Foreign Direct Investment: The OLI Framework

The "OLI" or "eclectic" approach to the study of foreign direct investment (FDI) was developed by John Dunning. (See, for example, Dunning (1977).) It has proved an extremely fruitful way of thinking about multinational enterprises (MNEs) and has inspired a great deal of applied work in economics and international business. In itself it does not constitute a formal theory that can be confronted with data in a scientific way, but it nevertheless provides a helpful framework for categorizing much (though not all) recent analytical and empirical research on FDI. This survey first summarizes the OLI paradigm and then uses it as a lens through which to review some of the highlights of this research, while also noting some important issues that it neglects.

"OLI" stands for Ownership, Location, and Internalization, three potential sources of advantage that may underlie a firm's decision to become a multinational. Ownership advantages address the question of why some firms but not others go abroad, and suggest that a successful MNE has some firm-specific advantages which allow it to overcome the costs of operating in a foreign country. Location advantages focus on the question of where an MNE chooses to locate. Finally, internalization advantages influence how a firm chooses to operate in a foreign country, trading off the savings in transactions, hold-up and monitoring costs of a wholly-owned subsidiary, against the advantages of other entry modes such as exports, licensing, or joint venture. A key feature of this approach is that it focuses on the incentives facing individual firms. This is now standard in mainstream international trade theory, but was not at all so in the 1970s, when FDI was typically seen through a Heckscher-Ohlin lens as an international movement of physical capital in search of higher returns. (See for example Mundell (1956).)

Ownership

Ownership advantages are key to explaining the existence of MNEs. A key idea is that firms are collections of assets, and that candidate MNEs possess higher-than-average levels of assets having the character of internal public goods. These assets can be applied to production at different locations without reducing their effectiveness. Examples include product development, managerial structures, patents, and marketing skills, all of which are encompassed by the catch-all term of Helpman (1984) "headquarter services". While this is clearly a multi-dimensional factor, it is common to model it in terms of a single index of firm productivity. The most sophisticated treatment along these lines is found in recent work on heterogeneous firms by Helpman, Melitz and Yeaple (2004), which combines the simplest version of the horizontal motive for FDI (to be discussed below) with the assumption that firms differ in their productivities. A potential firm must pay a sunk cost to determine its productivity, and, when this is revealed, active firms sort themselves into different modes of production. Low-productivity firms produce only for the home market; medium-productivity firms choose to pay the fixed costs of exporting; but only the most productive firms choose to pay the higher fixed costs of engaging in FDI. These predictions are consistent with the evidence. As a further contribution, the paper derives from the model the prediction that industries with greater firm heterogeneity will have relatively more firms engaged in FDI, and shows that this prediction is confirmed by the data. However, this work (and others like it) do not explore why firm productivities differ in the first place. Prior investment in R&D (both

process and product) and in marketing presumably account for the disproportionately
greater productivity of most MNEs.

Location

While international trade theory has tended to take ownership advantages for granted or
else to model them in fairly obvious ways, rather more attention has been devoted to
exploring alternative motives for MNEs to locate abroad. A key issue that has attracted
much attention is the distinction between "horizontal" and "vertical" FDI. Horizontal FDI
occurs when a firm locates a plant abroad in order to improve its market access to foreign
consumers. In its purest form, this simply replicates its domestic production facilities at a
foreign location. Vertical FDI, by contrast, is not primarily or even necessarily aimed at
production for sale in the foreign market, but rather seeks to avail of lower production
costs there. Since in almost all cases the parent firm retains its headquarters in the home
country, and the firm-specific or ownership advantages can be seen as generating a flow
of "headquarter services" to the host-country plant, there is a sense in which all FDI is
vertical. Nevertheless the distinction between market-access and cost motives for FDI is
an important one.

The horizontal motive for FDI reflects what Brainard (1997) has called a
"proximity-concentration trade-off": building a local plant saves on trade costs and so has
the advantage of proximity; but it loses the benefits of concentrating production in the
firm's home plant. Let $\pi^*(t^*)$ denote the operating profits which a potential MNE can
earn from selling in a foreign market subject to per unit trade costs t^* (which can include

both tariffs and transportation costs). These operating profits are decreasing in t^*: higher

trade costs reduce operating profits. Constructing a local plant avoids the trade costs,

leading to higher operating profits of $\pi^*(0)$; however, it requires an additional fixed

cost f. Hence the trade-cost-jumping gain, the difference between the total profits from

FDI, Π^F, and those from exporting, Π^X, equals:

$$\gamma(\underset{+}{t^*}, \underset{-}{f}) \equiv \Pi^F - \Pi^X = \pi^*(0) - f - \pi^*(t^*) \tag{1}$$

Thus FDI is encouraged relative to exports by proximity (lower trade costs t^*) but

discouraged by the benefits of concentration (higher fixed costs f).

The vertical motive for FDI implies a very different view of the determinants and

implications of FDI. Now the focus is on how a firm can serve its home market: either by

producing at home, or by vertically disintegrating and moving its production facilities to

a cheaper foreign location. Assuming for simplicity that each unit of output requires a

single unit of labor, we can write the operating profits of serving the home-country

market as $\pi(c)$, where c includes both factor costs and trade costs. If the firm remains

a domestic firm and supplies its home market from its parent plant, where w is the local

wage rate, it incurs no trade costs so its profits Π^D will equal $\pi(w)$. Alternatively, it

can engage in FDI and locate a new plant in the host country, exporting all its output back

to the source country and incurring a trade cost of t. In that case, it incurs a plant-

specific fixed cost f as in the case of horizontal FDI, and earns operating profits of

$\pi(w^* + t)$, where w^* is the host-country wage. The relative profitability of FDI is

therefore:

$$\Pi^F - \Pi^D = \mu(w^* + t, w) - f \quad \text{where:} \quad \mu(\underset{-}{w^*} + t, \underset{+}{w}) \equiv \pi(w^* + t) - \pi(w) \qquad (2)$$

Now the decision to engage in FDI depends on the trade-off between the benefits of concentration on the one hand and the cost savings from offshoring on the other, where the latter are denoted by the term $\mu(w^* + t, w)$. This offshoring gain depends negatively on the host-country wage w^* and positively on the source-country wage w: the vertical motive for FDI attaches great importance to comparative costs of production. In addition, the gain is decreasing in the source-country trade costs t, implying plausibly that trade liberalization will encourage FDI.

Empirical studies of FDI have until recently tended to favor the horizontal over the vertical motive. For example, many case studies have shown that "tariff-jumping" has been important in many historical episodes. It has also been noted that the bulk of FDI is between high-income countries with relatively similar wage costs (though much of this is likely to be neither vertical nor horizontal FDI, but rather cross-border mergers and acquisitions, to be discussed further below). More formal econometric studies have shown that the horizontal motive provides a good explanation for FDI. (See, for example, Brainard (1997) and Markusen (2002).) On the other hand, there is no clear evidence that FDI falls in importance with distance, as the horizontal model implies. In addition, more recent empirical work by Yeaple (2003b) and others, based on data at the level of individual firms, suggests that both motives are important. It is easy to see why this might be so even in the simple two-country case discussed above. If the foreign market is sizeable, then the total gain from FDI as opposed to producing at home (in each case serving both domestic and foreign customers from a single plant) is given by the sum of

(1) and (2) above: both trade-cost-jumping and offshoring gains have to be taken into account. More generally, with many countries there are additional reasons for FDI, and the two motives are likely to interact in complicated ways. For example, even for vertically integrated firms, proximity and concentration are not in conflict where serving a group of foreign countries is concerned. The reduction of trade costs between European countries in the 1990s encouraged American and Asian firms serving European markets to concentrate their production in European plants and so engage in "export-platform" FDI. Similarly, Yeaple (2003a) has shown that the horizontal and vertical motives may reinforce each other if a parent firm wishes both to serve foreign markets in similar high-income countries and to avail of lower production costs in low-income countries. In general, therefore, the pattern of location of foreign plants is likely to reflect the "complex integration strategies" of firms facing both vertical and horizontal motives for engaging in FDI.

Internalization

Internalization, the third strand of Dunning's taxonomy, is often seen as the most important; in the words of Ethier (1986), "Internalization appears to be emerging as the Caesar of the OLI triumvirate." Explaining why some activities are carried on within firms and others through arms-length transactions is a major research topic for microeconomics as a whole, not just for the economics of FDI. A pioneering 1937 paper by Ronald Coase argued that the optimal scale of the firm, or the optimal degree of internalization, reflects a balance between the transactions costs of using the market and

the organizational costs of running a firm. In recent decades economists working in information economics have tried to endogenize these two sources of costs, emphasizing the inability of agents to write complete contracts. An early application of this approach to FDI was by Ethier (1986). In his model production requires prior research, the results of which can either be carried out within a vertically integrated firm (in the MNE case) or sold to downstream users. However, the end user must agree to purchase the research before its outcome is known. Ethier shows that a greater degree of uncertainty about the likely success of research efforts makes it more costly for the upstream and downstream firms to write a contract, which because of the complexity of the research process must necessarily be independent of the outcome. Hence more uncertainty raises the likelihood that production will be vertically integrated through MNEs. Moreover, the emergence of MNEs does not require international differences in factor prices, unlike other models of vertical FDI.

A different approach to endogenizing the internalization decision, though also relying on incomplete contracts, is taken by Antras and Helpman (2004). Following the Grossman-Hart-Moore property-rights approach to the problem of bargaining between a firm owner and a potential supplier/employee, ex post efficiency is greater when residual ownership rights are allocated to the party which contributes more to the final output. Embedded in a model of product differentiation and trade, this implies that more efficient firms and firms for which headquarter services are more important should exhibit internalization (the owner contracts with the supplier, who becomes an employee) while less efficient firms should exhibit arm's-length trade (the supplier remains a separate legal entity). In addition the model assumes that final-goods producers are located only in

one country, the North of a two-country North-South model. Such producers are assumed

to have a two-fold choice: on the one hand they have to choose between vertical

integration, which solves the hold-up problem but at the cost of reducing incentives to the

provider of the input, and an arm's-length relationship; on the other hand they could

locate their production in either country, trading off higher wages in the North against

lower contract protection in the South. The full range of potential outcomes is shown in

Table 1, and the paper shows how heterogeneous firms will sort into these different

modes, based on their productivity, on the share of headquarter services in the value of

output, and on the differences in costs between home and foreign locations.

	Location	
	Home	Abroad
Internal	Integrated National Firm	FDI
External	Outsourcing	Offshoring

Table 1: Taxonomy of Location-Internalization Modes

Cross-Border Mergers

Both the OLI framework and the bulk of academic work on FDI until very recently have

concentrated on the "greenfield" mode of FDI, where the parent firm constructs a new

plant in the host country. Yet in reality the bulk of FDI, especially between developed

countries, takes the form of cross-border mergers and acquisitions (M&As), in which the

parent firm acquires a controlling interest in an existing host-country firm. (UNCTAD

estimates suggest that M&As accounted for over 80% of worldwide FDI in the 1990s.)

The distinction matters, since recent research suggests that the determinants and implications of cross-border M&As are very different from those of greenfield FDI.

Domestic M&As have been extensively studied by scholars in finance and industrial organisation, and these literatures suggest two principal motives for them. A "synergy" motive arises in any market where an acquired firm has assets which are complementary to those of the acquirer; while a "strategic" motive arises in oligopolistic markets (i.e., one where the number of competitors is small), since a firm gains from absorbing a rival and so increasing its own market power.

Post-merger synergies can arise from many sources, including cost savings via internal technology transfer, reductions of overhead and other fixed costs, and the integration of pricing and marketing decisions on differentiated products. In an open-economy context, a particularly plausible kind of synergy is between the "O" and "L" advantages of different firms: the superior productivity and international networks of an acquiring MNE on the one hand, combined with the local knowledge and distribution network of a potential target firm on the other. Nocke and Yeaple (forthcoming) develop a model which captures this kind of synergy: a competitive international market for corporate assets allows firms to match with suitable affiliates. Their model predicts that efficient matching occurs: more efficient parent firms acquire more efficient targets. However, they also show that the most efficient firms engage in greenfield FDI rather than in cross-border M&As, a result consistent with the evidence.

Mergers driven by synergies may be expected to raise world welfare, provided the synergies are realized in practice. By contrast, mergers driven by strategic considerations

might be expected to reduce welfare since they increase concentration. However, Neary (2007) shows that this intuition is incomplete for two reasons. First, in the absence of synergies, the only mergers which will occur in equilibrium are those in which the acquirer can afford to buy out the target firm. This implies that the target firm must be considerably smaller, and so eliminating it is likely to enhance global efficiency. Second, in general equilibrium, the expansion of more efficient acquiring firms and the elimination of less efficient target firms puts downward pressure on wages, so encouraging increased output and lower prices in all sectors. Hence mergers are likely to raise overall welfare, although income distribution shifts in favor of profits at the expense of wages. His model also makes the positive prediction that mergers take place in the same direction as trade and so they are encouraged rather than (as in the horizontal model of greenfield FDI) discouraged by falls in trade costs. In line with empirical evidence, cross-border mergers thus serve as "instruments of comparative advantage," encouraging more specialization and trade along comparative advantage lines.

Conclusion

In conclusion, the OLI framework does not directly address one of the key issues that has dominated economists' thinking about FDI, the distinction between horizontal and vertical motives for locating production facilities in foreign countries. Nor does it address the increasingly important distinction between greenfield and M&A modes of engaging in FDI. Nevertheless it remains a helpful way of organizing thinking about one of the most important features of the world economy.

Further Reading

Antras, Pol, and Elhanan Helpman. 2004. "Global Sourcing." *Journal of Political Economy* 112(3): 552-80. A pioneering model that shows how firms with different productivities will choose between locating production at home or abroad and keeping it within the firm or outsourcing it to a sub-contractor.

Barba Navaretti, Giorgio, Anthony J. Venables, et al. 2004. *Multinational Firms in the World Economy*. Princeton: Princeton University Press. An invaluable overview of theoretical and empirical work on greenfield FDI.

Brainard, S. Lael. 1997. "An Empirical Assessment of The Proximity-Concentration Tradeoff Between Multinational Sales and Trade." *American Economic Review*, 87(4): 520-44. A landmark paper in the empirical application of the horizontal model of FDI.

Dunning, John H. 1977. "Trade, Location of Economic Activity and the MNE: A Search for an Eclectic Approach." In Bertil Ohlin, Per-Ove Hesselborn, and Per Magnus Wijkman, eds., *The International Allocation of Economic Activity*. London: Macmillan. The first statement of the OLI approach, later refined and extended in many books and papers by the author and his collaborators.

Ethier, Wilfred J. 1986. "The Multinational Firm." *Quarterly Journal of Economics* 101(4): 805-34. An important paper that models the internalization decision in a general-equilibrium model with incomplete contracts.

Helpman, Elhanan. 1984. "A Simple Theory of International Trade with Multinational

    Corporations." *Journal of Political Economy* 92(3): 451-71. A pioneering

    exploration of vertical FDI, embedded in a Heckscher-Ohlin model with

    monopolistic competition.

Helpman, Elhanan, Marc Melitz, and Stephen Yeaple. 2004. "Exports versus FDI with

    Heterogeneous Firms." *American Economic Review* 94(1): 300-16. Extends the

    horizontal model of FDI to allow for productivity differences across firms.

Markusen, James R. 2002. *Multinational Firms and the Theory of International Trade*.

    Cambridge, Mass.: MIT Press. An invaluable overview of the author's

    contributions, both alone and with coauthors, especially Horstmann and Venables.

    Emphasizes horizontal greenfield FDI.

Mundell, Robert. 1957. "International Trade and Factor Mobility." *American Economic

    Review* 47(3): 321-35. A key reference in the Heckscher-Ohlin-inspired literature

    on FDI. An important step in the elaboration of the factor-endowments approach

    to trade flows. Through its emphasis on trade costs, it was a precursor of the

    horizontal view of FDI. However, its focus on sectors rather than firms, and its

    counter-factual prediction that FDI is mainly driven by international differences in

    rates of return, stand in contrast with the OLI approach, and have been abandoned

    in more recent work.

Neary, J. Peter. 2007. "Cross-border Mergers as Instruments of Comparative Advantage."

    Review of Economic Studies 74(4): 1229-57. A model of cross-border mergers in

    general oligopolistic equilibrium, focusing on strategic motives.

Neary, J. Peter. 2008. "Trade Costs and Foreign Direct Investment." Forthcoming in

International Review of Economics and Finance and in S. Brakman and H.

Garretsen, eds., *Foreign Direct Investment and the Multinational Enterprise*.

Cambridge, Mass.: MIT Press. An overview of recent work, highlighting that

export-platform FDI and cross-border mergers can overcome the counter-factual

prediction of the simple horizontal model that FDI should fall as trade costs fall.

Nocke, Volker, and Stephen Yeaple. 2008. "An Assignment Theory of Foreign Direct

Investment." *Review of Economic Studies*, forthcoming. A model with

monopolistically competitive firms, highlighting the synergy motive for cross-

border mergers and acquisitions.

Yeaple, Stephen. 2003a. "The Complex Integration Strategies of Multinational Firms and

Cross-Country Dependencies in the Structure of Foreign Direct Investment."

Journal of International Economics 60(2): 293-314. A model showing that

vertical and horizontal motives can reinforce each other in a multi-country world.

Yeaple, Stephen. 2003b. "The Role of Skill Endowments in the Structure of U.S.

Outward Foreign Direct Investment." *Review of Economics and Statistics* 85(3):

726-34. A careful empirical study using firm-level data which shows that U.S.

outward FDI is driven by both vertical and horizontal influences.

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