Nagesh Kumar. 1996, Foreign Direct Investment and Technology Transfers in Development: a perspective on recent literature. The United Nations University – INTECH Discussion Papers no. 9606 (August). UNU/INTECH: Maastricht.

DETERMINANTS OF FDI: THEORY AND EVIDENCE

What can FDI bring to a host economy?

- Entrepreneurship, managerial and organisational skills;
- capital and investment (savings and forex);
- technology and access to markets.

FDI flows into developing countries (US$ billions)

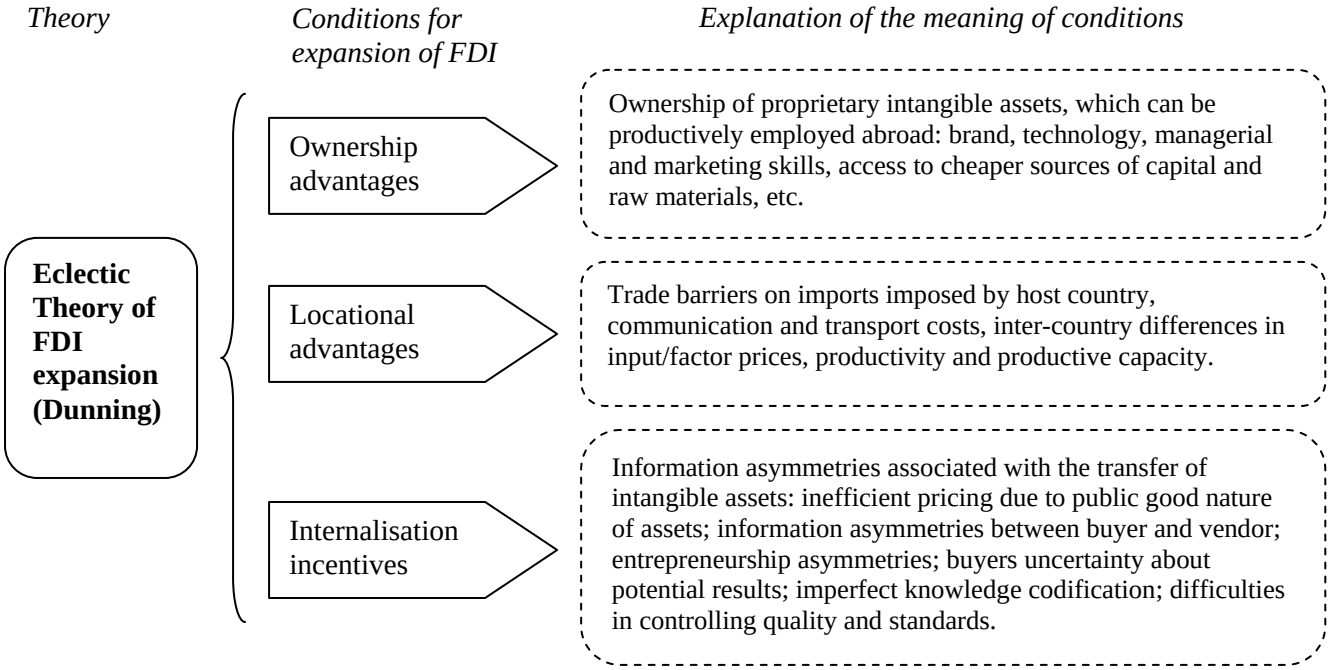
	1980-85	**1985-90**	**1994**
Annual average	13	30	80

How is FDI attracted?

- liberalisation of foreign investment codes, privatisation and de-regulation;
- incentives of different sort;
- competition between potential host economies for access to FDI, more intensive when it comes to export-oriented FDI (ex., through the establishment of EPZ).

Are incentives efficient? What does determine the flow of FDI?

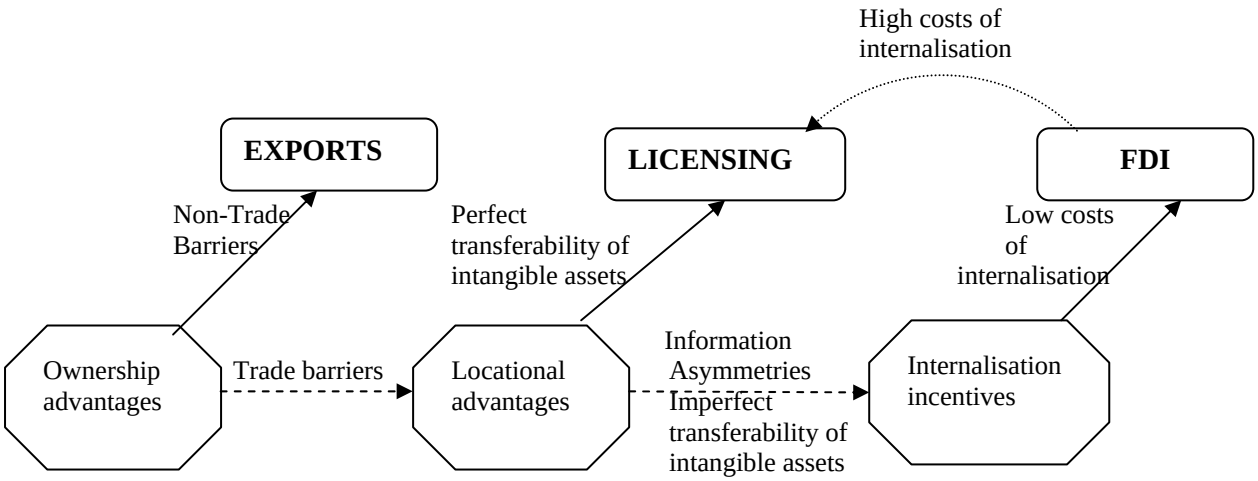
Figure 1: The eclectic theorisation of the conditions for expansion of FDI



The eclectic theory goes as follow: exporting, licensing and FDI are seen as alternative means for firms to operate abroad. To operate abroad, the firm must hold some specific advantage that offsets the disadvantage of competing with host firms in an alien environment. The decision to use one or another of these means is associated with transaction costs.

Ownership advantages are developed in the home economy. If the firm does not face trade barriers on its exports to a host country, nor particularly significant costs disadvantages with respect to transport and access to inputs (which would make its products non-tradable), the firm will export. If the firm faces restrictions on its exports to a host economy, intangible assets are perfectly codified and transferable, productivity and quality standards easily ensured and technology in the particular industry develops fast, the firm will license a host, foreign firm. The firm may also prefer licensing if the government of the host country favours, through policy, licensing over FDI. The firm will chose FDI if exports are restricted, intangible assets not perfectly transferable and costs of investing (coordination, lack of experience in management of subsidiaries abroad, discrimination and administration) are not sufficiently high to offset benefits from investing. Otherwise, the firm will choose licensing instead. The firm may choose between FDI or licensing depending on specific incentives and policies put in place by the host government.

Figure 2: The mechanics of the eclectic theory – how firms choose between alternative (often competing) means of operating abroad (exports, licensing and FDI)



Empirical studies have analysed the determinants of FDI at either inter-country (FDI as a function of country characteristics, important for promotion policy); inter-industry (variations across industry as a function of the industry's characteristics, helpful to identify which industries are more likely to attract FDI); and inter-temporal (how changing characteristics of a country over time affect FDI, helpful for evaluation of efficacy of policy).

Inter-country studies show that FDI is positively and significantly related to GDP/capita, growth rates, level of industrialisation and urbanization and the level of infrastructures and human capital. Other factors that exert positive influence on FDI flows are geographical distance, language and the level of economic and military dependence. Policy factors, such as incentives, degree of openness, taxes, etc, are not significant or are irrelevant. Intellectual property rights (IPR) and patents have little influence on the flows of FDI, but subsidiaries located in economies adhering to IPR had greater chance of sourcing from the source economy than from the host economy (weaker linkages in the host economy).

Export-oriented FDI depends on the availability of natural resources and efficiency cost of labour [(wL)/Q], but also on the level of industrialisation, infrastructure and presence of EPZ. The overall outward orientation of the economy has been shown to be irrelevant. Competition to attract export-oriented FDI has been keener amongst developing countries and MNEs pick winners.

On the other hand, high inflation, current account deficit and the risk of exchange rate depreciation, political instability and incidence of industrial disputes affect negatively the prospects for attracting FDI.

Poorer countries have little scope to attract FDI, and their promotion policies (liberalisation, adherence to IPR, etc) may be of limited help.

Inter-industry studies have found that FDI is positively related with the intensity of advertising, skills, technology and R&D, and human and physical capital requirements of the industry; whereas licensing is positively associated with industries with easily transferable know-how and less complex processes of production. Licensing and FDI are also sensitive to specific selective policies by host governments, which may attempt to attract one by increasing the costs of the other. Otherwise, in absence of selective policies the choice of one or another is dependent on relative transaction costs and transferability of intangible assets.

Inter-temporal studies have associated flows of FDI to one country over time with macroeconomic performance. FDI has been positively associated with domestic investment and the size of the domestic and export market, whereas high risk of currency depreciation and incidence of industrial disputes discourage FDI. Finally, FDI is responsive to changes in costs and prices, particularly with respect to changes in efficiency cost of capital and labour.

IMPACT OF FDI

Growth and other macroeconomic effects

Several studies have shown that FDI has limited impact on economic or industrial growth, and that the causality between growth and FDI runs from the former to the later.

On other macroeconomic variables, FDI has been shown not to increase domestic savings or provide additional forex, and it appears that FDI has been used as a substitute for other sources of foreign flows of capital. FDI does not exert a different effect from domestically financed investment on the rate of economic growth. A favourable investment climate could attract FDI without the need for discriminatory incentives provided on the belief that FDI necessarily brings externalities.

Studies on the tradition of social costs benefit analysis show that often FDI projects are not viable in terms of the social internal rate of return, but are financially viable for the investor because of the incentives. Incentives to attract FDI can be very costly.

In brief, FDI can crowd out domestic investment and have no significant positive impact on the economy as a whole, while being costly because of the incentives; or it can complement domestic investment and be a catalyst for economic change and growth. Government policy determines the direction of the impact.

Market structures, conduct and performance

Studies have shown a positive relationship between the presence of MNEs and the level of industry and sellers concentration. This may be due to four factors:

- MNEs' affiliates enjoy a formidable edge over domestic firms in many crucial aspects (knowledge, finance, reputation, etc.) because of their link to a global corporation;

- MNEs' affiliates are protected by "mobility barriers" against new entrants and existing firms in the industry because of their technology, skill, reputation and financial advantages;
- MNEs' affiliates prefer to engage on non-price rivalry with domestic firms, whereupon they build their competitive advantages based on scale and product differentiation, by making extensive use of advertising expenditure (of the affiliate and parent firms), R&D, technological, managerial and skill advantage (of the affiliate and parent firms), and vertical integration (to protect their proprietary competitive intangible assets); and
- MNEs' affiliates also benefit from scale advantages build at global level.

Technology and local technological capabilities

The literature discusses two fundamental aspects: links between imports of technology and local R&D (R&D*); and the spillover effects from FDI through dissemination of knowledge, inter-firm linkages and mobility of trained employees.

Local technological capabilities (T*) are defined as:

$$T^* = t(R\&D^*, Mtechno, dynamics)$$

where dynamics refers to the dynamic relationship between R&D* and imports of technology.

$$R\&D^* = R\&D(Mtechno, scale, diversifiation, EOI)$$

whereas ownership and profitability have little impact on R&D*.

The central aspect that links *T* with FDI* is the "dynamics", which is complex as it depends upon: nature of R&D, risk aversion of domestic private firms, government's role in risky projects, relative expenditure on basic versus applied research, access to foreign technology and government's policy towards it, institutional framework for adoption of technology and industry's structure.

Evidence is mixed and varies considerably across countries, but on the whole the link between FDI and R&D* is weak or negative, because MNE affiliates tend to rely on centralised research capabilities, FDI comes often as a package and research follows the global (not local) corporate strategy. Hence, FDI appears to substitute rather than complement R&D*.

Licensing, on the other hand, appears to complement and encourage R&D*, because unaffiliated licensed firms have no access to centralised R&D, need to absorb as much as possible during the period of the license and have to adapt the licensed technology to local conditions.

Strong patent policies and liberalisation tend to encourage sourcing from abroad and imports of technology and discourage R&D*; protectionism tends to encourage R&D* but continuous design upgrading may be hampered because of protection.

Evidence on *knowledge and productivity spillovers* of FDI varies considerably. The direct effect (on the affiliate) is strong, and on the whole foreign owned firms have higher labour productivity than domestic firms. The indirect effect (spillover on other firms) within the same industry (where domestic firms have to compete with foreign, more efficient firms) is not significant; and is negative if the affiliated firm has a very large market share and yields much higher productivity levels.

Vertical linkages, the channel through which FDI may generate externalities in other industries because of imposition of standards, schedules, scale and prices, depends upon which decision is taken: "import or procure locally", or "make or buy". Affiliated firms will "buy" if they can internalise economies of scale associated with the manufacturing of the inputs/services and also to avoid industrial relations problems. Once they decide on "buy", the decision then involves "import or procure locally". FDI firms tend to import a higher component of their inputs and technology because of: familiarity with foreign suppliers, global strategy of the corporation, provision of markets to foreign associates, transfer pricing and inadequacies of local suppliers. Affiliated firms may decide to "make" instead of "buy", in the case of uncertainty regarding delivery, price and quality standards, and also if they can appropriate a monopoly rent.

Whereas the evidence shows that affiliated firms invest more in *training and skill upgrading* of their employees, there is no evidence of mobility of employees from MNE affiliates to domestic firms; usually, affiliated firms offered better carrier and training opportunities as well as higher wages.

Thus, FDI does not necessarily and automatically generate externalities of any sort – encouragement to R&D*, knowledge and productivity spillovers, vertical integration and qualified labour. Whether externalities happen or not depends on local capabilities, context of direction of policy and the combination of strategic interests of MNE and local firms.

Exports

There is no evidence of a clear advantage of affiliated firms over domestic firms in terms of export performance. However, the export performance of MNE subsidiaries varies considerably. It seems that:

- policy matters: simple, static ISI does not necessarily create export oriented FDI, particularly when the domestic market is very large and secure; whereas complex, dynamic ISI leading to EOI has a much higher probability to attract EO FDI;
- nature of FDI matters: exports are associated with export oriented FDI, not with FDI itself; and the ability to attract EO FDI is determined by relative costs (wages and others), currency level and stability, industrial capacity, infrastructure, presence of EPZ and costs of environmental controls;
- nature of the industry matters: unaffiliated subcontracting tends to occur for standardized products were transference is cheap and easy; whereas R&D and skill intensive firms prefer FDI;
- internal logic of arguments matters: if FDI and exports are alternative ways of operating abroad, the link between FDI and exports may not be strong with exception of some specific areas: light, standardized industries (textiles, garments, etc.) and resource based, capital intensive industries (minerals, energy, etc).

No evidence of indirect impact on exports being strong.

Choice of technique and employment

There is evidence that MNE subsidiaries are often more capital intensive than local firms, particularly when comparing firms producing to the local market. This might be because of technological rigidities due to capital intensity, nature of the industries and products that are favoured by MNEs and the fact that MNE need to build comparative advantages most frequently associated with higher productivity. When local and foreign owned firms export,

their relative capital intensity depends on the nature of the market faced by the industry, namely because of standards of quality, price, delivery requirements and learning that takes place in export markets.

There is also evidence that MNE subsidiaries pay higher wages to skilled managers and workers, whereas unskilled workers wages are similar to those paid by local firms. However, generally MNEs employ a much smaller proportion of unskilled workers. The higher wages paid by MNEs to skilled workers are associated with the skill, higher levels of productivity and eventually competition between MNE subsidiaries in a small pool of skilled labour.

Costs of importing technology

Importing technology through licensing or FDI involves social costs. These are associated with: servicing the transfer of capital involved, paying for imported inputs and equipment, transfer pricing, the cost of bounded technological packages and the cost imposed by contractual clauses that restrict changes to bounded technology packages or access to export markets. These costs may be offset by gains associated with exports (EO FDI) or import substitution, may be reduced through detailed negotiation of contracts (for example, to ensure unbounded technological transfers). The net costs are inversely related with the domestic industrial capacity. The costs may be more or less important depending on the overall state of the economies balance of trade with the world. But these costs have to be accounted for.

SUMMARY OF ARGUMENTS

Determinants	Summary of Analysis	Impact on					
		Growth	Market structure	Technological capabilities	Exports	Choice of technique and employment	Social costs
Ownership, locational and internalisation advantages. Positively related to structural factors: GDP/capita, rate of growth, levels of industrialisation, human capital and infrastructures and technological capabilities. Negatively related with economic and political uncertainty.	**FDI**	Association is from growth to FDI. May crowd out domestic investment. May worsen income distribution.	Industry and sellers concentration.	No significant link between FDI and T*. Licensing has more potential for linkage with R&D*. Affiliated have higher productivity, but spillovers are weak or negative.	No evidence of clear advantage of MNE subsidiaries.	FDI is more capital intensive, particularly when producing to domestic markets.	Cost may or may not be offset by benefits.
	Causes	Is attracted by economic growth and scale of the economy. FDI has been used as a substitute for other sources of finance (foreign and domestic). Differences in wages and nature of technology and employment.	Competitive advantage due to global links (knowledge, skills, R&D, finance, reputation, etc.) Mobility barriers due to competitive advantages. Scale, product differentiation and vertical integration are the basis for their competitive advantage.	FDI tends to rely on centralised research, comes with bounded packages, and research obey global corporate strategy. Other firms' learning depends on their capabilities. Otherwise they go out of business. Vertical linkages depend on internalising economies of scale ("buys"); and buys locally (spillovers) or abroad (global interest). Evidence of training but no mobility of labour.	Policy matters: static versus dynamic ISI and the size of the market; Nature of FDI: EO FDI; Nature of industry: which industries and technologies.	Technological rigidities, nature of industries and products and need for MNE to build productivity advantage. Exporting firms regulated by international standards. Higher wages are related to skills and productivity.	Costs are: incentives, servicing of transfer of capital, imports of inputs and physical and human capital, transfer pricing, bounded technology, etc. Apart from direct benefits, externalities are uncertain and do not depend on FDI itself.
	Policy conclusions	Not a good starting point to initiate growth. Better have overall good investment climate then specific one for FDI. Need for good understanding of the nature of FDI that can be attracted and how to link it to the domestic economy.	Competition policy. Linkages to domestic firms. Selectivity – activities and industries.	Development of local capabilities. Development of local linkages bounded in investment agreements. Selection of nature/type/area of FDI – including activities related to it.	Purposes of FDI and type of FDI; identification of industries and firms' interests; dynamics of ISI; EPZ.	Extract rent from MNE through higher wages.	Cost benefit analysis; EO FDI; competition policy; promotion of links with domestic firms.