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Changing International Industrial Relocation Tendencies
and
Resulting Opportunities for Developing Countries:
A Conceptual Study

by

Sanjaya Lall → Consultant

Oxford University, Institute of Economics and Statistics

For the
Regional and Country Studies Branch

Backstop Off.
to Lütkenhorst

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I. Introduction

This study is concerned with emerging patterns of industrial relocation as they affect developing countries, with the main focus on foreign direct investment (FDI) as an important agent for relocation. In a broad sense, the location of industrial activity is the outcome of three fundamental forces: the technological characteristics of different manufacturing activities; the relative ability of different locations to meet the technological needs efficiently; and the transfer of productive capabilities between different locations. In a world of dynamic technological change, the process of relocation therefore depends on the speed of technical progress, the growth of the relevant capabilities in the countries concerned, and the response of the various transfer agents (among them, FDI) to technological as well as other factors in the technology generating and receiving countries.

FDI, especially that undertaken by large transnational corporations (TNCs), has traditionally been regarded as the most potent force for industrial relocation because the enterprises concerned are among the dominant producers in the developed countries where they originate. They are also the leading sources of technological change and the main exporters of products and services which embody their innovations. As the role of trade in global industrialization has grown, so has the transnationalization of production, with an increasing share of industrial output accounted for firms that operate in several countries. Foreign investors are not, however, the only agents of industrial relocation, since productive capabilities in the forms of skills, information and technological knowledge flow across national boundaries in many different ways. In several countries, and in a variety of industries, they are not even the most important agents: national strategies towards local capability development and industry-wise differences in the cost and pace of technical change determine the relative significance of FDI. Nevertheless, the current pace of technological advance and the evolution of national strategies in the developing world all point to an increasing role for FDI in industrial relocation.

To understand this evolving role and its impact on different types of developing countries, it is necessary to set up a conceptual framework that takes account of all the main

factors affecting FDI flows. These include macroeconomic conditions and prospects in home and host countries; the impact of technological progress; the growth of productive capabilities in various host countries; and the policies to foreign investment adopted by the concerned parties. There is a tendency in the literature to simplify the issue by focusing on macroeconomic conditions and policies as the only determinants of FDI: thus, it is assumed that if economic stability were achieved, prices were "got right" and a favourable stance to foreign investors adopted, foreign capital would flow in abundantly, and would presumably lead the process of industrial transformation.

This view is oversimplified. Different countries have differing abilities to attract FDI, depending not just on their policies but also on their capabilities to handle the technologies which foreign investors are deploying. FDI can transfer some of the (mobile) elements of the package that determines efficient production, but it cannot transfer all the elements that determines efficient production. The elements that the host economy has to supply then determine how much FDI, in which industries and at what level of sophistication it can, ceteris paribus, attract. Moreover, since there are other means by which relocation can be effected, the role allotted to FDI is a strategic decision that the host government has to make. The other means may involve "new" forms of foreign investment (contractual relations without equity participation, or with minority participation), short term or one-off arm's length transactions (licensing agreements, consultancy services, hiring of individual experts), or simply the import of capital goods coupled with local efforts to copy, improve or innovate on the relevant technology. A country's choice between FDI and these, or between the alternative non-FDI channels of relocation, depends on the strength of the indigenous industrial sector, socio-economic objectives and the technological resources that can be mustered in the time period under consideration.

This study attempts a comprehensive review of the interactions that determine industrial relocation by FDI. Some of the relevant factors are well known, such as the debt problem of some major past recipients of FDI and recent policy changes in most parts of the developing world favourable to foreign investors; these require less emphasis here. Others and

less well understood, and will be given greater attention, in particular the impact technological change and host country industrial capabilities on FDI patterns and flows. As UNIDO states in a recent study, "At present, fundamental changes are occurring in the determinants and international patterns of foreign direct investment flows, partly due to technological factors. The implications for developing countries are far reaching." (UNIDO, 1989, p.12).

The following section reviews in some detail recent data on FDI flows. The essential reality is briefly stated: "Developing countries as a whole now appear to be running the risk of marginalization in any intensified process of globalizing industrial production. Real FDI flows to developing countries have decreased substantially as have their share in total FDI outflows from developed market economy countries: since 1975 this share has exhibited a clear downward trend from a peak level of 41.8 per cent to only 16.8 per cent in 1986. At the same time a strong shift has taken place in the geographical distribution of FDI flows, with Latin America giving way to Southeast and East Asia as the major recipient area." (Lutkenhorst, 1988, p.221).

As far as the inflow of foreign resources is concerned, a recent World Bank Presidents' memorandum (1989) notes that net FDI inflows (after subtracting profit remittances during 1981-87) totaled only \$21 billion to the entire developing world, compared to gross FDI inflows of \$85 billion. For seventeen highly indebted mid-income countries,¹ the figures are \$2 billion and \$36 billion respectively. By region net foreign exchange inflows through FDI came to -\$10.5 billion for Africa, \$1.6 billion for Latin America, \$5.3 billion for developing countries in Europe, \$6.0 billion for non-oil Middle East countries, and \$18.3 billion for Asia. Oil exporting developing countries suffered a net outflow of -\$30.9 billion in the seven years.

It has sometimes been suggested that FDI, in the form of fresh inflows or via debt equity swaps, can relieve the debt problems of some highly indebted countries. While

¹The seventeen "highly indebted countries" middle-income countries are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cote d'Ivoire, Ecuador, Jamaica, Mexico, Morocco, Nigeria, Peru, Philippines, Uruguay, Venezuela and Yugoslavia.

debt-equity swaps are considered later, it is worth clarifying at the outset that future flows of FDI, even under optimistic assumptions, are "unlikely to take place on a scale sufficient to play a major role as a funding source in the resolution of the debt crisis" (World Bank, 1989, para.20). Thus, the main benefits to be expected of FDI are to continue to lie in the "traditional" areas of technology and skill transfer, efficiency spillovers, export promotion and employment generation. This study is not concerned as much with the economic effects of FDI as with the prospects of attracting flows of FDI in the near future; however, host country perceptions of its benefits do affect the flows and will be taken into account in that context.

The remainder of this study is organized as follows. Section II presents the empirical study of recent patterns of FDI flows. Section III to V deal with the various important issues raised for industrial relocation. In the order presented, these are: issues on the "supply side" of FDI (conditions in capital exporting countries, and technological and organizational factors); issues on the "receiving side" in developing countries (host government strategies and policies, and country attractiveness to FDI in terms of market size and macroeconomic conditions, industrial capabilities and infrastructure); and future strategies for developing countries to promote industrial relocation, in terms of entry conditions and regulations (on equity sharing, performance requirement, taxation), debt equity swaps, regional cooperation, attraction of small/medium enterprises, industrial capabilities and supporting industries/services/infrastructure, promotion of local enterprises and the choice between FDI and "new forms". In each of these sections, the distinction between large TNCs and small and medium-sized investors (including those from the developing countries) will be emphasized.

Section VI concludes the study with an action programme for UNIDO aimed at supporting developing country endeavours to increase FDI inflows, especially those from smaller investors and from other developing countries.

II. Empirical Analysis of FDI Flows

[to be provided by G. Hamilton]

III. The "Supply Side" of FDI

This section on the "supply side" of FDI considers factors that are external to developing host countries. These can be grouped under two broad headings: conditions in capital exporting countries (including the NICs that are emerging as important foreign investors), and technological and other factors affecting the flow and composition of FDI.

III. a. Conditions in Capital Exporting Countries

As the previous section showed, the OECD countries are both the predominant source of FDI flows and their prime destination, with their significance as destination increasing sharply in recent years. The evolution of their economic policies, their economic performance and the changing structures of their economies clearly condition the flow and content of FDI to developing countries. In addition, since some advanced developing economies (led by the East Asian NICs) are emerging as significant sources of FDI for countries in their proximity, their policies, performance and structures are also relevant to this issue. While this study cannot go into a detailed analysis of these questions some points deserve mention. Let us start with developed market economies.

As far as policies are concerned, there is every sign that FDI flows in OECD countries will continue to be encouraged, and the removal of restraints to such flows in areas where they exist (on services and utilities, or by means of exchange controls) actively pursued. Recent events in Eastern Europe are likely to lead OECD governments to adopt policies to favour FDI flows (and other forms of technology and service sales, as well as trade) to those countries which pursue market-oriented reform policies. At the same time, the emergence of "Europe 1992" is likely to attract large amounts of FDI to Western Europe. In contrast the continuance of debt related problems in parts of the developing world is likely to lead to intensified pressures by investing (and aid donor) countries for drastic policy reforms in the better-off indebted countries (mainly in Latin America and parts of Asia) as a condition for encouragement of financial flows (including FDI) to them. In the least-developed indebted countries (mainly in Sub-Saharan Africa), some debt forgiveness is likely to accompany

pressure for policy reform and structural adjustment, restoring at least a 'minimal' base for encouraging FDI and lending to countries that succeed in this difficult effort. While FDI outflows are not, by their nature, susceptible to direct control by home country governments, the latter's policies do affect investors' perceptions of risk and returns in particular regions. Furthermore, aid and loan packages offered to particular countries directly impinge on their economic attractiveness.

The current trends have conflicting implications for FDI flows to developing countries. On the positive side, the progress of economic liberalization in the OECD countries creates a favourable environment for FDI flows in general, and, in the developing world, to countries which perform well with liberalization policies. On the negative side, developments in Eastern and Western Europe are likely to attract substantially larger shares of FDI and so to "crowd out" the developing world. The increasingly strong stance taken by OECD governments towards policy reforms in developing countries is likely to affect the regional and country-wise distribution of FDI, with flows encouraged (by loans, aid, multilateral support) to countries that have the political and economic strength to carry through structural adjustment packages. On this reasoning, future trends are likely to accentuate patterns of the recent past, with some major recipients of FDI in Latin America continuing to lose their share of new flows, and Sub-Saharan Africa increasingly marginalized, with clear exceptions of countries which are able to adjust their economic structures. South East Asia as a whole is likely to continue its rise as a destination for FDI, but with possible shifts at the country level if OECD policymakers adopt unfavourable attitudes to particular regimes (e.g. China).

The performance of developed capital exporting countries determines both the surplus available for domestic and overseas investment and their attractiveness to investors from each other (and, in a small way, from the NICs). While the OECD as a whole seems set for a fairly robust growth performance in the foreseeable future, despite current anti-inflationary policies in several countries, long-term differences between the OECD

countries in competitive industrial performance are bound to carry over into the future.² This will affect not just their total FDI flows but also its composition (with each country concentrating on industries of emerging competitive strength and slowly withdrawing from others). For instance, the sustained, rapid rise of Japan as a foreign investor reflects both its overall economic performance (and its macroeconomic imbalances created by domestic and trade surpluses) as well as its growing technological prowess in various manufacturing and service activities. The relative decline of the UK reflects its long-term lag in industrial competitiveness, counterbalanced by its spread into various financial services. The US presents a mixed picture, with its macro imbalances and some sectoral lags in performance providing a powerful draw to inward FDI, but its healthy growth and service sector expansion, coupled with continued strength in some major manufacturing industries, providing the wherewithal for its overseas drive (witness its recent surge into Western Europe after a relatively quiet period). Among the Continental countries of Europe, Germany seems set to expand abroad on a significant scale, driven, like Japan, by a technologically powerful industrial sector, reinforced now by its special role in Eastern Europe. Other strong continental economies are likely to continue overseas expansion, but not on the scale to be reached by Germany; Eastern Europe is again likely to constitute a significant magnet for their enterprises.

After a detailed consideration of such factors, the UN Centre on Transnational Corporation's last major survey of the subject concludes that:

"... while the intensification of competition and the change in FDI flows can be traced to a number of long- and short-term factors, the main trends in the changing behaviour of TNCs described is best understood as part of the continuing transnationalization of economic activity."³

The pace and nature of "transnationalization" in turn reflects the economic performance of each country. The implications for developing host countries are again mixed. The growth of transnational activity in general bodes well for investments in the developing

²These factors are analyzed in OECD (1987) in the context of structural adjustment by the industrialized countries.

³UN CTC (1988), p.3, emphasis added.

world, as does the recent growth performance of the OECD. Shifts between the major actors (countries and firms) and the entry of new actors adds to the dynamism of the FDI process. On the other hand, the very same process suggests high rates of investment in the OECD area (and the socialist countries seeking to attach their economies to it) in the near future rather than in most of the developing world. The expansion of industrial economies based on high rates of innovation and advanced technical skills (OECD, 1987) also suggests that FDI will require increasingly industrial structures and skills that are geared to such activities (see below). This makes for increasing polarization of FDI in developing countries between countries that can cater to high-technology, high-skill activities and those that cannot.

The evolving structure of OECD countries supports the above points. There are three broad points worth noting about current patterns of structural change. First, it is increasingly driven by advanced technology, based on a series of technological changes (information technology, robotics, new materials, bio-technology and so on, see Freeman and Peretz, 1988) which require a close interaction between basic science, research, engineering and production, corresponding supplies of skills and worker training, and a complex support structure of supplies, services and information networks and institutions. Second, the role of services vis a vis manufacturing is growing, but these services are largely new and high tech in nature, often quite capital intensive, and, in many segments, highly linked to manufacturing activity. Third, a structural development often noted with some surprise is the "downscaling" of many industrial activities (after a long period of capital-intensive specialization that led inexorably to greater economies of scale and larger plant/firm size) and the emergence of small and medium sized enterprises as a highly dynamic innovative segment of the industrial economy. While not universal (the US has the most dynamic growth of small firms, Japan the least), this phenomenon is of great potential significance to developing countries.

As far as FDI is concerned, these structural changes point, as noted earlier, an increasing sophistication of investments in manufacturing; to a growing share of services in FDI, again with large components of high levels of technical and skill requirements (though other growing service activities, as in retailing, processed foods, tourism etc. do not have those

requirements); to the possibility of attracting efficient investments of a smaller scale than earlier possible; and, finally to the potential for tapping the small and medium enterprise sector in developed countries (not as yet heavily involved in transnational activity, especially in developing countries) as sources of technology, skills and capital.

The implications for developing host countries of technological change in industry is discussed below. The growth of importance of FDI in services has been remarkable when the composition of flows from the major investors to developing countries is considered. For the seven largest OECD countries, the share of services in total FDI rose from 48% in 1981–83 to 65% in 1984–87, with the US, Japan, France and Canada showing large rises, and UK and Netherlands showing declines (German figures for 1984–7 not available). While a large part of the US increase in service FDI was accounted for investments in Latin America/Caribbean tax havens, there was a genuine increase in "productive" investment in financial, insurance, retailing and other kinds of service activities. Some were related to the growth of manufacturing activity in the host countries (finance, software, consultancy), while others were independent of manufacturing, attracted by growing incomes, good infrastructure and location.

Small and medium-sized foreign investors are not a new phenomenon. While they have always accounted for a relatively small proportion of FDI flows, their numbers have not been small. As a percentage of the total number of direct foreign investors, they have accounted for 80% in France, 78% in the UK, 58% in Canada, 43% in the US and 23% in Japan (UN CTC, 1988, Table II.3). "The transnationalization of those smaller corporations appears to follow a gradualist path; they tend to move first into neighbouring countries or other countries with which there are long-standing links, and only later do they spread to other locations" (*ibid*, p.36–37). They are less internationally diversified than large TNCs, more concentrated in their choice of location, and proportionately less represent in developing countries (*ibid*).

The economic reasons for the generally low foreign presence of smaller enterprises are well-known in the foreign investment literature. Small firms tend to lack the kind of proprietary "ownership advantages" in technology or marketing possessed by large TNCs that

give them a competitive edge in foreign locations. They lack the managerial and technical manpower that would allow them to take on large or widespread foreign ventures. Their access to capital markets is on less favourable terms. Their limited access to information on, and so higher perceived risk of, unfamiliar locations forces them to choose proximate sites. Their bargaining power vis a vis host governments is limited, a disadvantage in countries where there are tight controls on entry: they are less able to offer high technology, established brand names, or integration into a worldwide production or sales network.

Despite these handicaps, small and medium sized investors offer many benefits in their areas of specialization. They can provide technology and skills of a sort often more suited to the needs of developing countries (i.e. less sophisticated, smaller scale, less differentiated). They are more willing than large TNCs to share equity, charge lower fees, and transfer the "know why" (the basic design or innovation knowledge) rather than simply the "know how" (the operating result of an innovation or design). They are sometimes in the vanguard of technical change, and their size gives them a flexibility and nimbleness larger firms lack. Moreover, many small firms are closely interlinked to large TNCs as subcontractors or suppliers of specialized parts, components and services, and can play a valuable supporting role to them in developing host countries. As argued below, the lack of an adequate supplier network often limits the entry and spread of FDI, and this type of small foreign investor can help plug this important gap (Phongpaichit, 1988).

The recent spurt in growth of innovative small enterprises in several developed countries increases their value to developing host countries and also the potential for attracting them as investors, joint venture partners or technology sellers. Section V considers possible ways of tapping this potential.

This brings the discussion to the related issue of investors from developing countries (or "Third World Multinationals", see Well, 1983 and Lall, 1983). Total stocks of FDI held by developing countries firms are not very large, though they are growing rapidly. In 1985, according to UN CTC (1988) estimates, they totaled \$19.2 billion, around 3 per cent of the world's total stock of FDI, up from 1% in 1960. Data on developing country investments are

notoriously difficult to collect because of tight regulations in many home countries that forces investors to under-report or conceal their overseas activity. Nevertheless, the Third World multinational phenomenon is an interesting one from the viewpoint of industrial relocation in the future, because it involve the transfer of industrial activity from the more advanced NICs to the less developed countries, and because it often involves low technology, low scale activities that are less frequented by TNCs from advanced industrial countries. Even where the Third World ventures involve capital or skill intensive "modern" activities, they may offer advantages in their greater willingness to take minority positions, source local supplies, train local workers and set up small-scale operations (Wells, 1983).

A number of NICs, from Latin America and Asia, have invested overseas in manufacturing industry. However, the pattern of activity in the 1980s has been strongly influenced by the economic performance of major home countries. Latin American countries have sharply reduced their overseas exposure (at least in recorded terms). India has also slowed down after an initial spurt; and, in contrast, the East Asian NICs have forged ahead with a substantial expansion of overseas manufacturing. A recent survey of FDI by Hong Kong, Singapore, Korea and Taiwan Province (Whitmore and Lall, 1990) shows that the total value of FDI by those 4 NICs in the 1980s, in South and East Asia alone, came to around \$16.9 billion (which makes the total stock of Third World FDI far larger than the figure given by UN CTC, quoted earlier). This may be compared to \$19.6 billion for Japan in the same period and host countries.

Hong Kong is the largest foreign investor of the NICs (and has long led the whole developing world in this activity, see Lall, 1983), accounting for around \$12.2 billion of the FDI in Asia. Much of this (\$8.4 billion) is concentrated in Mainland China: Hong Kong accounts for about three quarters of FDI inflows into China, and its activity has made China the largest recipient of FDI in the developing world in recent years. Hong Kong has been so active in relocating labour-intensive assembly activities in China that its enterprises there now employ about 2 million workers, more than twice manufacturing employment in Hong Kong itself. The export of products made in China and shipped through the colony was growing much more

rapidly than Hong Kong's own manufactured exports (Hong Kong, TDC, 1988).

This example shows clearly the potential for industrial relocation between NICs and other developing countries. While the China – Hong Kong experience is clearly exceptional, very similar forces are at work in other cases. The pressures of higher labour costs, appreciating currencies, the need for gaining market access (by locating in countries with unused export quotas in garments, for instance) and the search for raw materials, have led all the NICs to invest overseas. Taiwan Province follows Hong Kong with \$2.5 billion dollars of FDI (these are figures on approvals from the host countries, since Taiwan's own approval figures are gross underestimates of true outflows). Then comes Singapore with \$1.8 billion, and finally Korea with \$412 million (Whitmore and Lall, 1990, Table 3).

The differences in relocation propensities within the four NICs are themselves of interest, reflecting differences in their policies, industrial strategies and structural changes. Hong Kong has the highest propensity to relocate partly because of its laissez faire economic policies and its location (next door to culturally identical China), and partly because of its high degree of specialization in labour-intensive assembly of light consumer goods. This specialization does not allow it to deepen its industrial structure rapidly in response to rising wages, and its laissez faire policies do not provide its enterprises with the new skills and technological support needed to enter more high tech activities. Taiwan Province has recently liberalized its investment regulation and is encouraging its labour intensive industries to relocate. Its industrial structure, populated largely by small-medium enterprises, faces some of the same pressures as Hong Kong, but with the additional spur of an appreciating currency. However, Taiwan's firms have diversified considerably into skill and technology intensive activities, reducing the pressure to seek low-wage locations. Singapore is itself heavily dominated by TNCs from OECD countries, and has guided them into very capital and technology intensive activities: thus, its industrial sector is very different from Hong Kong's, with less pressure to relocate and less indigenous entrepreneurship to bear this pressure. In fact, a large part of FDI from Singapore appears to be from TNCs based there rather than from local enterprises.

These three NICs are much larger overseas investors than Korea, though Korea has a larger industrial sector and also suffers from rising wages and an appreciating currency. The reason lies essentially in Korea's much "heavier" industrial structure, with giant conglomerate firms (the Chaebol) spread over a very large range of capital, skill and technology intensive activities. These Chaebol do invest abroad, but are under far less economic pressure from rising costs than firms in other NICs because of their ability to upgrade and diversify their domestic activities. In fact they do not have the (very real) advantage of investors from the other NICs of the "Chinese connection", the ethnic link which greatly facilitates information exchange and mutual trust in South East Asia. The absence of such a connection for Korea leads its firms to be more adventurous in their location, spreading rapidly from Asia to other parts of the developing world.

Hong Kong enterprises have also spread beyond the Asian region to less familiar settings, in Mauritius, Southern Europe and Caribbean. This is due to their longer experience of overseas operations, and, increasingly, the urge of many Hong Kong residents to seek foreign domicile. Hong Kong, Taiwan and Korea have invested in developed countries, the latter two in some large-scale operations to assemble consumer durables near the market (and to avoid protectionist pressures) or to gain access to raw materials and new technologies. Thus, Korean automakers, TV and microwave oven manufacturers, and Taiwanese TV and computer manufacturers are operating in North America and Europe; both own Silicon Valley firms as "antennae" to pick up technological information. Hong Kong's ventures are much smaller: in garments, textiles and watches.

Developing countries can expect to continue to receive increasing amounts of NIC investments as the latter grow and upgrade their domestic industries. The best prospects are clearly for the "new NICs" of South East Asia, Thailand, Malaysia and Indonesia (Philippines is doubtful because of political uncertainties), and possibly Vietnam, China and countries of South Asia. But it is possible that a momentum will build up to invest in countries in or close to Europe, and in the Caribbean basin. Whether or not such relocation takes hold in other NICs depends largely on their macroeconomic performance and emerging competitive strengths

in industry.

III. b. Technological and Organizational Factors

World industry is in the throes of a major technological revolution. Scholars in industrial history characterize it as the fifth "long wave" of economic growth (the first four being early mechanization, steam power and railways, electrical and heavy engineering and Fordist mass production). It is based on information and communications, and is accompanied by developments in software, robotics, new materials (e.g. fine chemicals and ceramics), optical fibres and bio-technology (Freeman and Peretz, 1988). The fifth wave started essentially in the 1980s, though its origins go back much further, and is, now making rapid inroads into the dominant technologies inherited from earlier technological revolutions (third and fourth). Its widespread implications for industrial productivity and competitiveness mean that patterns of industrial relocation will also strongly influenced.

The UN CTC has a succinct analysis of the changes being wrought by the current revolution:

"The process of transition is being driven by the emergence of two forces for change. The first is technological in nature and stems from the development and diffusion of a family of technologies with the capacity to transfer both the products and the processes of production throughout the economic system. The development of information technology (IT) and its widespread application to the electronics complex, manufacturing and services, are the dominant technical forces in the current period and have already had a profound and well-publicized impact on all dimensions of production and competition... The second major force for change relates not to technological change, but to organizational innovation. An entirely new approach to the organization and management of production at the intra-firm and inter-firm levels has emerged, initially developed and cultivated within Japan, but now diffusing to other countries, which stresses flexibility, quality and cooperation. The nature of these organizational innovations inherently contradicts

the logic and principles of the mass-production model" (UN CTC, 1988, p.42).

The resulting changes maybe considered revolutionary in that they involve a shift of the ruling "techno-economic paradigm" (Freeman and Peretz, 1988), affecting not just technologies or organizational structures in a narrow sense, but the entire way in which the productive system is set up, the "common sense" which prevails in engineering or managerial terms, and the complex of supporting service, infrastructural and training activities. Among various changes, the ones most relevant for FDI patterns (based on CTC, 1988, Mody and Wheeler, 1990, Freeman and Peretz, 1988, p.59) are:

- reductions in cost of production, and in the labour components of costs;
- new forms of organization at the firm and plant level;
- new patterns of sourcing for components and services, with proximity, flexibility and speed of response becoming of dominance importance;
- new profiles of labour skills;
- new patterns of investment location as traditional comparative advantages change;
- new infrastructural investments designed to provide appropriate externalities throughout the system and facilitate technological diffusion;
- tendency for new innovating small firms to enter new activities;
- tendency for large firms to concentrate in activities where microelectronics (and related key factors) are produced and intensively used, reinforcing their dominance in these sectors, especially as technologies stabilize;
- new consumption patterns for goods and services; and
- new types of distribution, marketing and service activities.

A number of important implications for FDI may be drawn from these emerging technological and organizational patterns.

First, the "diminishing significance of inter-country differentials in labour cost as the key investment incentive" (Lutkenhorst, 1988, p.221) means that some activities previously attracted to developing countries will no longer need to relocate away from high-wage

developed countries. Furthermore, the distribution of low-cost seeking FDI in developing countries will be less oriented towards locations offering relatively unskilled labour and fairly rudimentary infrastructure (which served well for offshore assembly of semi-conductors or the sewing of garments) and more towards locations offering other advantages, described below.

This does not mean that some traditional forms of low-wage seeking FDI (this role may increasingly go to NIC investors, as noted above) will die out completely, and that the less-industrialized developing countries will not continue to attract the simpler forms of industrial relocation. As UNIDO (1989) observes, "the sometimes feared 'relocation back North' of industrial capacities has so far not taken place on a massive scale — although it can be observed that the strong redeployment wave of past decades from North to South is now tapering off" (p.10). Clearly, some industrial relocation will not be affected for a long time to come by the new technological wave, and even activities which are prone to change will have an inertia which will disappear slowly. However, over the medium to long-term the most dynamic elements of relocation will not consist of the simple labour intensive activities (clothing, toys, semi-conductors, or simple consumer electronics) of the past.

Second, to the extent that future relocation will be based on the "fifth wave" technologies, the following factors will determine FDI flows to particular locations:

— The availability, at economical cost, of high levels of skill relevant to the specific areas of production, design or management. The precise composition of skills required will depend on the industry and the elements of the production transferred, but a basic minimum will be highly trained production skills, some process-engineering, quality control, maintenance skills and management skills able to cope with emerging forms of organization. Far more advanced activities or "deeper" levels of relocation, local design, research and scientific skill will be crucial. A number of the requisite skills will require not just formal schooling but also intensive on-the-job training as well as post-employment education. As UNIDO (1989) stresses, "There is an increasing awareness now that it is the education and skill level of the labour force which largely determine a country's competitive strength and existence, its capacity to adjust to new sophisticated technologies and to reduce the economic and social

costs of the adjustment process" (p.18).

– Certain types of future FDI will depend on the availability, in fairly close proximity, of a variety of supporting firms, providing components, needs, services (maintenance, machinery, software, consultancy) and backup of various kinds. Industrial efficiency increasingly requires individual firms to be highly specialized, with close interaction with a number of other firms of different specializations, working in close unison to minimize inventory costs (i.e. the just-in-time delivery system), delays in information flows and the costs of product development. Process industries (paper, chemicals, metals, foods) of the old type have relatively limited needs of this sort, and FDI in these will continue to be determined by traditional cost, market and material-supply factors. New industries in the electronic, electrical and mechanical engineering fields (these fields are becoming increasingly merged), on the other hand, are highly prone to the economies of specialization, in these areas, the new wave locations offering efficient support systems will be favoured over others.

– In addition to the support provided by other firms, new FDI will also require a support network of physical, informational and technological services. The need for efficient power, transport and, above all, communications for 'new wave' industries hardly needs emphasis. What is less well understood is the need for a network of institutions which, in Freeman and Peretz's (1988) words, allow "appropriate externalities" to be generated. Thus new technologies need 'public goods' like evolving standards, basic research, testing and quality-control facilities, technological information banks, relevant university linkages, and so on, in order to function efficiently over the long term. While a certain level of FDI can proceed with a minimal technological infrastructure of this sort, its deepening and "striking roots" locally necessarily calls for a complex system of this sort. Local production facilities will increasingly undertake design and testing of very high quality products which cannot be done by one enterprise in isolation. Thus, FDI will gravitate to locations where the necessary externalities already exist.

– Two types of economies exist in the new technologies: traditional economies of scale arising from large volumes of production of standardized products (e.g. consumer

electronics or memory "chips") and, in contrast, economies of scope arising from the ability to undertake a variety of different but related tasks at fairly small volumes of production, using flexible automation and computer-aided manufacturing. Both types of economies will have their own specific location requirements. Large volumes of production, aimed at local or foreign markets, require extremely reliable workforce, infrastructure, government support and a favourable location. Flexible production requires high quality communication, proximity to customers, and very high level production and design skills. Both need very reliable support networks and the ability to absorb modern organizational firms.

Third, the impact of rapid technological change on corporate strategies in the advanced industrial countries imposes its own locational needs on FDI. The growing need for very expensive, research and development (R & D) activities to support future expansion has led to the adaptation of global strategies by leading firms "designed to penetrate simultaneously the world's major market with new or updated products in order to amortize large fixed R & D expenditures". (UN CTC, 1988, p.57). This is a break from the more incrementalist expansion strategies followed earlier, and requires firms to keep a presence in large markets (rather than in low-cost locations). The scale of R & D have also forced many firms to enter into cooperative arrangements to share the risk of technology development and to benefit from cross-fertilization and the public goods (leakage) aspects of other firms' research. In some cases, this has led to complete "internalization" of markets by a firm merging with or acquiring a competitor in order to acquire its technological assets, causing a diminution of technology flows to unrelated parties.

As the UN CTC (1988) report notes, international joint-ventures, mergers and other cooperative arrangements have been around for some time. But the 'new wave' technologies have given a major boost to such arrangements in forms that did not exist previously (e.g. joint research, subsidized by governments, by the largest TNCs in frontier areas of technology). This has increased inter-firm linkages in ways that may threaten competition. It has also reinforced the preference for investing in the richer, more advanced and technologically better endowed locations.

Another strategic response to emerging technological trends has been for TNCs to emphasize access to large domestic markets in developing countries as a measure to reduce risks (Lutkenhorst, 1988). This strategy covers several different countries so that total risk is greatly reduced by diversification.

Finally, the current technological transformation has led to a proliferation of non-equity ("new") forms of foreign participation, especially in less valuable technologies and by small and medium-sized enterprises from developed countries (Oman, 1984). While opening up new avenues for industrial relocation in the developing world, it also reinforces the location biases of the type noted above, in that non-equity forms involving the 'new wave' technologies can be utilized effectively only by countries which already have high levels of industrial competence and support structures. Furthermore, much of the spread of small and medium enterprises is in response to FDI by larger TNCs to whom they act as suppliers in their home countries. The smaller firms then cluster around their principals in new locations to provide a support system of high technical sophistication, but the location depends on factors relevant to the principals.

The upshot of all these technological and organizational changes is clear. The 'new wave' FDI will increasingly concentrate on host countries that offer advanced production, technical scientific and managerial skills, infrastructure, broad technological support, developed supplier networks, excellent favourable locations and, possibly, large internal markets. Needless to say, all this has to go with low relative overall costs, political stability, efficient bureaucracy and good macroeconomic performance.

In the developing world, this greatly strengthens the tendency, noted earlier, of FDI to concentrate on a few locations which are already industrially advanced, have relatively high levels of income, are well managed in economic terms and have their own technological dynamism. FDI has always been fairly selective in its flows, and has traditionally gravitated to the better-off economies (with the obvious exception of resource-extraction investments). The current technological changes will reinforce this, dampening hopes raised in the 1970's of a "new international division of labour" based on offshore assembly in low-wage areas. It will

also differentiate increasingly between middle-income developing countries, at least as far as export-oriented activities are concerned; away from countries without advanced skills and support system to those with such systems, i.e. from the less to the more dynamic NICs.

Traditional forms of FDI will not, as noted, disappear: low-wage seeking investments will continue in several activities, as will old-fashioned import-substituting investments behind high protective barriers. However, these are likely to diminish in significance beside investments based on 'new wave' technologies (which will also spread into older technologies), and in relation to investments which are less highly protected (policy regimes in host countries are considered below): and efficient 'new wave' industries will gravitate to countries already well down on the "learning curve" of industrial capabilities. "In consequence, the poorer developing countries will find themselves in a vicious circle. Left aside by foreign investors because of their not meeting the requirements for technologically more advanced production, they will be largely excluded from the only realistic source of technological upgrading, viz, foreign investment". (UNILDO, 1989, p.24). The following sections simplify the factors that affect the ability of countries to attract FDI and policy issues arising from the discussion

IV. The "Receiving Side" of FDI in Developing Countries

This sections reviews the ability of developing countries to attract FDI under the following headings: policies towards FDI; economic conditions in developing countries; and industrial capabilities in host countries.

IV. a. Policies Towards FDI

"Changes in the government policies of developing countries toward FDI in the past five years have confirmed and strengthened an already apparent trend towards liberalization of inward FDI regulation. Consolidation of this attitude is shown both by the extent of regulation changes and by their wide diffusion throughout the developing world... Countries seek primarily to encourage inward FDI by reducing obstacles, restrictions and requirements and by

granting guarantees and incentives; the effort to control its various manifestations or effects becomes relatively less important as an aim of FDI regulation". (UN CTC, 1988, p.262).

This widespread move to welcome FDI marks a change from the 1960s and 1970s when foreign investor tended to be regarded with suspicion, their superior technology and skills often taken to be threats to indigenous development and their integrated production structure to be channels of tax evasion. The ample flow of bank credit in the 1970s permitted developing countries to overlook the potential for capital transfer by FDI. The general pursuit of industrialization by protected, inward-oriented strategies concealed many strategic inefficiencies, and also induced foreign affiliates to participate in a process which generated more rents than dynamic and competitive growth.

With the onset of the debt crisis (and the accompanying recession) in many developing countries, attitudes to FDI altered dramatically. But it was not just the debt burden which was the agent of change. It had become widely recognized over the 1980's that export-oriented industrialization strategies were more conducive to sustained, efficient industrial growth than previous inward-looking strategies, and the FDI could play a valuable role in promoting such growth. The acceleration of technical change in industry led many countries to realize that they needed much more foreign technology to overcome the large gaps that had appeared in their competitiveness. Moreover the awareness grew that simply importing new equipment and licences did not always lead to efficiency: improved managerial, technical and engineering skills were also required. Since TNCs were generally the major (and in some very advanced technologies the only) sources of new technology, and were equipped to provide the entire package of knowledge capabilities and training, even countries without pressing debt problems and with traditionally hostile attitudes to FDI (India and China are the best examples) amended their policies in this area. A generally more favourable attitude to the private sector, supported by privatization programmes in some countries, strengthened this tendency.

The generally warmer climate for FDI did not, however, mean that all developing countries adopted "open door" policies. A great deal of variation remained in regulations

concerning foreign entry; more importantly, the interpretation and implementation of regulations varied greatly (UN CTC, 1988, p.263). Some of the differences lay in inherited attitudes and ideologies that sharply circumscribed the role that foreign investors could play: India, for instance, still insists on 60% local equity holding in all but a few exceptional cases, and, despite liberalization and streamlining, still has a tight screening process which has kept FDI inflows down to very small levels (approvals rose from under \$10 million per annum in the 1970's to around \$100 to \$160 million per annum in the late 1980's, but these are tiny compared to inflows in South East Asia).

Some differences are accounted for by indigenous strategies of, and success with, technology development. Countries that have made major progress in building up domestic capabilities, while becoming more attractive as investment locations, could afford to be more selective on foreign entry. Thus, Korea adopted, in its early stages of industrialization, a highly nationalistic strategy (on the Japanese model) which kept FDI inflows tightly constrained. It built up its chaebol to a commanding position in domestic industry and export trade, supporting them with a variety of interventions (Lall, 1990): they have now reached a position of strength such that recent liberalization (since 1984), while increasing FDI inflows somewhat, does not challenge their industrial dominance. Some countries, like Brazil, while keeping to a well-established policy of welcoming FDI, have restricted foreign entry in sectors (e.g. "informatics") marked out for indigenous technology development.

In sum, the interaction of different strategies, traditions and bureaucratic efficiency have resulted in a map of the Third World which still shows high level of variation in policy regimes facing foreign investors (detailed review is given in UN CTC, 1988, p.268-79). Apart from conditions for entry, concerning specified equity shares, permitted sectors, localization conditions, export requirements, and the like, there are major differences with respect to investment incentives given to foreign investors. While there is general consensus that long-term, underlying economic conditions are a more important determinant of FDI location than short-term incentives, "the impact of investment incentives on the investor's rate of return may be quite important when compared with the levels of effective protection that many

investors in both developed and developing countries enjoy. Thus, while any individual incentive measure may have a small effect, the cumulative effect of all incentive measures granted by a host country may be substantial". (Guisinger, 1986, p.170). Note here that "incentives" are defined more widely than tax incentives, to cover all policies that affect firm profitability.

Even when incentives given by different countries cancel themselves out, there is a classic "prisoner's dilemma" that it is still worthwhile for an individual country to offer incentives to attract a larger share of available FDI. Many efforts have been made to curtail competitive incentive package by developing countries, but so far with limited success (*ibid*). This is true despite – or perhaps because of – evidence that more liberal policies and more generous concessions to FDI have not halted the move away from developing to developed countries. To quote the conclusions on recent policy changes reached by the UN CTC (1988):

"... there is no conclusive evidence as to the actual impact of liberalization policies on the flows of FDI and technology. Available information in Latin American would suggest that no spectacular changes in those flows can be expected as a result of the more favourable rules applied. Those changes may perhaps facilitate the execution of investment or technology transfer plans, but are less likely to determine the initial decisions to invest or transfer technology. Existing studies on tax incentives have demonstrated that in a significant proportion of cases they have a limited impact on the investment–decision process. Conversely, the actual effect on FDI of the presence of limitations and restrictive policies has never been clearly established. The general and specific conditions prevailing in the world economy and in the country concerned along with the strategies of particular TNCs seem to have been the major determining factors of investment and technology flows. The measures of liberalization may then be seen primarily as signals addressed to TNCs, to attract their attention, as it were." (p.279).

No doubt the trend to move welcoming policies creates an initial necessary condition for the encouragement of FDI inflows, but it is by no means a sufficient condition. In view of

the technological and often supply-side factor reviewed above, and various other demand-side factors to be discussed below, it may be safely concluded that policy reforms on FDI by themselves are unlikely to have much impact of industrial relocation in developing countries. Any noticeable impact must result from a combination of appropriate policies with broader economic, technological and strategic considerations.

IV. b. Economic Conditions in Developing Countries

FDI flows are extremely sensitive to economic conditions in recipient countries, and the events of the 1980's have brought its sensitivity into sharp focus. As the World Bank's Presidents memorandum (1989) on the subject states:

"The decline in FDI flows to developing countries after 1982 occurred for several reasons. The debt crisis precipitated an erosion of confidence in developing countries' creditworthiness and attractiveness as investment sites, and recession and continuing macroeconomic instability in many developing countries further undermined investor confidence in these economies. Much FDI has been oriented toward producing for local markets, so that stagnation and macroeconomic instability provided further disincentives to new investment. So did the decrease in attractiveness of large, resource-based projects after 1981; part of the sharp rise and decline in flows to developing countries can be attributed to FDI flows to oil-producing countries. For non-oil developing countries, FDI flows peaked at about \$15 billion in 1981, fluctuated at \$11 billion until 1986, and then rose to \$14 billion in 1987, largely as a result of dollar depreciation. Finally, profitability has improved in developed country markets and this has caught investors' attention. The decline of the dollar since 1985 has induced a significant inflow of foreign investment into the United States to purchase land and other assets and create new capacity. Moreover, anticipation of a large internal market within the EC by 1992 is also stimulating investment in Europe by domestic and foreign firms. However, as demonstrated by recent pickups in FDI flows noted above, it is important to

remember that the factors that have constrained FDI flows to developing countries during the 1980s are not immutable features of the world economy or of the economies of individual developing or developed countries. Indeed, the variations in the rate of FDI inflows across countries are at least as striking as the variations over time." (p.3-4).

The variation between developing countries just noted have arisen, in this context, from differences in their macroeconomic management (especially of external debt, but also of internal inflation and exchange rates); their other economic policies (price controls, taxes, attitudes to the private sector, intellectual property rights, labour laws and conditions, stability of incentives and so on); their political stability; and their anticipated economic and export performance. The diminishing flow has been directed increasingly at countries that had a stable, transparent and predictable environment with good prospects for overseas investors to earn and repatriate healthy returns and to integrate the new locations into their global strategy as determined by technological and market factors. These are well-known factors in the FDI literature, and need little emphasis here. They are taken up again in Section V in the discussion of future strategies (specific policies such as debt-equity swaps are also taken up there).

One aspect of economic policies that needs special attention is their trade orientation. As mentioned earlier, there has been a growing disillusionment among developing countries and development economists with the experience of inward-looking industrialization policies. Much of FDI in manufacturing has traditionally gone into import-substituting ventures, generally protected by high barriers from world competition and in a high proportion of cases unable to achieve the levels of efficiency required to enter global competition. Some cases do exist, especially in the industrially advanced countries (Brazil and Mexico, for instance), of import substituting foreign ventures becoming major exporters when given adequate incentives, access to competitive inputs, an appropriate support structure and the opportunity to reap scale economies (e.g. in the automobile industry). However, these are the exceptions which serve to show how much has to be done before inward-oriented regimes can

transform themselves into competitive ones.

Since almost all developing countries now aim to promote manufactured exports, and look to FDI as an important mechanism to boost such exports, it is important to bear in mind the consequences of this change on FDI prospects. First, there will clearly be an "adding up" problem. Given the total size of markets for particular manufactures (and given constraints placed on imports of these from developing countries), every country cannot hope to become a major exporter. But other problems may arise long before the demand constraint is reached in most developing countries: essentially, their infrastructures, skill endowments, industrial support systems, and market sizes (quite apart from the economic conditions noted earlier) simply make dynamic export activity unfeasible. And current supply-side developments raise this feasibility for a large majority of developing countries: only a select few can hope to attract export oriented investments of the 'new wave'.

This creates a dilemma for FDI policy in the non-NIC developing countries which many analysts have not faced squarely. If highly protected, import-substituting foreign investments of the old type are really "out" for most developing countries, because of sagging domestic markets or in order to restructure industrial competitiveness, future flows of FDI will be even more skewed geographically than before, with a higher concentration on the few locations that are "efficient" and well located. The very process of liberalization which, by reducing protection and lowering barriers to FDI, is recommended in the interests of efficiency and structural adjustment will serve to squeeze further the inflows of foreign investment and so hamper the adjustment. This is because simply reducing protection and "getting prices right" may not be enough in most countries to provide (immediately or even in a short period of time) the enhancement of skills, capabilities, support systems, etc. needed to attract export-oriented FDI. No amount of policy reform directed at foreign investors (better investment codes, faster procedures, liberal treatment, tax holidays) or at macroeconomic variables (inflation, wages, exchange rates) is likely to offset structural economic weaknesses. Yet this seems to be the assumption in policy advice coming from various sources (for instance, World Bank, 1989).

This does not mean that countries should abort necessary economic reforms simply

to attract FDI. Nor does it simply that no new FDI will be attracted to reforming countries. Some reforms will enable "slack" in the existing structure to be taken up with efficient activity, in the sense that existing industries with unexploited export potential will be able to expand if policy barriers (say, in access to world-priced inputs) are removed. Some industrial capabilities will develop simply in response to healthier incentives, especially in countries (like India) where a substantial education base exists. There will still be scope for import-substituting FDI, even if lower protection than before is given, and current privatization programmes in sectors with natural monopoly (e.g. power generation in Pakistan) will attract foreign capital. Moreover, FDI in the older type of cheap labour seeking activities will continue, (as China shows with Hong Kong investments), and can be facilitated by setting up or enlarge export processing zones (Lutkenhorst, 1988).

It must also be noted that the adoption of export oriented industrial strategies does not imply a laissez faire economic policy. A number of interventions, both functional (aimed at improving the workings of skills, technology or capital markets) and selective (aimed at promoting and protecting strategic sectors), may coexist with export orientation. Indeed the experience of the medium-sized NICs suggests (see Lall, forthcoming) that the success of their export-oriented strategies in a rapidly diversifying range of industries depended crucially on such interventions. If policy reforms are devised to include efficient interventions, especially to speed up the development of industrial capabilities in selected strategic activities (of which, more below), it may well be possible to attract FDI in substantial volume while changing the thrust of the trade regime.

These qualifications dilute to some extent the dilemma posed by the association of FDI and import substitution in developing countries. They do not, unfortunately, get rid of it altogether. The number of potential host countries to export-oriented FDI that have "slack" in modern industrial capabilities is still fairly limited. Further import-substitution and privatization may be similarly circumscribed; in any case, efficient import-substitution in principle requires the same highly developed skills and systems that export-orientation does, and the promotion of other forms of investment are highly undesirable. Where new skills and

industrial systems have to be developed, the gaining of competitiveness and the attraction of "new wave" FDI will necessarily take time. Selective and functional interventions can be successfully mounted only in some countries, and require, apart from long gestation periods, efficient administrations, clear objectives, political strength and bureaucratic honesty — elements often lacking in many developing countries.

In sum, the changing economic environment of the 1980's has brought to the fore many problems with industrial relocation via FDI. Those arising from the debt crisis, recession and political instability are the ones that attracted most attention. These affect FDI flows to some countries that were previously major destinations, and also to many others that were always peripheral to overseas investors: in this, they partly distorted and partly strengthened underlying propensities generated by the technological forces shaping FDI. There were other changes that are less publicized in relation to FDI. The general shift from protected, inward-oriented policies to more outward-looking ones, whether induced by structural adjustment programmes or, more gradually, by governments under their own volition, is likely to raise the skewness of FDI. With some exceptions, (such as China), the ongoing strategic shift will, in the medium term, direct more flows to countries best placed to take advantage of new technologies. Other countries may benefit in the longer term, if they are able to mount strategies that bring their capabilities to the minimum levels required by emerging technologies and organizational forms.

IV. c. Industrial Capabilities in Host Countries

The industrial capabilities that are relevant to the attraction of FDI are those that determine the skills available to prospective investors directly, as well as those affecting the efficiency of local suppliers, consultants, service firms and the physical and technological infrastructure. In a general sense, therefore, the level and efficiency of development of the domestic industrial structure, including a thriving locally-owned sector and a network of supporting public or private institutions, indicates the availability of the capabilities that can allow foreign investors to set up competitive modern facilities.

There are several ways in which industrial capabilities in developing countries can be measured. The size and length of existence of the industrial sector is an obvious indicator: however, it does not capture the efficiency factor. Large industrial sectors may be technologically backward, and, if highly protected, may possess the wrong kinds of skills and attitudes needed for "new wave" investments from abroad. Moreover, they may operate with very low levels of technical proficiency if the human capital base is inadequate. Export performance in manufactures is another possible indicator. While creating a strong presumption in favour of industrial efficiency, it has to be analyzed further to show whether exports actually embody high levels and diversity of local skills, whether local enterprises (and so local technical effort) are involved, and the 'depth' to which local capabilities have developed.

A more direct measure of industrial capabilities is the human capital structure created by a country's education and training system, and the extent of technological effort undertaken locally in terms of R & D expenditures. In combination with data on industrial production and export performance, these figures can provide sound indicators of how well-gearred particular countries are to attract FDI in the future.

It may be relevant here to consider Tables and , containing two sets of data (taken from Lall, forthcoming) on investments in human capital and formal technological effort in a sample of NICs, "new-NICs" and one Sub-Saharan African country (Kenya). The table on human capital shows that the two larger East Asian NICs, Korea and Taiwan Province, which have arguably the best industrial performance in the Third World (in terms of industrial growth, diversity, depth, competitiveness and indigenous participation), also made the highest investments in the creation of worker (secondary and vocational education) and higher level (especially scientific and technical schools) skills. The two smaller NICs, Hong Kong and Singapore, have very high levels of unspecialized worker training (secondary schooling) but less vocational training, and fairly high levels of high level technical training. However, Hong Kong clearly lags in the latter behind Singapore, reflecting its more specialized and "lighter" industrial structure. Singapore, while highly dependent on FDI for technological inputs, has to

Table
Indicators of Investments in Human Capital

	<u>South Korea</u>	<u>Taiwan</u>	<u>Hong Kong</u>	<u>Singapore</u>	<u>Brazil</u>	<u>Mexico</u>	<u>India</u>	<u>Thailand</u>	<u>Indonesia</u>	<u>Kenya</u>
Percent Age Group Enrolled in:										
Primary Education										
(1965)	101	97	103	105	106	92	74	78	72	54
(1985)	96	100	105	115	104	115	92	97	118	94
Secondary Education										
(1965)	35	38	29	45	16	17	27	14	12	4
(1985)	94	91	69	71	35	55	35	30	39	20
Tertiary Education										
(1965)	6	7	5	10	2	4	5	2	1	0
(1985)	32	13	13	12	11	16	9	20	7	1
No. of Tertiary Students per 100,000 population (latest year)	3606	2080	1410	1406	1140	1508	776 ^a	1998	600	114
No. of Tertiary Students in CSE^b ('000) (Year)	585 (1987)	207 (1984)	36 (1984)	22 (1983)	535 (1983)	563 (1986)	1443 (1980)	360 (1985)	235 (1985)	12 (1985)
As % of Population: Total	1.39	1.06	0.67	0.89	0.40	0.70	0.21	0.06	0.14	0.06
Urban	2.02	1.36	0.72	0.89	0.57	1.02	0.97	3.90	0.53	0.30
No. of Students in SNE^c ('000)	320.6	151.7	27.5	16.2	323.3	336.9	1269.9	n.a.	137.3	4.8
As % of Population: Total	0.76	0.78	0.51	0.73	0.24	0.42	0.19		0.09	0.02
Urban	1.10	1.00	0.55	0.73	0.34	0.59	0.86		0.33	0.12
No. of Students in Engineering Only ('000)	227.6	128.7	21.1	15.4	164.6	281.8	397.0	n.a.	109.5	3.3
As % of Population: Total	0.54	0.68	0.41	0.61	0.13	0.35	0.06		0.07	0.02
Urban	0.78	0.85	0.42	0.61	0.17	0.50	0.27		0.27	0.08
No. of Students Enrolled in Vocational Training ('000) (Year)	814.5 (1986)	404.6 (1984)	31.7 (1984)	9.4 (1984)	1481.0 (1985)	853.6 (1985)	397.7 (1981)	288.0 (1984)	1061.3 (1986)	7.8 (1985)
As % of Population of Working Age	3.06	3.24	0.86	0.54	1.83	2.0	0.07	0.96	1.14	0.08

Sources: World Development Report, 1988.

UNESCO, Statistical Yearbook 1988, Paris, 1989.

Government of Republic of China, Statistical Yearbook of Republic of China 1988, Taiwan.

Government of Republic of China, Ministry of Education, Educational Statistics of Republic of China, 1984, Taiwan.

Notes:

^a 1980.

^b General Science and Engineering fields: natural science; mathematics and computer science; medicine; engineering; architecture; trade, craft, transport and communications; agriculture, forestry, fishery.

^c Natural science, mathematics and computer science, engineering.

TableFormal Technological Effort in Selected NICs and Japan

<u>Country</u>	<u>Year</u>	<u>Total R & D</u>	<u>R & D in Productive Sector (% of GNP)</u>	<u>R & D Financed by Productive Enterprises</u>	<u>Scientists/ Engineers in R&D per Million Population</u>
South Korea	1987	2.3	1.5	1.9	1,283
Taiwan	1986	1.1	0.7	0.6	1,426
Singapore	1984	0.5	0.2	0.2	960
Brazil	1982	0.7	0.2	0.1	256
Mexico	1984	0.6	0.2	0.005	217
India	1984	0.9	0.2	0.1	132
Thailand	1985	0.3	n.a.	0.04	150
Indonesia	1984	0.3	n.a.	n.a.	152
Kenya	1975	n.a.	n.a.	n.a.	20
Japan	1985	3.5	2.4	2.7	4,569

Sources: UNESCO, Statistical Yearbook 1988, Paris 1989.
 Government of Republic of China, Science and Technology Data Book, Taiwan, 1987.
 Government of Japan, Ministry of Science and Technology, Indicators of Science and Technology, Tokyo, 1986.
 Ministry of Science and Technology, Introduction to Science and Technology, Seoul, Republic of Korea, 1988.

provide high level engineering manpower to enable foreign affiliates to move into very skill and technology intensive areas.

Of the larger NICs, Mexico has a clear lead in human capital, while India and Brazil are far behind. All three countries suffer from large areas of inefficiency in industry (combined with pockets of efficiency and dynamism), and a comparison with the larger East Asian shows how far they have to go if they are to bring the general level of industrial performance to their levels. India and Brazil seem to operate large parts of their extremely diverse industrial structures with very low inputs of technical skills; in particular, India's vocational training lag suggests very low levels of worker competence. Similarly, Kenyan data show graphically the kind of skill lags suffered by African countries: and Kenya is a star performer in the context of Sub-Saharan Africa.

The figures in Table do not take into account such important factors as the quality of education, completion rates at school or university, the relevance of the curriculum or the extent of post-employment training given to workers. It is likely that these considerations would increase the lead of the East Asian countries (Lall, 1990). The quality of education and completion rates tend to be better in East Asia, while Korean and Singaporean workers receive large amounts of training (on-the-job and in formal courses). The Latin American countries also have various training programmes but India and Kenya, as well as the new-NICs (Indonesia and Thailand), seem to lag in the respect.

Turning now to R & D effort in the NICs, Table sets out total R & D, R & D in the productive sector and R & D financed by productive enterprises, as percentages of GNP. It also shows the ratio of scientists and engineers involved in R & D to total population. Japanese figures are given for comparison. While formal R & D is not an accurate measure of total technological effort in industries and it does not measure the level of development of the technological infrastructure, it does provide a rough indication of both. The former is particularly related to R & D financed by productive enterprises, since at advanced levels of industry formal R & D in the firm becomes necessary to absorb new technology as well as to generate it. All the measures shown in the table may be indicators of the level of development

of the technological infrastructure.

The two larger East Asian NICs again stand out, with Korea in the lead by most measures. Its higher degree of self reliance and greater emphasis on heavy industry have necessitated this high level of R & D to establish international competitiveness. This has, in turn, given Korea an impressive base of capabilities to absorb, build upon and even innovate on a range of modern techniques. Other NICs lag well behind, they may thus be able to receive and operate new technologies by FDI, but not to develop it further over a broad spectrum. Singapore, despite its very high reliance on TNC technology, invests more money and scientific manpower than the larger NICs. It is this capability which is inducing TNCs to shift some innovative activities to Singapore.

These tables are only illustrative, but they serve to underline two important points: first, among the NICs, the record of success in absorbing and efficiently deploying industrial technologies is highly correlated with efforts to develop local capabilities. Healthy capabilities develop from an interaction of incentives (export orientation, but combined with interventions to protect learning processes in difficult technologies) with skill creation and technological effort (these also requiring government intervention to overcome "market failures" in capital, education and information markets). The very same base of capabilities developed to deal with previous technologies will serve to absorb new technologies in the future (whether through FDI or by alternative means depending on the country's strategies).

Second, the development of industrial capabilities is not evenly distributed, between the NICs or in the Third World at large. It has depended on large, costly investments, in infrastructure, education, research and institution building, on the effectiveness of government interventions in these activities, as well as on the provision of appropriate incentive structures. In view of the long gestation periods involved in capability development and the inherent complexities of policy support, it is unlikely that the base of capabilities needed to attract "new wave" FDI will change dramatically. It has to be a slow, incremental process in which past performance strongly influences future growth. This reinforces the conclusion reached in the discussion of policies that liberalization measures ("getting prices right") by themselves will not

greatly alter the pattern of FDI flows. The countries which have done well in the past will continue to do well in the future, and, in the longer term, some less-industrialized countries will become major FDI locations if they build up their skills and support systems (the policy implications are discussed in the following section).

The discussion so far has stressed education, training and technological effort. It need hardly be said that physical infrastructure development is an equally important part of building national capabilities. The significance of high-quality communications, transport, power supply and other utilities are well known to all policy makers. What may need emphasis is the need for institution building in this context. Efficiently functioning markets need a variety of institutions to support them: in the administrative sphere, institutions to deliver efficient processing of necessary formalities, appropriate regulation to ensure that monopoly power is not created or abused, fair tax collection, transparent and stable policy regimes, and the ability to take unpopular measures where necessary (e.g. ease out declining industries); in the technology sphere, institutions to provide "public goods" such as information flows, standards, basic research, linkages between industry and universities, extension services to small and medium enterprise, collaborative efforts between individual enterprises where economies of scale or riskiness of research require this; in the labour field, institutions to promote labour training and retraining, ensure labour mobility, hold down restrictive practices; in the financial field, institutions to mobilize and encourage savings, allocate them economically but while supporting high risk activity with long-term payoffs, meet the needs of smaller borrowers. The list could be much further extended.

It is evident that institution building and capability development are closely intertwined. The complexity of skills, knowledge support structures and administrative back-up needed for industrial development can be provided only if appropriate institutional structures emerge. Some may emerge autonomously, under pressure of market forces or by cooperative action by industrialists, workers or bankers. However, this may be insufficient, or may take too long: in this case, governments have to step in to set up or support institutional development. Other institutions fall naturally within the government's purview: they are

concerned with the formulation and implementation of policies or deals with public goods which private bodies have no incentive to supply.

It is generally acknowledged that the worst market failures in capability development occur in human capital and technology development (Stiglitz, 1989). Private agents tend to underinvest or invest wrongly in skill development or building technological capabilities because of uncertainty, lack of foresight, lack of information, externalities (lack of appropriability of a firm's investments in training or R & D), and complementarities (one firm's investments are productive only if other enterprises also invest). This is the kind of market failure which government interventions in NICs like Korea was designed to overcome (Pack and Westphal, 1986).

This concludes the discussion of factors on the recipient side affecting relocation via FDI. It must be admitted that the picture that emerges is not very reassuring for much of the developing world. It is likely that the traditional "inequity" in FDI flows to developing countries, recently exacerbated by macroeconomic developments and technological progress, will persist or increase. Some recent policy changes may offset this slightly by removing administrative obstacles in the way of foreign investments, but other may strengthen it (by offering lower levels of protection). More importantly, policy reforms will, at best, have a very gradual effect on the basic determinant of the ability to attract "new wave" FDI – industrial capabilities. For some time to come, therefore, industrial relocation will continue to favour the better-off, industrially more advanced, developing countries. A few newcomers will join the fortunate group, but a large number of less developed nations will continue to lie outside the dynamics of relocation. But the picture is not static: progress, however slow and difficult, must continue, and policies must be geared to long-term objectives.

V. Future Strategies and Policy Implications

This section outlines some of the policy implications of the earlier analysis. It is arranged under the following headings: entry conditions; debt-equity swaps; attraction of small and medium enterprises; regional cooperation; promotion of local enterprises; and the

development of industrial capabilities.

V. a. Entry Conditions

Host countries have to do more than adopt a hospitable attitude to foreign investors. Apart from offering a stable and promising economic and political environment, governments should pay close attention to the regulatory framework and procedures adopted towards prospective investors.

"The transparency of FDI regulations is important, since investors need to know in advance how host regulations will be applied to such particular investment. If there is a high degree of variability in the interpretation of these regulations, or if it is necessary to obtain the approval of multiple host government agencies (which may disagree among themselves), than an otherwise hospitable host country environment will remain unattractive. Steadiness in the FDI regulations is also important to investors: uncertainties created by constantly changing FDI regulations can be a significant deterrent to FDI flows adding to the normal commercial risks of doing business plus additional uncertainties by virtue of being foreign to the host country. Consequently, those host countries that exhibit not only hospitable but also transparent and stable FDI policies provide investors with especially attractive conditions for FDI. These conditions extend to the treatment of expatriates, and include timely approval of work permits for reasonable durations". (World Bank, 1989, p.13). (Emphasis added).

Among entry conditions that particularly affect FDI are: controls on foreign exchange transactions (governing import of inputs and payments of dividends, royalties or principal); investment incentives (which may cancel out between countries but still affect the choice between them); subsidies for training or borrowing; effective rates of protection against imports (as noted, this widely-used tool for industrialization is not generally recommended if it leads to inefficient import substitution and inadequate capability development); access to world-price inputs (critical for export-oriented activities); freedom to choose ownership shares (experience shows that rigid rules governing foreign equity shares or their dilution over time are harmful to FDI inflows); and the provision of special facilities (like export-processing zones for

exporting firms).

The most significant of these conditions in the context of future FDI trends are likely to be those concerning foreign exchange transactions, access to world price inputs (or EPZ type facilities) and the freedom to choose ownership shares. It is to be hoped that competitive incentives for FDI will be phased out by some form of international or regional agreement. Countries seeking to promote FDI will then focus on "marketing" their country effectively, in terms of targeting activities or investors likely to be interested, providing information specific to these investors' needs, and a package of facilities (but without excessive tax or other concessions). Such marketing has been shown to be highly effective in the case of the Republic of Ireland (see the presentation made by the head of its Industrial Development Authority in Asian Development Bank, 1988).

High levels of protection will also, hopefully be eased out as countries move to more open trading regimes with only very selective interventions to promote infant industries for limited periods. In return for granting these privileges, increasing use should be made of "performance guarantees", tying the investors to undertaking agreed actions to raise local skills, undertake local research, buy local inputs or export specified amounts. Performance guarantees are an increasingly common feature of FDI negotiations even in developed countries, especially when very large projects are involved, and it is appropriate for developing countries to build them into their bargaining strategies. However, like any bargaining condition, the imposition of difficult conditions may simply involve a trade off in some other area (Guisinger, 1986); a very well-informed, sensitive and pragmatic approach is needed rather than a heavy-handed or rigid set of rules.

The growth of privatization in a number of developing countries opens up a new avenue for attracting FDI. Countries like Pakistan, Guinea, Mexico, Philippines and Togo have used privatization as a means to bring in direct investment or other forms of foreign involvement (World Bank, 1989, p.21). While privatization raises a host of difficult issues of ideology, procedure and regulation (Berg and Shirley, 1987), which entail a careful use of the tool, it is evident that it is an important potential mechanism for certain kinds of FDI – and

one which will be used significantly to promote flows to Eastern Europe in the near future.

V. b. Debt Equity Swaps

The debt crisis has given birth to debt-equity swaps — a highly publicized instrument for reducing the debt burden while promoting the inflow of FDI and associated skills and technology. Debt equity swaps enable investors to buy a country's outstanding debt on the secondary market, and then resell it to that country's central bank at a higher price, using the proceeds to buy equity in new or existing (sometimes public, in which case debt-equity swaps are part of privatization deals) enterprises in that country (Bergsman and Edisis, 1988). The investors gain a cheap entry into the country, while the country reduces its debt burden in exchange for more easily-serviceable FDI and associated benefits. The extent of discount is variable, sometimes zero and sometimes as high as 50 percent (World Bank, 1989, p.19).

The existence of this discount (which is subsidy to the investors) clearly raises difficulties for the host country. It is often seen as a way "selling national patrimony" on the cheap to foreigners, and questions are raised about whether any additional investment has been attracted in return. Research conducted by Bergsman and Edisis (1988) suggests that some of the swapped equity would have come in any case, but that stable and long-lasting debt-equity programmes have a lot of additionality. Once foreign investors (in manufacturing) make a commitment to a local enterprise, they do follow up with additional resources of capital, skills, technology and the like to raise its productivity. However, this additionality tends to be higher for export-oriented investments.

In view of the scale of debt-equity swaps (in 1988, they totaled \$2.7 billion for Mexico, \$3.6 billion for Brazil and nearly \$1 billion for Chile of which some 40% went into equity investment), it is important to ensure that "additionality" is high and resources are channeled into high-priority sectors. Bergsman and Edisis (1988) recommend that the level of incentives should be kept high and stable, while keeping some restrictions on the timing of repatriation of dividends or capital, and on the activities open to swaps. There are also fears of

macroeconomic effects (inflation) resulting from credit creation by the central bank to finance swaps. These fears are real, but any inflationary impact can be limited by appropriate fiscal and monetary policy, or by limiting swaps to privatization programmes. However, where restrictive monetary or fiscal policies cannot be implemented, swaps do add to inflationary pressures: it was largely this which led several countries (Argentina, Brazil, Mexico, Philippines) to halt their swap programmes in 1988 (World Bank, 1989, p.17).

No one believes that debt-equity swaps are a complete solution to the debt problem or to the problem of serving FDI flows if other conditions are inappropriate. However, it is one promising means to stimulate FDI to indebted countries which otherwise would have received substantial inflows and which undertake measures to contain its inflationary impact and direct it to most productive uses.

V. c. Attraction of Small and Medium Sized Investors (SMIs)

An earlier part of this study noted some difference between large TNCs and small and medium investors (SMIs). The latter offer certain special benefits to developing host economies in their areas of specialization, and recent technological trends seem to be giving a new boost to their innovativeness and dynamism. SMIs are of particular interest to countries that seek "new forms" of international involvement, both in very traditional (low technology) areas of investment and in some newly-emerging high technology (but not yet scale intensive) activities.

The main problem in attracting SMIs from both developed and developing countries lies in imperfections in information, skill and insurance markets. Thus, SMIs tend to be much less familiar with operating conditions, both economic and political, in foreign countries than large firms, which accounts for their investments in neighbouring countries or those with ethnic or cultural connections. They find it costly to collect, analyse and compare data on different possible locations. They also find it more tiresome to cope with unfamiliar bureaucracies and legal requirements. If they do find suitable locations, they generally find it hard to spare the high-level manpower to send (in adequate quantity) to ensure the success of the venture. They

may also find it difficult to recruit the necessary manpower from their home country or other labour markets. Finally, they may be more risk-averse than large firms because the potential cost of failure abroad may pose a much larger risk to their overall profitability than to a large firm. In the absence of insurance for (non-commercial) risk, therefore, even a slight hint of uncertainty may deter their investments.

There are various possible ways to overcome these market imperfections. Many developing countries have set up investment promotion offices in major home countries to provide information and assistance to prospective investors. Trade missions and aid agencies from the rich countries also promote foreign ventures by SMIs from their economies, as do industry associations on both sides. Trade fairs, conferences, symposia and high-level political meetings are often also used to provide information, inspire confidence and establish direct contact. A number of private agents provide technology brokerage services or arrange joint ventures in specific regions or industries. International institutions (like IFC or MIGA) try to promote FDI in all its forms. Similarly, political risk can be insured by home country government or by MIGA, which also offers services in resolving international business disputes.

All these measures need to be greatly strengthened and expanded before they reach the great bulk of potential SMIs, especially those located in large countries away from the major metropolitan centres. The problem of information (in which coping with bureaucracy is included) is the major one, and there are no easy or cheap solutions. Much of the investment has to come from the host countries themselves, though there is also scope to improve the quality of their existing "marketing" efforts.

Two points need to be made here. First, a significant proportion of SMI can come to developing countries as ancillaries to major TNCs, thus the focus of SMI promotion should be those large investors who then induce their existing suppliers to relocate with them (Phongpaichit, 1988). Second, a very effective method of promotion may be to use local businessmen in host countries (rather than official centres located in capital cities) to go to investing countries and meet SMIs through trade associations or other bodies. Since the most likely route for SMI entry is the joint venture, an aggressive policy of sending out local firms to

seek prospective partners is likely to yield much higher dividends than a more passive approach (of advertising or holding general meetings).

To the extent that the promotion of joint ventures is a marketable service, it may be expected that private brokerage services will grow rapidly. These should be encouraged and promoted, not just to provide information, but a whole package of services, also including finance, dealing with bureaucratic requirements, privatizations, arranging for recruitment and personnel relocation, arbitration and so on.

V. d. Regional Cooperation

There are several arguments for regional cooperation in the attraction of FDI. First, where individual developing countries are too small to offer an economic sized market, a regional grouping can attract efficient investments in activities enjoying economies of scale. Second, regional cooperation enables members to cut back on offering competitive subsidies to attract FDI. Third, a group may be able to bargain better and obtain better performance guarantees than individual countries, not just because of larger market size but also because of economies in collecting information. Fourth, a regional group can "market" itself better than a country, again because of scale economies inherent in such promotion. Finally, a regional group may be regarded as economically more stable than a small individual country because of greater resource diversity (though this may work against an individual country which is a "star performer").

It is essentially the scale and diversity case, in its various aspects, that underlies the argument for regional cooperation. The argument has a long history, and many attempts have been made to form trade, cooperation or other blocks to promote industrialization and attract foreign capital. As is well known, most of them have failed or yielded disappointing results, for political or economic (but for distributional rather than efficiency) reasons. Yet the basic case still stands, and may even be strengthened by the nature of technological changes under way. If the development of industrial capabilities can be speeded by forming regional groupings (because of scale economies in creating a base of high level technical manpower and a minimum

industrial support structure), then such groupings can be effective in attracting "new wave" FDI more successfully than individual countries. It is easy to see why: institutions to educate and train specialized technical manpower, or R & D institutions, are more feasible for servicing a group of small countries than for a single country. However, it is difficult to see how geographical concentration (and so an inequitable distribution of benefits) can be avoided in such a strategy.

The major problems of using regional cooperative forms to attract industrial relocation continue to lie in their political and distributional aspects. If these can be overcome, the potential rewards are considerable.

V. e. Promotion of Local Enterprise

The entry of FDI may have significant beneficial effects on domestic enterprises. Those that linked to it in the vertical production chain, as suppliers of goods and services or buyers of the affiliates' output, can benefit from the growth in production and from transfer of technology or skills from the affiliate. Those that compete with it can benefit from efficiency spillovers, because of the competition provided, the 'role model' set, the leakage of skills and knowledge, a greater exposure to international markets, and the upgrading of common suppliers or buyers. The business environment at large can benefit from the affiliates' linkages to the science and technology infrastructure, its influence on government policy and a generally "progressive" act of attitudes. The presence of manufacturing FDI can attract a host of complementary FDI in services that promotes greater efficiency and dynamism in domestic industry.

However, the entry of a large powerful foreign presence in a developing country's industrial sector is not an unsullied advantage. Many of the benefits just noted accrue to an economy which already has a thriving indigenous sector that can benefit from the competition, linkages and externalities provided by foreign entrants. Countries that have weak or fragmented indigenous industrial entrepreneurship may find its development inhibited by a large foreign sector: even a supporting role may be taken over by foreign firms with established

links to the major investors. The difficulties of local development will vary with the entry barriers posed by technological complexity and economies of scale. Local enterprises may do well, *ceteris paribus*, in activities with simple technologies and low capital requirements, while foreign firms may dominate more demanding activities. Some countries may then feel (Korea being a good example) that restrictions on foreign entry are warranted for a period, in which local capabilities are built up in heavy industry.

It appears, therefore, that a strong indigenous entrepreneurial class in a diversity of industries is necessary to reap the greatest advantages of FDI, and that FDI has to be selectively permitted to allow such a class to emerge. Once the class is established, FDI can be permitted much more freely, or can be encouraged as joint venture partner to local enterprises.

This is not, of course, the only possible strategy to follow to promote industrial relocation. Small economies may well decide that the cost of protecting domestic entrepreneurship is too high, and so base their strategy entirely on FDI. This is the course pursued by Singapore with striking success, with all its policy efforts directed to providing the infrastructure, skills and macroeconomic environments needed for attracting increasingly sophisticated forms of FDI. However, the Singapore strategy may not be acceptable to larger countries, and there may be socio-political constraints to accepting, from the start, a subsidiary role for domestic enterprises. In many cases, therefore, the kind of selective strategy to promote local entrepreneurship described above would be more acceptable.

Once a strategy of entrepreneurial development is in place, and the activities to which it is to be applied demarcated (some areas may still be left open for FDI if these are felt to lie outside local capabilities), what can the government do to promote such development?

Entrepreneurial development may be seen as a learning process, in which incentives, capabilities and institutions again play crucial, interlinked roles. The incentives to healthy learning arise from a competitive environment, in which prices are relatively undistorted, entry and exit unobstructed by policy constraints, technology flows freely permitted and ownership patterns (say between public and private, or large and small scale) not heavily biased by policy. However, this is not to say that ideal competitive conditions are best produced by free trade:

there are strong arguments for import industry protection to help overcome the costs of mastering difficult technologies. The development of entrepreneurial capabilities largely arises from "learning by doing", but the more formal aspects can be taught in business schools and the like. In a broader sense, the encouragement of domestic enterprise requires the growth of industrial capabilities generally; this is considered below.

Many developing countries have stultified entrepreneurial development by offering excessive protection, on the one hand, and imposing a variety of business regulations to control the abuse of market power, on the other. They have tried to force domestic enterprises into pre-selected activities, to regulate size, product range and technology, to restrict entry and exit, to control prices and employment, and to specify the source of inputs. Many of these regulations have bred anti-competitive attitudes and led to inefficient practices: in the context of entrepreneurial learning, they have misdirected the direction, content and pace of capability acquisition. By sapping business confidence, and by slowing down overall rate of growth, they have also held back the size of indigenous enterprises and its projection in world markets.

The most important step in promoting entrepreneurship is therefore to remove policy-induced constraints to private sector development. By giving the right environment and policy signals to local enterprise, the government can also transmit a clear positive signal to prospective foreign investors. The nature of the response, both internally and externally, will then depend on the development of capabilities and supporting institutions, and the entrepreneurial capabilities that exist already.

The promotion of entrepreneurship need not involve passively leaving everything to the market. A number of positive measures are necessary: to protect the learning process, to remedy failures in capital, labour and technology markets, to create large size units where necessary, to provide extension sources, to provide a technology infrastructure, and so on. Promotion is also intervention, but it is intervention of a very different sort from that practised in many developing countries (thus Korea actively promoted its private businesses, while India held back a thriving entrepreneurial class).

V. f. Promoting Industrial Capabilities

The elements of a strategy to develop industrial capabilities have already been suggested above. The objectives are clear: to improve worker, technical, scientific and managerial skills; to promote technological activity; to develop a system of industrial support, with suppliers, service firms and R & D institutes; and to provide an institutional structure to embody such a system and the "rules of the game". Is a strategy required at all? The answer is clearly yes – there are widespread market failures in capability and institutional development because of the externalities, uncertainties, risks, complementarities and lumpiness involved. Many markets are segmented, some do not exist at all. Agents have little information or experience on which to base long term decisions. Clearly, the scope for efficient intervention is enormous.

This study cannot go into the details of how to a broad base of industrial capabilities can be developed, but the broad lines of action are beyond dispute. The most important is probably the strengthening of the human capital base. There are many choices to be made here: which form of schooling, further education, disciplines and institutions to develop; how best to finance education; how to choose between formal and on-job training; what role to allot to employer based and foreign training; and so on. The answers depend partly on the stage of development of the economy. Simple economies need more emphasis on lower levels of education, more advanced ones are specialized, higher levels, and so on. A great deal can be learned here from the strategies adopted by the NICs of East Asia.

As skills develop, the focus of the strategy has to be broadened to encompass the stimulation of technological activity by enterprises and supporting institutions. Such activity included formal R & D, of course, but it also covers a variety of informal, even routine, activities related to production, adaptation and minor improvements to products and processes. There is a risk that firms underinvest in all these forms of technological activity or, in highly distorted regimes, invest in the wrong kinds (say, to substitute materials rather than lower costs). Part of the remedy lies in better market signals and greater competition. Part lies in providing better skills, information and technological support (including the import of

up-to-date capital goods). And part lies in directly encouraging, sometimes subsidizing, R & D activity and appropriate technology imports. The nature and pace of technological activity is strongly influenced by the development of industrial structure and firm size: countries that push into heavier industry need larger firms and more R & D (like Korea) than those that do not (Taiwan Province), even given equal export-orientation. However, greater export-orientation itself, for similar industrial structures, seems to call forth greater technological effort.

The support of technology development also requires the build up of a complex superstructure of R & D institutes, standards institutes, quality control and testing facilities, information and extension sources and linkages with universities and foreign sources of knowledge.

The "support system" for industrial development needs not just the provision of skills and technology in a generic sense or in specific enterprises, but the coherent development of capabilities in whole sets of linked activities that complement each other (Lall, forthcoming). The "learning process" must thus be promoted in all firms that buy from and sell to each other (services and goods), otherwise the development of the whole group can be retarded. This would hold back efficient specialization, forcing firms either to use costly or poor inputs, or to internalize an activity which should be conducted elsewhere. Governments must thus aim to promote strategic networks of activities rather than very specific ones, and the promotion must be in the form of a package. Just undertaking partial promotion, say by offering protection, may be less effective (or even counterproductive) than a series of coherent measures which support each other: e.g. temporary protection combined with skill and technology development, institutional support, and so on.

Stated in this form, capability development sounds an extremely difficult and forbidding task. There is no doubt that it is formidable — which is why even advanced industrial countries differ so much among themselves in this respect (OECD, 1987) — and also costly and slow. But countries can move in a gradual, incremental way rather than attempt to do everything at once. Their planning and implementation capabilities are limited in exactly

the same way as their industrial capabilities, and must be slowly improved and deployed economically. It is imperative, therefore, to start modestly and with lower degrees of selective intervention at the early stages, and to increase the policy burden only as the administrative learning process builds up. If the country is able to attract the simpler kinds of FDI to start with (and policy reforms and physical infrastructure are essential for this), this can itself help to build up various industrial capabilities. This can then be used to mount more difficult interventions in the technological field. If the strategy promotes growth successfully, larger resources will be available to investing skill and technology creation, and so on: progress is possible, but it has to be incremental. Too ambitious a programme may be counterproductive.

VI. Action Programme for UNIDO

UNIDO can support developing countries in attracting industrial relocation in two general ways:

- (a) By supporting developing country endeavours to establish the proper preconditions for increasing FDI inflows; and
- (b) By helping to establish proper channels and mechanisms to induce, in particular, small and medium sized firms to invest in developing countries.

VI. a. Helping with Preconditions for FDI

The comparative advantage of UNIDO lies in improving the capability aspect of the preconditions for attracting relocation. Within this, it has areas of strength in dealing with technical education and training, technological extension and support, technology transfer and the development of a science and technology infrastructure.

Technical education and training are best assisted by interventions in the setting up of facilities, provision of teachers (with adequate facilities and incentives) and ensuring proper technical content and quality in the curricula. UNIDO can assist in all of these, but especially in arranging for foreign experts to help with teaching, curricula and firm-level training, and the sending overseas of host country nationals for further education or work experience. Technical

assistance has a poor record in the least developed countries, especially of Sub-Saharan Africa, because not enough has been done to prepare the ground on the receiving side: inadequate provision for skill transfer and insufficient education or motivation of local technicians. Future programmes have to come to grips with the very difficult problems involved in ensuring efficient training – throwing money at it is not the answer.

One of the most effective means of improving technical skills is to "show how" on the shop-floor. Experienced technicians from other companies (including other developing countries) can impart a great deal of know-how in a short period (say 2–3 years) of practical demonstration in host country factories. However, to carry this to deeper levels, it is necessary to improve formal training of higher level technicians and engineers. UNIDO can play a catalytic role at both levels by arranging for training, recruitments of experts and formal training.

Technological extension and support are particularly relevant for small establishments and new entrepreneurs in developing countries. These tend to lack the basic skills of quality control, layout, maintenance, process adaptation or product improvement. Apart from the provision of training noted above, there are economies of scale and scope in the provision of such basic functions which may make it feasible to provide central services to groups of small establishments. For instance, it has been recommended in Africa that mobile fleets of repair, maintenance and quality control technicians service particular industrial estates. Or central units be set up to undertake design work or solve emerging production problems for particular activities. In theory, again, there are many grounds for centralizing technical functions, but in practice their effectiveness depends on the quality and motivation of personnel involved, their links with users and their own access to technology and equipment. UNIDO can play a role in setting up adequately staffed and equipped extension services and in improving those in existence.

UNIDO is extremely active and experienced in facilitating technology transfer to developing countries, and thus already plays an active role in industrial relocation. The main addition it can make to this function in the present context is to specify the kinds of capability,

support system and infrastructural developments are needed in host countries for future technology transfer in particular activities. These specifications should be passed on to the governments concerned, with further assistance given to design and implement relevant restructuring/upgrading programmes.

The most efficient way for UNIDO to proceed with this role may be to use the services of established TNCs in selected industries. Firms with widespread experience overseas can best advise on their future needs and also on ways in which host government can best meet them. These firms are not in a position to advise individual governments, but with UNIDO acting as intermediary and arbiter, can be tapped at low cost (i.e. if they are persuaded that it is in their own best long-term interest).

The development of science and technology infrastructure is an extremely complex task. Even if the various skills required are available, their organization into institutions that have a coherent work programme relevant to the industrial sector is difficult to achieve. The developing world is full of research, standards, testing and other institutes which function poorly or are delinked from manufacturing activity. The most important function UNIDO can serve here is to create, strengthen and extend these links. This may require, in some case, the reorientation of research effort; in others, raising its quality, getting external expertise and know how; or better equipment. In some countries the problem may be purely organizational, and a reorganization of financing mechanisms, personnel and incentives may be all that is required. UNIDO is better suited to tackling the technical problems rather than organizational ones. It may proceed by developing special expertise in the area of technological institutions geared to practical industrial needs, providing advice, finance and expertise for upgrading of these institutions.

Sanjaya Lall

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