



IMF Working Paper

Determinants of, and the Relation
Between, Foreign Direct Investment and
Growth:
A Summary of the Recent Literature

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Middle Eastern Department

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Abstract

The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.

This paper summarizes recent arguments/findings on two aspects of foreign direct investment (FDI): its correlation with economic growth and its determinants. The first part focuses on recent literature regarding positive spillovers from FDI while the second deals with the determinants of FDI. The paper finds that while substantial support exists for positive spillovers from FDI, there is no consensus on causality. On determinants, the paper finds that market size, infrastructure quality, political/economic stability, and free trade zones are important for FDI, while results are mixed regarding the importance of fiscal incentives, the business/investment climate, labor costs, and openness.

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I. INTRODUCTION

This paper summarizes recent arguments and findings on two separate aspects of FDI: its correlation with economic growth, and its determinants. The first part (Section II) focuses on recent literature regarding positive externalities (spillovers) from FDI, while the second (Section III) deals with the determinants of FDI.

II. RELATIONSHIP BETWEEN FDI AND ECONOMIC GROWTH

While there is yet no consensus on the relationship between FDI and growth, there is a growing view in recent years that FDI is positively correlated with growth. Theoretically, this view has been bolstered by recent developments in growth theory, which highlight the importance of improvements in technology, efficiency, and productivity in stimulating growth. In this regard, FDI's contribution to growth comes through its role as a conduit for transferring advanced technology from the industrialized to the developing economies. For instance, Findlay (1978) postulates that FDI increases the rate of technical progress in the host country through a "contagion" effect from the more advanced technology and management practices used by foreign firms.

This contagion or knowledge diffusion (often referred to as externalities or efficiency "spillovers") can lead to improvements in productivity and efficiency in local firms in several ways. In its simplest form, a spillover can occur when a local firm improves its productivity by copying some technology used by multinational affiliates/corporation (MNC) in the local market. Another type occurs when local firms are forced to use existing technology and resources more efficiently, or to search for more efficient technologies, because an MNC's entry has increased competitive pressure in the local market. In addition, spillovers can occur when an affiliate demonstrates new techniques to and trains local workers, who later accept employment in local firms or start their own firms.

A particularly significant channel for spillovers is through the linkages between the MNC affiliate and its local suppliers and customers. Lall (1980) identifies the following MNC/supplier interactions that can help increase the productivity and efficiency of local firms: (i) helping prospective suppliers set up production facilities; (ii) demanding from suppliers reliable, high quality products that are delivered on time, while also providing the suppliers with technical assistance or information to help improve the products or facilitate innovations; (iii) providing training and help in management and organization; and (iv) assisting suppliers to find additional customers including their sister affiliates in other countries. Such suppliers may then start to export to the sister affiliates as well as to other independent external purchasers.

A. Empirical Findings

Empirically, there appears to be good evidence that FDI efficiency spillovers exist, although there is no strong consensus on the associated magnitudes (Blomstrom, Globerman, and Kokko (2000)).² For developed countries, the limited evidence available indicates fairly consistently that the productivity of domestically owned firms is positively related to the presence of foreign firms (Caves, 1974; Globerman, 1979; Nadiri, 1991; Imbriani and Reganati, 1997). For developing countries, the results are also generally positive, although somewhat mixed, with a number of studies showing a higher foreign presence increasing productivity in host country sectors, but others pointing to limited or no efficiency spillovers. For instance, Blomstrom (1986) and Kokko (1994) find econometric evidence of positive FDI spillovers for Mexico; Blomstrom, Kokko and Zejan (1994), for Uruguay; and Sjöholm (1999), for Indonesia. Aitken, Hanson, and Harrison (1997) find that foreign manufacturing investors in Mexico act in general as export catalysts for domestic firms—the probability of a Mexican-owned plant engaging in exports is positively correlated with its proximity to MNCs, after controlling for various other factors. As such, they conclude that the export spillovers they observe must spring directly or indirectly from ways in which the foreign investors act as a conduit for technology, management, distribution services, and information about foreign markets. However, Aitken and Harrison (1991) find only limited or no evidence for Venezuela; and Harrison (1996) finds that while joint ventures in Morocco and Venezuela exhibit higher productivity levels than their domestic counterparts, there is no evidence of positive short run spillovers from foreign to domestic firms.³ Harrison suggests that in the short run FDI may adversely affect domestic firms by taking away market share and leading to reduced capacity utilization for the firms—although that does not rule out positive spillovers over the longer run.

Determinants of spillover magnitudes

A determinant of the magnitude of spillovers appears to be the size of the technology gap between domestic and foreign firms, that is, spillover magnitude appears to depend on the host country's capability to "absorb" the foreign technology. For instance, the Imbriani and Reganati study shows that efficiency spillovers for a set of Italian firms are greater, the smaller the size of the technology gap. Similarly, Blomstrom's 1986 study on Mexico finds that a foreign presence lowers the average dispersion of a sector's productivity but the effect is more significant in sectors with simpler technology. Blomstrom interprets the finding as indicating that foreign presence forces local firms to become more productive in sectors where "best practice technology" lies within their grasp. Kokko (1994) and Kokko, Tansini, and Zejan (1996) find similar results for Mexico and Uruguay, concluding that spillovers are

² Studies of spillovers are usually done at the firm, industry, or sectoral levels.

³ Productivity is total factor productivity (TFP)—for Morocco for instance, TFP are firm-level residuals in production function estimation.

more difficult to identify where foreign affiliates have much higher productivity levels than local firms—for instance, as in "enclave-type" situations like some resource-processing enclaves, where foreign and domestic technologies may be so far apart that there is little scope for learning and spillovers.^{4 5}

Moran (1998) suggests that another important determinant of spillover magnitude is the type of host investment climate. He argues that a liberal investment climate would tend to generate stronger spillovers because it is more likely to attract more dynamic FDIs that have a number of attractive qualities in that they are: large, enjoy economies of scale, exhibit best management practices, are at the cutting edge technologically, and highly efficient. On the other hand, a restrictive investment climate with conditions such as mandatory joint partnerships, licensing, or domestic content requirements tend to attract FDIs that are likely to be less efficient and exhibit older technology, as well as experience slower rates of new technology transfer and lags in the utilization of advanced management systems.

Moran (1998) also argues that a liberal investment climate tends to encourage the establishment of export-oriented operations that are integrally tied into the MNCs' global/regional sourcing and production network—with the aim of enhancing the parent firm's competitive position in international markets (including in their home markets). As such, it is in the parent firm's interest to provide these affiliates with newer technology, more rapid technological upgrading, and persistent parental supervision in the areas of cost and quality controls as well as development of managerial/human resources. Once these export-oriented FDIs are set up, they also tend to attract other foreign investors including competitors into the location (in a "clustering" effect). The combination of cutting edge technology, exporting into competitive world markets, and clustering of foreign investor activity will then tend to generate substantial spillovers and externalities through strong backward linkages to indigenous suppliers.

⁴ This suggests that some types of FDI, such as enclave-type oil/natural resources, may have less of an impact on growth than others. In an extreme, hypothetical case, where there is zero scope for positive spillovers, the FDI contributes to growth in a limited sense—by generating income. For instance, income and revenue from the development of an enclave-type one commodity (for instance, oil) economy will contribute to growth by supporting the government sector as well being the foundation for growth of the private nontraded services sector—but from a dynamic perspective, the contribution to growth may end there, since economic growth may subsequently tend to reflect largely developments in the oil (one commodity) sector.

⁵ A related issue is the speed of adoption of foreign technology by local firms. Here, the important factor appears to be the degree of competition introduced by the MNC. McFetridge (1987) finds that new technology is frequently introduced sooner by MNC affiliates but greater competition spurs quicker adoption of the innovation by local firms. Chen (1983) finds a positive association between the speed of technological diffusion and the share of foreign ownership in four Hong Kong industries.

As evidence, Moran cites case study literature on Mexico's experience with the automotive industry and Asia's with the electronics/computer industry. Before 1979, the FDI-related automotive industry in Mexico had subscale plants producing mostly for the small domestic market. Once General Motors decided to use Mexico as a base for producing and exporting its engines, two events occurred: first other major foreign car and auto parts companies followed suit, establishing their own export-oriented plants. Second, within five years, 310 domestic suppliers of car parts and accessories had sprung up to serve the FDI-related exporters. The interactions of these local suppliers with the foreign investors included weekly meetings, where the foreigners introduced industry best practices and provided technical assistance. By 1987, six out of the largest ten exporters of auto parts were locally owned, suggesting spillovers of export-related marketing expertise to domestic producers (Peres Nunez, 1990).

The experience with FDIs in Asia (outside Japan) has been roughly the same. Faced with Japanese competition, General Electric set up its first television parts plant in Asia in 1968, followed quickly by RCA and Zenith, Fairchild, Texas Instrument, National Semiconductor, and Motorola through 1973. Once these sites were integrated to serve world markets, the U.S. firms upgraded their Asian subsidiaries in line with the pace of development in the lead market being served, the U.S. market—all the while introducing new technology and progressively upgrading output toward more complex subsystems, including some design (Borras, 1994; Ernst, 1994; Linden, 1996). Strong spillovers occurred. Rasiah (1993, 1995) finds that links between local suppliers in Malaysia and the foreign investors began at an elemental level, with the former first carrying out simple tasks such as machining and stamping, but progressing later into precision tooling and parts fabrication.⁶ Over time, all nine of the local machine-tool firms studied by Rasiah began to export, via channels provided by the foreign firms, to other parts of Asia and the United States. Seven of these firms exported to sister affiliates of the MNCs located outside Malaysia, while the other two had built up subcontracting orders from independent external purchasers. Interestingly, of the nine companies, the owners of seven of them had had prior work with one of the foreign firms before starting their own operations; also, 10 percent of the employees of the local manufacturers had had prior work experience with one of the foreign firms as well.

Moran points out that a restrictive climate, on the other hand, tends to orient FDI toward producing for the host market because FDIs launched under mandatory joint partnerships and licensing requirements are less likely to be integrated into the MNCs' global/regional sourcing and production network—mainly owing to concerns over quality controls, leakage or misappropriation of the latest proprietary technology, possible conflicts

⁶ For instance, foreign subsidiaries began by subcontracting work on machinery prototypes to indigenous suppliers, often with the engineers of the subsidiaries first supervising and monitoring the engineers of the local suppliers. Later, however, engineers of both sides together drafted plans for the machinery which the local suppliers then produced on their own.

with partners over transfer prices, market allocations and rationalization of international production (Beamish, 1988; Stopford and Wells, 1972; Gomez-Casseres, 1989; Encarnation, 1992). Meanwhile, FDIs launched under domestic content requirements suffer from being noncompetitive internationally because the foreign investors have been forced to substitute more expensive indigenous goods for cheaper imports—leading again toward production for the host market. Being noncompetitive, these FDI operations typically also operate under heavy import protection, tend to be highly inefficient, and unless the domestic market happens to be very large, are also unable to achieve sufficient plant size to enjoy scale economies (UNCTC, 1991; Shapiro, 1993; Klein, 1995).

These FDI operations—being less efficient, host-market-oriented, and out of the MNCs' global production loop—thus tend to be less dynamic and receive much less attention from the parent firms, leading to slower rates of new technology transfer and developmental resources. For instance, Mansfield and Romero (1980), in a study of 31 firms and 65 technologies, find that parent firms transfer technology to wholly owned subsidiaries (in developing countries) one-third faster on average than to joint ventures or licensees, while Doner (1995) documents the problems of delays in technology transfer prevalent in Malaysia's "national car" joint venture with Mitsubishi. In addition, Ernst (1998) finds, in the case of domestic content-restricted FDI, lags in the utilization of advanced management systems, including quality control systems and just-in-time inventory control. Kokko and Blomstrom (1995) find that in general the imposition of host country mandates on the behavior of foreign affiliates is negatively correlated with technology inflows into the host country. As a result, Moran concludes that spillovers from FDI operations under the three types of restrictions discussed above are likely to be smaller and may even be negative.^{7 8}

⁷ The scenario with a domestic content-restricted FDI operating very inefficiently in a small, heavily protected host market, and generating negative spillovers could be consistent with the malign view of FDI commonly expressed in the past. According to this view, MNCs are oligopolistic companies locating in protected markets with high barriers to entry and increasing market concentration. They extract rents, siphon off capital through preferred access to local capital markets, and drive domestic producers out of business (Brecher and Diaz-Alejandro, 1977). In addition, they repatriate profits and drain capital from the host economy. Far from encouraging economic growth and efficiency spillovers, these FDIs support a small oligarchy of indigenous partners and suppliers, use inappropriate capital intensive technology in a labor surplus context, producing a small labor elite while many workers remain unemployed or underemployed.

⁸ It should also be noted that while Moran (1998) is very critical of mandatory joint partnership, licensing, and domestic content requirements, he observes that export requirements have played a positive role in some instances by pushing MNCs into setting up world-scale, export-oriented facilities along the lines of international comparative advantage. (Mexico is one such example). Export requirements played this role because the MNCs were moving very slowly (showing stickiness in decision-making) to reorient their corporate strategy by incorporating new but viable and cheaper cost production sites into their global/sourcing and production networks. Moran attributes this stickiness in decision-making (continued...)

Despite the persuasive case study evidence, there does not appear yet to be direct systematic evidence that spillovers from wholly owned subsidiaries free of restrictions are greater than those under domestic content requirements or those from joint ventures and licensees, mandatory or not. The empirical studies on spillovers discussed above in general do not separate the FDI by type of restrictions. In addition, an implicit assumption in Moran's argument must be that the local firms are able to absorb the spillovers from the foreign investors, (i.e., the technology gap is not prohibitively large). In the examples of Mexico and Malaysia, both were countries with relatively literate and sophisticated populations when the export-oriented FDI took off. Also, Rodrik (1999) has expressed some doubts about the evidence on spillovers. In particular, he has argued that greater productivity in domestic firms producing for exports does not necessarily suggest efficiency spillovers from foreign firms. Domestic firms that locate in the export sector by definition should be expected to be more productive than domestic firms in other sectors because of the international competition they face. More productive firms, domestic or foreign, tend to locate in the export sector.

Other arguments against the increased efficiency and positive FDI spillovers include Krugman (1998) and Razin, Sadka, and Yuen (1999). Krugman (1998) considers the efficiency of FDI undertaken within a crisis situation (as per the recent Asian crisis) under

partly to political pressures applied by labor leaders and elected officials in the MNCs' home countries; and partly to the type of behavior modelled in the Dixit-Pindyck (1994) framework for irreversible investments under uncertainty. In this framework, investors are more cautious about constructing a new facility than in abandoning an old one—because there is **value in delaying** (similar to the value of **financial options**) large new investments while the firm waits to receive and assess new information as to whether the new pattern of production would be superior to the old. However, Moran also postulates that a type of market failure is possible here by posing the question: what if the new information emerges too slowly (suboptimally) or the learning is suboptimally slow? This may happen if the gaps in information can be filled only by trying out the site for an extended period of time— analogous to the decision process in Akerlof's lemons model for the buying and selling of used cars (Akerlof, 1970). In Akerlof's model, identifying which products (used cars) are good and which are defective is extremely difficult for buyers—unless they try the product for an extended period of time. This problem tends to drive potential buyers toward a common price for all such products which is far too low, or in our case of FDI's, toward a common too uninterested stance in new production sites, that is, excessive and suboptimal delays. In the Mexican and Southeast Asian case studies he cites, Moran argues that export requirements helped to push the MNCs into incorporating those sites into their international sourcing strategies—to speed the MNCs in the direction they were eventually heading anyway, that is, investing along the lines of comparative advantage. However, despite his postulate of market failure, Moran has not generalized from these case studies to advocate export requirements as a systematic FDI strategy because “one cannot conclude from these success stories...that the use of export performance requirements will always produce as favorable or as powerful an outcome as witnessed here.”

“fire-sale” terms while Razin, Sadka, and Yuen (1999) consider the implications of asymmetric information. Krugman posits that domestic investors are more efficient than foreign investors in running domestic firms (otherwise, the foreigners would have made the investments in the first place). However, in a financial crisis, domestic investors may become liquidity constrained (while foreign investors are not) and domestic firms and assets become available at fire-sale terms. In the absence of a panic, foreign firms will not get involved (because it is not profitable to), but in a fire-sale financial panic context, it becomes profitable for the foreign firm to take over a project in midstream and make more than the opportunity cost of funds in foreign capital markets. Such fire sales transfer ownership of domestic assets to foreign firms that are less efficient than domestic firms, only because of the foreigners’ superior cash position. Within such a context, Krugman thus overturns the argument that foreign firms take over domestic firms because they have a special competence and can run domestic firms more efficiently and productively.

Razin, Sadka, and Yuen (1999) argue that FDI investors have an informational advantage over domestic savers because they gain crucial inside information about the productivity of firms under their control. Having this inside information, FDI investors can “overcharge” uninformed domestic savers when multinational shares are traded in the domestic stock markets. However, anticipating future domestic stock market trade opportunities, foreign investment may become excessive, leading to overinvestment and inefficiency. Assessing these arguments, Loungani and Razin (2001) suggest that while the empirical relevance of these types of risks with FDI “remains to be demonstrated, the potential risks do appear to make a case for taking a nuanced view of the likely effects of FDI.”

Economy-wide findings

At the **economy-wide** level, recent empirical work has also generally tended to find a positive correlation between FDI and economic growth. Dees (1998) finds that FDI has been important in explaining China's economic growth; while De Mello (1996) finds a positive correlation for selected Latin American countries. A recurring theme appears to be the need for the host economy to have achieved a certain threshold of development—the absorptive capacity for new technology as discussed above. For instance, Blomstrom, Lipsey, and Zejan (1994) find that FDI has a significant positive influence on growth rates but the influence seems to be confined to higher-income developing countries. The authors interpret this result as signifying that the host economy must be capable of absorbing the new technology manifested in the FDI.

At a more specific level, this absorptive capacity is conceived as a certain level of human capital. Using panel data in a test for 69 developing countries, Borenstein, De Gregorio, and Lee (1995) find that while FDI is an important vehicle for the transfer of technology and a positive contributor to economic growth, its impact is greater the higher the level of human capital stock in the host economy (proxied by the level of educational attainment). Another interesting finding is that FDI appears to have a “crowding-in” effect on domestic investment. A priori, FDI can have two potential effects on domestic investment—

by competing in product and financial markets, MNCs may displace domestic firms; however, FDI may also facilitate the expansion of domestic firms through complementarity in production (the linkage effects discussed above) and productivity spillovers. Borensztein, De Gregorio, and Lee (1995) find the latter effect dominating in their study. Thus FDI can increase growth in two ways: 1) it increases total investment by attracting higher levels of domestic investment; and 2) through interaction of the more advanced technology with the host's human capital, FDI is more productive than domestic investment.

Another theme is the type of trade regime involved. While Balasubramayam, Salisu, and Sapsford (1996 and 1999) also find tentative evidence regarding the importance of a certain threshold of the host's human capital, their studies in addition find that FDI's growth contribution is significantly greater in outward-oriented or neutral trade regimes compared to those pursuing import-substituting strategies (using classifications on trade regime from Bhagwati (1978) and the World Bank (1987)). This latter result is also demonstrated in Kawai (1994).

However, a dissenting view is echoed in Rodrik (1999) who argues that the effect of FDI on economic growth tends to be weak, and suggests again that much if not most of the correlation between FDI and superior economic performance is driven by reverse causality: MNCs tend to locate in the more productive, faster growing, and profitable economies. Rodrik cites a Bosworth and Collins (1999) study on total capital flows, that does not find the "crowding-in" effect of Borensztein, De Gregorio, and Lee (1995) above—instead, Bosworth and Collins (1999) find that the positive effect of FDI on domestic fixed investment tends to fall off significantly when more country characteristics are controlled for. That result notwithstanding, Bosworth and Collins (1999) also find that FDI inflows tend to raise a country's economic growth rate through their positive impact on total factor productivity.

III. DETERMINANTS OF FDI

A. General Framework

There are two main reasons why a firm would want to become a multinational one.⁹ The conventional view is expressed very well in Shatz and Venables (2000). According to

⁹ In general, the theory of FDI answers the question as to why a firm would want to produce in a foreign location (where indigenous firms have superior knowledge of the local market, consumer preference, and business practices) instead of exporting or entering into a licensing arrangement with a local firm. Dunning (1977, 1988) argues that three conditions must be satisfied for a firm to engage in FDI. First, the firm must possess ownership of some firm-specific tangible or intangible asset or skill that gives it an advantage over other firms (ownership advantage); otherwise, it would not be able to overcome the additional costs of foreign production such as the costs of dealing with foreign administrations, regulatory and tax systems, and customer preferences, and would become noncompetitive vis-à-vis-indigenous firms. Second, it must be more beneficial for the firm to use or exploit the firm-

(continued...)

them, one reason is to better serve the local market, and the other is to get lower-cost inputs. FDI to serve local markets is often called "horizontal" or "market-seeking" FDI since it normally involves building duplicate plants in a foreign location to supply the market there. The motive is to reduce the cost involved in supplying the market (such as tariffs or transport costs) or to become more competitive in other ways—such as through proximity to the market and being able to respond to changing local circumstances and preferences. As such, horizontal FDI will tend to replace exports if the costs of market access through exports (tariffs and transport costs) are higher than the net costs of setting up a local plant and doing business in a foreign environment. In addition, horizontal FDI will be more likely to replace exports the larger the local market is—for two reasons. First, the plant-specific fixed cost will be lower per unit of output the larger the market is. Second, larger markets will tend to have more local firms, more intense competition, leading to a lower price for the product. If the marginal cost of supply through exports is relatively high, it may tip the balance for the firm in favor of local production (Shatz and Venables, 2000).

FDI in search of low-cost inputs is often called "vertical" or "production cost-minimizing" FDI since it involves slicing the vertical chain of production and relocating part of the chain in a low cost location—for example, assembling electronic goods in Asia, even though manufacture of sophisticated component parts and final sales might take place in the United States. Vertical FDI also encompasses what is commonly called "raw material-seeking" FDI since the inexpensive input could be primary commodities or raw materials in a specific location. Other inexpensive inputs that may be sought by vertical FDI include labor, intermediate goods, or even access to certain externalities, for example, when there happens to be a cluster of FDI in one location. Vertical FDI are normally export-oriented, frequently to the multinationals' home market, and tend to be unaffected by the market size of the host economy. In general, vertical FDI will be stimulated when different parts of the production process have different input requirements and input prices vary across countries. International differences in factor and raw materials prices and refinements in production technology will tend to encourage vertical FDI (Shatz and Venables, 2000).

Both horizontal and vertical FDI may tend to cluster in a certain location, (sometimes referred to as "agglomeration") perhaps because of linkages among projects, creating incentives to locate close to other firms. An example may be regional groupings of service suppliers. More suppliers, each producing a different service, will create finer divisions of labor in intermediate input markets, thus lowering unit costs for final producers (Wheeler and

specific asset itself than to sell them or lease and license them to other firms; for instance, the firm-specific asset might be a brand name or a nonpatentable technical/managerial skill or process, which the firm might find in its interest to keep internally instead of licensing (internalization)—in order to prevent the asset from being replicated by competitors. Third, it must be more profitable to use these advantages in combination with at least some factor inputs located abroad (locational advantage); otherwise, the foreign market could be served exclusively through exports.

Mody, 1992). Alternatively, clustering may occur if firms "herd"; uncertain about whether a country is a good location, firms may wait for the success of the first firm (as a signal of underlying national conditions) before entering the fray in a follow-the-leader type scenario. Finally, while the distinction between horizontal and vertical FDI is useful, they are not mutually exclusive; at times, we may find one plant serving both functions (Shatz and Venables, 2000).

B. Impact of FDI Determinants

The framework above suggests a list of factors that may be important in affecting FDI, such as economic distance/transport cost, market size, agglomeration effects, factor cost, fiscal incentives, business/investment climate and political, economic stability/risk, and trade barriers/openness. While some of these factors are likely to affect all types of FDI, the different strategic objectives implicit in horizontal and vertical FDI also suggest that certain factors may affect one type of FDI more than the other. We discuss the rationales underlying the choice of these determinants and their likely impact on FDI below:

- **Economic distance/transport costs:** to the extent that horizontal FDI (see Section A) will tend to replace exports if the cost of market access through exports is high, horizontal FDI will tend to increase if the distance between the home and host markets is large, leading to higher transport costs. However, vertical FDI, which is export-oriented (particularly to the multinationals' home markets), may be discouraged by high transport costs because of the need to ship vast amounts of imports and exports of components and final goods. The net impact of transport cost on FDI is uncertain.
- **Size of the host market:** to the extent that larger host markets reduce the cost of supplying the market because of economies of scale and lower fixed cost per unit of output, a larger host market will encourage horizontal FDI. Vertical FDI, however, is indifferent to the host's market size. The net impact of market size on FDI is likely to be positive.
- **Agglomeration effects:** to the extent that agglomeration effects make clustering attractive, their impact on both horizontal and vertical FDI will be positive. Factors contributing to agglomeration effects include the state of the host country's infrastructure, the degree of industrialization, and the size of the existing FDI stock (the last two factors are proxies for the relative availability of specialized support services and competitors). The net impact of agglomeration effects on FDI is positive.
- **Factor cost:** production cost-minimizing vertical FDI will be stimulated directly by lower factor cost. Lower factor cost should also be viewed favorably by horizontal FDI. The net impact of lower factor cost on FDI is positive.

- **Fiscal incentives:** fiscal incentives in the host country (relative to those of its competitors) can increase the country's locational advantage for both types of FDI. However, production cost-minimizing FDI may be more likely to respond to fiscal incentives, since they are more sensitive to costs and thus more likely to be "footloose" and shop alternative sites. Horizontal FDI tend to be more concerned about the viability of the host market and may thus tend to favor other policies (such as protectionist policies) than fiscal incentives. However, all things being equal, the net impact of fiscal incentives on FDI should be positive.
- **Business/investment climate:** a friendlier business/investment climate lowers the additional costs of doing business in a foreign country, thus benefiting both horizontal and vertical FDI. These costs have to do with factors like regulatory, bureaucratic, and judicial hurdles; issues of property rights; enforceability of contracts; labor regulations; performance requirements like mandatory joint partnerships and domestic content requirements; and political and macroeconomic stability. In general, greater red tape, more restrictive performance requirements, an unstable political situation, or economic instability would make the host country less attractive for all types of FDI.
- **Trade barriers/openness:** Horizontal FDI undertaken to get behind trade barriers (tariff-hopping) may decrease with an increase in openness, say, a decrease in tariffs. However, other FDI will be stimulated. Vertical FDI, which requires substantial flows of intermediate inputs and goods in and out of the host country, and benefits from a liberal and predictable trade environment, will increase with greater openness. In addition, other (non-tariff-hopping) horizontal FDI may be stimulated to the extent that widespread trade liberalization (as opposed to limited measures in selected areas) in concert particularly with other liberalizing measures lead to a better business climate and expectations of better long term economic growth prospects and increasing market size. The net impact of openness on FDI is uncertain.

C. Empirical Findings

Surveys

The empirical work on FDI determinants generally comes in two forms: investor surveys and econometric or in-depth case studies. We review two large investor surveys first. The first is a recent survey of CEOs, CFOs, and other top corporate executives of the Global 1000 companies by A.T. Kearney, a global management consulting firm. The survey cites large market size, political and macroeconomic stability, GDP growth, regulatory environment, and the ability to repatriate profits as the five most important factors affecting FDI (Development Business, 1999). Among countries, industrialized economies and large emerging markets rank highest in the so-called FDI Confidence Index—with the United States ranked number one, followed in descending order by Brazil, China, the United Kingdom, Germany, Poland, France, Mexico, and Spain. Heavy manufacturers remain

mostly interested in the large emerging markets, such as Brazil, China, India, Mexico, and Poland. Another reason cited for Brazil's popularity is the country's commitment to privatization and the deepening of MERCOSUR.

In 1994, the World Bank conducted a survey of 173 Japanese manufacturing investors on their likelihood of investing in an East Asian country over the coming three years, on a scale of 1 to 7, with 7 being very likely (Kawaguchi, 1994). Against this subjective probability, the participants were also asked to rank various characteristics of the countries, on a numerical scale of 1 to 10, with 10 being very favorable. Using pooled regressions, the Bank found that the most important determinants were the size of the market; the cost of labor; and FDI policies. On the last, the investors viewed restrictions on repatriation of earnings, local content and local ownership requirements as serious disincentives to FDI. In general, the technology-intensive sectors such as general machinery and electronics were the most sensitive to restrictive FDI policies (particularly the local content requirements). Interestingly, fiscal and tax incentives were viewed as having little or no effect on FDI decisions. Such incentives policies were viewed as perhaps indicative of a positive political attitude towards investment, but also unstable because they could just as easily be reversed.

Econometric and other studies

There does not yet appear to be consensus on all the important determinants of FDI in the empirical literature. In part, this is because, as Section B shows, there are different types of FDI, which are affected by different factors. The lack of consensus also has to do with the difficulty of getting accurate data (particularly for developing countries) on some of the determinants, such as labor costs and labor quality, investment/regulatory climate, and degree of openness. While certain determinants such as market size and some measure of relative labor costs are usually included in the empirical models, other determinants chosen may vary significantly across models. Of the studies surveyed here, the most robust determinant is the size of the market. Market size proxied by real GDP or GDP per capita is highly significant and positive in virtually all the studies (Shatz and Venables, 2000; Fung, Iizaka, Lee, and Parker, Iizaka, and Parker 2000; Billington, 1999; Dees, 1998; Branard, 1997; Loree and Guisinger, 1994; Wheeler and Mody, 1992; Contractor, 1991; Kravis and Lipsey, 1982; Reuber and others, 1973). This partly reflects the fact that most of the world's FDI is horizontal in nature.

Transport costs are found to be positively related to FDI by Branard (1997) in a study covering a mix of developed and developing countries.¹⁰ However, in a study of Swedish multinationals, Ekholm (1998) finds transport costs to be only weakly related to FDI. The mixed results are expected to the extent that horizontal FDI are stimulated by higher transport

¹⁰ FDI is proxied as the ratio of overseas affiliate production in the host country relative to U.S. exports to the country.

costs, while vertical FDI as mentioned above benefits from lower transport costs—as can be seen from the well-reported large FDI flows between the United States and Mexico.

As expected, agglomeration (clustering) effects are found to be highly significant by Wheeler and Mody (1992) in a study of capital expenditures by U.S. manufacturing MNCs covering 42 developed and developing countries. All three agglomeration-related variables—quality of infrastructure, degree of industrialization, and the stock of FDI— had large impacts on U.S. manufacturing FDI. The quality of infrastructure is the dominant factor for developing economies, whereas specialized support services are more important for industrial economies. Regarding the positive influence of the existing stock of FDIs, foreign investors seemed clearly to be influenced by the presence of other foreign investors. Other findings of positive agglomeration effects include Barry and Bradley (1997) on the computer, instrument engineering, pharmaceutical, and chemical sectors in Ireland;¹¹ Fung, Iizaka, Lee, and Parker (2000) on the positive influence of infrastructure on FDI in Chinese provinces; Moran (1998); Loree and Guisinger (1995); Agodo (1978); and Root and Ahmed (1978, 1979).

Low labor costs should in general attract FDI. Feenstra and Hanson (1997) find that low labor costs have a large impact on U.S.-owned assembly plants in Mexico called maquiladoras, that are set up precisely to take advantage of low wage costs. Similarly, Dees (1998) finds the ratio of Chinese real wages vis-a-vis an average of East Asian real wages to be negative and significant; while Wheeler and Mody find labor costs to be a significant influence on U.S. electronic assembly manufacturers. Two other studies, however, show apparently puzzling results. Mody, Dasgupta, and Sinha (1998) find raw labor costs not to be an attractor of Japanese FDI although labor quality is; while Fung, Iizaka, Lee, and Parker (2000) find average wage costs to be insignificant but labor quality (proxied by educational attainment) significant for U.S. and Japanese FDI in Chinese provinces. These two results could be interpreted as indicating that perhaps the better variable should have been unit labor cost (but such data are usually not available).

All things being equal, the influence of fiscal incentives should be positive. The empirical results, however, are mixed. Reuber and others (1973) do not find incentives to be important, noting also that many previous studies had found mixed results. The reason postulated is that companies discount these incentives to the extent that governments could just as easily take them away as award them. In this regard, incentives that result in excessive revenue loss may actually generate expectations of future tax hikes and discourage FDI. Wheeler and Mody (1992) find corporate tax rates not to be important because of avoidance through transfer pricing and that foreign taxes can be deducted from U.S. tax liabilities. On the latter point, case studies in Shah (1995) similarly suggest that tax incentives may simply shift tax revenues from host developing countries to foreign treasuries without providing any special benefit to the foreign investors (because the foreign taxes paid by MNCs can be

¹¹ This was a survey of the chief executives in these respective industries in Ireland.

deducted from their domestic tax liabilities). However, UNCTC (1991) and Woodward and Rolfe (1993) find evidence that tax incentives have a positive influence on FDI.¹²

The impact of business/investment climate is expected to be positive but the empirical results are mixed, probably because of the lack of good measures. In particular, researchers have used different measures that sometimes overlap or are mixed in with other factors. To break the problem down, we separate the concept into two components: political and economic factors; and regulatory/ bureaucratic/judicial environment including performance requirements. As expected, political risks in developing countries are found to be significantly negative for FDI by Lecraw (1991); Nigh (1986); and Nigh and Schollhammer (1987).¹³ Similarly, on economic instability, high balance of payments deficits and inflation are found by Schneider and Frey (1985), and inflation and inflation uncertainty are found by Apergis and Katrakilidis (1998) to affect FDI negatively.

The econometric results are less encouraging for regulatory, bureaucratic red tape, judicial transparency, and performance requirements. This may reflect largely greater measurement problems, because of the many different indicators used. For instance, Wheeler and Mody used a Business International (BI) index of many domestic socio-political factors—including bureaucracy and red tape, quality of the legal system, and corruption—finding it to be insignificant for U.S. manufacturing FDI. Singh and Jun (1995) used a Business Environment Risk Intelligence (BERI) index, which is a potpourri of economic

¹² A risk in using extensive fiscal incentives is the possibility of distortionary effects on the economy that may result from the incentives. For instance, incentives can lead to highly distorted decision making by domestic and foreign firms because they may discriminate (e.g., via tax holidays) between firms that show losses in early years and those that do not, and between relatively capital-intensive activities and relatively labor-intensive activities (Shah, 1995). In addition, incentives given to a selected few priority sectors often led to pressures from other industries for similar treatment. Over time, these incentives proliferated, as in Brazil, Indonesia, and Mexico in the early 1980s (Shah, 1995), until the tax system became so complex that its ability to raise revenues in an equitable and less distortionary manner also became impaired. Such a situation then induces tax avoidance and evasion. Thus while incentives properly designed and executed could attract FDI, administrative and institutional weaknesses in developing countries and the complexities of designing effective incentive structures could also create a substantial risk of distortionary side effects, thereby significantly limiting the efficacy of these tools. Moran (1998) and Shah suggest that the appropriate fiscal regime for FDI should *inter alia* highlight simplicity in tax structures, adjustment of corporate tax rates so that they are similar to those of the capital exporting countries, and nondiscrimination between foreign and domestic investors.

¹³ As measures, Lecraw used an index constructed by Business Environment Risk Intelligence (BERI), while Nigh used an index that tried to capture for eight Latin American countries conflict and cooperation both within the host nation and between it and the United States. In another study, Nigh and Schollhammer used an index of intranational conflict.

factors such as economic growth, balance of payments performance, and currency convertibility as well as socio-political factors like political continuity, attitude toward foreign investors, and enforceability of contracts. This index was significantly positive in some models, but turned insignificant when exports/GDP was added as another independent variable. In a more positive vein, however, an increase in performance requirements is found by Contractor (1991) and Loree and Guisinger (1994) to be negative for FDI.

An indirect way of drawing inferences on red tape problems is perhaps to look at the impact on FDI of free trade zones, special economic zones (SEZs), and export processing zones (EPZs). While these zones normally incorporate other effects such as tax and tariff incentives, one of their functions is to eliminate red tape and regulatory/legal hurdles like obtrusive labor regulations. Their impact on FDI must thus partially reflect the effects of a more efficient and hospitable business environment. These special zones are found to be generally positive for FDI. For instance, Ranis and Schive (1985) find that EPZs in Taiwan mobilized FDI to play an important catalytic role in the transition from import-competing to export-oriented industrialization; while Woodward and Rolfe (1993) find EPZ acreage to be a significant determinant of FDI distribution among Caribbean host nations. Fung, Iizaka, Lee, and Parker (2000) find that provinces designated SEZs in China had a significant advantage over other provinces in attracting FDI.

The impact of openness is expected to be mixed, depending on whether the FDI is mostly horizontal (catering to the host market) and tariff-hopping, or vertical (catering to exports). In addition, as for business/investment climate, there is the difficulty of measuring openness empirically. Again, various measures have been used including indicators like the ratio of exports or imports to GDP (Kravis and Lipsey, 1982; Singh and Jun, 1995; Dees, 1998), average tariffs (Branard, 1997), and other BI and BERI indices, which are again a mixture of many factors (Lecraw, 1991; Wheeler and Mody, 1992). For instance, Wheeler and Mody's index covers a broad range of factors besides import/export restrictions, including local content requirements, expropriation risk, currency convertibility, and profit repatriation controls. Not surprisingly, conflicting results occur, although more studies show a positive correlation between openness and FDI. Dees, Singh and Jun, Lecraw, and Kravis and Lipsey all find their measure of openness to be positively correlated with FDI; however, Branard finds higher average tariffs increasing U.S. FDI; and Wheeler and Mody find total U.S. manufacturing FDI correlated with greater restrictions. It is likely that these U.S. FDIs were horizontal and undertaken in part to get behind trade barriers. This is indicated because Wheeler and Mody also did a run using only electronics-related FDI (instead of total manufacturing) as the endogenous variable (to isolate the effect on vertical FDI) and the coefficient on openness became insignificant.

Summary of the empirical evidence

Market size is the most robust, positive FDI determinant. FDI also appears to like to cluster, making infrastructure and a certain level of industrialization important determinants. Lower relative labor costs are generally positive for FDI although unit labor costs properly measured should be a better variable than average wage costs. Political risk, economic

instability, and performance requirements hinder FDI. While the econometric evidence is weak on problems related to red tape and regulatory/judicial hurdles—probably reflecting measurement problems—the investor surveys clearly identify the regulatory system as an important determinant of FDI. In addition, support for the establishment of a more efficient and hospitable investment regime comes from the positive impact of free trade/special zones on FDI. As expected, the evidence on openness is mixed, although four out of six studies show openness to be positively correlated with FDI. A good portion of past U.S. FDI examined in the studies above probably reflected horizontal FDI undertaken in part to get behind trade barriers. The evidence on fiscal incentives is mixed, reflecting the potentially transient nature of such incentives; the possible offsetting impact of the MNCs' home country tax regimes; and the scope for tax avoidance already implicit in the ability of MNCs to undertake transfer pricing. Transport costs, as expected, are found to have a mixed impact on FDI, although only two studies include it as a determinant variable.

D. Regional Integration

An issue related to openness as well as several of the factors discussed above—market size, investment climate—is the effect of regional economic integration (REI). A good recent discussion is found in Blomstrom and Kokko (1997). According to the latter, since REI normally refers to reductions of regional trade/investment restrictions, leading to a larger integrated common market, REI would likely affect FDI in multiple ways. We first assess what would likely happen to *intra-regional* FDI. Here the effects are mixed. A reduction in intra-regional trade barriers (greater openness) may reduce tariff-hopping FDI and may even precipitate the repatriation of existing FDI assets back to the MNCs' home countries. However, as we have shown, greater openness may also stimulate FDI, as MNCs can now operate more efficiently across regional borders. In addition, intra-regional FDI will be stimulated by the removal of investment restrictions, including the elimination of or reduction in restrictions on inward FDI (Blomstrom and Kokko, 1997).

What about the impact on *interregional* FDI? Here, the effects are in the same direction. Tariff-hopping FDI may increase if the REI should result in higher protection vis-a-vis the rest of the world or if it should raise fears among outsiders about future protection ("Fortress Europe" for example). Other FDI will also increase because of the larger size of the integrated "common" market and friendlier intra-regional investment environment.

Thus far, we have considered only the static effects of FDI. REI may generate dynamic effects that will positively affect FDI flows (Blomstrom and Kokko, 1997). For instance, the REI may increase overall economic efficiency and growth rates for the participating countries (because of improved resource allocation and increased competition) thus increasing the attractiveness of the region for both domestic and foreign investment. In addition, the larger integrated market may affect firm characteristics, such as motivating firms to merge with former competitors in order to better manage in a more competitive environment. As firms become larger, they may be able to invest in more R&D and marketing, and create new intangible assets that stimulate new FDI, within as well as outside the region. While these dynamic effects take time and may be difficult to pin down

empirically, they do suggest the potential for an REI area to become a more attractive investment location for both intra- and inter-regional FDI (Blomstrom and Kokko, 1997).

Empirical assessments of REI on FDI

There are not many studies on the direct REI-FDI relationship, particularly for developing countries. We have suggestive evidence on intra-regional FDI from the increase in German and U.K. investments in the rest of the EU in the years leading up to 1992. Pain (1997) and Pain and Lansbury (1997) report that U.K. and German investments in the rest of the EU rose sharply in sectors that previously had the highest investment barriers to cross-border entry. Among the EU 12, Shatz and Venables (2000) note that intra-EU investment averaged 30 percent of total outward investment from 1984 to 1988, but rose to 62 percent in the next five years through 1993. For tariff-hopping FDI, Gittelman and Dunning (1992) note that Japanese investment in the EU responded to fears of impending protection a la Fortress Europe. However, it is conceivable that the increased Japanese (and also U.S.) investment in the EU during the 1980s also partly reflected the expected emergence of a substantially larger and more efficient market.

Other areas of integration that appear to have attracted FDI into participating countries are the Central and Eastern European Agreement (CEEA), NAFTA (for Mexico), and MERCOSUR. CEEA countries, particularly Hungary, have benefited from large privatization-related and other FDI from Germany and Austria (Kaminsky and Riboud, 1999). For NAFTA, Mexico, and for MERCOSUR, Argentina and Brazil have particularly benefited from increased FDI flows (Table1).

E. Policy Implications

Overall, the evidence from investor surveys and econometric studies suggests that a focus on correcting *nontax deficiencies*—such as infrastructural deficiencies, regulatory and legal impediments, possible macroeconomic instability, and economic barriers that distort resource allocation and impede economic growth and market size— may be the most efficient way to attract FDI. On economic barriers, the positive impact from widespread liberalization is also suggested by the positive response of FDI to regional integration arrangements. A beginning toward correcting some of these deficiencies, as suggested by the data, is the construction of fully liberalized and business-friendly industrial zones to help generate clusters of new activities. While *tax incentives* properly designed and implemented may, all things being equal, attract FDI, the empirical evidence on incentives is mixed—in part because of the inherent potentially transient nature of such schemes. In addition, a proliferation of incentives has the potential of generating significant distortionary side-effects in the economy—particularly for developing economies, given the complexities of designing effective incentive structures combined with the generally weaker administrative and institutional capacities of these countries. Instead, the appropriate fiscal regime for FDI should perhaps highlight a simple tax system with low rates, which does not discriminate between foreign and domestic investors, and which has corporate tax rates that are similar to those prevailing in capital exporting countries.

Table 1. Foreign Direct Investment (FDI) Before and
After Regional Integration Arrangements

(FDI in percent of GDP)

	Before Regional Integration	After Regional Integration
Portugal 1/	0.87	2.10
Spain 1/	1.04	2.03
Mexico 2/	1.21	2.88
Argentina 3/	1.41	2.41
Brazil 3/	0.32	2.17

Source: International Monetary Fund, International Financial Statistics.

1/ Data before integration (into EU) is for 1981-85; data after integration, 1986-90.

2/ Data before NAFTA is for 1989-93; after NAFTA, 1994-98.

3/ Data before MERCOSUR is for 1990-94; after MERCOSUR, 1995-98.

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