-square values in the equations vouch for a reasonable explanatory power of the model. The coefficient of size variable (S) is found

Table 4.3

Regression Estimates for All Companies

Number of firms	*Intercept*	*Explanatory Variables*			
		S (NETSALE)	*TM1 (ICAP)*	*TM2 (FROYTF)*	
215 firms	− 5.189	+ 0.981 (+ 10.132)*	− 0.006 (− 0.141)	—	$\bar{R}^2$ = 0.393 F = 70.558*
146 firms	− 3.338	+ 0.804 (7.906)*	—	+ 0.084 (1.113)	$\bar{R}^2$ = 0.398 F = 48.950*

Figures in parentheses are t-statistics.

* Significant at 5 per cent level.

to be positive and statistically significant in all equations. The analysis thereby confirms the positive influence of size variable on domestic R&D in the Indian industry.

For all firms taken together, the estimated coefficient of TM1 (i.e., technology import in terms of capital goods import) is negative in sign but is not statistically significant. For TM2 (i.e, technology import represented by royalty, technical fees payments) the relationship shows positive sign but it is not statistically significant. All considered, what can be concluded is that there are no conclusive empirical evidence as yet to confirm the complementary relationship between domestic R&D and technology-import being undertaken by firms under foreign collaboration during the post-liberalisation period. Within this general pattern of technological behaviour, is there any difference in the behaviour as between FDI-firms (firms under foreign ownership-control) and TC-firms (firms under foreign technical collaboration)? The regression estimates made separately for FDI-firms and TC-firms, as reported in Table 4.4., throw some light on the question.

When technology-import is measured in terms of TM1 (i.e imported capital goods) its relationship with domestic R&D has a positive sign in the case of FDI-firms whereas, the corresponding relationship is negative in the case of TC-firms. As the coefficient is not statistically significant no firm conclusion can be drawn on the differential behaviour. However, when technology-import is measured in terms of TM2 (i.e, cost of the transfer of disembodied technology through technical collaboration), TC-firms are seen establishing complementary relationship with domestic R&D; the sign of the relevant coefficient is positive and statistically significant. To the extent that the value of the coefficient is greater than unity, it can be inferred that TC-firms tend to spend proportionately more on domestic R&D. This is an encouraging pattern, as it indicates the increasing degree of technological self-reliance of local firms. It is, however, disturbing to note that FDI-firms do not adequately back up the import of disembodied technology with domestic R&D efforts with the result that their impact is relatively less favourable than the local firms, to the building up of national technological capability.

To wit, the analysis does not provide empirical support to the hypothesised complementary relationship between technology-import and domestic

Table 4.4

Regression Estimates : FDI and TC Firms

Type of firm	Intercept level	Coefficients S (NETSALE)	TM1 (ICAP)	TM2 (FROYTF)	
FDI-firms					
62 firms	−5.459	+0.974	+0.074	—	$\bar{R}^2$ = 0.503
		(+ 6.427)*	(+ 1.077)		F = 31.890*
42 firms	−5.762	+1.097	—	−0.093	$\bar{R}^2$ = 0.506
		(+ 6.024)*		(−0.586)	F = 22.000*
TC-firms					
153 firms	−4.880	+0.974	−0.044	—	$\bar{R}^2$ = 0.348
		(+ 7.891)*	(−0.694)		F = 41.68*
104 firms	−1.462	+0.605	—	+0.188	$\bar{R}^2$ = 0.343
		(+ 5.196)*		(+2.254)*	F = 41.687*

't' statistics are given in parentheses.

* Significant at 5 per cent level.

technology-efforts of firms under foreign collaboration during the period of study.

B. FDI AND EXPORT PERFORMANCE

The impact study of the influence of foreign collaboration and in particular, foreign direct investment on the export performance of the Indian industry assumes significance as the ongoing liberalisation policy is based *inter alia* on the belief that FDI helps resolving foreign exchange constraints to development by its contribution to increased exports apart from bringing in net resource inflows on the capital account of the Balance of Payments. To

quote from the Governments' Industrial Policy Statement of 1991, " Foreign investment would bring attendant advantages of technology transfer, marketing expertise, introduction of modern managerial techniques and new possibilities for promotion of exports".

The Rationale of FDI Liberalisation

The rationale of FDI liberalisation policy for a developing country rests on the *a priori* idea of the relatively better export performance of TNCs. This is derived from the neo-factor endowment and neo-technology theories of international trade. In this theoretical framework TNCs (FDI firms) are generally considered to be better placed to tap international markets than their local counterparts in view of their captive access to the information and marketing networks of their parent enterprises (de la Torre, 1974). Besides, they have easy access to parent firms' advanced technology and also to monopoly advantages of patent, trade mark and other investment related intellectual property of parent firms, which facilitate their efforts to enhance exports from the host country. However, it has been be argued by Lall and Mohammad, (1983) that "the theoretical case is ambiguous and needs careful empirical investigation for each particular host country." Therefore, any empirical inquiry into the export performance of FDI firms as a group in the Indian industry will be rewarding intellectually and relevance to policy.

In so far as the literature on the subject with reference to India is concerned, some studies (e.g. Lall and Mohammad, 1983) have found that foreign presence and the extent of foreign share-holding are positively associated with export propensities, whereas many others (e.g. Subrahmanian and Pillai, 1979, Kumar, 1994 and Pant, 1993) have not found empirical evidence supporting the theory of better export performance of foreign enterprises. All the studies, however, relate to the pre-liberalisation period. It is possible that the market-distortion effect of the protective policy-regime would have made domestic market more profitable than exporting, and made the foreign firms to orient their strategies biased against exporting from India, despite their inherent advantages and the government's incentives for export promotion.

To the extent that the situation has changed with the introduction of outward-oriented liberalisation policy, it stands to reason that the behaviour of FDI

would reflect signs of significantly better export performance. This proposition stands valid also in the case of the existing firms established earlier during the protective policy regime, as they are now free to modernise, diversify, expand and to perform better in their export activities.

Hypotheses and Methodology for Empirical Analysis

To put the question sharply for empirical analysis it is hypothesized that (1) technology-import and FDI-stake *inter-alia,* are significant positive factors explaining variations in the export intensity; and (2) export-performance of FDI firms is different and better, as compared to local firms, in the Indian industry under the ongoing liberalisation policy. These working hypotheses are put to empirical verification by specifying an export-determination model in terms of some industry and firm characteristics in the framework of the neo-factor endowments and neo-technology theories of international trade. The explanatory variables in the model include industry-characteristics of (1) capital intensity, (2) technology-intensity, (3) technology-import intensity, (4) foreign ownership (5) advertising intensity, and firms characteristics of (1) size, and (2) profitability. The method of investigation is the estimation of empirical relationship between export-intensity and the explanatory variables with the help of OLS multiple regression equations. Here, it must be mentioned that the present study has followed closely the earlier studies, especially the ones by Lall and Mohammed (1983) and Kumar (1994) with a view to making the comparison of empirical results for the period before and after the liberalisation policy meaningful. As in the earlier studies, the present study has opted for a cross-section analysis of the relevant financial data of the sample of medium and public limited companies compiled by the Reserve Bank of India. As the data used in the study are averages over the period 1991-92 to 1993-94, the likely bias of year-to-year fluctuation is avoided.

The rationale of an export-determination model with industry and firm characteristics has already been dealt with in earlier studies but, for the purpose of ready reference, a brief presentation is made here about the logic of the chosen variables. As for industry characteristics, the choice of capital intensity (capital-labour ratio) is dictated by the logic of Heckscher-Ohlin theory of trade according to which a developing country like India has the comparative advantage in the manufacture and export of labour-intensive

products. Even in the theories of new international division of labour, multinational firms are predicted to export labour-intensive and not capital-intensive products from developing countries. According to the neo-technology theories of trade, export performance is influenced by the technology-intensity and hence, industries associated with high technology-effort tend to export a high proportion of their product. To the extent that a developing country like India is mainly an importer of foreign technology, industries with high technology-import can be postulated to have better export performance. As explained earlier, there is reason to postulate a better export performance of an industry, where FDI stake is high. There is also theoretical support to postulate a positive relationship between export intensity and product differentiation, represented by the intensity of advertising and sales promotion expenditure of the industry.

As regards firm characteristics, the size of the firm is chosen on the ground that exporting involves significant economies of scale (Caves, 1980) and therefore, there must be some minimum sales-volume, which must be reached before exporting. As exporting is associated with high degree of risk and uncertainty, it stands to logic that firms with greater access to financial resources do better on the export front. A variable that can represent this aspect is the profitability and hence it is postulated that firms with higher profitability would be doing better on the export front.

Thus, the first working hypothesis is verified by estimating an OLS regression equation as follows :

$$\text{EXINT} = f(\underset{(-)}{\text{ICAP}},\ \underset{(+)}{\text{TECHM}},\ \underset{(+)}{\text{FOROWN}},\ \underset{(+)}{\text{ADVINT}},\ \underset{(+)}{\text{SIZE}})$$

Signs indicate the theoretical expectation of the relationship.

The dependent variable is the export-intensity (EXINT). The explanatory variables included in the equation consist of (1) capital intensity (CAPINT) represented by the ratio of gross fixed capital to wage bill, (2) technology-import (TECHM), measured by the ratio of foreign payments on royalty & technical fees to net sales, (3) foreign ownership (FOROWN) represented by the ratio of dividend remitted to the total declared dividend, (4) advertising

intensity (ADVINT) represented by the ratio of expenditure on advertising and sales commission to net sales, and (5) firm size (SIZE)) represented by the average net sales per firm. Admittedly, some of the variables are proxies. Thus, wage bill is used to work out capital-labour ratio due to the non-availability of data on physical units of labour. Similarly, the absence of reliable data on foreign shares of equity or sales in the industry total has dictated the choice of share of dividend remitted abroad in total dividend paid, as a proxy for foreign ownership stake. The model used for empirical verification of the first hypothesis is more or less the same as the one used by Lall and Mohammed (1983) except that some of their variables like incentives and Highly Paid Employees (employees paid over Rs. 3,000 per month) are dropped, as these are less relevant in the current context, and some additional variables like ADVINT and SIZE are added to represent the export-operation in a market-friendly environment.

The empirical verification of the second hypothesis is carried out by estimating separate OLS regression equations for FDI-firms and local firms on the lines of Kumar (1994). However, some of the variables in the Kumar study have been dropped because they are of less relevance in the context of the present outward-oriented policy regime. The variables of industry characteristics included in the present study consist of capital intensity, technology-intensity, and advertising intensity. Technology-intensity (TECH) of an industry is measured by the sum of expenditures on R&D and foreign remittance on account of royalty and technical fees for technology import deflated by net sales. The firm characteristics are, size and profitability. The latter (PROFIT) is measured by the ratio of profit before tax of the I-th groups of firms as a proportion of their net worth (I = FDI, local).

Thus for verifying the second hypothesis, the export performance of FDI firms and local firms is postulated to be influenced as follows :

$$EXINT^{F} = f1\ (CAPINT,\ TECH,\ ADVINT,\ SIZE,\ PROFIT)$$
$$(-)\quad (+)\quad (+)\quad (+)\quad (+)$$

$$EXINT^{L} = f2\ (CAPINT,\ TECH,\ ADVINT,\ SIZE,\ PROFIT)$$
$$(-)\quad (-)\quad (-)\quad (+)\quad (+)$$

Signs indicate the expected relationship. The verification sought here is that the export-performance of foreign firms would be significantly different and better than that of the local firms.

Empirical Results

The analysis is based on the data on export-intensity (measured by the ratio of exports to net sales) and its postulated determinants in respect of 310 medium and large public limited companies which are engaged in the modern manufacturing industries and reported to have received export earnings during the period of study viz., 1990-91 to 1993-94. The industries included are 16 in number (as listed in the subsection A). They are (1) transport equipment, (2) electrical machinery, (3) foundries, (4) machinery (others), (5) ferrous and non-ferrous metal products, (6) chemical fertilizers, (7) dye-stuffs, (8) man-made fibres, (9) other basic chemicals, (10) medicines & pharmaceutical products, (11) paints, (12) other chemical products, (13) cement, (14) rubber and rubber products, (15) paper & paper products and (16) plastics. In other words, traditional manufactures of (1) edible oil, (2) sugar, (3) other food products, (4) tobacco, (5) cotton textiles, (6) silk & rayon and (7) breweries and beverages are excluded from the scope as the role of technology-import and FDI-stake is expected to be relatively low in these industries. The company-wise data have been aggregated to get industry-wise totals and the relevant ratios worked out by transforming them into logarithms to reduce possible heteroscedasticity.

The results of the OLS regression estimates as reported in Table 4.5 reflect the empirical evidence on the first hypothesis. It is encouraging to note that the variables included in the regression equation explain a fair proportion of the variation in the dependent variable as testified by the value of adjusted R^2 and the significance of F-ratio.

However, only one variable viz., advertising intensity has taken the postulated positive sign with statistical significance. The size-variable is also significant but has taken a negative sign which gives the empirical evidence of the greater export responsiveness of small firms as compared to big firms. As expected, the capital intensity variable has taken a negative sign, though its

Table 4.5

Estimates of Regression Coefficients of Export Intensity Equations

Explanatory variables		*Coefficient*	*t-statistics*
TECHM		+0.005	+0.030
FOROWN		−0.127	−0.670
CAPINT		−0.443	−1.388
ADVINT		+0.588	+2.170*
SIZE		−0.657	−2.150*
Intercept		+ 14.087	
Adjusted R^2	0.522		
F-ratio	4.283*		

* Significant at 5 per cent level.

value is not of expected significance and indicated a better export potential of labour-intensive products.

What is of particular interest in the regression results is that the variable representing foreign-stake (FOROWN) does not show up the postulated positive sign; contrarily, it has taken a negative sign though the value is not of enough statistical significance. Further, the coefficient of technology-import variable is also not statistically significant, though it has taken a positive sign. Thus, the analysis does not validate the hypothesis that technology-import and FDI-stake are significant positive factors in explaining variations in the export performance of Indian industries.

The results of the regression equations estimated separately for FDI-firms and local-firms are reported in Table 4.6. Admittedly, the explanatory power of the equations is poor in the case of FDI-firms. This however is not peculiar to the data for the period under study. In fact, earlier studies also had poor adjusted R^2 for similar export functions.

The coefficients and the statistical significance of the explanatory variables do not reveal any major difference in the role of industry characteristics in explaining the export performance of both the FDI-firms and local-firms. Advertising intensity (ADVINT) and size are found significant for local firms and profitability is found significant for the FDI-firms. However, there is some difference in firm-characteristics in that the profitable firms among FDI group and smaller firms among the local group seem to venture into the international market. On the whole, the analysis does not provide sufficient empirical evidence to validate the *a priori* proposition that there is a significant difference in the industry characteristics or the export performance of FDI firms as compared to local firms in the Indian manufacturing industry.

Table 4.6

Regression Equations Explaining Export Performance of FDI-Firms and Local-Firms

Independent variables	*Dependent variable*			
	EXINT of FDI-firms		*EXINT of Local firms*	
CAPINT	− 7.353	(− 0.023)	− 0.384	(− 1.544)
ADVINT	− 0.348	(− 0.506)	+ 0.696	(+ 2.550)*
TECH	+ 0.316	(+ 0.450)	− 0.030	(− 0.124)
SIZE	+ 0.222	(+ 0.312)	− 0.930	(− 4.059)*
PROFIT	+ 2.456	(+ 2.178)*	− 0.565	(− 1.361)
intercept	− 7.353		+ 18.70	
Adjusted R^2	0.12		0.67	
F-ratio	1.29		7.26*	

't' statistics are given in parantheses.

* Significant at 5 per cent level.

Export Probabilities : Results of Logit Regression

The above analysis leaves out the sample firms, which are not seen to have engaged in exports during the period, from the analytical scope. The number

of such firms in the sample is quite large. Besides, it does not capture the probability of exporting by the firms under foreign collaboration. As such firms, especially the firms under foreign control have tie up with transnational corporations and thus have links with the external markets, they have the greater potential to export from India. It would, therefore, be interesting to estimate the probability of their export propensity relative to the local firms.

In more specific terms, the analytical question is to ascertain if the firm-characteristic of foreign ownership-control (FDI) *per se* has a positive influence on the export behaviour at-least, in terms of export probability. To answer this question, a separate export equation for explaining the inter-firm variations in export probability is specified with foreign ownership as a firm-specific dummy variable. The other variables included in the equation are net sales (SIZE), product differentiation (ADVINT), capital intensity (CAPINT) and technology (R&D by using a dummy variable : 1 if the firms undertake R&D and 0 otherwise). The model is estimated by maximum likelihood method in the logistic regression procedure by using the panel data for 411 large & medium public limited companies in the Indian corporate sector.

In the model, the endogenous variable export (X) takes the value 1 if a firm exports and 0 otherwise. The model states that X is equal to the probability of exporting plus an error term. The probability is not observed but it is estimated. The approach followed here is to express the probability of exporting as a cumulative logistic function namely,

$$Pr\ (X = 1) = 1 / [1 + \exp\ (-Zb1)]$$

where b1 is a column vector of parameters, some of which are set equal to zero by assumption. The parameter estimates for the logit regression are reported in Table 4.6.

The parameters of SIZE and R&D dummy are negative in signs and are statistically significant. By inference, there does not seem to have a positive effect of the size and R&D on the firms' export probability; rather, the evidence indicates the relationships in opposite directions. In other words, the smaller firms engaged in the production of low R&D intensive products (standard

Table 4.7

Logit Analysis of Export Probabilities

Regressor	*log* $\frac{Pr\,(X = 1)}{Pr\,(X = 0)}$			
	Parameter Estimate	*Standard error*	*Pr > Chi.square*	*Odd Ratio*
Intercept	7.973	1.556	0.000	99.0
D1 (FDI dummy)	– 0.640	0.428	0.135	0.52
R&D dummy	– 1.238	0.276	0.000	0.29
ADVINT	– 11.335	8.451	0.179	0.00
SIZE	– 0.658	0.123	0.00	1 0.51
CAPINT	0.017	0.006	0.010	1.01

goods) have greater probability of entering into the export market. Similarly, the parameter of product-differentiation (ADVINT) has negative sign though its value is not significant. That is to say, the fact that the firm is engaged in differentiated products and has access to monopolistic advantages by itself does not increase its export probability. The variable, capital intensity (CAPINT) has taken a positive sign and is statistically significant. It may be that given labour-intensive products, the firms with higher capital investments have better prospects of export probability. All these findings stand to reason. However, the empirical finding on the relationship of foreign ownership-control (FDI) as a firm specific characteristic with the export probability does not lend support to the *a priori* idea on the greater export potential of FDI. For, the parameter of FDI dummy (D1), the main variable of interest to the study, is not significant in value and has taken the negative sign. That is to say, foreign ownership-control (FDI) has no positive effect of significance on the firms' export probability.

How does this empirical finding stand to logic? While at the conceptual level, FDI-firms have access to advanced technology, the marketing networks etc. of the parent TNCs, it may be that in practice Indian subsidiaries/associates of TNCs are not permitted to establish close links with the markets of their parent companies in other countries. The prevalence of various types of export-restrictive clauses in the technology transfer agreements and other restrictive practices of TNCs lend credibility to such a reasoning. In any case, the empirical finding gives evidence of portentous signs of FDI impact on India's export promotion.

General Conclusion on FDI Impact on Exports

The results of regression equations when considered together lead to the general conclusion that the *a priori* idea on the better export performance of FDI firms under the liberalisation policy has not been empirically established in respect of modern manufacturing industries. This is true both in terms of actual export performance as well as export probability of the firms. As far as the actual export performance is concerned, it may be recalled that most empirical studies for the pre-liberalisation period also did not show evidence of better export performance of foreign firms relative to their local counterparts in the country. It, therefore, stands to reason that FDI-firms continue to confine their operations to cater to the Indian domestic market despite the ease with which they can seek access to their parent companies' advanced technology, investment related intellectual property, marketing network etc., under the liberalisation policy to export. What is more disturbing is that foreign ownership-control (FDI) as such has no significant influence even on the firms' export probability.

Lest there is a wrong impression created by this analysis, it is necessary to state that given the limited empirical information, a review of the *a-priori* presumption that FDI opens up export promotion possibilities under a liberalisation framework, is essential. In case the FDI continues to have no significant positive impact on export promotion, it would be imperative to seek alternative measures for export promotion including perhaps, a selective policy of export-oriented foreign investment.

Section 5

ECONOMIC DETERMINANTS OF FDI INFLOWS

In order to know why some countries have more FDI inflows than others, it is necessary to know the determinants of FDI inflows. The most commonly used strategy by developing countries to attract FDI inflows has been to remove regulations and controls, and to opt for an 'open-door' policy, on foreign direct investment. While this led to a momentum in FDI since the early nineties the pattern of FDI distribution across developing countries casts doubts on the efficacy of the liberalisation policy in attracting FDI into particular developing countries.

At the global level, the FDI-boom is strong since 1991, the annual growth rate of FDI inflows into developing countries having surpassed that of earlier periods and that for developed countries (see Table 5.1). However, the bulk of FDI inflows is concentrated in a few countries: the top 10 countries together receive more than 70 per cent of the total inflows. The composition of major receivers has remained more or less stable. To illustrate, more than 75 per cent of the total inflow into the developing world has remained concentrated in less than 10 per cent of FDI receiving countries. Here, the top five countries (viz., China, Singapore, Mexico, Malaysia, and Argentina) together account for nearly 60 percent of the total.

While almost all developing countries have sought to attract FDI by liberalising their policies, few have been successful. Liberalisation policy *per se* therefore may not be a significant factor in attracting FDI inflows into a developing country. Rather, the economic environment conducive to increased FDI inflows has elements more important than the liberalisation policy.

There is a considerable body of empirical literature on the principal determinants of FDI inflows, though there is no unanimity with regard to them. These studies invariably deal with the location influence but as most of these studies are based on the analysis of data for periods that are not promotional of foreign direct investment, it is relevant to look afresh into the location influence based on the data for the 1990s, when most developing countries have shown a marked shift of attitude towards foreign direct investment.

Table 5.1

Pattern of FDI Inflows: Some Facets

	Annual average 1981-85	*Annual average 1986-90*	*1991*	*1992*	*1993*
Global Inflows US $ billion	50	155	162	158	194
Inflows into developing countries US $ billion	13	25	39	51	80
Share of Developing world in global flow (%)	26	16	24	32	41
Annual growth rate in FDI developing world (%)	−4	17	25	32	54
Annual growth rate in FDI developed world (%)	1	24	−32	−5	7
Share of the top ten countries in FDI flow to developing world	71	71	71	76	72
Share (%) of major receivers in FDI flows to developing world					
China			11.2	21.7	
Singapore			11.2	10.9	
Mexico			12.2	10.4	
Malaysia			10.2	8.6	
Argentina			6.2	8.1	
Thailand			5.2	4.1	
Hong Kong			—	3.7	
Indonesia			3.8	3.4	
Brazil			—	2.8	
Nigeria			—	1.7	
Republic of Korea			4.9	—	
Taiwan			3.3	—	
Columbia			2.9	—	

Source : United Nations, World Investment Report 1994.

A. ANALYTICAL FRAMEWORK AND APPROACHES

The literature on FDI determinants essentially encompasses two basic approaches. One examines the factors influencing the firms' decision to invest and produce abroad rather than to supply foreign markets through exports. The other investigates host-country characteristics including elements of public policies that influence the location of foreign direct investment. The analytical framework used in the literature is usually the one, which comes close to the eclectic theory of international direct investment (developed by Dunning[10]) incorporating the theories of industrial organization, location and firms.

The general proposition of the theory is that enterprises are more likely to engage in international investment when (1) the more *ownership-specific advantage* is possessed; (2) the enterprises are interested in exploiting these advantages from foreign location (*location influence*); and (3) the firms have the incentives to internalize rather than externalize these specific advantages (*internalisation advantage*). For purposes of this study, we formulate an analytical framework based on the eclectic theory but limit its scope to the location influence. This means, the question of our inquiry is the following: Given the firms' decision on international investment, what factors determine the location in individual countries in the developing world?

It is obvious that how a country is perceived as a desirable location of industrial production depends on the firm's strategic considerations, which are unique to itself. However, this perception to a large extent is formed on the basis of the information the firm has about the host countries. Thus viewed, the location of foreign direct investment would depend upon the foreign investors' perception on such economic, social and political conditions (factors) in the host countries that influence the maximisation of the firms' objectives of foreign investment. The analytical approach in the empirical literature has been to hypothesise *a priori* the relationships of some independent variables (factors) with FDI inflows and examine their empirical validity.

Generally, two alternative methods viz., (1) survey method and (2) econometric modelling are found to have been adopted for empirical evaluation. We opt for the latter for purpose of analytical rigour, even though it cannot evaluate qualitative factors. But within the econometric approach, one could choose

between cross-section and time-series analysis. In view of the data constraints we opt for a cross-section approach of analysing relevant data on location factors at a point in time.

The required data on the characteristics of countries receiving foreign direct investment of more than US$ 100 million[11] are fitted to the multiple regression model. We supplement this with the application of discriminant analysis, as the FDI inflow and some of its determinants are more categorical than continuous variables. Thus, variables (representing different factors) with satisfactory statistical significance in both methods of analysis, are regarded as the principal determinants of the FDI flows across developing countries. In doing so, there is no denial of the influence of other factors but these are to be treated as factors supplementing the principal determinants in attracting FDI inflows into a particular country-location in preference to others in the developing world.

B. FDI DETERMINANTS : SOME TESTABLE HYPOTHESES

A few studies[12] have formulated testable hypotheses emphasising the simultaneous influence of economic and non-economic factors; most studies have limited their scope of analysis to the economic determinants. We follow the approach of limiting the scope of the analysis to the economic determinants. There is no denial of the importance that foreign investors attach to social, political and other non-economic conditions of the host countries in deciding upon the FDI location. For instance, a country in which there is political unrest or where there is threat of nationalisation of private investment *ceteris paribus* would be less attractive as a location for foreign investment than a country offering political stability and guarantee of private property rights. However, we recognise the practical difficulty in formulating hypotheses or designing empirically verifiable quantity-measures of political factors. It is also possible that qualitative aspects of political characteristics like the political orientation (left vs. right ideology) of the government, the out-dated legal and political processes and systems, the degree of efficiency of bureaucracy etc. exert influence in modifying the modalities, rather than acting as the determinants of the entry, of foreign firms' operation in developing countries. It must also be said that studies in the literature which have dealt

with FDI determinants by incorporating political factors generally have not revealed with any satisfactory degree of confidence the definitive influence of political factors on the FDI inflows.

Economic Determinants

In dealing with economic determinants we distinguish on the lines of Dunning (1973) three sets of factors of *"location influence"* in regard to foreign direct investment inflows. These are (a) market factors, (b) cost factors, and (c) investment climate. The formulation of specific variables in the model to represent the sets of economic factors is conditioned by the availability of relevant quantitative data. Details of the variables and their hypothesised relationship with FDI inflows are outlined below.

(a) Market Factors

Under the set of market factors, we consider two specific propositions: First, the higher the GNP per capita in a country, the wider the domestic market for the products, the better the prospects of profitability, and the more attractive that country would be for location of foreign direct investment. We postulate the direct and positive relationship between GNP per capita and FDI inflows. Second, it stands to reason that the expectation of the dynamic growth of the host country also finds a place in the calculus of foreign investors. The higher the rate of growth of real GDP, the better the prospects of market growth in the future. Hence, we postulate the direct and positive relationship of the annual average rate of real GDP growth with FDI inflows.

(b) Cost Factors

It needs no emphasis that profitability of investment, which is an important consideration in the firms' location decision, is related to the availability of factors of production and their costs to the investing firms. It could be conceptualised that the choice of location is influenced by the availability of raw materials and workers with the required skill. However, the specification of variables to represent factor availability in the FDI determinant model is a difficult task. We use different ratios to represent different dimensions of factor availability. The share of primary commodities in the exports of a country

can be visualised as a measure representing the raw material availability for domestic manufacture. The availability of the labour force for organising the production is indicated by the ratio of the age group of 14 – 64 years in the population. Given the labour-surplus situation in most developing countries, however, the inclusion of this ratio in the model is likely to be devoid of meaning. Besides, what the foreign investors are concerned with is the educational/skill profile of the potential work force. To some measure, this would be reflected in the facilities and the practices of the population in the school-going age-group for education. It is hypothesised that the larger the percentage of the age-group enrolled in secondary education in a country, the more its attraction for FDI inflows.

Apart from the factor availability, there is the question of cost. Here, the primary concern is with the cost of labour, i.e., wages. Obviously, a country with lower wage has a greater attraction for location. The low wage in a developing country is often cited as providing maximum attraction for FDI inflows. However, it may be added that the low wage *per se* is not important unless it is backed up by labour productivity. We, therefore, use the concept of 'efficiency-wage' to represent the labour cost condition and postulate its inverse relation with FDI inflows. The variable is obtained by dividing the index of wages with the index of labour productivity (1980 = 100).

There is yet another important factor in facilitating industrial production. This is the availability of infrastructure. Generally, most empirical analyses incorporate in the FDI determination model an infrastructure index, which is constructed on the basis of the evaluation of such facilities as power, transport, and communications available in the host country, and postulate its positive relationship with the FDI inflows. Obviously, a complicated procedure requiring information on various forms of infrastructure facilities and a proper 'weighing-diagram', is involved. In the absence of detailed information we construct the index on the basis of published information on percentage of households with electric power, telephone main lines per 1,000 persons, road density (km. per million persons) and rail traffic (km. per million $ GDP) giving equal weights to each element. The positive relationship of the Infrastructure Index with the FDI inflows is postulated in the model. A warning must be given here. As the methodology used for the construction of the index has limitations,

the relationship, as revealed by the empirical evaluation, should be read with caution. Nevertheless, the investment on infrastructure in developing countries is made generally by the government agencies. Hence, this measure also reflects the role of public policies in improving the investment climate.

(c) Investment Climate

The investment climate in a country is an important determinant of the flow of foreign direct investment but it is difficult to identify different elements of what constitutes a conducive climate and measure them. There is no consensus in the literature on the variables to represent the investment climate. The practice has been to introduce variables more on *ad hoc* rather than theoretical considerations.

Invariably, studies have used the state of external balances to reflect upon the investment climate. The strong international reserve position (foreign exchange reserves) of a host country instills a high degree of confidence in the foreign investor on the health of the country's balance of payments facilitating the maintenance import and outward remittances of profits and other returns on investment. In our model we consider the gross international reserves in terms of months of import coverage as a variable representing the investment climate. We postulate the positive relationship of international reserves with FDI inflows. In addition, we include the average annual rate of inflation (GDP deflator) as another variable to represent the investment climate. We postulate the negative relationship between the rate of inflation and FDI inflows on the ground that a higher rate of inflation signals the high cost of operation, internal economic tension, and other disadvantageous that may deter the inflow of FDI. To the extent that inflationary situation reflects the inability of the authorities to bring about an appropriate macro policy management, this variable would be a good proxy for measuring the efficacy of public policies in conditioning the investment climate.

Another important dimension of the investment climate relates to the government policies on direct taxation on income, profit, capital gains etc. Higher tax burden would be less conducive to FDI inflows. Here the relevant variable is the effective rate of taxation which is arrived at by adjusting the

nominal tax rate for various investment incentives and tax concessions. In the absence of detailed information, however, we use the percentage revenue contributed by direct taxation on income, profit and capital gains as the variable to represent the tax incidence.

A country with relatively less government expenditure would be regarded as one in which the government has much less direct involvement with production activities, providing for larger private sector role in economic activities. The incentive to foreign investment will be high in such a country. However, a caveat must be added. Some investors would consider the high level of government expenditure as a positive factor, where expenditures are incurred for building up social and economic infrastructure – the 'wheel' of economic growth. Besides, to the extent that the higher government expenditure would raise the purchasing power of the people, some foreign investors would perceive it as a positive factor in expanding the market for their products. Thus viewed, the variable of government expenditure representing the investment climate can take a positive sign in the empirical model of FDI determination. In a more general sense, the investment climate has complex qualitative dimensions conditioning the risk perceptions of potential investors. It is for this reason difficult to capture these through quantitative measures. And it is difficult to provide firm theoretical expectations on this issue.

Country Risk Indicators

Given the decision on foreign investment, the location decision by the firms can be analysed also by adopting an alternative approach of evaluating the investment climate across developing countries with the help of such country risk indicators[13] as the Business Environment Risk Index (BERI), the World Political Risk Forecast (WPRF), the Political System Stability Index (PSSI) or the Institutional Investors Credit Rating Index (IICRI). The variations in the risk indicators of different countries can be directly related to the intensity of FDI inflows into those countries in as much as the risk indicators can claim to be the summary measures of all economic and non-economic factors. Some scholars have included these country-risk indicators (e.g. Dunning in his 1981 study uses the BERI index along with economic factors) in their formulations but have not found any significant influence of these risk indices

in explaining the distribution of foreign direct investment. In view of the difficulty in collecting the information on such risk indicators or in collating the necessary data for construction of such indices, we do not include these country risk indicators in our empirical model.

C. EMPIRICAL VERIFICATION

We test the postulated relationships with the help of multiple regression technique. Information on independent variables are compiled from the World Bank Reports. The data on the dependent variable i.e, foreign direct investment flows for 1992 are compiled from the UNCTAD-DTCI's World Investment Report. The values of FDI inflows into developing countries, as has been the general practice in the literature, are normalised with reference to the respective country population. That is to say, the phenomenon to be explained is the intensity of FDI inflows measured by the inflow of FDI per capita. Here, there is a bias in the sense that the high-population countries receiving large quantum of FDI would be shown with less FDI intensity. As against this, the bias of using absolute FDI inflows would be much greater in the opposite direction. In any case, the former cases are in fact too few to give a distorted overall picture.

Regression Estimates

The estimated coefficients of the multiple regression equations are reported in Table 5.2. It may be mentioned that the correlation matrix did not reveal any serious multi-collinearity problem. The values of R-square vouch for the explanatory power of the model. F-ratios are statistically significant. The results of regression model using the direct method (all variables considered) reveal that coefficients are statistically significant only in respect of two variables viz. (1) GNPPC and (2) PRIMEXP, which represent the domestic market and the raw-material availability respectively[14]. These variables have taken the signs as hypothesised in our FDI-determination model. It is interesting to note that the coefficients of all variables (except efficiency wage) have taken the signs postulated in the model; however, to the extent that none of the coefficients of those variables has statistical significance, no valid inference

Table 5.2

Regression Estimates

Dependent Variable: FDI per capita

Independent Variables	*coefficient*	*standardized coefficient*	*t-values*
I. Multiple Regression : Direct Method – all variables			
GNPCC	0.081	0.604	3.386*
GDPAGR	7.098	0.369	0.212
PRIMEXP	22.422	0.424	2.659*
SECED	1.502	0.063	0.405
INFRINDX	0.323	0.078	0.435
EFWAGE	2.367	0.129	0.826
INTRESERV	7.723	0.359	0.233
INFLATION	– 0.181	– 0.038	– 0.205
TAXREVENU	– 7.616	– 0.216	– 1.185
GOVTEXPN	0.924	0.262	0.163
R-square = 0.685 Adjusted R-square = 0.500 F = 3.700*			
II. Multiple Regression: Method Step-wise.			
GNPCC	0.093	0.693	5.607*
PRIMEXP	17.083	0.323	2.615*
R-square = 0.621 Adjusted R-square = 0.590 F = 20.490*			

* Significant at 5 per cent level.

can be drawn on their hypothesised relationship with FDI inflows. The conclusion that can be drawn with confidence is that (1) the availability of primary material inputs for manufacture and (2) the large size of the domestic market for the sale of the manufactured products are the two principal

economic determinants of the location of FDI inflow (distribution across countries).

The results of OLS multiple regression model using step-wise method (see Table 5.2) has also endorsed the influence of raw-material availability and market size on location of FDI inflows. For, the step-wise regression method has identified only GNPPC and PRIMEXP as the two important variables with statistical significance at 5 per cent. Contrary to the popular notion and the findings of some earlier studies, the comparative advantages of a country in terms of the availability of labour (even the educated population) and of the low wages are not found to be of great significance in influencing the location of FDI flow into that country.

Discriminant Analysis

We also attempt identification of the determinants of the distribution of FDI inflows across developing countries with the help of discriminant analysis. We first classify our sample of 28 countries into two groups of (1) highly

Table 5.3

Discriminant Function: Method Step-wise (Mahalanobis)

Variable	*Standardized Coefficient*	*F-Values*
GNPPC	+ 0.823	9.365*
GDPGR	− 0.488	− 6.010*
PRIMEXP	+ 0.463	7.124*
INFRINDX	+ 0.374	4.991*

* Significant at 5 per cent level.

Note: Variables are listed in the order they are selected by the Mahalanobis stepping criterion. The F-values and number of degrees of freedom depend on the number of variables already selected at the time of a particular variable is added. The sign of a coefficient does not indicate the direction of change.

attractive location and (2) moderately attractive location using the mean FDI per capita inflow into these 28 countries in 1992 as the cut-off point[15]. The task of empirical valuation is to estimate the discriminant function and select from the variables those that are found to be essential discriminants[16]. In our case, the estimated discriminant function has selected four variables viz., (1) GNPPC (2) GDPAGR, (3) PRIMEXP and (4) INFRINDX (Table 5.3) as essential discriminators.

By inference, the analysis suggests that developing countries that have attracted the most FDI inflows on per capita basis are those that have a large and growing domestic market with raw material availability and adequate infrastructure facilities. Thus, the discriminant analysis endorses the findings of the regression analysis and further reveals the significance of two additional variables viz., the growth rate of GDP and the level of infrastructure facility, as the principal determinants of FDI inflows into developing countries.

Section 6

SUMMARY AND CONCLUSIONS

We conclude the study by summarising the main findings and by bringing into fore some 'clues' for policy making. Given the short period of analysis and the limited information, the 'clues' may not be as strong as one would like them to be. Yet, they do throw up some 'indications' and to the extent their continuous monitoring would make a movement towards objective policy changes, they serve a purpose.

In recent years, many developing countries have undertaken measures to liberalise their economies and, in the process offered generous incentives for attracting FDI. India came into this mode somewhat belatedly, in 1991, and has made changes in its earlier regulatory policy on foreign investment and technology transfer (foreign collaboration). The changes introduced through the Industrial Policy Statement of 1991 and other reforms include, the abolition of industrial licensing system except in a few strategic sectors, the revision

of FERA providing flexibility in foreign ownership with no upper bound for foreign equity, the automatic approval of FDI unto 51 per cent equity and technical collaboration within specified parameters in listed priority industries, the opening up of areas like mining, power generation and telecommunications earlier closed to FDI, the trade liberalisation and tariff reduction, and the rupee convertibility on current account. While the policy is said to be "continuity with change", the measures introduced since 1991 are sharp departures from the past.

The current Indian policy towards foreign investment and foreign technology (foreign collaboration) is inbred with outward-orientation. Such questions as foreign ownership and control, adverse balance of payments effect of factor incomes, transfer pricing and other surplus outflows, increased technological dependence, and reduced self-reliance, which used to be issues of concern from the earlier inward-looking policy perspective, are no longer regarded so. FDI is considered necessary for improving India's competitiveness and economic performance in a globalising world economy. And, liberalisation is viewed as important for improving the investment climate, leading to increased deployment of tangible and intangible assets – capital, technology, R&D capacity, management practices and trade links – by TNCs. This, it is believed, would strengthen the country's resource base, technological capability, access to external markets, and thus, improve the overall economic performance.

In addition to the general macro-economic considerations, attracting inflow on capital account is seen as a way of tackling the balance of payments problem. And when it is through FDI, it is less uncertain and less burdensome, as there are fundamental differences in the motivations of foreign direct and portfolio investments. Liberalising FDI-policy would contribute to a change in the nature and composition of capital flows and reduce, relatively speaking, risks associated with payments problems, by providing access to external markets, and thereby increasing the country's export earnings.

The trends in FDI inflows and technology transfer moved in tune with the nature of policy phases. Among the four identifiable policy-phases since 1948, the current phase engineered a trend reversal in foreign collaboration in the sense that the quantum of investment inflow and technology transfer became

significant and higher than those of the earlier policy phases. As for the investment pattern, the FDI increasingly originated from diverse sources and generally moved into priority areas such as power generation, oil refinery, telecommunications, electronics and food processing where domestic investment is inadequate. Thus viewed, there is much to commend the current policy on foreign investment and foreign technology (foreign collaboration).

However, there still exist some discouraging dimensions. India has not been so successful, as other major FDI-seeking Asian countries, in attracting FDI. In particular, the gap between FDI approvals and actual inflows has been wide. Some inferences could be drawn from this situation. The response of TNCs to the ongoing liberalisation process in India has been rather cautious. The actual FDI-inflow into the country has been less than the potential and expectations. Besides, when a comparison is made with the experience of China, where the bulk of the foreign investment originated from overseas Chinese, the contribution of NRIs to the total direct investment in India has been unimpressive.

This situation offers some clues for reducing policy interventions and increasing the role of free market in relation to entry and operation of FDI. There is considerable scope for speeding up liberalisation with greater transparency and stability and for giving incentives for increased FDI inflows.

This suggestion, however, has to be juxtaposed with some other findings. The main factor influencing FDI inflows into a developing country is seen to be the prevailing economic environment, understood to include, domestic market size, levels of infrastructure development, cost conditions and broad macro-economic conditions. This implies that liberalisation policy alone as such is not a significant determinant of FDI inflows. In other words, the policy environment while being important, is not the only factor; it has to be supplemented by broader economic environment in the location of FDI. For attracting 'market-seeking' FDI, the considerations that merit priority attention are improvement of the size of the effective domestic market, and of access to infrastructure and productivity-enhancing measures. And, 'resource-seeking' FDI being location-specific, would be less sensitive to the host country's investment climate.

The irrelevance of further liberalisation can also be seen from yet another angle. The current Indian policy in terms of 'openness', does not rank much below those of other major FDI-seeking countries. The scheme of automatic approval of foreign equity unto 51 per cent in the listed priority industries, is a unique feature of the Indian policy. In fact, from the policy perspective India scores over China, which has been attracting the major share of the total FDI flows into the developing world, in as much as China's FDI policy is more selective in terms of the types of FDI and sectors, and restrictive, with all FDI proposals having to get prior approval on a case-by-case basis without any specific rules or guidelines. In contrast, Indian policy is transparent, rendering entry and operation of FDI generally in a market-determined environment.

The prevailing environment for the operation of foreign investment in India is not less attractive relative to most other FDI-seeking Asian countries as well. India has schemes of investment incentives (including special incentives for selected sectors like power and hydro-carbon) and protection of private property and other basic rights which render foreign investment highly profitable, similar to those in FDI-seeking Asian countries. The Indian policy on repatriation of profit and other income also compares well with these countries. Nonetheless, Indian policies are regarded as relatively less favourable at margin in specifics. There are some specific aspects (e.g. lack of transparency in the approval of FIB/SIA cases, regulations and bureaucratisation at the level of state governments for accessing operating facilities, and higher rates of taxes and tariffs especially in regard to corporate taxation, capital gains tax and customs duty), which need detailed reviews and perhaps revisions for rendering the Indian environment relatively more competitive for FDI inflows than before.

In particular, the findings of the study provide the clue that the entry-policy may consider adopting a "negative list", instead of the present "positive list", approach. This implies that the government would define from time to time the role of FDI in the economy, and determine the potential for development without further FDI in different areas. The government could then declare as and when required, specific areas where FDI would not be permitted without prior clearance. And, FDI would get automatic approval for all cases except

in the negative list. With such a change, the scope of the RBI automatic-route, which at present has a relatively insignificant place in the total quantum of approved FDI, would get expanded. Also, more effective measures would be required to mobilise NRI direct investment.

While there is scope for fine-tuning some of the existing policies and practices to attract more FDI inflows, the case for eliminating policy interventions and enlarging the scope and speed of the ongoing liberalisation for increasing FDI inflows is, on balance, not very strong.

For example, the increasing incidence of foreign ownership control through various means (e.g., expanding foreign equity base and ousting local partners in existing joint-ventures, amalgamation and take-over of existing enterprises, and bargaining for ownership-control in new enterprises) is one problem in relation to FDI. As for technology transfer, the more packaged forms (e.g., the FDI), the longer duration of agreements, and higher rates of royalty, could all raise the direct and indirect costs. The problem would be compounded when export clauses in the technology agreements that are approved do not sufficiently encourage exports. Further, in terms of investment pattern, the manufacturing sector is declining in importance and witnessing a structural shift away from capital goods to light industries. Moreover, foreign investors have inclined to move into areas, which have growing domestic markets (e.g. consumer goods and services) notwithstanding the uncertainty in getting prior approval of FIB/SIA, and the limited contribution they make towards the long-term socio-economic development.

Indeed, these aspects are not wholly unexpected and underscore the relevance of strategic policy intervention. The solution does not lie in reinstituting a regulatory interventionist policy. Perhaps, what is needed along with FDI-liberalisation are programmes for dealing with diseconomies of monopolies that surface as part of the increased FDI stock in certain sectors of the economy.

The sharp growth in industrial output and foreign exchange reserves since 1993-94 is often viewed by some as a reflection of the favourable impact of FDI as well a justification for further liberalisation. Within the limitations of

the sample period, the results of our impact study of FDI on two major dynamic aspects of development, viz., technological capability and export promotion, do not present an unequivocal support to such a view point. For, there are no clear empirical evidence of (a) the complementary relationship between technology import (especially through FDI) and domestic technological efforts, and (b) the relatively better export performance of FDI firms. In fact, Indian firms with non-equity forms of collaboration with TNCs have performed better than FDI-firms, in terms of strengthening domestic capacities for R&D, innovations, production and expanding markets, in some areas.

A salutary effect of liberalisation has, however, been that the Indian industries could have avenues for easy access to advanced technologies from TNCs which would help improve their productivity, competitiveness and growth. Such an 'open-door' policy to be effective, should help back up technology import with investment on R&D and other technological efforts in India. In other words, technological behaviour has to impart enough dynamism to the national technological capability building.

Some policy inferences follow. One, strategic interventions by using the country's comparative advantage in R&D skills and other inputs are necessary to strengthen linkages between TNCs and Indian firms (both FDI and domestic) for domestic technological progress. Two, there are non-equity forms of tie-up with TNCs that can be used as effective alternatives to FDI for acquiring advanced technologies with greater scope for local adaptations, improvements and innovations. Three, distinct policies and programmes are necessary to strengthen the national technological capability on its own, with the initial support that FDI renders.

Empirical evidence do not suggest that FDI and technology transfers have been significant in explaining the variation in the export-intensity of Indian industries. The empirical support to the *a priori* idea of high export propensity and more export orientation of FDI firms as compared to domestic firms, is not fully borne out in the Indian context. Further, foreign ownership control (FDI) does not seem to have a strong positive effect on the firms' export performance. Foreign collaboration firms, especially the ones with high FDI stake, do not seem to be making significant positive impact on exports

presumably because of the attractiveness of the large and growing Indian market.

Although FDI-firms are not found as export-intensive as anticipated, their indirect influence in the growth of the export sector needs to be kept in perspective for policy making. As FDI is positively related to GNP and its growth rate, it stands to reason that FDI helps promote diverse domestic economic activities, both tradable and non-tradable. Therefore, there may be indirect influence of FDI and market factors in terms of spill overs, externalities and competition effects, on the growth of India's external sector. This, however, may take a long time for fruition. A strong commitment of FDI to India's long term development would help remove uncertainties of raising the growth trajectory over time. In order to ensure that FDI flows are not influenced by short term considerations of accessing Indian market, strategic policy interventions are needed to strengthen the country's 'locational advantage' and to mould market signals for creating conditions for attracting more FDI inflows and internalize TNCs' 'ownership advantage' to stimulate the process of domestic learning and capacities for efficient production and expanding external markets in selected sectors. This will be rendered possible if FDI helps to acquire higher technologies and to strengthen national technological capability to reduce costs, improve competitiveness and to bring about large scale industrialisation in the country.

Endnotes

1. To illustrate, the developing countries attracted (US $ 80 billion) 40 per cent of world FDI flow in 1993 whereas, the corresponding annual average figure for 1981-85 was 26 per cent. The annual growth rate of FDI flow into the developing world averaged 35 per cent for 1991-93 as compared to the corresponding figures of 17 per cent for 1986-90 and 4 per cent for 1981-85. In particular, the flow into Asia-Pacific region has been unprecedented: the FDI swelled by an average of 41 per cent annually through the eighties. For details see, United Nations, (1994).

2. In this regard it is interesting to note that FDI regimes at the national level in a number of countries are rapidly being liberalised. For instance, 101 out of 102 legislative changes made in 1993 in 57 countries were in the direction of more liberal FDI framework; in 1994, 108 out of 110 legislative changes made in 49 countries were in the same direction. In fact, only 5 out of 373 FDI regulatory changes during 1991-94 were not in the direction of greater liberalisation. For details see, United Nations, (1995).

3. As per the BOP Manual (1993), however, a direct investment enterprise where the foreign equity holding is between 10 to 50 per cent is considered as an 'associate' and for equity holding above 50 per cent, it is considered as a 'subsidiary'.

4. To illustrate, FERA provided for fresh registration of all enterprises incorporated outside India and Indian enterprises with more than 40 per cent non-resident interest and made the existing foreign majority enterprises to dilute the ownership so that foreign stake does not exceed 40 per cent. Among other measures, the government streamlined the procedure for approval of foreign collaboration, set up the Foreign Investment Board to approve cases up to 40 per cent equity (all cases above this ceiling to be decided by the Cabinet Committee), and placed restrictions on FDI inflows unaccompanied by foreign technology transfer. It was also laid down that foreign equity participation should be by way of cash and where it is allowed on non-cash basis, compulsory exports is insisted upon. Further, industries were classified into three categories *viz.*, (1) where foreign collaboration was not necessary, (2) where only technical collaboration was to be allowed, and (3) where FDI would be allowed. In relation to technical collaboration agreements, the use of foreign brand name for internal sale was prohibited.

5. This is clear from the data on foreign investment flows into China in response to its reforms and opening-up since 1979.

Foreign Direct Investment in China, 1979-93
(US $ billion)

Year	*Actual FDI contracted*	*Contracted FDI*	*Actual as % of contracted*
1979-82 (cumm.)	1.17	6.01	19.4
1983	0.64	1.73	36.7
1984	1.26	2.65	47.5
1985	1.66	5.93	28.0
1986	1.87	2.83	66.1
1987	2.31	3.71	62.4
1988	3.19	5.30	60.3
1989	3.39	5.60	60.6
1990	3.49	6.60	62.9
1991	4.37	11.98	36.5
1992	11.00	58.13	28.9
1993	25.76	110.90	23.2

Source: Chinese Statistical Year Book (various issues).

6. According to the Ministry of Finance (Government of India, 1993), " we should aim at achieving an annual inflow of FDI of around $ 2 billion by 1996-97". If this is taken as the measure of our need and if actual to approval ratio is 20 per cent, FDI approvals will have to be around $ 10 a billion year. "So, there is a need for more than three fold increase in the quantum of FDI flows to reach the target" (see, Bhattacharyya, 1994).

7. The ratio of actual to contracted FDI in China during the initial period of opening up, 1979-82, averaged 19.4 percentage only. But this went up to 34.52 between 1983 and 1985 and further to 61.7 per cent in 1987-89 to decline to 23.8 per cent during 1990-93. (see Table at end note).

8. During the period 1979-1987, the period since "reforms and opening up" in China, for instance, Hong Kong and Macao based enterprises accounted for 67 per cent (US $ 14 billion) of total committed foreign investment in China. (see for details, Chen 1993 p.32). In 1992, 70 per cent of total FDI inflows into China came from Hong Kong and Macao. With the easing off political tension between the two sides of the Strait, Taiwan has become the second largest source of FDI in the main land accounting for 9.5 per cent of the total in 1992 (for details, see Chinese Statistical Year Book, 1993).

9. As domestic R&D or technology import is treated as an endogenous variable, estimates are subject to the simultaneity problem, which prevents any conclusion to be drawn about the true relationship between the two variables. Further, as the firms are chosen because they are known to perform R&D and to import technology, there is the problem of endogenous sampling which provides an additional source of bias (see Maddala 1983).

10. For details see Dunning 1973 and 1980.

11. There were 38 countries each receiving more than US $ 100 million FDI inflows (i.e. more than 0.2 percent of the total inflows into developing countries) in 1992. Of these, we have covered 28 countries only. These are Singapore, Hong Kong, Malaysia, Hungary, Trinidad and Tobago, Argentina, Papua New Guinea, Costa Rica, Mexico, Chile, Tunisia, Thailand, Venezuela, Dominican Republic, Poland, Morocco, Korea Republic, Indonesia, China, Brazil, Nigeria, Egypt, Sri Lanka, Peru, Philippines, Pakistan and India. The aggregate FDI inflow into these 28 countries accounted for about 85 per cent of the total FDI inflows into developing countries. The other 10 FDI receiving countries could not be included due to non-availability of full information. The total FDI inflows received by these 10 excluded countries accounted for 13 per cent of the total inflow into the developing world.

12. For a comprehensive review of the literature see Agarwal, 1980 and Root and Ahmed, 1979 and for a recent contribution, see Schneider and Frey, 1985.

13. For details on the specification and construction of country risk indicators, see Kobrin, 1982 and Herring, 1983.

14. An alternative regression model incorporating export-orientation of countries as an additional variable (using dummy variable) was also tried. Any country exporting to the value of 25 per cent and more of its GDP was considered as an export-oriented country. The results obtained were not significantly different to that extent that GNPPC and PRIMEXP were the only statistically significant variables in the regression equations.

15. In calculating the mean, the FDI inflows into Singapore is excluded as it is an extreme value that can distort the group classification.

16. A step-wise procedure was used in the discriminant analysis. The Mahalanobis D2 statistic served as the stepping criterion by selecting from the discriminant variables significant at the 5 per cent level those variables that maximized group distances given the variables selected in the earlier steps. F-ratio was used to determine significance.

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Appendix A

India's Current Policy Regime on FDI
A Cross-Sectional Comparison

A. **Sectors open to FDI**

India	:	Most of the manufacturing activities except six strategically important sectors.
China	:	Most of the agricultural and manufacturing activities
Thailand	:	Most of the agricultural and manufacturing activities
Other Asian countries	:	Generally allow in various agricultural and manufacturing activities. Access to the service sector generally limited.

B. **Level of Equity allowed**

India	:	In 35 specified sectors foreign equity up to 51 per cent gets automatic approval With prior clearance up to 100 per cent equity is allowed under various situations. Purely financial participation(collaboration) also permitted.
China	:	No automatic route. Approvals are dealt on cases by case basis. Up to 100 per cent foreign equity participation is allowed in certain cases.
Thailand	:	In certain segment of agricultural and service sectors activities majority holding of equity by foreign firms is restricted and in certain other segments of these sectors it is prohibited.
Indonesia	:	For all FDI, a minimum of 20 per cent equity holding by local firms is insisted upon and within 20 years

equity holding by local firms should surpass 51 per cent.

South Korea : No restriction on the level of foreign equity participation with permission except for sectors where foreign participation is prohibited.

Other Asian countries : Most countries allow majority foreign equity participation in manufacturing activities but restricts the same in other activities.

C. **Approval Procedure**

India : Automatic approval for 35 manufacturing activities for foreign equity up to 51 per cent. Other cases require approval on a case by case. However, there is a streamlined procedure involved in the approval.

Automatic approval is extended to foreign technical collaboration (technology-transfer) with specified parameters.

Use of foreign trade names, employment of foreign technicians etc. are allowed.

China : Approval procedure is on a case by case basis and generally more rigid.

South Korea : Automatic approval of minority participation with investment in certain sectors when the amount involved is below US $ 3 million.

: A clear negative list of sectors where FDI is either restricted or prohibited.

Other Asian countries : No automatic route for approval. Generally done on a case by case basis.

Appendix B

Table III.1
Number of Annual Foreign Collaboration Approvals

Year	*All*	*Financial*	*col. 3 as a % of col. 2*
(1)	(2)	(3)	(4)
1948-55	284	—	—
1956	82	—	—
1957	81	—	—
1958	103	—	—
1959	150	—	—
1960	380	—	—
1961	403	165	40.94
1962	298	124	41.61
1963	298	115	38.59
1964	403	123	30.52
1965	241	71	29.46
1966	202	49	24.26
1967	182	62	34.07
1968	131	30	22.90
1969	134	29	21.64
1970	183	32	17.49
1971	245	46	18.78
1972	257	37	14.40
1973	265	34	12.83
1974	359	55	15.32

(Contd.)

(1)	(2)	(3)	(4)
1975	271	40	14.76
1976	277	39	14.08
1977	267	27	10.11
1978	307	44	14.33
1979	267	32	11.99
1980	526	73	13.88
1981	389	57	14.65
1982	592	113	19.09
1983	673	129	19.17
1984	752	151	20.08
1985	1,024	239	23.34
1986	957	240	25.08
1987	853	242	28.37
1988	926	282	30.45
1989	605	193	31.90
1990	666	194	29.13
1991	950	289	30.42
1992	1,520	692	45.53
1993	1,476	785	53.18
1994	1,854	1,062	57.28
1995	2,337	1,355	57.98

— Not available

Source : Indian Investment Centre and SIA Newsletter

Table III.2
Amount of Foreign Investment Approval

Year	*In U.S.dollar (million)*	*In Indian Rupee (crores)*
1970	—	2.5
1971	—	5.8
1972	—	6.2
1973	—	2.8
1974	—	6.7
1975	—	3.2
1976	—	7.3
1977	—	4.0
1978	—	9.4
1979	—	5.7
1980	—	8.9
1981	12.5	10.9
1982	66.2	62.8
1983	61.0	61.8
1984	99.4	113.0
1985	102.0	125.8
1986	84.8	107.0
1987	83.1	107.7
1988	172.3	238.8
1989	195.2	316.7
1990	73.3	128.3
1991	235.0	534.1
1992	1,318.4	3,890.1
1993	2,818.0	8,860.0
1994	2,855.0	8,957.0
1995	9,194.0	30,880.0

Note : Figures exclude approvals for NRI investment under the 40% and 100% scheme.
— Not available

Source : SIA Newsletter and India Investment Centre.

Table III.3
Sectors-wise Break up of Foreign Investment Approvals
(1.8.1991 to 30.6.1995)

Industries	*Amount in Rs.million*	*% share in total*
(1)	(2)	(3)
1. Metallurgical industries	25,802.64	7.36
2. Fuel (including power)	99,601.85	28.39
3. Boilers & steam generating plant	922.03	0.26
4. Prime mover other than electrical	141.93	0.04
5. Electrical equipment	22,799.82	6.50
6. Telecommunications	22,418.23	6.39
7. Transportation industry	18,407.78	5.25
8. Industrial machinery	8,753.42	2.50
9. Machine tools	433.12	0.12
10. Agricultural machinery	1,613.46	0.46
11. Earth-moving machinery	129.69	0.04
12. Misc.mechanical & engg.	1,941.20	0.55
13. Comm. Office & Household eqpt.	815.67	0.23
14. Medical and surgical appliances	184.81	0.05
15. Industrial instruments	600.28	0.17
16. Scientific instruments	419.56	0.12
17. Fertilizers	36.45	0.01
18. Chemicals (other than fertilizer)	29,314.00	8.36
19. Photographic raw film and paper	206.32	0.06
20. Dye-stuffs	59.55	0.02

(Contd.)

(1)	(2)	(3)
21. Drugs & pharmaceutical	3,026.73	0.86
22. Textiles (incld.dyed, printed)	13,710.87	3.91
23. Paper & pulp(incld.paper products)	3,945.72	1.12
24. Sugar	535.00	0.15
25. Fermentation industries	6,944.67	1.98
26. Food processing industries	20,912.99	5.96
27. Vegetable oils and vanaspati	288.84	0.08
28. Soaps,cosmetics & toilet items	830.70	0.24
29. Rubber goods	1,003.26	0.29
30. Leather, leather goods & pickers	1,068.24	0.30
31. Glass	2,479.30	0.71
32. Ceramics	3,133.94	0.89
33. Cement and gypsum products	3,977.61	1.13
34. Timber industries	13.71	....
35. Defence industries	0.00	0.00
36. Consultancy services	685.20	0.20
37. Service sector	26,868.74	7.66
38. Hotel & tourism	17,187.22	4.90
39. Trading company	926.49	0.26
40. Miscellaneous industries	8,672.66	2.47
Total	3,50,813.80	100.00

Source: Lok Sabha, Answer to Unstarred Question 424 (2.8.1995) cited in Assochem Parliament Digest, 1995.

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