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**Edited by Kenneth A. Reinert & Ramkishen S. Rajan:
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analysis of employment substitution between parent firms and foreign affiliates.

Vandenbussche, Hylke, and Chang Tan. 2005. "The Taxation of Multinationals: Firm Level Evidence for Belgium." LICOS discussion Paper No. 160/2005, Catholic University Leuven. <http://www.econ.kuleuven.be/LICOS/DP/DP2005/DP160.pdf>. An empirical assessment of whether multinational enterprises are given more favorable tax treatment compared to domestic firms.

HYLKE VANDENBUSSCHE

■ foreign direct investment (FDI)

Foreign direct investments are defined as investments in which a firm acquires a majority or at very least a controlling interest in a foreign firm. Foreign investments not involving a majority or controlling stake are typically referred to as portfolio investments. Firms making foreign direct investments (FDI) are referred to as multinational enterprises (MNE) and the two terms are used somewhat interchangeably. A direct investment may involve creating a new foreign enterprise, often referred to as a greenfield investment, or acquiring an existing foreign firm (sometimes referred to as a brownfield investment, though that term is much less common; *acquisition* is the typical label).

Historically, there are three strands of literature that see the multinational and FDI in different ways: the international business tradition, the trade-theory tradition, and the macroeconomic tradition. This entry will focus heavily on the trade-theory tradition, where the biggest developments in the last twenty years have occurred.

The international business approach is very individual-firm oriented. It details the determinants of the decision of firms to go abroad and the mode they chose for doing so. In addition to FDI, the firm considers exporting, joint ventures, licensing or contracting with arm's-length foreign firms, and so forth. The international business literature has been far more interested than the other streams of literature in the choice-of-mode decision.

It is probably accurate to say that until the late 1980s the microeconomic trade-theory approach to FDI and the macroeconomic tradition were pretty much the same. These two traditions did not really distinguish between direct and portfolio investments: there was no real attempt to model the "D" in FDI. Both schools modeled FDI as the movement of homogeneous capital from locations where its return was relatively low to where its return is higher. The simple approach to capital flows had a natural intersection with Heckscher-Ohlin trade theory, in which factors are expensive where they are scarce and cheap where they are abundant. The consequence is the obvious hypothesis that capital should flow from capital-rich to capital-scarce countries.

There was no sense of individual firms in this literature, and certainly no modeling of mode choice. Even trade theory, with its better-developed sense of general-equilibrium than macroeconomics, was dominated by perfect-competition, constant-returns-to-scale models in which individual firms had no real meaning. But trade theory did have advantages over the international business approach in that it had a basic general-equilibrium structure that did at least give some predictions as to the pattern of capital flows we should observe.

Macroeconomics has more or less continued in the tradition of restricting analysis to aggregate capital flows generated by international rental-rate or cost-of-capital differentials. It is not easy to fit a rich structure for individual firms into macro models, and hence that stream of literature continues to make no real distinction between FDI and portfolio investments.

International trade theory, on the other hand, began to move sharply away from the macro approach in the 1980s, and to draw a clear distinction between FDI and portfolio investments. It began to move more toward the international business literature in that it included meaningful treatments of individual firms, yet the trade approach retained the general-equilibrium roots of its tradition. The split with macro seems to have been driven by some important statistical evidence that casts considerable doubt on the suitability of cross-country differences

in the cost of capital as a driving and motivating force for FDI.

Troubling Statistics The first statistical difficulty confronting the traditional theory is that the high-income developed countries are not only the major source of FDI but also the major recipients. FDI does not primarily flow from capital-rich to capital-poor countries; it flows primarily from capital-rich to other capital-rich countries. Firms from high-income countries are mutually invading one another's markets. In addition, the FDI that does flow to developing countries is highly concentrated in the most advanced of those countries.

Many statistics are found in Caves (2007), Markusen (2002), UNCTAD, OECD, BEA, and other publications. One simple way to measure this source/recipient pattern is to simply compute the shares of total world FDI inward and outward stocks that are found in different countries or groups of countries. UNCTAD statistics for 2003 indicate that the developed countries accounted for 89 percent of the outward stock in this year, but also accounted for 69 percent of the inward stock. Of course, the developed countries also account for the overwhelming share of world income, so we can instead divide the inward share of a group by its share of total world income. This yields the results shown in table 1. The high-income countries are close to a share of inward FDI equal to their share of income. Developing countries are higher on this score, as the simple capital-scarcity macro approach would suggest, but it turns out that this is highly concentrated in the more advanced of the developing countries. The least-developed countries (a UN-defined group of 44 countries) have a share of inward FDI only slightly greater than their share of world income.

Table 1
Share of world inward FDI stock divided
by share of total world income

Developed countries	0.90
Developing countries	1.37
Least-developed countries	1.07

A second statistic that led to a rethinking of trade theory is that there is very often a disconnect between the act and amount of FDI and the sources of financing for new investments or acquisitions. There is much less systematic evidence on this point since published data rarely comment on the source of financing for individual foreign projects. Yet the international business literature documents a great variety of financing choices: retained earnings of the parent firm, equity or bonds issued in the parent-country market, equity or debt issued in the host-country market, or third-country financing. Apparently, many FDI projects in China are financed with Chinese capital, although systematic data are not known to this author. If we think of Chinese debt financing an American direct investment, we have in fact a portfolio and a direct investment flowing in opposite directions.

A third relevant statistic is that FDI is attracted to large markets. Inward FDI divided by GDP should not display any particular pattern in a simple cost-of-capital macro approach. The data shown in table 2 are from 1993 and thus somewhat dated (Markusen 2002), but there is no reason to think that the basic message has changed. They show that not only is FDI attracted to rich countries, it is clearly attracted to large markets.

A fourth statistic that called for a new approach to FDI is that a very large proportion of the actual output of FDI projects is for local sale in the host country. Firms were often replicating their home

Table 2
Inward FDI per capita

Country group GDP per capita (US\$)	Country group Size	Average inward FDI per capita (US\$)
> 5000	Large	242
	Small	54
2500–5000	Large	46
	Small	32
1200–2500	Large	33
	Small	31
600–1200	Large	11
	Small	3

Table 3
Sales of foreign manufacturing affiliates
of U.S. multinationals, 2000 (shares in total sales,
sample of 39 countries for which BEA data is available)

	Local sales	Export sales to the U.S.	Export sales to to third countries
all countries	0.60	0.12	0.28
Ireland	0.13	0.16	0.71
Canada	0.57	0.38	0.05
Mexico	0.53	0.39	0.08

activities, goods or services, in foreign markets. These are now generally known as “horizontal” investments, although the term “market-seeking” is also used. The latter term emphasizes that the FDI is not motivated by cost-side considerations as it would be in a cost-of-capital-differential approach, but rather by the demand-side motive of serving the local market. Table 3 presents a few statistics from BEA data. Perhaps 60 percent local sales does not seem terribly high for the sample as a whole. But more interesting is the fact that only 12 percent of sales are back to the United States; 28 percent of the sales are to third countries, often referred to as “export-platform” production and sales.

Closer inspection of the data suggests that third-country sales are most important for affiliates located in large regionally integrated trade areas: the exports are destined for the other regional members. In an important sense, this represents horizontal production in which one location within the region is chosen. United States affiliates in Ireland, for example, export 71 percent of their total production to third countries, and apparently almost all of this is horizontal production destined for other European Union markets. For U.S. affiliates in Canada and Mexico, exports are similarly directed to other members of the North American Free Trade Agreement, and so the overwhelming portion of their exports are to the United States. Thus is it clear that the overwhelming portion of affiliate output is destined for local or regional sale. Note that Canada and Mexico

exhibit remarkably similar statistics in spite of the large difference in per capita income, and that local sales have shares close to the world average for U.S. affiliates. While many investments in Mexico are surely chosen to access cheap labor for production for the United States market, the general notion that multinationals are firms seeking cheap production abroad for sale back home is at best a minor phenomenon.

The consequence of these observations was that trade theory needed to move away from the old macro approach and adopt a firm-based approach, yet one still rooted in the general-equilibrium tradition. Trade theory began to think of and indeed measure FDI not in terms of the value of investments (inputs), but in terms of the outputs of foreign affiliates, the destinations for those outputs, and the trade patterns with the parent firm. But the old bias is still very evident in data sources: it is much easier to get data on FDI stocks and flows than on affiliate outputs, sales destinations, and intrafirm trade.

The International Business Approach As suggested earlier, researchers in the field of international business have produced a rich set of theory and empirical analysis, though little is formalized and few testable hypotheses emerge. Nevertheless, the newer formal models owe a great debt to these scholars. An early approach was by Dunning (1973) with his ownership-location-internalization (OLI) framework. Dunning suggested that three conditions must be met before a firm will want to establish an owned production facility. Subsequent researchers have assembled a great body of evidence, though very little of it formal econometric work, about the form that these advantages take.

The first condition is ownership advantage. Given a disadvantage relative to local firms in a host country, a foreign firm must own a propriety asset such as a superior product, production process, patent, trademark, or asset that gives it a compensating advantage over local firms in the host market. This focuses the theory on the assets of the individual firm and away from some general return to homogeneous capital. Caves (2007) has written much on this idea, using the term *intangible assets* to label these proprietary assets.

Empirical analysis established that multinationals tended to be firms that are intensive in knowledge-based assets (Markusen 2002) rather than physical capital. Multinationals are associated with patents, research and development (R&D) intensity, skilled white-collar and technical workers and engineers, new and complex products, and product differentiation variables such as advertising, trademarks, and brand names. Multinationals have a high value of intangible assets, which can be measured as a sort of Tobin's Q: the ratio of the market value of the firm to the book value of capital. There are good reasons why multinationality should be associated with knowledge-based assets, but a discussion of this is temporarily postponed.

But ownership advantage is not sufficient. For example, if the purpose of the investment is to serve local markets, then the firm can exploit its asset through exporting. The second condition is therefore location advantage. This is some factor that leads the firm to prefer to actually produce abroad rather than export. Location advantages tend to depend in large part on whether the purpose of the investment is to serve local markets or to export from the host country. For the first type, termed horizontal or market-seeking investments as noted earlier, location advantages are (1) a large host-country market to compensate for set-up costs and plant-level scale economies, and (2) trade costs in the form of tariffs or transportation costs (time as well as money) that make serving the host country by exports expensive. For investments that are more directed at using the host country as an export platform, termed vertical or resource-seeking investments, location advantages are more in the form of low input costs and low trade costs to get intermediate and final goods into and out of the country.

The third condition is internalization advantage. The firm must have a reason to own the foreign production facility rather than simply to license its asset or contract with a local firm to produce on its behalf. Internalization is often contrasted with its mirror image, outsourcing. These are the two alternatives to one decision: the firm must choose between internalizing and outsourcing.

Internalization advantages are the most abstract of the three. For some authors, the principal issue derives from properties of knowledge capital, which are discussed a bit more below. The firm needs to maintain tight control over knowledge-based capital or the value can be easily dissipated through copying and other forms of agent opportunism. Many threats of asset dissipation arise from the lack of strong legal institutions in host countries, such as intellectual property protection and contract enforcement. Other determinants of the internalization/outsourcing decision are familiar from more general discussion of the boundaries of the firm and are not focused on anything particularly international in scope (i.e., strictly domestic firms face decisions on what activities to outsource and which to internalize).

In what follows, we will focus on ownership and location issues in discussing both theory and empirical evidence. The goal is to explain the statistics presented earlier. Internalization is attacked with a very different set of tools and, to date, empirical evidence is scarce.

Early Trade-Theory Models Two very different papers appeared in 1984. Helpman (1984) is a model in which a firm can decompose a production process into a headquarters activity and a production activity. Headquarters and production have different factor intensities and firms can choose to geographically separate these activities. A multinational is a firm that has its headquarters in one country and a plant in the other; in other words, this is a model of vertical multinationals. There are no trade costs in the model and multinationals arise only when countries are sufficiently different in relative factor endowments (i.e., countries must be outside the factor-price-equalization set in the Edgeworth box). In particular, in this model multinationals cannot arise between identical countries, and there are no multiplant firms. Helpman's model is very much in the older tradition of factor-price difference driving FDI discussed earlier.

Markusen (1984) is a model in which there is also something like a headquarters activity and a production activity that can be geographically separated, but these activities do not have different factor intensities.

The whole focus of this model is different from Helpman's. The key idea in the Markusen paper is that headquarters activity, such as R&D, has a "jointness" or "public-goods" property, in that it can yield the full value of its productivity in two locations: adding a second production facility does not reduce the value of the R&D asset in the first location. A blueprint, formula, or procedure can be jointly and fully used in multiple locations. The focus of Markusen's paper is on multinational, horizontal or market-seeking firms that produce in two locations to exploit the value of their knowledge capital. Multinationals can arise between two identical countries, marking a clear break with the old capital-flows literature.

Subsequent Theoretical Developments Important refinements of the horizontal approach are in Horstmann and Markusen (1992) and Brainard (1993). These papers solve for equilibrium market structure between two countries and show that two-plant horizontal multinationals arise when firm-specific fixed costs (knowledge capital) are important relative to plant-level fixed costs, when trade costs are high, and when the two markets are large and similar in size. The result that FDI is expected between large, similar countries provided a theoretical underpinning for the empirical finding that most FDI occurs between large, high-income countries as discussed earlier.

The general-equilibrium structure of the problem was later fleshed out in several papers by Markusen and Venables (1998, 2000). Markusen and Venables use the world Edgeworth box. They concentrate on horizontal two-plant firms and do not consider vertical structures in which a single plant and headquarters are located in different countries. There can be single-plant national firms and two-plant multinationals located in each country, or four potential firm types in all.

They solve the model over a grid in the Edgeworth box, where countries different in size and/or in relative endowments occur at each point in the box (they are identical in the center of the box). Solutions indicate which types of firms are active in equilibrium (termed the "regime") and the pattern of foreign affiliate sales and exports. They show that affil-

iate production is most important when the two countries are similar in size and in relative endowments. The intuition is found by considering what happens when the two countries are quite dissimilar in either of these dimensions. If one country is quite large relative to the other, the dominant firm type will be single-plant firms located in that country serving the small country with exports: it does not pay to incur a plant-specific fixed cost in a small market. If the two countries are quite dissimilar in relative factor endowments, the dominant firm type will be single-plant national firms located in the country which is abundant in the factor used intensively in the multinational's industry.

An integrated treatment of horizontal and vertical multinationals was developed in Markusen's knowledge-capital model (Markusen 2002). Specifically, the model rests on three assumptions relating to knowledge-based assets. First, the services of these assets are easily used in foreign production facilities (transportability or fragmentation). Second, the production of knowledge-based assets is skilled-labor intensive (skilled-labor intensity). Third, knowledge-based assets can yield their full productivity in multiple locations at the same time (jointness). The first two properties support vertical firms while the third supports horizontal multiplant firms.

The contribution of this model is that it yields clear, testable predictions about how foreign affiliate production and trade should be related to the size, size differences, skilled and unskilled labor endowments, and trade and investment cost barriers for two countries. An important extension to include physical capital as a third factor and a third country is found in Bergstrand and Egger (2007).

Empirical Evidence Once again, a good deal of empirical evidence is found in Caves (2007) and Markusen (2002). Brainard (1997) gave convincing evidence for the first time that FDI is not closely related to factor endowments (further discrediting the simple cost-of-capital approach), but much more closely related to country similarity. The ratio of foreign affiliate production to home exports to the host market is increasing in trade costs, increasing in corporate scale economies, and decreasing in plant

scale economies. Only that proportion of affiliate production that is destined for export is related to factor endowments, but that makes sense given the vertical motive for foreign production.

Carr, Markusen, and Maskus (2001) found strong support for the knowledge-capital model. In subsequent work, Markusen and Maskus (see Markusen 2002) found strong support for the horizontal model and virtually no support for a pure vertical model, and could not reject the pure horizontal model in favor of the more complex knowledge-capital model.

Combined with the Brainard paper, these results give strong confirmation to simple summary statistics that the vertical model, the most natural incorporation of the cost-of-capital approach, is a very poor fit indeed. Somewhat later and more sophisticated work by Braconier, Norbäck, and Urban (2006) has discovered more evidence in favor of vertical production, and has found it where the knowledge-capital model suggests it should be found. The addition of physical capital and a third country in Bergstrand and Egger (2007) clears up a number of issues. Finally, readers can find an empirical analysis of the horizontal model extended to heterogeneous firms in Helpman, Melitz, and Yeaple (2004).

The Way Forward There seems no clear direction to the research agenda at this time. Both theoretical and empirical work on multicountry models is needed. Most affiliate activity is directed at local markets as we have noted, and for this part of FDI studying bilateral relationships is fine. But the phenomenon of export-platform production is quantitatively important, and there are only a few papers on this topic. Competition among host countries for inward investment is also interesting and important for development economics.

Research integrating models of internalization/outsourcing into the ownership/location models would be valuable. There is some clear link in models that focus on knowledge capital: the same property that makes knowledge easy to transfer makes it easily dissipated through agent opportunism. There is much less of a link with some newer literature on the property-rights, hold-up approach.

While much has been done on country characteristics (size, endowments, trade and investment costs) as determinants of FDI, somewhat less has been done on the converse question: the effects of inward FDI on host countries. There certainly has been good work on the effect of inward FDI on local labor markets and local firms, but this literature remains disjoint from much of what is covered here. The relationship between host-country governments and multinationals deserves more work. Weak results on taxes as determinants of FDI may reflect the fact that, while multinationals don't like taxes, they value strong physical, educational, and institutional infrastructure that taxes bring.

A few papers have interfaced the so-called New Economic Geography with the theory of the multinational. It seems clear that results from the geography literature on the instability of diversified (or dispersed) equilibria in the presence of moderate trade costs break down when multinational firms are added: horizontal multinationals arise precisely when countries are similar and trade costs are moderate to high, and equilibria in the presence of horizontal multinationals are stable. But much more remains to be done. Similarly, the strategic-trade policy literature focuses almost exclusively on single-plant nationally-owned firms, yet it is precisely in those industries in which scale economies and imperfect competition dominate that we find multinationals.

Individuals working in theory would do well to revisit the international business literature as indicated above. That literature, while frustratingly informal and lacking in testable hypotheses, contains a great richness of insights and data that should be fertile ground for new theoretical ideas.

See also foreign direct investment: the OLI framework; internalization theory; knowledge-capital model of the multinational enterprise; multinational enterprises; outsourcing/offshoring

FURTHER READING

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■ foreign direct investment and exit of local firms

The exit of local firms refers to the discontinuing of operations by firms owned by local shareholders (i.e., not affiliates of foreign-owned multinationals, which represent foreign direct investment, or FDI). This