

**Vertical versus horizontal FDI**

Horizontal FDI, where multi-plant firms duplicate roughly the same activities in multiple countries, has been distinguished from vertical FDI, where firms locate different stages of production in different countries. The bulk of FDI is horizontal rather than vertical. That developed countries are both the source and the host of most FDI suggests that market access is more important than reducing production costs as a motive for FDI.

Brainard (1993) reports that foreign affiliates owned by US multinationals export only 13 percent of their overseas production back to the United States, so most production by US multinationals appears to be motivated by the desire to serve markets abroad. Similarly, the US affiliates of foreign multinationals export only 2-8 percent of their US production back to their parents; 64 percent is sold in the US market. The bulk of FDI is attracted to big markets, rather than to cheap labor (or other factors of production). The large volume of two-way FDI flows also seems to fit horizontal FDI models better than vertical ones.

Standard models of horizontal FDI revolve around the trade-off between plant-level fixed costs and trade costs (see Markusen, 1984). When the potential host country is small, the potential savings in trade costs (with accrue per unit of exports to the country) are insufficient to offset the fixed costs of setting up a production facility there; hence, exports are chosen over FDI as the method for serving the market abroad. However, when a host country is large enough for the fixed costs of the plant to be offset by the trade costs saved, FDI is chosen over exports. Bigger market size of the host country, smaller plant-level fixed costs (smaller plant-level scale economies), and larger trade costs are more conducive to horizontal FDI. The *proximity-concentration*

*hypothesis* (see separate entry) refers to the common tenet that FDI occurs when the benefits of producing in a foreign market outweigh the loss of scale economies that could be reaped if produced in only one plant (in the firm's home country). See also separate entries on *fixed costs & FDI*, *market size & FDI*, and *trade costs & FDI* for more on the impact of each on FDI.

FDI may exist to avoid not only actual trade costs but feared trade costs as well. FDI, such as by Japanese firms into the EU in electronics and into the United States in autos, may be motivated more by fear of impending trade barriers (anti-dumping duties or voluntary export restraints) than by any barriers in place at the time of the investments.

When the choice between FDI and exports involves a simple trade-off between trade costs and fixed costs, an interesting implication is that no firm should simultaneously engage in both FDI and exports. Even for the exact value of trade costs where the trade costs times the number of units exported equals the plant-level fixed costs, when the firm is exactly indifferent between FDI or exports, the firm will either pay the fixed costs to build the plant and serve the market exclusively through FDI, or not build the plant and serve the market only through exports.

Unlike horizontal FDI, with vertical FDI firms engage in both FDI and exports. Whereas in horizontal FDI models, the two countries are often envisioned as being of similar size, in vertical FDI models, the home country is usually thought of as being much larger than the host country. Thus, the horizontal FDI framework is more representative of a pair of developed countries, whereas the vertical FDI framework is like a developed source country and a developing host country. In horizontal FDI

models, the question is how best to serve the host market (abroad), whereas in vertical FDI models, the question is typically how best to serve the domestic market.

Standard models of vertical FDI involve deciding where to locate production to minimize costs. Headquarter services are located in the home country; production of the good can be located with the headquarters in the home country or separated and located abroad. Production costs are assumed to be lower in the host country than at home. Hence the trade-off is between the lower costs of producing abroad and the need to pay trade costs to bring the goods back home. FDI occurs if the cost savings from producing abroad are greater than the trade costs incurred. Lower trade costs should encourage vertical FDI but discourage horizontal FDI. As trade costs fall, vertical FDI occurs for smaller differences in factor prices. In a simple setup where only one unit of labor is required to produce the good in either country, vertical FDI occurs if the wage difference across countries is greater than the trade costs. As vertical FDI is often called international *outsourcing/offshoring* (see separate entry), the production cost savings minus the trade costs can be called the gain from offshoring.

Anyone fearing that, as trade costs fall, all production will shift to from rich countries such as the United States to poorer countries such as China or Mexico (where wages are lower) should bear in mind that the United States remains the largest recipient of FDI inflows. Also, the comparison is not of wage levels alone, but efficiency wages – labor costs per unit of production. If wages elsewhere are one-tenth US wages but workers are less than one-tenth as productive, labor there is not truly less expensive.

The *knowledge-capital model of the multinational enterprise* (see separate entry) is an overarching model that includes both horizontal and vertical FDI as special cases. It

has been used to test for evidence in support of horizontal versus vertical FDI. Most findings have been more supportive of horizontal FDI, but other research (such as Braconier et al, 2005) has emphasized that vertical FDI does indeed occur and is important to the host countries in which it occurs (sales by affiliates are large relative to GDP). Both horizontal and vertical FDI can occur in Markusen and Venables (2005) -- the split between market-oriented and export platform activity depends mostly on trade costs, and factor endowments influence whether specialize in components or assembly.

Given that the bulk of FDI is horizontal in nature, and that horizontal FDI is motivated by avoiding trade costs (tariff-jumping), the trends in the 1990 were rather perplexing. Dramatic reductions in trade costs due to trade negotiations and technological change occurred together with substantial growth in FDI (outpacing the fast growth in world trade). Neary (2007) has put forth two potential explanations. He shows that cross-border mergers can be encouraged by reductions in trade costs. As mergers & acquisitions are quantitatively more important than greenfield investments (building from scratch), falling trade costs can be consistent with expansions in horizontal FDI. He also argues that horizontal FDI in trading blocks can be encouraged by trade liberalization within the trade block. When trade costs fall within the block, outside firms invest in one country as a means for serving the entire trade block. For example, a US firm may produce in Ireland to serve all of Europe, or a German firm may produce in Canada to serve all of North America. These are examples of export-platform FDI, discussed below. Which explanation is most empirically relevant remains to be determined.

**Export-Platform FDI**

Export-platform FDI is FDI motivated by a desire to export rather than to serve the local market. Vertical FDI is export-platform FDI where the exports are sent back to the home market. However, there is an increasing trend toward export-platform FDI where the exports are sent to third markets. The rise of trade blocks with low internal trade barriers but higher external barriers may contribute to this trend. Multinationals are establishing production subsidiaries within a trade block and using that plant to serve the entire block. To the degree that the host country is small relative to the overall size of the trade block, the vast bulk of production will be exported to other countries in the trade block.

Motta and Norman (1996) find that improved market access within a trade block leads to export-platform FDI in this manner. As an additional benefit, since FDI into the block becomes more attractive to outside firms, due to firms being better able to reach the majority of markets within the block through exports from one plant, the subsidies required to entice firms to locate in the block will be reduced. Instead of considering only the market size of a potential host country, firms now consider the broader, regional market that can be easily reached from the country. As trade blocks are often formed on a regional basis, avoiding artificial trade barriers (such as tariffs) and natural trade barriers (transport costs) tend to go hand in hand.

Kumar (1998) emphasized the need to distinguish between export-platform FDI oriented toward the home market versus that oriented toward third countries. FDI for export back to the home market occurs to take advantage of cheaper factors of production elsewhere, and only trade costs between the home and host country matter. However,

FDI for export to third countries is critically dependent on the ease of access to the third countries, and the trade costs back to the home market matter little.

Ekholm et al (2007) further distinguish between three types of export-platform FDI. Home country export-platform FDI involves export back to the parent. Third-country export-platform FDI involves export to another large country (not home or host). With global export-platform FDI, the host plant exports to both the home country and the third country. When the home and the host countries form a free trade area, the outcome can be that the inside firm engages in home (or global) export-platform FDI, while the outsider firm opts for the third-country approach. Fitting this scenario, the North American affiliates of US multinationals concentrate on exports back home, whereas affiliates in Europe concentrate on exports to third countries. See also Yeaple 2003. With NAFTA, Mexico has seen increases in the share of production by affiliates of multinationals (both US and from elsewhere) sent to the United States.

Using data for US outbound FDI to OECD countries from 1980-2000, Blonigen et al (2004) find evidence consistent with export-platform FDI in Europe. When measures of market potential (size of proximate third country markets) are included, they find a clear negative relationship between FDI into proximate countries. This pattern of substitution between industrialized countries in Europe provides strong evidence of export-platform FDI. Ireland is the most successful EU economy in attracting export-platform FDI.

The implications of export-platform FDI need further study. For example, when MNEs use the host country as an export-platform, local firms are often not competitors (unless also exporting) and thus the MNEs need not worry about restricting technology

spillovers. As there is less risk of damaging local competitors, local governments may view export-platform FDI more favorably than FDI for the purpose of serving the local market. While there are potential employment gains from both, export-platform FDI does not generate the gains in consumer surplus that market-access motivated FDI would.

*See also: fixed costs & FDI, knowledge-capital model of the multinational enterprise, market size & FDI, outsourcing/offshoring, proximity-concentration hypothesis, trade costs & FDI*

### **Further Reading**

Blonigen, Bruce A., Ronald B. Davies, Glen R. Waddell, and Helen T. Naughton. 2004.

“FDI in Space: Spatial Autoregressive Relationships in Foreign Direct Investment.” NBER Working Paper No. 10939.

<http://www.nber.org/papers/w10939.pdf> Finds evidence consistent with export platform FDI in Europe.

Braconier, Henrik, Pehr-Johan Norback, and Dieter Urban. 2005. “Multinational

Enterprises and Wage Costs: Vertical FDI Revisited.” *Journal of International*

*Economics* 67(2): 446-70. Evidence in support of vertical FDI.

Brainard, S. Lael. 1993. “An Empirical Assessment of the Factor Proportions

Explanation of Multinational Sales.” NBER Working Paper No. 4583.

<http://nber15.nber.org/papers/w4583.pdf> Finds little support for factor proportion motivation for FDI.

- Ekholm, Karolina, Rikard Forslid, and James R. Markusen. 2007. "Export-Platform Foreign Direct Investment." *Journal of the European Economic Association* 5(4): 776-95. Examines conditions under which three different types of export platform FDI arise: back to MNE's home country, to a third country, or globally (to both).
- Kumar, Nagesh. 1998. "Multinational Enterprises, Regional Economic Integration, and Export-Platform Production in the Host Countries: An Empirical Analysis for the US and Japanese Corporations." *Weltwirtschaftliches Archiv/Review of World Economics* 134(3): 450-83. Contrasts the determinants of production for export back to MNE's home market to those for export to third-country markets.
- Markusen, James R. 1995. "The Boundaries of Multinational Enterprises and the Theory of International Trade." *Journal of Economic Perspectives* 9(2): 169-89. Excellent review of empirical evidence on multinational firms.
- . 1984. "Multinationals, Multi-plant Economies, and the Gains from Trade." *Journal of International Economics* 16(3-4): 205-26. The original.
- Markusen, James R., and Anthony J. Venables. 2005. "A Multi-Country Approach To Factor-Proportions Trade and Trade Costs." NBER Working Papers No. 11051. <http://www.nber.org/papers/w11051.pdf> Model where both horizontal and vertical FDI occur.
- Motta, Massimo, and George Norman. 1996. "Does Economic Integration Cause Foreign Direct Investment?" *International Economic Review* 37(4): 757-83. Three country, three firm model showing how improved market access within a region leads to export-platform FDI as outside firms invest in the region.

Neary, J. Peter. 2008. "Trade Costs and Foreign Direct Investment." *International Review of Economic and Finance*, forthcoming. Provides two explanations for how

falling trade costs can generate increased FDI, as seen in the data.

Yeaple, Stephen Ross. 2003. "The Complex Integration Strategies of Multinationals and Cross Country Dependencies in the Structure of Foreign Direct Investment."

*Journal of International Economics* 60(2): 293-314. Describes how strategies of multinationals are richer than just horizontal or just vertical FDI.

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