CHAPTER II
THEORETICAL BACKGROUND AND CONCEPTUAL FRAMEWORK

2.1 THEORETICAL BACKGROUND

The sustained growth and industrialisation experienced by the newly industrialising countries (NICs) of East Asia until the second half of the 1990s witnessed tremendous attention converging on East Asia, with the 'flying geese' paradigm being widely adopted to explain the pattern of industrial restructuring and development of the countries in this region.

In the original formulation, the growth sequence of imports, domestic production, and exports typical of late-industrialising developing countries was first highlighted by the Japanese economist Kaname Akamatsu (1943 and 1961) in his statistical study of production and trade of a few modern industries in Japan before the Second World War. It was Akamatsu who first used the term 'flock formation of flying wild geese pattern' of industrial development, to describe the shape of imports, production, and export growth curves of Japanese industries.\(^1\) It was observed that at each stage of manufacturing sector development, Japan started with importation, then production for the domestic market which increasingly replaced imports, along with new imports of raw materials from neighbouring countries and more advanced capital goods from the US and Europe, and then moved onto exports of the goods which were now being produced domestically. Rising cost and competition (from countries catching up from behind) eventually forced Japan to stop domestic production and export of the product, and the country began importing it again, while production moved onto a new product for which the cycle got repeated.\(^2\) Later, the paradigm was renamed the “catching-up product cycle” (CPC) model by Kojima (1973), after its association with the product cycle model of Vernon (1966).

Elaborating the ‘flying geese’ model, Yamazawa (1990) distinguished five development stages - introductory, import-substitution, export, mature, and reverse import - in describing the lifecycle of an industry. At the introductory stage, a new

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2 See Chia Siow Yue, 1990, p. 61.
product is introduced via imports from advanced countries, and domestic consumption of the product increases gradually. As the follower country learns to produce these goods for itself through imitation or borrowed technology (i.e., technology transfer under licensing agreements), it begins to manufacture these products. In the import substitution stage, domestic consumption increases rapidly encouraging production to expand at a faster rate than demand, which thereby decreases the share of imports in the domestic market. In the export stage, the growth of domestic demand slows down and production expands beyond the domestic demand satiating level. The country begins exporting the product and the increase in production is maintained through rising growth in export demand. In the mature stage, exports also start declining either on the face of protectionist measures or due to cost-escalating factors at home, and the domestic product fails to compete with similar products from late-starting countries, which prevents further expansion of production. Finally, products of late-industrialising countries, which are cheaper and are of equal quality begin to be imported and gradually replace domestic products in the domestic market, which contributes to the accelerating decline of domestic production. This marks the reverse-import stage. Thus, import substitution followed by export expansion is the essence of the life cycle of the industry’s development in this model.

In Figure 2.1, the CPC model of a modern industry is schematically represented using four growth curves denoting imports (M), domestic production (S), domestic demand (D), and exports (X). The growth curves representing imports, production, exports, and reverse imports denoting the different stages in this development path were originally shown sequentially on the time scale, implying that each stage started only after the preceding one ceased to exist. However, later on, the shift from one stage to the next was understood to be a continuous one, as within an industry there are products of varying value-addition and there is a step-wise upgradation in value-addition in the goods produced by the country, as the industry climbs up the technology ladder.

Thus, while the catching-up process initially takes off when a country imports the higher value-added goods (than what it is currently capable of producing) from an

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3 Yamazawa, op. cit., p. 30.
4 Yamazawa (1990) considered the change from import substitution to export expansion in terms of the change in import dependence (that is, ratio of imports to domestic demand or $D/D$ where $D = S + M - X$), and the change in export/production ratio ($X/S$). The decline in import dependence signals the advent of import substitution, and the rise in the export/production ratio indicates development of the export stage. When the export/production ratio exceeds the import/demand ratio, the sector moves to the position of being a net exporter; and this was considered as the demarcation point between the import substitution and export stages. See Yamazawa (1990), p. 18.
5 For instance, the export growth curve would begin only where the import curve ceased, in such a way that exports of the product took off only after imports dropped to zero.
advanced country, the export of lower value-added products develop and expand at the same time as the import (and import substitution) of higher value-added and more sophisticated goods belonging to the same industry proceeds. That is, industrial deepening which takes place through product upgradation within an industry can also be depicted in the movement of CPC development from lower value-added products to higher value-added products within an industry.


Note: (1) The five development stages are: I- Introductory; II- Import substitution; III- Export; IV- Mature; and V- Reverse import.

(2) Panel A illustrates the CPC model of a modern industrial product with four growth curves representing imports (M), domestic production (S), domestic demand (D), and exports (X). The growth curve of domestic demand determines the basic pattern of development for a particular industry. Panel B shows the change for the two key ratios, the import/demand ratio (M/D) and the export/production ratio (X/S), illustrating the progress of import substitution and export expansion. Panel C illustrates the CPC with a single growth curve which stands for the production/demand ratio (S/D).

Source: Yamazawa Ippei, 1990, Economic Development and International Trade, East West Centre Resource Systems Institute, Honolulu, Hawaii, Figure 2.1, page 29.

In an extension of the CPC model for a single industry, movement from low value-added industries into new, higher capital- or technology-intensive industries and the movement into related industries through linkages, have also been observed to follow the CPC model. In general, the increased availability through generation, accumulation

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and greater sophistication over time of various factors of production such as capital, labour, and technology as well as forward and backward linkages with other industries, all interact together to determine how the transfer of CPC from one industry to others proceed.

In a second variation of the CPC model, instead of imports, FDI has been considered as the channel by which a higher value-added product is introduced into a late-industrialising country. It was first Kojima (1973) followed by Shinohara (1982) who attempted a synthesis of Akamatsu's theory on the interaction between production and trade in the course of industrial development, with the theory of FDI by Vernon (1966). Vernon postulated exports and FDI as successive stages in the production by a firm for foreign markets so that the firm could internalise its ownership advantages. Kojima and Shinohara juxtaposed the Akamatsu's flying geese pattern of imports, domestic production, and exports with the Vernon's product cycle of domestic production, exports, and foreign direct investment.

The synthesised version has the following sequence — imports/inward FDI leading to domestic production and import-substitution, followed by exports, mature stage of outward FDI flows, and reverse imports. While inward FDI occurs in the introductory stage and may continue to occur at the subsequent stages, outward FDI occurs in the export and mature stages in the form of outflows when production and exports start declining on the back of increasing production costs, prompting overseas investment in lower cost locales. This introduces the industry into a new late-industrialising country, initiating CPC development there. The fifth stage of reverse-imports takes place as the home country starts importing the product from the host country of its investment, with the former country having reduced or completely ceased production of this particular product as it moves on to produce higher value-added goods. One difference here as compared to the basic CPC model is not only that in this case domestic production is hypothesised to occur through FDI, but also that since the mature stage is characterised by overseas investment by the country's firms, reverse imports may mostly originate from the (home) country's affiliates in host countries.

This paradigm has been used to argue that rather than attempting to domestically generate and accumulate the technology and managerial resources required for catching-up industrialisation through trial and error and relying on imported machines and new

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6 Through the formation of backward linkages, industries supplying inputs to the first industry are presumed to benefit from the increase in demand brought forth by the CPC development of the first industry, and in forward linkages, industries relying on the first industry's output as their input are expected to follow the successful CPC development of the first industry.

technology under licensing agreements or other non-equity forms of foreign participation, CPC development can be hastened for a late industrialiser through inward FDI. Subsequently, FDI-led domestic production of a product is predicted to lead to exports and FDI outflows from this sector and also lead to industrial diversification and upgradation in the host country, as it happened in the original home country’s CPC development. The underlying hypothesis is that capital accumulation and technology transfer (brought about through FDI), and forward and backward linkages of foreign-controlled production capacities with indigenous firms across industries, by changing the comparative advantage of the host country concerned, usually lead to an upgrading of the host country industrial structure. Thus, while for the early-industrialising home country, outward FDI becomes the means by which domestic production of a particular industry can be relocated abroad to further market expansion or to take advantage of lower input prices or other locational advantages (which in turn leads to a decrease in the production growth of the investing country thus leading to its reverse import stage), for the late-industrialiser, ‘flying geese’ model hypothesised that inward FDI accelerates import substitution and export expansion of the new industry and enables rapid catching-up and industrial restructuring.

2.2 CONCEPTUAL FRAMEWORK

There has been much literature on the several differences in the ways in which Japan and the first-tier NICs managed their industrialisation, contrary to what is implied by the “flying geese” theory. This probably is the first criticism of this theory - that it simplifies the late industrialising efforts of the East Asian economies as following an orderly well-trodden path pioneered by Japan, followed by the first-tier NICs. Secondly, while the transfer of new products and new technology from advanced countries in one form or another is considered indispensable for the start of CPC in a late-industrialiser, the manner in which this transfer takes place critically affects the later performance of the country through its implications for foreign technology dependence and sustainable industrial development. In later formulations of the ‘flying geese’ model, FDI-led domestic production has been assumed and propagated to have been the channel used by Japan, while that had not been so until recently. In the attempt to highlight the role of FDI in enabling developing countries to do technology catch-up or technology ‘leap-

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frogging', there has been persistent tendency to suggest that countries which have been successful in technology development and industrial catching-up such as Korea, Taiwan, and Singapore have also relied heavily or solely on FDI to develop their industries and pursue technology development, while they have had quite restrictive FDI policies in the earlier periods of their fast growth as we have seen in detail in Section 1.3 of Chapter I. Further, there is a lack of willingness to highlight the critical role played by government industrial policies in those cases where FDI was indeed utilised by the governments concerned as one of the means to assist in their industrial development objectives. The advocates of the model have ignored this crucial factor completely and propagated open market FDI-led CPC path as the one that is most desirable by late industrialising developing countries.

Most importantly, the precise dimensions of how the interaction between FDI flows and industrial development occurs cannot be realistically specified or formulated into a standardised model in any orderly sequencing of progression from domestic production to export competitiveness. Such a simplified standardisation is, in fact, another one of the fundamental flaws in the way the "flying geese" model has been interpreted and propagated. It depicts industrial development in late-industrialising countries as an automatic consequence of FDI, the underlying assumption being that there is a natural or automatic inclination for the progression from each step to the next, indeed from FDI-led industrial production growth to import substitution and exports. In doing this, the FG hypothesis fails to give allowance for the interaction between the numerous endogenous and exogenous factors that come into play in the growth process of countries. Such factors impacting on the industrial growth process include: (a) natural resource endowments; (b) availability of skilled and unskilled labour; (c) demand pattern; (d) macroeconomic policies; (e) industrial, trade and investment policies and tax structure; (f) technology capability (and in turn, productivity); (g) patterns of specialisation brought about by induction into international production networks (IPNs); (h) a liberalised global trade regime; (i) the external economic environment facing the country which in many ways determine the opportunities for catching-up growth; etc. The FG hypothesis fails to take account of such various elements, the dynamism involved in the changes in such factors and their interaction over time, and the participation of several players in the economic scenario faced by any one particular country.

Therefore, a deeper understanding of the nature and dynamics of the mechanism that underlie the shift from one stage to the next in this path is imperative to evaluate

10 As discussed in detail in Section 1.3 in Chapter I.
this process of industrial restructuring. Below, we attempt to identify a range of factors and conditions whose evolution and interplay induces, influences, restrains or transforms the movement of a country/industry/firm from one phase in the industrial development process to the next, as it attempts to progress through the catching-up mechanism of industrial restructuring. This might help us to answer some issues like: Under what conditions does the growth of an industry led by FDI lead to import substitution and export expansion? Does FDI-induced growth of an industry indeed lead to industrial diversification and upgradation, enabling sustainable industrial growth? If so, under what conditions does this take place? What are the implications and opportunities for a country whose industrial growth is predominantly foreign capital-based, under the WTO regime?

At the aggregate level, FDI-led industrial development of a country along the CPC path consists of a reallocation of its gross economic output across primary, secondary, and tertiary sectors, as the manufacturing sector expands in significance and undergoes structural transformation. In the present enquiry, the focus is on the latter, that is, the manufacturing sector’s growth and restructuring. However, changes in the primary and tertiary sectors clearly have a direct bearing on the industrial restructuring process. Further, industrial restructuring at the country level encompasses industry level and enterprise level changes within the manufacturing sector.

Thus, the ensuing analysis is carried out at three levels, namely, country, industry, and firm levels. At each of these levels, the layout of the analysis is as follows. In each phase of the catching-up product cycle (CPC) (such as introduction, import substitution, exports, mature and outward FDI, and reverse imports), first of all, the features of the particular phase as provided in the literature are described. This is followed by a discussion of the conditions that are believed to be necessary, in order to obtain the stated features of the phase. The processes described at each of these three levels involve complex interlinkages and interactions, and as such cannot be dealt with in isolation, or in a linear sequence. These take place simultaneously at the various interacting multiple layers of economic organisation of a country. The analysis also includes a discussion of the possible alternative ways in which these necessary conditions may be achieved. However, at the outset, it must be emphasised that the latter is not meant to be an exclusive list of the possible scenarios, as they clearly vary from country to country, industry to industry, or from firm to firm, depending on the specific conjunctions of policies, historical junctures, international environment, technological changes, etc. The entire analysis is wrapped up with some overall common conditions.
To begin with, we attempt to list some of the basic conditions that may be necessary for a country to meet, so that an FDI-initiated industrial catching-up strategy may be sustainable.

2.3 COUNTRY-LEVEL REQUIREMENTS FOR SUSTAINABLE FDI-LED INDUSTRIAL CATCHING-UP

2.3.1 Phase I- Domestic Production

*Features: This phase is characterised by the introduction of manufactured goods production in the country through FDI, and the increased domestic production of manufactured goods.*

Whatever the nature of inward FDI into the manufacturing sector (such as domestic market-oriented or export-oriented FDI), the entry of FDI necessarily requires that the country offer some locational advantage/s for production initiation by foreign investors.\(^\text{11}\) Locational advantages could originate from any of the following factors:

1. Availability or proximity of competitive productive labour;
2. Availability or proximity to natural resources or other factor inputs at competitive prices
3. Availability and competitiveness of non-tradable inputs, for example, infrastructural facilities like power etc.;
4. Size of the market, its accessibility and potential growth in case of domestic market-oriented FDI, or proximity to growing markets;
5. Presence of liberal or reasonably liberal foreign investment policies\(^\text{12}\) that reflect a relatively open and stable attitude towards FDI;
6. Geographic\(^\text{13}\) or strategic/geopolitical advantages;
7. Availability of entrepreneurial endowments, political stability, etc. where other locational advantages are broadly similar among countries;

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\(^{12}\) Although some surveys on determinants of inflows have suggested that firms rank investment and other incentives used for FDI promotion, below other locational factors such as quality of infrastructure, level of skills, political stability and economic growth, investment incentives may continue to matter at the margin.

\(^{13}\) This could include membership of the country in free trade/ preferential trade areas.
8. A favourable economic policy regime, which include trade policies that provide market accessibility,\textsuperscript{14} monetary, financial or/and fiscal policies that impact key prices including exchange rate, human resource and physical infrastructure that offer higher productivity levels than other FDI-competing countries, etc.;\textsuperscript{15}

9. Presence of agglomeration economies in particular sectors or industries;

10. Presence of privatisation programmes, etc.

In the case of domestic market-oriented FDI, increased domestic production of manufactured products necessarily requires stable and increasing domestic demand, while in the case of export-oriented FDI, production expansion necessarily requires growing export demand. Domestic demand growth may come about through either of the following:

1. An increase in purchasing power or change in tastes;

2. Changes in government policy that influence demand pattern, which could include trade policy changes oriented towards import-substitution;

3. Increase in government procurement support; etc.

On the supply side, increased domestic production necessitates the availability of labour at various skill levels. This could occur:

1. Either through investment in basic and technical education and human resource development domestically;

2. Or through the availability of skilled and semi-skilled immigrant labour.

Increase in domestic manufacturing sector production in this phase may occur either through: (1) FDI; or (2) the entry of indigenously owned firms in various industries; or (3) a combination of both.

Increased domestic production, however, necessarily requires increased availability of intermediate and capital inputs. This may be brought about either

\textsuperscript{14} Again, this could include membership in growth triangles or/and free trade or preferential trade agreements.

\textsuperscript{15} Locational advantages of a host country essentially reflect the relative competitiveness of producing in the country. However, some of the locational advantages enjoyed by a country may be purely transitory. For example, movements in wage costs adjusted for productivity levels and land-related factors may continue to shift competitiveness in favour of or against particular countries. Again, when the exchange rate-induced competitiveness diminishes, the locational advantage of the country might shift. Similarly, tax policy changes could take away the locational advantage of the particular country. Further, a number of exogenous factors could enhance or diminish the locational advantage of countries, which include source country industrial restructuring policies in specific sectors/industries in which the host country has a comparative advantage or disadvantage, FDI-competing countries’ policies through their effect on interest rates, inflation, exchange rates, infrastructural facilities, human resource capabilities, etc., strategic locational decisions by MNCs controlling international production networks (IPNs) in specific sectors/industries, etc.
through: (1) an increase in the domestic production of various intermediate and capital goods; or through (2) an increased access to imported inputs. The domestic production of various intermediate and capital goods may in turn occur either through: (a) the entry of FDI itself into such production, or (b) by setting up indigenously owned downstream and upstream industries.

2.3.2 Phase II- Import-substitution

Features: The central feature of this phase is that domestic manufacturing sector production occurs faster than increase in domestic demand, so that the share of imports in the domestic market for manufactured products declines.

As in the phase above, increase in domestic manufacturing sector production may occur through a combination of: (1) increased FDI; and (2) production expansion by indigenously owned firms in various industries. However, for sustainability in the country’s industrial growth, where foreign investors have introduced many industries, indigenous firms should also necessarily expand production, whether through private or public initiative. This is because of the fact that if FDI is dependent on any transient kind of locational advantage, once foreign investors move out to alternative locations, the industry itself ceases to exist in the country if there is no indigenous production base. Further, in the absence of an expanding indigenous production base, the wider and longer-term technology benefits associated with linkages with foreign-affiliated production bases may not occur at all. However, indigenous firms could begin or expand production either in this phase or in the later phases.16

Further, production expansion by an indigenous production base by itself will not guarantee the country’s advance along the import-substitution phase.

If the indigenous production base together with foreign firms is to displace imported products, an increase in the price competitiveness of domestic manufactured products17 vis-à-vis imports is a necessary condition for an overall decline in their imports. Price competitiveness of domestic products may improve in either or a combination of the following ways:

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16 In industries whose expansion is primarily led by domestic market demand, it is necessary for indigenous firms to develop during the import-substitution phase, where they have not developed already. This is because, in the absence of the development of an indigenous production base in the initial phases, it might be even more difficult for it to develop in later phases due to higher and higher cost of entry in industries dominated by foreign-owned production bases. And this has adverse implications for the country’s sustainable advance along the CPC path.

17 Here, ‘price competitiveness’ is used as being different from ‘cost competitiveness’.
1. Subsidisation of domestic production in a variety of ways (including tax concessions and cheap credit) to offset the higher productivity/lower prices of imports;¹⁸
2. Presence of exchange rate advantage;
3. Imposing quantitative restrictions on imports and/or providing tariff protection to domestic industries;
4. Increase in productivity; which in turn could come about due to increased availability of competitive factor inputs through diversification of domestic industrial production or through access to competitive imported inputs; faster increase in labour productivity in comparison to wage rise; successful technology transfer; etc.

In this phase, the expansion in the domestic production of import substitution products/industries also necessarily requires an increase in the domestic production of intermediate and capital inputs, i.e. a diversification of the domestic production structure through the successful development of backward and forward linkages. In order to expand industrialisation further, increased access to imports of intermediate and capital goods alone will not be sustainable. In the absence of domestic industrial diversification, import-substitution production in the manufacturing sector would only lead to ever increasing dependence on imported inputs. That is, only the structure of imports might change from a few final products- for which import-substitution may be taking place - to intermediate and capital goods, but the total value of the country’s imports might not come down as suggested by the CPC model. This could create a balance of payment (BoP) constraint in the CPC development of the industrial sector, in the absence of adequate capital inflows.¹⁹ Therefore, domestic production of intermediate and capital goods needs to be expanded to enable a broadening/widening of the country’s industrial structure.

2.3.3 Phase III- Exports
Features: The basic feature of this phase is that the country begins exporting low value-added manufactured products. The increase in production is then sustained through

¹⁸ In the import substitution stage, import substitution can be promoted through government policies that restrict imports or subsidise domestic production. However, if the domestic market is large, prolonged use of protectionism might stunt the country’s domestic production due to lack of productivity improvements, inefficiency etc. See for example, Lall, Sanjaya, 1996.

¹⁹ Therefore, in the absence of the conditions required for industrial widening discussed in detail in the industry-level analysis, secondary sector’s CPC development will be thwarted.
rising growth in export demand, and is accompanied/followed by the introduction and
import-substitution of higher value-added products and more advanced industries.

The country’s entry into export markets may come about from any combination of the
following possibilities:
1. An export strategy of foreign-owned/affiliated firms;
2. Direct entry into export markets by indigenous firms; or
3. Indirect entry of indigenous firms through sub-contracting or other non-equity forms
   of foreign alliance.

In any of the above scenarios, an increase in the price competitiveness of domestic
products vis-à-vis export competitors becomes a necessary prerequisite for entry into
export markets and expansion in exports. As in the previous phase, price competitiveness
of the country’s products may improve in either of the following ways:
1. Subsidisation of domestic production in a variety of ways (including tax concessions
   and cheap credit) to offset higher productivity of export competitors;
2. Presence of exchange rate advantage for exports;
3. Increase in productivity; which in turn could come about due to increased availability
   of competitive factor inputs due to the presence of a diversified domestic industrial
   structure or through access to competitive imported inputs; faster increase in labour
   productivity in comparison to wage rise; successful technology transfer; etc.

The introduction and import-substitution of higher value-added and more advanced
products/industries may also be initiated by: (a) foreign firms (FDI), (b) indigenous firms
(private or public); or (c) both.

However, in any scenario, industrial upgradation necessarily requires:
1. The availability of the required factor inputs (including labour at higher skill levels);
2. Stable demand for the more advanced products.

As already highlighted in the first section, the flying geese hypothesis postulates that FDI
leads to technology transfer and diffusion and facilitates upgradation in the technological
capabilities of the host country firms, and in consequence, play a more important role in
the process of technological change in the host country and thus will lead to industrial
upgradation. At this point, it is pertinent to briefly discuss the various modes and channels
identified in the literature, through which FDI is predicted to facilitate this process, and the
conditions under which this will actually take place. However, first of all, it is useful to
discuss the four interrelated levels of technological capabilities that a firm is required to
develop in the course of its technological development process. These are acquisitive capability, operative capability, adaptive capability, and innovative capability.20

- Acquisitive capability refers to a firm’s ability to search, negotiate, and procure relevant technologies, to install the technology or production process in the factory, and carry out the necessary test runs prior to start-up.

- Operative capability deals with the extent of efficient operation of machinery and plant, using the acquired technology. The types of activities that characterise this level of capability include process operation and maintenance, quality control of both inputs and outputs, skill development, management, production planning and inventory control, and input sourcing arrangements including sub-contracting.

- Adaptive capability refers to the ability of the firm to carry out minor or incremental modifications and improvements to existing plant and processes as well as minor product design changes.

- Innovative capability involves carrying out in-house R&D, making radical or major process or product modifications and improvements, or new products or process inventions.

Chart 2.2 Levels of Technological Capabilities Required by a Firm for Production Upgradation

| LEVELS OF TECHNOLOGICAL CAPABILITIES OF A FIR | M | M |
|---------------------------------------------|--|---|---|
| Acquisitive Capability | Ability to search, negotiate, and procure relevant technologies; to install the technology/production process, and carry out the necessary test runs prior to start-up. | Operative capability | Ability for process operation and maintenance, quality control of both inputs and outputs, skill development, management, production planning and inventory control, and input sourcing arrangements including sub-contracting. |
| Adaptive capability | Ability to carry out minor or incremental modifications and improvements to existing plant and processes as well as minor product design changes | Innovative capability | Ability to carry out in-house R&D, making radical or major process or product modifications and improvements, or new products or process inventions |
| Technological Deepening | |

It is evident that each of these technological capabilities involves progressive levels of learning and eventually leads to independent technological mastery by a firm, as reflected in innovative capability. Technological deepening takes place when the firm moves from the low-end process of end-product assembly involving acquisitive and

operational capabilities, into: (a) higher-end processes of making drastic modifications or improvements in its products/processes requiring higher-technological capabilities; or (b) making completely new products by itself, involving innovative capabilities (forward integration into R&D). On the other hand, technological widening occurs when a firm moves from end-product manufacturing into higher-end processes of part and components manufacturing, materials processing etc., through backward integration. Each level of such technological widening evolves through successive levels of technological deepening. Thus, technology development is essentially cumulative and dynamic in nature, contrary to what a once-for-all technology transfer process might seem to imply.

We can distinguish two modes in which FDI-led technology transfer and diffusion can take place, namely, direct and indirect.\textsuperscript{21} In the direct technology transfer process, while the physical transfer of technology in the form of technologically more sophisticated and superior machinery and equipment is important (which is referred to as ‘embodied technology’), the transfer of information and skills are more crucial.

\textbf{Chart 2.3: Modes of Technology Transfer Through FDI}

\begin{figure}
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\includegraphics[width=\textwidth]{chart2.3.png}
\caption{Modes of Technology Transfer Through FDI}
\end{figure}

That is, more than the setting up of a manufacturing plant, it is the acquisition and accumulation of superior technological knowledge in the course of the manufacturing process which is the essence of technology transfer process. This is so because information and skills acquired reside in human beings who can then apply this knowledge to the production and distribution of goods and services. Such technology transfer fortify the

\textsuperscript{21} In the case of direct technology transfer, we discuss the performance of the foreign affiliate itself, while in the case of indirect technology transfer or spillovers, the reference is to an indigenous firm.
human capital in the firm and makes the production process independent of the investing country support after a point of time, and helps begin production indigenously and makes the industry's growth sustainable in the host country. Thus, the designs, drawings, and specifications of the parent firm's technologically superior products, operational techniques/process know-how, quality control, management techniques, and the like provided by the MNC to the affiliate firm, all constitute elements of the second channel of direct technology transfer, in the form of superior knowledge.22

The transfer of such technology occurs through the transfer of skills necessary for using this superior knowledge introduced by the MNC in the host country affiliate. The principal modes of skills transfer are: (a) the use of expatriate employees; and most importantly (b) training of local employees. In fact, it is not always possible to treat these two modes of direct technology transfer through the second channel separately, as superior technological knowledge is personified in the skills of expatriate employees or trained local employees. Host country employees may be trained either in-house with the help of expatriate staff or by sending them abroad to the parent firm's head offices.

In the case of indirect technology transfer, which is often referred to as technology 'spillovers', the superior knowledge of the enterprise with foreign investment is expected to spill over to other firms in the economy, as a kind of externality. This could involve: (a) the birth of new firms through spin-offs from the foreign-affiliate; (b) indirect leaks to competitors and other firms in the host country; as well as (c) spill-overs to firms in related industries (by way of direct links with suppliers or customers). While successful direct technology transfer leading to an upgradation in the technological capabilities within the foreign-affiliated firm may lead to spin-offs or industry-wide competition effects, the most important channel for the transfer of technology and know-how on a broader and deeper scale clearly is the spill-overs to firms in related industries. This happens most significantly and extensively through customer-supplier linkages between MNCs and indigenous firms in the domestic supporting industries.

The increase in the local content of an MNC's production through the substitution of imported inputs by local production can be achieved either through internalising such local production by the MNC or by externalising it. Externalisation of intermediate goods or capital goods production occurs through backward linkages to local firms. This in turn, can be accomplished by: (a) subcontracting to indigenously owned firms; (b) procurement of inputs in the open market (from foreign-owned or

22 See Chen, opcit.
indigenously owned firms); or by (c) sub-contracting to locally established non-affiliated foreign firms. Sub-contracting to indigenous firms may be considered the first-best scenario, offering scope for faster technological upgradation of indigenously owned production base. The other two are second-best scenarios, as we shall see in the following paragraph. On the other hand, internalisation of local production takes place through the backward or vertical integration strategy of the parent firm which it achieves by: (a) in-house production of parts and components in the existing host-country firm itself; or (b) by setting up other affiliates in the same host country.\(^{23}\)

**Chart 2.4: Channels of Indirect Technology Transfer Through FDI**

In the case of: (1) sub-contracting linkages with non-affiliated foreign-owned local factories; (2) in-house production; and (3) sub-contracting linkages with affiliated local factories, there is scope for development of similar levels of technological capabilities like assembly, operative, and minimal adaptive capabilities in parts or component technologies in the host economy (like in the case of end-product assembly production). The major difference is that while skills are transferred in the same factory in the case of in-house production, in the case of the other two, such technology capabilities develop

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\(^{23}\) While the firm may also utilise the division of labour in its manufacturing affiliates in various other countries, this will lead to imports rather than an increase in local content. Although involvement of indigenous firms in the form of sub-contracting to these other affiliates can take place, this is also outside the scope of the present discussion.
in other (foreign-owned) local factories. All the three are second best scenarios from the point of view of domestic linkage creation capacity and technology diffusion. However, they have scope for rising to first best scenarios, if instead of containing their operations to simple assembly of the end-product (with respect to particular part or component concerned), these foreign affiliates introduce core component technologies in their firms.

Most firms may follow a mix of all these different scenarios and may not follow any one of them exclusively for all their parts and components. Although substituting local production for imports using any of the above strategies leads to an increase in local value added and contributes to the growth of the economy, the method of localization determines its long-term impact and benefits to the national economy for industrial technology upgradation. Neither the internalisation of production through backward integration nor the procurement of inputs from unrelated firms in the open domestic market offer the same degree of transfer and diffusion of technology and management know-how, as does sub-contracting to indigenous firms\(^24\).

As discussed in an earlier section, sub-contracting or ancillarisation involves an intensive kind of co-operation between a foreign parent firm and a local supplier with assured off-lift of all or a part of the ancillary production.\(^25\) Further, the parent firm extends an umbrella of protection and support in the form of technical know-how. Thus,


\(^{25}\) In the case of sub-contracting, various non-equity forms of cooperative arrangements for organising international production which have gained increasing significance over the last two decades, have been identified in the literature. Although non-equity forms of international production are also sometimes called "international sourcing", apart from sub-contracting, contract manufacturing, consignment manufacturing, and product franchising; these may be broadly defined to include licensing agreements, management contracts, etc. as well. In fact, the concept of international production networks (IPNs) have been used to describe the spread of such broader and more complex forms of international production involving cooperative arrangements in production and technology that cut across different stages of the value chain and may or may not involve equity. Increasingly dense networks of cooperative agreements have emerged, which fall between arms-length market transactions and internalised transactions, geared to an increase in vertical and horizontal integration. Apart from technology exchange and joint technology development (technology cooperation networks), IPNs cover: supplier networks (such as sub-contracting and a variety of other arrangements such as original equipment manufacturing (OEM), original design manufacturing (ODM), contract manufacturing; cooperative arrangements for co-production (producer networks); customer networks (defined as forward linkages of manufacturing companies with distributors, marketing channels, value-added resellers, and end users in order to increase penetration of existing markets for the development of new markets); and standards coalitions (initiated by potential global standard setters with the explicit purpose of locking-in as many firms as possible into their proprietary product, architectural, or interface standards, especially relevant for electronics industry). See Lall, 1996, Ernst, 1997, Gereffi, 1995, Dicken, Peter, 1998, 'The Global Shift', UNESCAP, 1991, Industrial Restructuring in Asia and the Pacific, United Nations, Bangkok, p. 241 etc.
the crucial contribution of sub-contracting linkages to a host industry lies in the knowledge and technology flows from MNCs to such firms (which does not happen in the case of purchase of parts and components from indigenous firms in the open market), which may be in the form of: designs, drawings, or specifications provided by the MNC to the local firm which has been made a supplier; manufacturing knowledge/process know-how, quality control, productivity enhancing techniques, testing know-how, or management techniques and the like handed out to the local firm through consultation with MNC engineers or technicians and managerial staff. Such linkages also facilitate information sharing and joint problem solving, and support what has been called ‘learning by interaction’ by which local firms learn international best practices from the MNCs they work with.26 Technical staff from foreign affiliates can also train personnel in the supplier firm in the production of required parts or components, thus upgrading the skills of the employees in the local firms. The supplying firm is thus expected to become geared to the parent unit’s requirements regarding product quality and delivery schedules. The MNC customer and the local supplier may also be involved in collaborative or co-operative arrangements in process changes and even in product development, which will enable the local firm to acquire deeper technological capabilities faster by reducing the ‘learning-by-doing’ period.27

Therefore, it is clear from the above discussion that for FDI to lead to technology upgradation and diffusion enabling industrial upgradation in a country, the production of foreign-affiliated firms in the country should be linked to indigenous firms in the supporting and other related industries. Looked at from another perspective, this means that indigenous technology development (and non-internalised forms of technology transfer) should take place along with FDI, for breaking the cycle of foreign technology dependence.28

2.3.4 Phase IV- Mature Phase and Outward FDI

Features: This phase is characterised by a decline in the exports of lower value-added products/industries due to various competitive pressures (protectionist tariff / non-tariff measures abroad or cost-escalating factors at home), increase in domestic production

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26 See Barker and Goto, opcit, p. 264.
27 Subcontracting may also involve products, which can be marketed by themselves (e.g., electronic components, bolts, computer peripherals). See UNESCAP, opcit.
28 Clearly, the argument here is that the indigenous technology capability development is a ‘strategic choice’ necessary for sustainable FDI-led industrial upgradation; there is no clear failure involved in remaining highly dependent on foreign technology, from a market point of view. Lall, 1996 makes a similar point in p. 61.
and exports of higher value added products and industries, and the onset of outward FDI from the country.

Adaptability of productive structures and the labour force is necessary to enable domestic industrial upgradation, through the exit of industries with declining comparative advantage and the development of new industries with emerging or potential comparative advantage. This may come about through: (1) proactive government policies for industrial restructuring; or (2) through strategic investments and decision making by the private sector. On the other hand, for production expansion and export growth in the higher value-added products, which may be brought about by (1) increased FDI; (2) or through an increase in production and exports by indigenous firms, stable demand continues to be necessary in this phase as well.

However, for sustainability of export expansion and industrial upgradation by the country, it is also necessary to have continuous national technology capability development. This is because only indigenous technology capability development will lead to successful technology transfer and thus continuous upgradation of the technological capabilities of firms in both foreign-owned and indigenous production base, which in turn is indispensable for sustaining domestic industrial upgradation initiated through FDI. Otherwise, in the medium to long run, domestic industry’s advance along the CPC path will be constrained by the prices of imported technology and inputs, and thus may be unable to maintain their competitiveness in the domestic or/and export markets, as the case may be.

On the other hand, the commencement of outward FDI from the country necessarily requires that the country’s firms have to develop ownership advantages. Ownership advantages could be scale economies, managerial techniques, superior technology or technology adaptations suitable for specific host country markets, access to markets, economies of integration, control over sales or servicing networks, etc. However, outward FDI may involve: (a) either indigenous firms; or (b) domestically located foreign-owned firms.

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29 The government should be able to anticipate/recognise and respond to changes in industries’ competitiveness through proactive planning so that relevant skill development programmes, enabling supporting industries, etc. may be put in place. Further, in order to enable the industrial structure to adapt to changes in competitive advantage, the government may have specific policies in place for managing the restructuring of particular industries that are on the decline. To avoid high social and economic costs of adjustment in declining industries during the anticipated reverse import stage, government needs to actuate a gradual transition by regulating imports of import substitutes (at each phase of import-substitution), for a pre-specified time period. This also requires that the vested interests of different segments within the domestic private sector (such as of those industries that have been receiving protection and those for whom protection needs to be increased) are negotiable for facilitating the required transition.
2.3.5 Phase V- Reverse Imports

*Features: In this phase, imports begin displacing domestic production of lower value-added products, while there is expansion in production and exports of the higher value-added products/industries.*

If imports are to displace the domestic import-competing products in lower value-added sectors/industries once production of higher value-added products has begun, import-substitution policies should not continue indefinitely. To eventually enable industrial upgradation and the reallocation of productive resources, controls on imports should not be used to protect uneconomic industries for long. What is required is transitional assistance to enable and empower workers and capital to flow into next generation of products/industries.

Production and export expansion in higher value-added industries may again be brought about (a) by increased inflows of FDI into such production; or (b) through production upgradation by indigenous firms. However, the conditions mentioned for sustainable catching-up by the earlier set of products/industries become necessary for the sustainable catching-up by the country in higher value-added products as well.

In the next section, we consider the case of catching-up by a specific industry whose production has been initiated through FDI. It should be kept in mind that the alternative scenarios mentioned under necessary conditions would keep varying depending on whether the industry under consideration is one that produces consumer goods, intermediate goods, or capital goods.

2.4 INDUSTRY-LEVEL REQUIREMENTS FOR SUSTAINABLE FDI-LED CATCHING-UP

2.4.1 Phase I- Introduction

*Features: This phase is characterised by the beginning of production in an industry in foreign-owned/affiliated firms.*

Clearly, two necessary conditions for the initiation of domestic production through FDI are:

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30 The various channels of technology transfer are discussed in detail in the industry level analysis.
31 The introduction phase of the industry could commence with the production of a single or multiple products. It depends on the level of industry definition. For example, at the two-digit level classification, we could be talking about the electronics industry wherein production could begin with products like TV, Radio, VCR, etc. simultaneously. Then, production upgradation would involve any or all of these products. Similarly, diversification could involve movement into electronics parts and components production, or electronic testing equipment, etc.
1. Sufficient and growing effective demand for the products of the industry, whether in domestic market or in export markets; and
2. The presence of industry-specific locational advantages to attract FDI.

### 2.4.2 Phase II- Import Substitution

Features: The central feature of this phase is that a growth in demand for its products leads to a faster expansion in the industry’s output relative to imports.

There are two necessary conditions that should be met for an expansion in the industry’s output. Firstly, an increase in the price competitiveness of domestic producers vis-à-vis imports is necessary if the domestic product is to replace imports (whether imports of the product are restricted or not). Secondly, there should be entry of indigenous firms into the industry.

While the latter condition is not necessary for expanding the industry’s output or for import-substitution, for the same reasons as those mentioned in the country-level analysis, for the sustainable growth over time of the industry, it is desirable. The entry of indigenous firms into the industry following the growth in demand can come about through:

1. The emergence of private indigenous firms due to the presence of strong entrepreneurial capabilities in the economy; or
2. The emergence of indigenous firms through strategic government participation and promotion.

Price competitiveness of domestic producers (both indigenous and foreign-affiliated firms) may improve in either of the following ways:

1. Subsidisation to domestic producers of the product in a variety of ways (including tax concessions and subsidised credit) to offset the higher productivity/lower prices of imports;
2. Presence of a managed exchange rate advantage;
3. Imposing quantitative restrictions on imports and/or providing tariff protection to domestic firms;
4. Increase in productivity;
   The last in turn may come about due to: (1) increased availability of competitive factor inputs through (a) successful linking up with firms in supporting industries domestically, or (b) through access to more competitive imported inputs; (2) faster increase in labour productivity in comparison to wage rise; (3) successful technological development or technology transfer; etc.

However, productivity increase may become a necessary condition for the sustainability of the industry’s growth in the medium to long term. Import substitution in an industry may be achieved by indigenous firms through price competitiveness obtained under prolonged use of tariff protection, import bans, subsidies, etc. However, they may
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continue to produce for the protected domestic market with significantly lower productivity.\textsuperscript{32} Meanwhile, locally established foreign producers may achieve higher productivity and enter export stage successfully due to the international production network strategy of the parent firm. Such a situation may lead to a dichotomised industrial structure. This in turn leads to intra-industry trade with large trade deficits, which occur because of exports of low value-added goods and imports of higher value-added goods belonging to the same industry. If this occurs across several industries, the country would eventually run unsustainable trade deficits, which may jeopardize further industrial development. Further, while this co-existence is possible under protection, unless they improve their productivity consistently, the domestic market-oriented segment will find it extremely difficult to survive if and when protection is withdrawn suddenly.

2.4.3 Phase III- Exports

Features: In this phase, exports from the industry begin and there is expansion in the industry's output led by export demand growth. Simultaneously production upgradation begins to occur within the industry.

Three necessary conditions need to be met for export expansion:

1. First of all, it is essential that the firms have access to potential external markets.\textsuperscript{33}

Exports may take off and expand in a combination of the following ways: (a) An increase in production and entry into exporting by foreign affiliated firms in the industry; or (b) An increase in production and entry into exporting by indigenous firms in the industry.

2. Secondly, the price competitiveness of domestic products vis-à-vis export competitors is a necessary prerequisite for entry into export markets and expansion in exports. As in the previous phase, price competitiveness of the industry's products may improve in either of the following ways:

3.1. Subsidisation to domestic producers of the product in a variety of ways (including tax concessions and subsidised credit) to offset the higher productivity/lower prices of export competitors;

3.2. Presence of a managed exchange rate advantage for exporting;

3.3. Increase in productivity, which in turn could come about as discussed in Section 2.4.2.

\textsuperscript{32} Similarly, domestic market-oriented production undertaken by foreign-affiliated joint ventures under long periods of assured protection may also operate with low productivity and get relegated to rent-seeking investment.

\textsuperscript{33} The issue of access to export markets is essentially linked to trade policies of the country under consideration and countries with the potential markets.
Successful entry of indigenous producers into export markets may in turn come about through: (a) direct exporting by indigenous firms; (b) sub-contracting to foreign-affiliated firms domestically; or (c) sub-contracting to foreign firms abroad (i.e., international sub-contracting). Entry of indigenous firms into export markets through sub-contracting\(^34\) is possible for both end products as well as for parts and components.\(^35\)

Again, however, although export expansion of domestic producers may be achieved through price competitiveness achieved in a variety of ways, without productivity improvements in the medium to long run, there will be no industrial upgradation and thus the growth in exports from the industry may be unsustainable. An FDI-dominated industry may be able to advance through the export phase based on price competitiveness alone. Export expansion is possible because the production technology of MNCs (where they import capital, technology, and packaged parts and materials in the case of export-processing assembly manufacture, and components and materials in the case of component supply sub-contracting, use local labour for assembling, and export through the MNC’s distribution networks) is standardised, so that skilled labour, continuous learning, and the adoption of new technology, which are essential for improving productivity and cost competitiveness, are not required. However, this type of industrial development may provide only some employment and foreign exchange benefits; both direct and indirect technology transfer within and across industries are inevitably limited.\(^36\) Further, in the absence of learning effects, each time a new process or product is to be introduced, it will require to be brought in by an MNC. Along with the lack of domestic linkages, this reduces the scope of host country firms to benefit from FDI. This kind of CPC development of an industry without internal capability build-up may make the host country industry perpetually dependent on technology transfer in order to introduce new industries. This may not be a sustainable industrial catching-up strategy as made out by the proponents of the CPC model.

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\(^34\) Sub-contracting involves an intensive kind of cooperation under which the parent firm assures off-lift of all of the ancillary production or a substantial portion of it over an extended period of time at a fair, mutually acceptable price. Further, the parent firm extends an umbrella of protection and support in the form of technical know-how, provision of drawings and training. See UNESCAP, 1991, p. 241.

\(^35\) This corresponds with the initial two stages of manufactured export roles assumed by an industry that is, export-processing assembly and component supply sub-contracting, classified by Gereffi (1995). While export-processing assembly emphasizes the labour-intensive assembly of simple manufactured goods from imported components, component supply sub-contracting refers to the manufacture and export of component parts (often in technologically advanced industries). Both these kinds of “sub-contracting” involve a linkage with TNCs that take full responsibility for supplying (in export-processing assembly) or buying (in component supply sub-contracting) all components and parts, for their factory affiliates.

\(^36\) Yamazawa, 1990 (p. 236.) makes a similar point.
Production upgradation takes place when firms in the industry begin the production of higher value-added products. While this again can be initiated by foreign-affiliated firms or indigenous firms (private or public) in the industry, the most essential condition for this to occur is that the firms should have the necessary entrepreneurial capabilities required for market planning and an upgradation in their technological capabilities required for moving on to a higher technological trajectory.

2.4.4 Phase IV- Mature Phase and Outward FDI

Features: The characteristic of this phase is that while exports of the low value-added product from the industry start declining, production expands in higher value-added products within the industry. As the product profile of the industry becomes more diversified, the share of lower value-added product/s declines in the industry's total output. Firms from the industry also begin relocating the production of the lower value-added product abroad in countries at a lower stage of development.

As mentioned above, while production upgradation may be initiated by foreign-affiliated firms or indigenous firms (private or public), expansion in the output of the higher value-added products requires the same conditions as those mentioned in the case of successful growth in output expansion of lower value-added products. Thus:

1. There should be growing demand for the higher value-added products, which could be led by domestic demand growth or export demand growth; and

2. Firms should be able to obtain and maintain price competitiveness (by any of the possible means discussed already) for the more advanced products in order to be able to compete with imports or export competitors, and the cycle gets repeated.

On the other hand, development of ownership advantages for the firms in the industry is necessary for enabling firms to invest abroad, which could occur through:

1. Overseas investment by foreign-affiliates
2. Overseas investment by indigenous firms

2.4.5 Phase V- Reverse Imports

Features: In this phase, as imports begin displacing domestic production of lower value-added products, the latter's share in the industry's total output becomes negligible. At the same time, there is expansion in the share of higher value-added products in the industry's output and exports.

The following conditions become necessary for the restructuring of the industry towards higher value-added products:
1. The exit of firms from the non-competitive lower value-added segments and their expansion of higher value-added products. This in turn requires the ability of the firms in the industry to negotiate their differing vested interests and agree on policy reforms required for the restructuring of the industry, or the ability of the government to implement policies aimed at the required restructuring.

2. The ability of the firms to obtain price competitiveness in the higher value-added products.

2.4.6 Sustainable Catching-up of an industry with Export-Oriented FDI

In export-oriented FDI, the introductory stage (when the initiation of production begins) and the export stage coincide. There is no import-substitution stage in this case. How is sustainable catching-up ensured in this case?

Clearly, again, it is the ability of the independent or sub-contracting indigenous firms to achieve price competitiveness and enter these export markets along with foreign-affiliated firms, and their ability for production upgradation, which determine the sustainability of the export growth from the industry, even when the parent firm shifts production out of the affiliate into affiliates in other countries as the country loses competitiveness in the lower value-added products.

2.5 FIRM-LEVEL REQUIREMENTS FOR SUSTAINABLE FDI-LED CATCHING-UP

In this sub-section, we examine the requirements for a foreign-affiliated firm to achieve successful catching-up. But, clearly, country-level and industry-level requirements and common conditions discussed above influence firm-level operations and are not be repeated here.

2.5.1 Phase I- Introduction

Features: In this phase, there is an increase in domestic sales of the firm, following the commencement of production through foreign equity participation.

This necessarily requires a management team that has the ability to identify and respond to domestic demand and changes in it. This includes the abilities for successful operation of the acquired technology, i.e.; technology brought in by the foreign partner/s.

2.5.2 Phase II- Import Substitution

Features: The main feature of this phase is the increase in the firm's share in the market for the import-substituting product.
This requires that the firm is able to improve its price competitiveness relative to its competitors domestically. This could be achieved through distinctive competitive strategies implemented through:

1. Strategic investment planning;
2. Strategic and effective linkage programs with suppliers from overseas markets, local affiliated suppliers, or local indigenous suppliers, for ensuring prompt supply of competitive inputs;
3. Successful technology transfer from the parent firm;
4. Successful in-house technological development;
5. Successful backward integration into the (in-house) production of core parts or components, capital equipment etc., or forward integration.
6. Or a combination of all the above.

2.5.3 Phase III- Exports

Features: In this phase, the firm begins exporting the product.

This may take place: (1) when the foreign-affiliate is part of the parent firm’s trading network; or (2) in the case of an indigenous firm, when its management implements an export expansion-led growth strategy.

The necessary conditions for exporting are:

1. To start with, this requires that the firm is able to improve its price competitiveness relative to its competitors domestically.
2. But, in the medium to long-term, productivity gains have to be achieved, leading to cost competitiveness. Productivity gains may be achieved through: (a) Increase in the technological capabilities of the firm at various levels. (See Chart 2.1 in Section 2.4); or (b) A drop in domestic cost of production brought about through the effect of an exchange rate appreciation on cost of imported inputs, or availability of domestic intermediate or capital goods with increased productivity, etc.

2.5.4 Phase IV- Mature Phase and Outward FDI

Features: Export sales of the firm begin to decline (due to protectionism or increased competition in its export markets or rising production costs), and the firm begins to invest abroad. At the same time, the firm begins to produce higher value-added product/s.

The necessary conditions for outward FDI by the firm are:

1. Development of ‘ownership advantages’ for investing abroad; and
2. The availability of investment capital, generated either internally or through access to loan capital due to good will.

According to the CPC model, the know-how and learning-by-doing experience gained by a firm which is able to undertake the CPC development of a standardised product
successfully would then enable it to move on to the production of more sophisticated goods, as in the case of black and white TVs and colour TVs. Production upgradation may take place through: (1) the parent firm's decision to upgrade the affiliate production to advanced products; or (2) the local partner's/indigenous firm's capacity to enter the production of advanced products. Besides the conditions mentioned at the industry level, the ability of the firm to successfully carry out product upgradation, that is, to move from the production of a lower value-added product to a higher value-added product within the industry, depends on:

1. The availability of investment capital; and
2. The presence of technological capabilities\textsuperscript{37} and entrepreneurial abilities\textsuperscript{38} for setting up new facilities or upgrading existing ones.

2.5.5 Phase V- Reverse Imports

Features: The firm loses its market share for the lower value-added product due to replacement by more competitive imports and it begins to expand market share in higher value-added products.

The specific firm-level necessary conditions for these to occur are the following:

1. The firm should have the flexibility required for production upgradation; and
2. Price competitiveness achieved by the firm vis-à-vis competitors in the initial stages of higher value-added production must be complemented by continuous productivity improvement by the firm as discussed above.

2.6 COMMON CONDITIONS

Some common conditions, which are fundamental for simulating the necessary conditions mentioned at the country and industry level, and for facilitating the progress of the country through a sustainable FDI-led industrial development path may be described as given below:

- The government needs to have a long-term vision as well as the political will for self-reliant national economic growth. It should also have at least moderate abilities

\textsuperscript{37} In the absence of firm-level R&D that may lead to technological improvements in production processes, technology transfer becomes the deciding factor in the ability of a foreign-affiliated or indigenous firm to undertake production upgradation. In both internalised and non-internalised forms of technology import by a firm, the skill levels and technological capabilities of its human resources determine the firm's negotiating strength and hence its ability to achieve satisfactory technology transfer.

\textsuperscript{38} However, apart from availability of capital and technological capabilities, the scope for R&D investment depends on the entrepreneurial qualities of the firm's owner. In the absence of a long-term vision of growth for the company, investment in R&D may not be forthcoming.
for strategic industrial planning\textsuperscript{39} and coordinated implementation of macroeconomic,\textsuperscript{40} industrial, trade and foreign investment policies,\textsuperscript{41} as well as technological and human resource policies. This would include government support for the development of: (a) entrepreneurial capabilities of the population; (b) supporting industries; as well as (c) continuous development of science and technology (S&T) infrastructure, all of which are essential for supporting industrial upgradation. Only continual national technological capability building through determined and persistent upgradation of the entrepreneurial and technological capabilities in the country will ensure sustained technological growth with or without foreign investors' presence. Clearly, this necessarily includes the support and promotion of non-internalised forms of technology transfer rather than FDI, that is, the import of technology in fully or partly externalised forms. In short, effective or strong transformative capacity\textsuperscript{42} of the state is a necessary overall condition for the CPC model to advance.

- There should also be a sizeable indigenous private sector with a vision for self-reliant growth and the ability to obtain adequate overall policy support from the government vis-à-vis foreign capital.

- Tertiary sector activities such as retailing, wholesaling, logistics, financial services, health care, energy, truck transportation, telecommunications, construction, housing, etc. need to be competitive for supporting the progress of the manufacturing sector through the different phases. This is because inefficient tertiary sector industries affect the performance of manufacturing industries, not only through affecting living costs but also business costs, thus weakening their competitiveness.

\textsuperscript{39} This implies ability on the part of the government for industrial planning based on dynamic comparative advantage. This involves a strategic choice of import-substitution industries with substantial potential for linkage creation and productivity gains and a choice of export commodities with high income elasticity of demand, so that advantages to the overall manufacturing sector and the economy are widespread and long-term.

\textsuperscript{40} Macroeconomic management includes control of hyperinflation and drastic price fluctuations in the economy, so as to maintain and expand sectoral growth rates. This is because stable prices for manufactured as well as agricultural and other resource-based products (which are inputs for industrial development) create a stable environment for investment planning.

\textsuperscript{41} For example, complete or fast-track liberalisation of trade and foreign investment inflows where domestic sectors do not get adequate time to strengthen their technological development and international competitiveness, can lead to a break down of the domestic capital which has been built up until then.

\textsuperscript{42} This is a term used in the literature to indicate an institutionalised capability for guiding industrial change: by coordinating investment, diffusing innovation, and generally ensuring constant upgrading of the industrial portfolio. See Weiss, Linda and John M. Hobson, 2000, “State Power and Economic Strength Revisited: What is so special about the Asian crisis?” in Robison et al., ed., 2000.
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In particular, the domestic financial sector should be developed adequately to support the financial intermediation requirements for industrial development. This is because, the nature of domestic financial sector growth and development decides the nature of its interaction with the productive sectors and the latter’s growth, through enterprises’ access to sources of finance and cost of capital and thus their operational success. Therefore, financial market liberalisation needs to be carefully orchestrated so as to allow the development of the domestic financial sector to a level of competitiveness and diversification that helps to confine the country’s exposure to external financial markets to sustainable levels. In particular, the government should be able to regulate capital account convertibility in order to avoid explosive external debt-accumulation so that short-term macro economic adjustment problems triggered by any debt crisis do not limit the medium and long-term policy options available for pursuing industrial growth and diversification needs and thus truncate the CPC path.

It is now evident that international and regional agreements governing trade and investment (such as agreements under the World Trade Organisation WTO, North American Free Trade Agreement NAFTA, ASEAN Free Trade Agreement AFTA, European Union norms, etc.) which define the policy options available to member governments, limit the power of developing countries to frame policies which are suitable to their needs and their stage of development, and create new obstacles and add costs in the catching-up path of developing countries. In particular, WTO limits the scope for tariff protection of domestic industry, having set drastic tariff reduction targets for its member countries. Indigenous industries’ ability to achieve import substitution is further eroded by the inclusion of the Trade-Related Aspects of Intellectual Property Rights (TRIPS) and Trade-Related Investment Measures (TRIMs) into the WTO. With the inclusion of the TRIPS, developing countries have limited power to frame intellectual property systems which are in consonance with their own needs and which are suitable to their particular stage of development.43 On the other hand, by agreeing to eliminate import substitution subsidies and domestic content requirements44 within a certain specified period within TRIMs, developing countries have, in effect, deprived themselves of the right to pursue some of the policies

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43 The IPR regime of a country influence the incentives offered to entrepreneurs. Its impact ultimately depends on the degree of importance of innovation for the industry’s competitiveness and how the IPR regime balances the needs for technology diffusion and the benefits to innovators.

44 WTO also removes all scope to implement a performance requirement (such as domestic content requirement for foreign firms) in a discriminatory manner (based on ownership). Measures that are prohibited are prohibited regardless of ownership. If developing countries perceive that measures on the illustrative list are required to meet other objectives and must be implemented on foreign firms, this will need to be negotiated. Chances of succeeding are likely to be very low given that a measure will be prohibited because it distorts trade. See Bora et al., opcit, p. 555.
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that the NICs successfully used to embark on the path of rapid industrialisation.\textsuperscript{45} WTO imposes stringent conditions on member countries that want to use subsidies and other tax exemptions for promoting specific industries, making their use by developing countries more restricted. Export subsidies are also ruled out by WTO. In addition, new issues like environmental standards, labour standards, good manufacturing practices (ISO 9001, etc.), transparency in accounting and governance, etc. which are being attempted to be included in various trade negotiations, might even out the labour and other related cost advantage of the developing countries and drastically reduce the capacity of late-industrialising developing countries to compete with the more resourceful MNCs.

However, there are still options available for developing countries for pursuing technological capability development, as subsidies for technology-related activities are permissible. Given the fact that in the medium to long-term, it is the technical abilities of a country that enable sustainable catching-up, this does provide scope for developing countries to embark on their industrialisation efforts.

2.7 CONCLUSION

It is evident from the discussion in this Chapter that in analysing the role of FDI flows in industrial restructuring, it is essential to consider the dynamism involved in the changes in a large variety of factors over time and in the participation of several players in the economic scenario faced by any one particular country. A deeper understanding of the nature and dynamics of the mechanism that underlie the shift from one stage to the next in this path, than what is implied by the ‘flying geese’ model, is therefore, very important to evaluate the process of FDI-led industrial restructuring in a country. It is against this setting that the following chapters attempt to undertake an examination of the role of FDI in Thailand’s industrial restructuring. We attempt to identify a range of factors and circumstances whose evolution and interplay influenced and transformed Thai industrial development process, as it attempted to progress through an FDI-led industrial restructuring path. This is carried out through an analysis of the production and trade structures, and the pattern and structure of inward and outward FDI flows for Thailand, in the subsequent chapters.

\textsuperscript{45} For example, implementation of the requirement under the TRIMs Agreement to eliminate local content and foreign exchange balancing requirements, came into effect for developing countries from January 2000. See Rajamoorthy, T., 2000, p. 17 and also pp. 9-10.