
How Does FDI Affect Host Country Development? Using Industry Case Studies to Make Reliable Generalizations

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One dollar of FDI is worth no more (and no less) than a dollar of any other kind of investment.

—Dani Rodrik (2003)¹

Volkswagen requires that plants producing the four components of the ‘basic vehicle platform’ (engines, axles, chassis, and gear boxes), which the parent manufactures separately from assembly sites in Brazil, Mexico, Argentina, and Eastern Europe, be designed to receive simultaneous engineering improvements online within 16 hours of each other.

—Kristian Ehinger (1999)

As with the studies of wage and productivity spillovers, those of the effects of FDI inflow on economic growth are inconclusive . . . one cannot say from these studies that there are universal effects.

—Robert E. Lipsey (2002)

What is the impact of foreign direct investment (FDI) in manufacturing and assembly on host countries in the developing world? When do the operations of foreign manufacturing and assembly firms have the most positive impact on the growth and welfare of the host economy? When do they have the least positive—or possibly negative—impact? What policies should those host countries that want to maximize the benefits, and avoid the hazards, from FDI adopt?

This chapter begins by examining the answers I derived from an initial set of industry case studies in a limited number of countries. The third sec-

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1. Dani Rodrik, Appel Inaugural Lecture, Columbia University, March 27, 2003.

tion probes how robust and generalizable the observations contained in those case studies appear to be. The fourth section then investigates why other approaches have failed to come to the same conclusions. Sections five and six conclude with suggestions for further research, with implications for policies toward FDI and development.

Initial Answers from a Limited Number of Case Studies

When the Institute for International Economics first asked me to investigate the impact of nonextractive FDI on development, I chose to focus on the two industries—the automotive industry and the high-performance electronics industry (e.g., computers, telecommunications equipment, and semiconductors)—where flows of FDI have been among the largest in the manufacturing sector and where globalization of production has been most extensive (Moran 1998). The countries where the industry analysis was most thorough included Mexico, Brazil, and Thailand for the automotive industry, and Mexico, Malaysia, and Thailand for high-performance electronics.

The advantage of selecting case studies of these industries in these countries was that the empirical sources were most probing and the detail extraordinarily rich. The disadvantage, of course, was that the results might not be generalizable, might be misleading, or might be useless—as the story of the proverbial drunk, searching for lost car keys under the lamppost because the light there was best, constantly warns.

These investigations showed that a fundamental difference in performance exists between subsidiaries that are integrated into the global or regional sourcing networks of the parent multinationals, and subsidiaries that are oriented toward protected domestic markets and prevented by mandatory joint venture and domestic content requirements from being so integrated. They differ in terms of size of plant, proximity of technology and quality control procedures to the international frontier, rapidity with which technology and quality control procedures are upgraded, efficiency of operations, and cost of output.

FDI to Build an Integrated Corporate Supplier Network

When the international auto and electronics companies built plants upon whose operations their competitive position in international markets depended, the parent companies designed them to capture all economies of scale and used cutting-edge technology and quality control techniques. They insisted upon whole or majority ownership, and upon freedom from mandatory local content requirements. From a dynamic perspective, the parent companies upgraded technology and quality control procedures on

a continuous near-real-time basis, a process (by their own testimony) that served the larger corporate self-interest.

The popular term “outsourcing,” which seems to imply shopping around for cheap inputs, fails to capture the potent interaction between parent and subsidiary when the fate of the former depends upon the performance of the latter. Engines produced at the General Motors (GM) export plants in Brazil were designed to be interchangeable with engines produced at the Pontiac plant in upstate New York. Engines produced at Ford export plants in Brazil were perfect substitutes for engines manufactured in Lima, Ohio and received the company’s highest quality rating. Foreign-owned telecommunications and semiconductor plants in Malaysia incorporated high precision manufacturing and quality control techniques as soon as they were developed: “As far as assembly and testing are concerned,” observed a Texas Instruments executive, “We have more expertise here than we have in the US” (Lim and Eng Fong 1991, 115). Once Mexico acceded to IBM’s demand for 100 percent ownership, the parent built an export-oriented plant supplying its western hemisphere network nine times larger than any other computer plant in the protected domestic market.

The foreign investors in these industries provided jobs paying more than other employers, and generated millions—sometimes billions—of dollars worth of exports. To anticipate an area of controversy that will become important in the fourth section’s assessment of appropriate and inappropriate ways to measure the impact of FDI on the host economy, multinational auto firm exports of vehicles and parts from Mexico grew from a very small base in the mid-1970s to some \$7 billion in 2000, for example, with employment reaching more than 354,000, remunerated at a level second only to the petroleum sector.

With regard to backward linkages and spillovers, the automotive and electronics multinationals in Mexico, Brazil, Malaysia, and Thailand assiduously avoided horizontal technology transfer, insisting upon whole or majority ownership of their plants to keep what they called “leakage” of technology and management procedures to a minimum. In the vertical direction, however, they worked closely with suppliers in the host country (foreign-owned and indigenously owned suppliers) to increase those suppliers’ productivity, ensure low rejection rates for their inputs, generate lower prices, improve management, and build team spirit.²

More than 400 auto parts producers in Mexico, Brazil, and Thailand qualified—under foreign investor supervision—for Original Equipment Manufacturer (OEM) or Replacement Equipment Manufacturer (REM)

2. As Javorcik and Spatareanu point out in this volume, some aspects of the foreign investor–host supplier relationship fall easily into the category of direct assistance (such as advance payment and financing); other aspects might be better characterized as a “positive productivity shock” (such as having to pass a technical audit or acquire ISO 9000 quality certification to win a supplier contract).

status (Peres Nuñez 1990; Doner, Noble, and Ravenhill 2002). Almost without exception the most prominent indigenous electronic-component producers in Thailand and Malaysia originated as contract manufacturers to foreign plants, with production-to-spec leading to joint design of a growing array of inputs. Early country studies complained about a lack of backward linkages, with later reports documenting the spread of contract manufacturing among suppliers (Lim and Eng Fong 1991; Ernst 1999). The evidence supports the contention that foreign investors take time to learn how to take advantage of potential suppliers, and that local businesses must pass certain basic thresholds to qualify.

The backward linkages from foreign investors into the host economy extended to supporting industries as well as input suppliers: seven of the nine largest machine tool manufacturers in Malaysia began by providing tooling services to the international telecommunications and semiconductor investors; each of their founders started their careers as local managers at the foreign plants, and 10 percent of their workers had prior experience as employees (Rasiah 1995).

To help host country suppliers achieve economies of scale, the foreign automotive or electronics investors sometimes provided export coaching, a process that began with sales to sister subsidiaries of the investors but led some indigenous firms to penetrate international markets on their own. In Malaysia, QDOS Microcircuits, for example, got started as a supplier to Motorola, won contracts for similar products from the affiliates of Siemens and Hewlett-Packard in Penang, added sales to factories owned by these three multinationals in Thailand and Indonesia, and then began to export to other buyers in the Southeast Asia region.

FDI to Serve a Protected Host-Country Market

Foreign investment flows oriented toward serving protected host country markets offer a much different picture. The automotive plants in Mexico, Brazil, and Thailand built to accommodate the import substitution (IS) policies of the host authorities were one-tenth—or less—the size of assembly lines built to capture all economies of scale. They did not employ the same production processes as assemblers producing output for world markets; instead, they put together completely knocked-down (CKD) or semiknocked-down (SKD) “kits” of automotive components. The automotive plants did not and could not use the same automated technologies and quality control procedures as world-class plants, substituting hand welding for precision computer-assisted welding. Their production costs were 30–80 percent higher than the full-scale assemblers. The term “tariff jumping investment,” which might imply replication of plants of similar size and sophistication across borders, does not adequately capture the dissimilarities in management and production processes.

These projects did pay higher than average host country manufacturing wages, but creating employment in the local economy came at a high price: the cost per job created in the protected market ran as high as \$300,000 apiece.

However, the small size and inefficient production techniques did not necessarily mean that the parent corporations found foreign investment in the protected host market to be unappealing, or unprofitable. Chrysler's Mexican affiliate during that country's IS phase was the corporation's most profitable operation in the world, and the parent fought *against* the liberalization of the Mexican automotive sector in order to preserve what its managers described as a "cash cow" (Samuels 1990, 148).

In high-performance electronics, Mexico also provides detailed information about the characteristics of plants designed to comply with a protectionist informatics regime prior to the liberalization of 1985. As in the automotive sector, the IS plants of Hewlett-Packard, Compaq, Apple, and other foreign investors again were boutique operations. Required to accept a Mexican joint venture partner and to meet specific levels of local content, the foreign affiliates produced computers two and three years behind the newest models in the United States—a strategy deliberately aimed at reaping a second round of oligopoly rents from previous-generation products without fear of turning local partners into rivals or being challenged by imports of newer and cheaper substitutes—for prices 130–170 percent of the external price (Harvard Business School 1990). The miniature dimensions of the assembly processes prevented the joint venture (JV) companies from using the most advanced high-precision construction of circuit boards and "large batch" quality control monitoring.

In both the automotive and the electronics industries, the small size of the protected plants constrained the generation of backward linkages. Throughout the country's IS period, upstream auto parts suppliers in Mexico were concentrated in simple operations where scale economies were small (e.g., springs, coils, and stamped plastic articles) and not in operations requiring larger production runs to be efficient (e.g., catalytic converters, fuel injection assemblies, or exhaust systems) (Peres Nuñez 1990). Computer component companies in Mexico resorted to hand soldering of connections rather than automated assembly techniques. To meet domestic content requirements, Hewlett-Packard and Compaq had to settle for local purchases of fiberglass housings for their computers, because the operations of Mexican suppliers were not large enough to support the use of advanced plastics and composites.

For both economic and technological reasons, attracting foreign investment to serve a protected local market failed to serve as an effective infant industry strategy. The plants built to replace imports of autos or computers could not be used as building blocks for launching internationally competitive operations. Creating a viable host country base in each industry required the construction of new plants with new and different assembly lines and

quality control procedures—plants that the parent investors insisted be wholly owned and free from specific restrictions on the sourcing of inputs.

Once Mexico approved IBM's proposal to operate a wholly owned facility (allowing Hewlett-Packard to shed its Mexican partner as well), and eliminated specific domestic content requirements, for example, the interaction between foreign affiliate size and potential for backward integration became apparent: both companies built cutting-edge export-oriented plants approximately nine times larger than any previous facility and began to purchase larger amounts of local inputs than they did when required to meet domestic content targets. The degree of integration within the domestic industry actually increased as imports as a percentage of host country production declined (Peres Nuñez 1990).

On the basis of these case studies of the automotive and electronics industries, which focused on the experiences of four countries, I concluded that FDI that was integrated into the global sourcing network of the parent multinationals would provide diverse positive impacts on the host economy (see the fifth section for a schematic inventory of positive impacts, some of which include externalities and some of which do not). I also concluded that FDI that was oriented toward protected domestic markets and prevented from being integrated into the parent's global sourcing network by mandatory joint venture and domestic content requirements would not have such a positive effect (or would be much less beneficial).

How generalizable are the observations from these case studies, and how reliable are the conclusions about when FDI is most likely to make a strong positive contribution and when it is not?

Avoiding Selection Bias and Allowing Generalization from Country and Industry Case Studies

Case study analysis is often referred to as "anecdotal" evidence, suggesting that lessons drawn might be easily discredited or disproved by any other handful of observations. Moreover, the small and specially selected number of observations—as indicated earlier—may provide misleading suggestions about what is occurring more generally. It is important, therefore, to expand the number of observations and to take careful precautions to check for selection bias (King, Keohane, and Verba 1994; Scarbrough and Tanenbaum 1998; George and Bennett 2004). To accomplish this I examined the extent to which the same outcomes seem to occur in the same industries in different countries and over different periods of time. Next, I tried to investigate the extent to which the same outcomes seem to occur in other industries.

If the findings in the case studies appear to be supported by similar results across geography and time as well as in observations from the same industry and observations from other industries—complete with similar

testimony about the motivation for the different outcomes and backed by solid theoretical models to explain the “good” and “bad” outcomes—then it should be reasonable to conclude that the case study findings can be considered quite robust.³

But this still leaves open the question of why other researchers using other methodologies do not report similar results—a puzzle to be addressed after first assessing the generalizability of the original case study analysis.

Comparing the Experience of Automotive Investors in Different Countries and Over Different Periods of Time

In the automotive industry the earliest observations of the contrast in size of plant, type of technology, degree of productivity, and relative cost between foreign investors producing for protected host country markets and plants oriented to international markets begin in the 1970s and extend to the contemporary period.⁴ They derive from Latin America and Southeast Asia as well as from Eastern Europe and South Africa.

In her classic study of import substitution in the Indian automobile industry in 1975, Anne Krueger discovered that foreign automotive firms were operating with much smaller size and much lower efficiency than companies producing for world markets (Krueger 1975). Of those studied, 27 of 34 assemblers and associated suppliers required effective levels of protection of 50 percent to remain in business.

In a survey of 16 countries with protected auto industries in the mid-1980s, Bale and Walters (1986) found plants that were consistently less than half the size of developed-country assembly operations. The size penalty, coupled with mandatory domestic content requirements, led to price levels 1.5 to 2 times higher than the cost of imports. Over the course of the 1980s, the differentiation of production technologies between full-scale assembly operations with increasing levels of automation, and boutique fabrication of SKD and CKD “kits,” became standard throughout the industry.

The penalties in efficiency from small plant size and kit assembly technology have not changed over time. In 1992 GM built a new 15,000-car-per-year plant to serve the Hungarian domestic market (Klein 1995). Its CKD production line peaked with an output of 8 Opels per hour in 1995, in comparison to 90 vehicles per hour in the company’s full-scale assembly operations (200,000 units per year) elsewhere in Europe. The plant required a 22.5 percent tariff, plus other subsidies, to remain profitable.

3. The summary of evidence that follows amplifies what was first reported in Moran (2001).

4. In this volume, Robert Lipsey and Fredrik Sjöholm point out that putting in controls for scale of operation in microdata regressions may conceal the advantages that foreign firms operating with international sourcing networks have to offer. The same might be true of controls for other operating characteristics.

Evidence from Turkey and Indonesia reinforces the demonstration of the negative effects of using FDI for import substitution in the automotive sector (Okamoto and Sjöholm 2000; Basri, Aswicahyono, and Hill 2000; Erdilek 1982).

The boutique plants that Mitsubishi and Daewoo built in Vietnam in 1995 with designated Vietnamese partners required that each automobile body be assembled individually from 30 to 100 components that arrived in containers, with the parts temporarily held together with jigs as they were hand-welded (Ngo and Conklin 1996, app. 3).⁵ The engine, transmission, seats, and other interior parts were placed by hand in the auto body. This contrasted with home country plants in Japan and South Korea that feature highly automated assembly lines in which robots perform much of the welding and assembly. To make the Vietnamese kit assembly viable required tariff protection of 200 percent. Despite a legal requirement to increase domestic content by 5 percent each year, the proportion of local goods and services used in vehicle manufacturing had reached only 10 percent by 2002, limited to “simple technology chains” for welding, painting, and installation (*Vietnam Investment Review* 2002).

In a background study of the Association of Southeast Asian Nations’ (ASEAN) proposed Common Effective Preferential Tariff (CEPT) regime, the Japan Research Institute estimated that a small car imported from an ASEAN neighbor at a price of \$16,500 would cost \$34,340 if assembled from a CKD kit at one of the joint venture plants in Vietnam.⁶

South Africa presents a “before-and-after” picture as import substitution was replaced by export promotion as the basic strategy toward FDI in the automotive sector. During the period of economic isolation associated with apartheid, South Africa experienced problems of high cost and low productivity at domestic car assembly plants (Henri E. Cauvin, “A Quest to Promote the Quality of Cars Made in South Africa,” *The New York Times*, November 24, 2001). After the election of Nelson Mandela, DaimlerChrysler, BMW, and Volkswagen (VW) took the decision to make South Africa a world production center to serve the right-hand driving markets of Australia, Japan, and the United Kingdom with the Mercedes-Benz C-Class sedan, the BMW 3-Series sedan, and the VW Golf 4 hatchback.

To “make the leap from a low-volume accident of history to a high-volume asset of the future” (quoted from Cauvin’s article) required building highly automated production lines that reduced the number of hours needed

5. It is important to note the difference between foreign direct investors freely choosing a local partner to help penetrate a host country market, and foreign direct investors required to form a joint venture as a condition of entry. Multinational corporations (MNCs) frequently partner with a local firm to help penetrate a local economy, and then take full control if they decide to incorporate the host site into the parent’s internal sourcing network.

6. “Vietnam Auto Industry Gears Up for CEPT,” Japan Research Institute, February 6, 2003 at *asia.news* (accessed June 16, 2004).

to build a car from 100 to less than 60. As for quality, to ensure that each Mercedes rolling off the assembly line in East London was “every bit as good as those coming out of the plant at Bremen, Germany,” DaimlerChrysler reported sending hundreds of workers to Germany for training, flying in dozens of experts from Germany, and spending millions of dollars on vocational instruction. Ford took complete ownership of its local subsidiary and designated South Africa as the sole production site for one engine line. Other foreign-owned parts exports expanded as well, led by plants producing catalytic converters.

Anticipating the end of tariff protection with Hungary’s accession to the European Union, GM simply shut down its small Opel kit assembly plant in 1999 rather than undertake the major new investment associated with constructing a world-scale assembly site (Kalotay 2002). Instead, GM concentrated on export-oriented manufacture of engines, cylinder heads, and gearboxes for inclusion in the Opel model assembled in Germany, Spain, and Britain, reaching a capacity of more than 800,000 units per year in 2002. To ensure that the Hungarian components were indistinguishable from other parts in the parent’s supply chain, operations at the GM plant were designed to accept continuous real-time changes and improvements without having to rebuild the production line. To qualify for employment, Hungarian workers were required to pass a 12-week course in quality control. Hungarian managers were rotated through other GM plants in Europe as part of their promotion cycle.

GM entered Hungary as majority shareholder (67 percent) in a joint venture with a local parts producer (Raba) and the Hungarian State Development Institute. As GM abandoned local kit assembly and expanded the operations supplying components for the parent’s EU supply network, the company bought out its partners and terminated the relationships. GM showed the same preference for complete control over operations when the parent solicited bids for the first auto assembly plant to serve the entire Southeast Asia region, insisting that the winning host country—which turned out to be Thailand—allow the venture to be wholly owned. In both Eastern Europe and Southeast Asia GM required that export-oriented plants be free from domestic content requirements.

In China, the requirement that foreign investors operate with a local partner led to the use of production processes during the 1990s that were, by industry estimates, an average of ten years behind the frontier of best practices (*Wall Street Journal*, February 11, 1998, 1). According to Chrysler, the refusal of foreign firms to introduce cutting-edge procedures derived from a fear that the Chinese JV firms would take them over, as when Audi’s partner in the First Automobile Works “expropriated” the production technology after the European parent’s license expired in 1997. And GM’s operations have been bedeviled by ongoing “piracy problems” with its designated joint venture partners (Danny Hakim and Keith Bradsher, “China Lowers the Wall for US Cars and Parts,” *The New York Times*, November 13, 2003, 1).

Comparing the Experience of High-Performance Electronics Investors in Different Countries and Over Different Periods

While there is less information about relative plant size in high-performance electronics, the evidence across countries and across time shows a clear distinction between FDI oriented toward protected domestic markets and FDI serving the parent's global sourcing network. Even more than in the automotive sector, the issue of operating with wholly owned subsidiaries stands out in high-performance electronics.

In the computer sector, Brazil's informatics policy limiting foreign ownership to 30 percent in designated sectors—and excluding foreign investment altogether in other sectors—led those investors who would participate to use older technology in less capable products priced at 2½ to 3 times more than potential imports (Cline 1987). Besides costing consumers approximately \$500 million per year in the 1980s, Brazilian efforts at national self-sufficiency put a drag on the competitiveness of the country's indigenous industries, leading Embraer (aerospace) and Petrobras (petroleum exploration and development) to become leading critics of the policy. Industrial users in Brazil complained that the lag in introducing new capabilities, such as CAD-CAM technology, was a greater burden than the excess cost.

In India, the lag between introducing new computer capabilities in developed countries and introducing similar capabilities in the domestic market steadily widened during the country's IS period (Grieco 1984). IBM withdrew from the protected Indian market altogether when the host authorities insisted that foreign computer investors form joint venture partnerships.

Throughout Southeast Asia—not just in Malaysia and Thailand—there was a contrast between US computer firms building international sourcing networks and Japanese firms producing for protected local markets, which kept the home market in Japan relatively unpenetrated from offshore sites until well into the 1990s (Encarnation 1992). The difference showed up in the speed of technology transfer between parent and subsidiary. Michael Borrus observed (1994, 134–35):

Because their Asian affiliates were integrated into production operations serving advanced country markets, US firms upgraded their Asian investments in line with the pace of development of the lead market being served, the US market. In essence, they upgraded in line with the United States rather than local product cycles. By contrast, Japanese firms were led to upgrade the technological capabilities of their Asian investments only at the slower pace necessary to serve lagging local markets.

In the disk drive industry, Seagate, Read-Rite, and other assemblers operated exclusively via wholly owned subsidiaries to minimize coordination problems in ramping up new generations of products and to prevent technology escaping horizontally to potential competitors in Singapore and

China as well as Malaysia and Thailand (McKendrick, Donner, and Haggard 2000). Vertically they farmed out increasing amounts of subcontractor work (printed circuit boards, motor assemblies, and actuator arms) to host country suppliers, utilizing contract manufacturing with supervision from the parent.

In the semiconductor industry, Intel similarly eschewed joint ventures or partnerships in its assembly and test facilities in Costa Rica, China, and the Philippines, just as in its wafer fabrication plants in Ireland and Israel (Spar 1998).

Evidence from Other Industries

What evidence is there from FDI in other sectors of developing-country economies to corroborate the differences between projects oriented toward international markets and projects oriented toward protected domestic markets?

Using cost-benefit analysis and valuing inputs and outputs at world market prices, Dennis Encarnation and Louis T. Wells, Jr. (1986) offer a reexamination of three major attempts to measure the impact of specific foreign investment projects on the host economy, comprising 83 foreign investment projects in 30 developing countries over more than a decade. The sectors include industrial equipment, agribusiness, textiles, pharmaceuticals, chemicals, and petrochemicals as well as automotive equipment and electrical equipment. A majority of the projects—ranging from 55 to 75 percent, depending upon the shadow-price assumptions—made a positive contribution to host national income. But a large minority—from 25 to 45 percent—used resources in a way that created fewer goods and services for the host economy than the cost of those resources. There was a consistent rank-order correlation between the effective rate of protection and the proportion of projects with a deleterious impact on the host economy.⁷

In another study with a similar methodology, looking in detail at one country, Bernard Wasow (2003) calculated the costs and benefits in use of national resources when 14 foreign-owned firms produced 35 diverse goods in Kenya under IS policies in the late 1980s. He found that only 3 of the 35 created benefits for Kenya in excess of their costs. Of these, a single one—a large exporter of processed fruit—made a substantial contribution to host country welfare. More than half generated no foreign exchange saving or earnings at all; instead, they drained foreign exchange from the economy.

7. Encarnation and Wells, Jr. (1998) did not explicitly assess plant size, plant ownership structure, or technology flows from the parent. A theoretical case for negative effects from FDI in protected markets can be found in Brecher and Dias Alejandro (1977).

Many of these foreign firms operated with considerable excess capacity.⁸ Wasow calculated that if the firms had produced closer to full capacity, the drain on the economy would have been proportionately greater.⁹

In a survey of 15 FDI projects in petrochemicals, Peter Gray and Ingo Walter (1984) found that scale of plant output was decisive for the operation's success. Six projects built for IS purposes were subscale and inefficient, and did not serve as building blocks to move from infant industry to competitive status. Two of the six ended up as failures by parent investors' estimates, with one—a mandatory joint venture in South Korea—being sold at a loss to the local partners as the MNC withdrew. The other four required ongoing trade protection to stay in business.

V. N. Balasubramanyam, M. Salisu, and David Sapsford (1996) found that the effect of FDI was most strongly positive when the host country pursued export promotion policies rather than import substitution.

Is there corroboration outside the automotive and high-performance electronics sectors that joint venture or other technology-shifting requirements affect the flow of technology or intimacy of interaction between parent and subsidiary?

Investigating technology flows between parent and subsidiaries in 2 separate studies some 16 years apart, Edwin Mansfield and Anthony Romeo (1980) and J.-Y. Lee and Edwin Mansfield (1996) found that technology introduced into joint ventures across a variety of industries in developing countries was 3 to 4 years older than technology introduced into wholly owned subsidiaries.¹⁰ In 14 sectors as diverse as chemicals, medical products, metal products, rubber, food, textiles, transportation equipment, and electrical goods, Vijaya Ramachandran (1993) discovered that technology transfers and the interchange of managers and technicians between parent and subsidiary were significantly higher for wholly owned subsidiaries than for joint venture partnerships or licensees. In this volume, Long Guoqiang finds that wholly owned and majority-owned foreign affiliates in China are much more likely to use the most advanced technology available to the parent corporation than 50-50 ownership or domestic majority ownership affiliates.

Like mandatory joint venture requirements, technology transfer mandates also appear counterproductive for bringing technology into the host economy. Magnus Blomström, Ari Kokko, and Mario Zejan (1992) report

8. For a theoretical analysis of why trade protection, domestic content requirements, or other restraints on competition are likely to lead to a proliferation of subscale and inefficient plants, see Eastman and Stykolt (1970). Potential success for domestic content mandate schemes requires complicated assumptions about potential for internal rent shifting.

9. Wasow did not look explicitly at domestic content requirements, ownership structure, or technology flows from parent to subsidiary.

10. Mansfield and Romeo (1980) lumped together joint ventures and licensees.

a negative correlation between host country requirements that foreign investors provide access to the parent's patents, transfer skills to local personnel, perform research and development (R&D) onsite, or use the most advanced technology available and technology inflows to the host economy. For Japanese investors, Shujiro Urata and Hiroki Kawai (2000) observed that technology requirements imposed on international companies as a condition to establish a local affiliate led to a negative coefficient for intrafirm technology transfer. Across Eastern Europe and the former Soviet Republics, Beata Smarzynska Javorcik and Kamal Saggi (2004) find that foreign investors with more sophisticated technologies and marketing skills (relative to other firms in their industry) prefer direct entry to joint ventures, because joint ventures are associated with less sophisticated technological and marketing capabilities.

According to Keith E. Maskus (2000), unless host countries provide foreign investors with the right to operate with wholly owned facilities, the degree of protection of intellectual property rights does not, on its own, have a significant impact on where international investors choose to locate.

The evidence that whole ownership limits opportunistic behavior, prevents appropriation of proprietary assets, and allows parent companies to minimize transaction costs associated with trying to control the actions of local partners is quite abundant (Gomes-Casseres 1989; Beamish and Delios 1997). Mihir A. Desai, C. Fritz Foley, and James R. Hines, Jr. (2002) note that over the past two decades US multinationals have shown a growing preference for wholly owned or majority-owned affiliates. Using data from 1982–97, they find that whole or majority ownership is most common when the parent firms coordinate integrated production operations among different international sites, when the parent firms transfer technology and other intangible property among affiliates, and when the parent firms coordinate tax planning worldwide. Desai, Foley, and Hines show, in addition, that when a host country liberalizes ownership restrictions, US investors trade more with their affiliates in that market: each 4 percent increase in sole ownership of affiliates is associated with 3 percent higher intrafirm trade volumes.

From this survey, it would appear that the conclusions initially based on evidence from the automotive and high-performance electronics sectors in a handful of countries appear quite robust in light of similar findings from the same industries and from other industries, in other countries, across time. Indeed, if used properly, many political scientists are prepared to argue that case study analysis can be used to provide a deeper and richer insight into causal relationships than mere statistical correlations (King, Keohane, and Verba 1994; George and Bennett 2004). As the fifth section will point out, however, further research is needed in at least three areas where predicted outcomes may not be as straightforward as the results summarized here.

But first it is necessary to investigate why other studies have not reported the same findings as the investigations reviewed to this point.

Why Have Other Studies Not Come to the Same Conclusions?

Dani Rodrik's (1999) contention that FDI brings no special benefits to host country development in comparison to other kinds of investment derives from the analysis of plant-level data from two countries: Brian Aitken and Ann Harrison's (1999) study of Venezuela and Mona Haddad and Ann Harrison's (1993) study of Morocco.

How well do these two studies provide a test of the impact of FDI on host country development? Why do they not show results similar to those observed in the industry case studies summarized earlier?

The data on industrial plants in Aitken and Harrison's Venezuelan study cover 1976 through 1989 (Aitken and Harrison 1999). During this period, Venezuela followed a determined IS development strategy with, as Aitken and Harrison acknowledge, a heavy layer of controls on foreign investment.¹¹ Foreign firms were discriminated against in a number of ways: They faced higher income taxes than domestic firms (50 percent versus 35 percent); they were obliged to exchange bolivares at the official exchange rate rather than the free market rate; they had restrictions on repatriation of profits; and they were restricted from exercising confidentiality and exclusive use-of-trade-secrets clauses in joint ventures.

The Venezuelan Superintendencia de Inversiones Extranjeras exercised substantial discretion in regulating the inflow of foreign investment into three ownership compartments: less than 20 percent foreign ownership, 20–49.9 percent foreign ownership, and majority foreign ownership. In evaluating Venezuela's investment regime during the 1980s, the Business International index of "openness" used the descriptors "strict joint venture requirements/only foreign minority position tolerated and this on a limited basis" to describe the country's policy toward foreign ownership, and "general requirements for specified percentage of local content/strictly enforced requirements for fully utilizing local components and materials" to describe the country's policy toward domestic content (Wheeler and Mody 1992).

Aitken and Harrison (1999) investigated whether rising levels of foreign equity participation were correlated with increases in productivity for recipient plants and discovered a robust positive relationship only for small enterprises. Searching for spillovers from joint ventures to plants with no foreign investment, they found that foreign investment was negatively correlated with the productivity of domestically owned firms in the same industry. The gains from foreign investment appeared to be entirely captured by the foreign joint ventures. On balance, they concluded that the net effect of foreign investor participation in the Venezuelan economy was quite small, with pos-

11. On Venezuela's IS strategy, see Balasubramanyam, Salisu, and Sapsford (1996).

itive effects from foreign-owned firms only slightly outweighing negative effects on domestic firms.

These findings are surprising not because they fail to show a strongly beneficial FDI impact on the host economy, including vibrant spillovers from foreign firms to domestic counterparts, but because they show results that appear to be beneficial at all.

The trade and investment regime in Venezuela during this period quite closely resembles those conditions under which Encarnation and Wells, Jr. (1986) and Wasow (2003) found that FDI made a negative net contribution to host country welfare, when all inputs and outputs were valued at world market prices. One would predict that Venezuela was quite probably experiencing a mix of beneficial and adverse foreign investor operations in a highly distorted setting, but this is impossible to know from the way the analysis is designed. Aitken and Harrison (1999) do not control for export-oriented FDI (if any) versus import-substitution FDI; for foreign investors free to source from wherever they wish (if at all) versus foreign investors operating with domestic content requirements; or for foreign investors obliged to operate as minority shareholders versus foreign investors with whole or majority ownership.¹²

Without these controls, the Aitken-Harrison (1999) study is designed like a medical experiment exploring the impact of minerals on patient health after the patient receives dosages of calcium and iron mixed with dosages of mercury and lead. With the intake of some minerals proving helpful to the body and the intake of others generating internal disorders, it is difficult to see how the analysis could arrive at a meaningful single aggregate assessment of the minerals' effect on the patient's physical condition.

Mona Haddad and Ann Harrison's (1993) investigation of FDI in Morocco may offer a clearer insight into FDI's impact on development. Prior to 1983, Morocco had a regulatory regime for FDI even more restrictive than Venezuela, mandating that all foreign firms not only have local joint venture partners but that they accept less than 50 percent foreign ownership. Between 1983 and 1985 the foreign investment regulations were liberalized, allowing foreign firms in industrial sectors to have an equity participation of more than 49 percent. There was also a degree of trade reform, so one might hope that the Moroccan case would offer a chance to test how the behavior of foreign investors responds under conditions of simultaneous trade and investment liberalization.

But "trade reform" during this period in Morocco was limited to phasing out quantitative restrictions while leaving in place a complicated tariff system that was structured to provide effective rates of protection considerably higher than nominal rates and that rose with each processing

12. However, Aitken and Harrison did find a coefficient on foreign ownership within the plant that was positive and statistically significant.

stage. Except for basic metals, tariff rates ranged by sector from 17 percent to 44 percent. Other researchers (Balasubramanyam, Salisu, and Sapsford 1996) continued to characterize the Moroccan trade regime during this period as “IS.” Haddad and Harrison (1993, 56, n. 4) acknowledge that after 1985 Morocco was “still far from being an open economy.”

The data on foreign investor behavior in the Moroccan investigation cover four years, 1985 through 1989. During this period new inflows of FDI that might be structured to take advantage of the permission to allow majority ownership were quite limited, raising the foreign share of manufacturing assets by 2 percentage points, from 13 percent in 1985 to 15 percent in 1989. Changes in the share of foreign ownership by sector were also small: 5 percentage points in leather, 4 percentage points in scientific instruments, and 3 percentage points in machinery, textiles, and apparel. Only in chemicals (phosphates) was there a substantial FDI inflow, with the foreign share rising by 7 percentage points. By far the bulk of the FDI stock had been established to respond to the earlier minority foreign ownership IS regime. With the given data, it is impossible to know how much reorientation—if any—occurred among firms whose operations had been set up prior to 1985.

Controlling for firm size, Haddad and Harrison (1993) found that foreign investors did not exhibit higher levels of labor productivity or greater outward orientation for most sectors than their domestic counterparts. Firms with foreign ownership demonstrated higher levels of total factor productivity than their domestic counterparts, but the rate of productivity growth was higher for the latter because—as Haddad and Harrison show—the domestic firms were better prepared to cope with the distortionary effects of protected markets.¹³ There was no significant relationship between higher productivity growth in domestic firms and greater foreign presence in the sector, suggesting that foreign investment did not bring positive spillovers to the host economy. When Haddad and Harrison varied measures of relative trade protection, technology spillovers from foreign investors to domestic firms remained insignificant and generally negative.¹⁴ Overall, Haddad and Harrison found that foreign investors did not make a large or dynamic contribution to the development of the Moroccan economy.

Thus the Rodrik-led contention that a dollar of FDI is worth no more and no less than a dollar of any other kind of investment rests on four years of observing a host economy whose foreign investment base had been built as

13. The data from Morocco show a positive and statistically significant relationship between the extent of foreign ownership of a firm’s assets and firm-level productivity: each increase by one standard deviation in the extent of foreign ownership of a given firm brought that firm 4 percent closer to best practices in the industry. Harrison (1996) tested the Moroccan data in a later analysis. In the original study of Morocco, Haddad and Harrison (1993) had suggested that firms with majority foreign ownership behaved generally in the same way as firms with minority foreign ownership.

14. Haddad and Harrison (1993) tested only for horizontal spillovers, not vertical spillovers.

part of an IS strategy, with no large numbers of new investors arriving and significant trade distortions remaining in place. The 1985–89 Morocco case study would seem to be a less than compelling basis on which to generalize that FDI brings no special benefits to host country growth and welfare.

A second approach assessing FDI's impact on development compares the economic performance of FDI-heavy developing countries with less FDI-heavy countries. However, it also fails to discern positive results. Ted Truman (2002) reviews the economic performance of 12 major emerging market economies from 1980–2000: South Korea and Thailand achieved a "high" growth score over the period; Malaysia and India achieved a "good" growth score; Egypt and Turkey were a step behind with a "moderate" growth score; Mexico, Brazil, Argentina, and the Philippines received a "weak" growth score; and Nigeria and Venezuela had a "negative" growth score.

Truman then examines FDI as a percent of GDP for the 12 countries. He points out that for this 20-year period, the two economies with superior growth performances, South Korea or Thailand, were at the opposite ends of the scale of FDI as a percentage of GDP: Thailand was a bit above the group average, while South Korea was toward the low end. Of the two countries with "good" growth performance, Malaysia had a high rate of FDI, but India had the lowest. The two countries with "moderate" growth performance had only average (Egypt) or below average (Turkey) reliance on FDI. The four countries with "weak" growth performance (Mexico, Brazil, Argentina, and the Philippines) had average participation of FDI. The two countries with "negative" growth performance had average (Venezuela) or above average (Nigeria) ratios of FDI to GDP. Thus, Truman (2002, 16) concludes that, "on the whole, this is not a very convincing picture in favor of FDI as providing a valuable and stable stimulus to growth."

But is this formulation—for example, arguing that Mexico's average amount of FDI as a proportion of GDP, but weak aggregate economic performance, demonstrates that FDI does not contribute much to growth—the appropriate way to specify the counterfactual?

As indicated earlier, over this period the largest FDI flows into Mexico occurred in the automotive industry, with consequences that included exports of vehicles and parts growing from a negligible level in the mid-1970s to \$7 billion in 2000; employment reaching more than 354,000 (earning wages second only to the petroleum sector); and plants in several cities winning world-best quality awards by independent tracking agencies supported by more than 300 indigenous Mexican suppliers of inputs and accessories.

Is it logical to conclude on the basis of the overall performance of the Mexican economy between 1980–2000 that this automotive-sector FDI did not make a positive contribution to Mexican economic performance?

Or would it make more sense to rephrase the counterfactual: Why has Mexican economic performance over this period been so relatively poor,

despite the benefits of automotive-sector investment? Might not Mexican economic performance have been *even weaker* in the absence of FDI?¹⁵

Similarly, why should the outside observer want to generalize in the way that the Truman study does—arguing on the basis of *Mexican* economic performance that the massive FDI in the *Malaysian* electronics industry was unimportant for the behavior of the Malaysian economy?

Is it more plausible to conclude that trade and investment liberalization are *not* significant factors for Indian economic growth, or that India's "good" economic performance would probably have been *even better* if Indian trade and investment liberalization had proceeded more vigorously?

Implications for Further Research

The preceding sections suggest that future research will be more valuable—and more convincing—if the researchers do not mix data from foreign investment projects oriented toward protected domestic markets with export-oriented foreign investment projects, or mix data from projects burdened with domestic content and/or joint ownership requirements with projects free from such requirements.

Similarly, future assessments of the contribution of FDI to development will be particularly valuable if the investigators try to assess how the economic performance of a given host country with a given configuration of FDI would compare with the economic performance of that same host country in the absence of that FDI, rather than simply compare the economic performance of more foreign investment-heavy developing countries with less foreign investment-heavy developing countries.

There are three specific areas, however, where the studies reviewed above suggest that well-structured future research might provide interesting amplifications of or variations on—even divergences from—the results generally observed thus far. These involve:

- examining the differences in impact between FDI that allows a host economy to undertake completely new activities, and foreign investment that allows a host economy to improve the activities that it conducts;
- exploring the difference in impact between FDI in middle-income developing countries, and FDI in poorer developing countries with "low absorptive capacity"; and

15. This suggested methodology is similar to efforts of Görg and Strobl (in this volume) to simulate the evolution of the host economy—and, in their case, to calculate what would have happened to the population of domestic plants—in the absence of MNC investment. For the background on how macro mismanagement and failures in institutional reform in Mexico have offset the benefits of growing investment and trade flows during the North American Free Trade Agreement (NAFTA), see Sidney Weintraub (2004).

- investigating what measures host governments might take to expand backward linkages and spillovers from foreign investors to local firms.

FDI in “New” Versus Improvement in Current Host Economy Activities

The industries that provided the basis for my initial research at the Institute for International Economics—automotive and high-performance electronics—fit quite well into the distinction formulated by Paul Romer (1993a, 1993b, 1994), as a precursor to “endogenous growth theory,” between introducing goods and services into a host economy that help a country carry out activities that it already does more efficiently and importing “ideas” (via FDI) that enable a country to undertake entirely new kinds of activities altogether.

It is possible to make a case that Brazil and Mexico had rudimentary indigenous automotive companies, and that Malaysia and Thailand had simple indigenous electrical companies, prior to the arrival of the major US and European multinational firms. But the multinational computer, telecommunications, semiconductor, and auto investors introduced a combination of technology, management, and quality control procedures that gave these host economies a new “endowment” of productive activities, capable of competing in these sectors internationally for the first time.

In cases such as these, foreign investors differ from domestic firms not only because they operate on different production functions, but because they allow the creation of an entirely new production possibility frontier for the host economy. But many foreign investment projects may not accomplish this. Instead they may simply allow the host country to use its resources more efficiently in carrying out activities already present in the economy. Future research might contrast the impact of these two different kinds of FDI across the entire inventory of potential contributions from FDI, including backward linkages and externalities, as sketched out in box 11.1.

There may be many cases that resemble primary contribution category (3) more closely than category (4). In category (3) foreign investors differ from domestic firms either because they operate with different production functions or because they operate at different points on the same production function, but their primary potential impact is to allow the host economy to operate more efficiently rather than to engage in entirely new types of activities.

Category (3) foreign investments may be found in mature industries where the pace of innovation is slower, economies of scale are smaller, and/or product differentiation is less pronounced—such as basic chemicals and paints, household appliances and furniture, off-patent and generic pharmaceuticals, industrial equipment, tires and rubber products, electrical fixtures and devices, unbranded garments and apparel, and processed

Box 11.1 Inventory of potential FDI contributions to a host economy

FDI can contribute to host country development in many ways even when the foreign firms do not necessarily provide externalities.

Primary contributions may add to host country growth and welfare whether or not externalities are generated.

1. The foreign investor brings new products, improved quality, and/or lower prices to consumers in the host country.
2. The foreign investor provides additional resources (capital, technology, and management) to raise the level of domestic output. For example, an investor in London acquires a chain of restaurants in Baghdad, providing capital to help with reconstruction.
3. The foreign investor provides technologies, management techniques, and quality control processes that potentially allow the host economy to engage in existing activities more efficiently and offer better/cheaper goods to consumers or inputs to producers. For example, Sherman Williams makes an investment in Brazil to produce the Sherman Williams basic line of house paints.
4. The foreign investor provides technologies, management techniques, and quality control processes that allow the host economy to undertake completely novel activities. For example, Seagate builds a plant in Thailand to assemble high-speed disk drives; Intel builds a plant in Costa Rica to produce semiconductors.
5. The foreign investor provides technologies, management techniques, and quality control of types (2) and (3) above that enable the host economy to penetrate international markets and earn foreign exchange and/or allow competitive substitution of imports.¹ For example, Brazil reduces its importation of house paints as a result of the Sherman Williams investment and/or Sherman Williams supplies the Southern Cone from its Brazilian plants; GM expands its Hungarian plant to supply 1.6-liter Audi engines to its assembly sites throughout the European Union.

Secondary contributions via backward linkages may add to host country growth and welfare without necessarily providing externalities.

6. The foreign investor provides new demand from its local subsidiary for host country suppliers to meet, using operations they already know how to undertake. For example, Ericsson's plant in the Philippines purchases boxing and shipping materials from Philippine suppliers.
7. The foreign investor provides new demand from foreign subsidiaries for host country suppliers to meet, with coaching from the foreign subsidiaries about how to provide inputs at cheaper cost or with more reliability. For example, Motorola

(box continues next page)

foods and beverages. Category (3) foreign investments might be found in larger and more advanced developing countries with more extensive indigenous business communities.

It would be useful to contrast the contributions from foreign investments in category (3) with foreign investments in category (4). One might find that foreign investments in category (3) appear less valuable than those in category (4), since the presumed intangible benefits from foreign ownership are

Box 11.1 (continued)

farms out printed circuit board (PCB) assembly to two electrical firms in Singapore to which it provides instructions about what machinery to purchase and how to carry out quality control procedures.

Externalities

8. The presence of foreign investors generates leakage of personnel, management techniques, or technologies from the foreign firms to host country firms. For example, Citibank's training program alumni in Brazil spread throughout the Brazilian financial sector. In some cases, the trained employees establish their own banks or financial service firms.
9. The foreign investor introduces new technologies, management techniques, and quality control into existing sectors in the host economy that either allow host country competitors to upgrade their own operations by *imitation* and/or force host country competitors to upgrade their own operations via *competition*. For example, BASF produces nonrun bleach-resistant textile dyes in India, which signals to Indian dye producers the new chemicals needed to achieve the same results and puts pressure on them to remain competitive.
10. The foreign investor provides host country firms that become suppliers the opportunity to offer the new goods and services to other buyers in the host economy.² For example, after Motorola farms out PCB assembly to two firms in Singapore, the two firms extend their sales of PCBs from Motorola to Philips and Texas Instruments.
11. The foreign investor provides host country firms that originate as suppliers new opportunities to become producers of goods and services to other buyers in the international economy (with or without export coaching from the original foreign investor).³ For example, Malaysian machine tool firms that originated selling equipment and services to Intel in Malaysia follow the MNC to China, and begin to sell equipment and services to US, European, and Japanese firms in the Chinese market.

1. General equilibrium considerations would suggest that primary contribution categories (1), (2), (3), and (4) will have export-import implications by allowing host country resources to be used more efficiently. To the extent that "market penetration" is a barrier to entry to a particular industry, or an intangible asset of an MNC, category (5) merits separate consideration.

2. Rather than explicit "coaching," the foreign investor may provide a "positive productivity shock" in the form of a required technical audit or ISO 9000 certification in order for an indigenous firm to qualify as a supplier.

3. See footnote 1 regarding general equilibrium considerations.

more often offset by special knowledge and customization advantages of indigenous producers. In the examples given in the "inventory" above, Sherman Williams house paint production in Brazil or BASF nonrun bleach-resistant textile dye production in India might not prove to be far superior—if superior at all—to local competitors.

In addition, while foreign investments in category (3) might appear to be of higher productivity than other investments in the host economy, gen-

uine problems in deciphering the direction of causality may exist: a pre-existing high-productivity sector might simply attract high-productivity foreign participants whose performance does not have much to add, complicating the measurement of spillovers.

In contrast, for foreign investments in category (4), reverse causality is simply not plausible: Seagate did not happen to locate in a disk drive sector in Thailand that was already populated with high-productivity indigenous disk drive firms, nor did Intel happen to locate in a semiconductor sector in Costa Rica that was already populated with high-productivity indigenous semiconductor firms.

It is logical to imagine that FDI's impact on category (3) might differ appreciably from its impact on category (4). For foreign investment of category (3), the externalities of category (9) might be larger than those associated with category (4), since there is less of a technological gap between the foreign investor and the indigenous counterparts, leading to horizontal spillovers as all firms "catch up" via competition and imitation to the same best practices.¹⁶ For the same reason, backward linkages of categories (6) and (7) might be greater from the foreign firms of category (3) in a vertical direction to indigenous suppliers than from foreign firms of category (4), although whether these backward linkages from the foreign firm were greater than those from the indigenous counterparts would bear examination. So, too, externalities of category (10) might be larger from foreign investors in category (3) than from foreign investors in category (4).

Providing some confirmation of such a contrast, Robert Lipsey (2000) examined the evolution of the electrical machinery industry, consisting primarily of consumer electronics likely qualifying for category (3), in Southeast Asia.¹⁷ In 1977, the subsidiaries of US and Japanese multinationals produced more than half of the exports; by the mid-1990s, their share of exports had fallen to 22 percent even while their absolute level steadily rose. This represented, in his view, a "maturing of the industry" as indigenous producers overtook the initial superiority of the foreign investors. In the nonelectrical machinery industry, consisting primarily of computers and accessories—likely qualifying as category (4), in contrast—where the level of technological sophistication was greater and the pace of innovation faster, the subsidiaries of US and Japanese multinationals increased their share as well as their absolute levels of exports substantially between 1977 and 1995.

At the same time, some observations about foreign investor performance—and some implications for host country policy—might apply equally well to investors in category (3) as well as category (4). In the case of

16. Kokko (1994), Blomström and Wolff (1994), and Kathuria (2001) suggest that additional horizontal spillovers and faster convergence between foreign and domestic firms are likely when there are lesser initial technology gaps or differences in capital intensity or science intensity between them.

17. The countries included Hong Kong, China, Indonesia, South Korea, Malaysia, Philippines, Singapore, Thailand, and Taiwan.

domestic content requirements and import substitution, the studies surveyed earlier by Encarnation and Wells, Jr. (1986) and by Wasow (2003) included foreign investment in more mature industries of the kind likely found in category (3) as well as foreign investment in cutting-edge operations of the kind likely to be found in category (4). They concluded that foreign investment of all kinds in their samples is more efficient and more likely to make a positive contribution to host country growth and welfare when the investors are not protected by trade or other barriers to competition, and less efficient and likely to be detrimental to host country growth and welfare when they are so protected.

Similarly, with regard to joint venture requirements and technology sharing mandates, the studies surveyed earlier by Mansfield and Romeo (1980), Lee and Mansfield (1996), Ramachandran (1993), and Blomström, Kokko, and Zejan (1992) also included foreign investment in more mature industries of the kind likely to be found in category (3) as well as foreign investment likely to be found in category (4). They found that parent firms in all categories deploy newer technology and provide more training when local plants are wholly or majority owned and not subject to technology sharing requirements than when local plants are minority owned or bound by technology sharing mandates.

FDI in Poorer Developing Countries with “Low Absorptive Capability”

The observations about the globalization of the automotive and high-performance electronic industries presented earlier originated in middle-income developing countries. Several of the best-known aggregate statistical efforts to evaluate the impact of FDI on the host economy have found that the potentially beneficial effects tail off, or disappear, at the lowest levels of development. Borensztein, De Gregorio, and Lee (1998) found a strong complementary interaction between FDI and human capital, with the positive contribution of FDI to economic growth dependent upon a minimum threshold stock of human capital. A survey of 11 studies by de Mello (1997) reports stronger positive effects of FDI inflows on host country growth as a function of the host country’s level of development as well as openness and greater attention to export promotion.

This seems to suggest a kind of Catch-22 trap—that poorest and least developed countries with lowest levels of human capital can utilize FDI to enhance their domestic growth only by becoming less poor and more developed with higher levels of human capital—thereby appearing to exclude them from using FDI to move up from the lowest to the middle ranks of developing countries.

What does the case study evidence show about whether the poorest and least developed countries with lowest levels of human capital can utilize FDI

for development? Is there a path that the poorest countries can follow that begins with foreign investment in least-skilled, labor-intensive activities and moves toward the more skilled labor-intensive operations of the kind shown earlier in the automotive and high-performance electronics sectors?

To be sure, the historical flows of FDI to the developing world have been quite concentrated. Over the past few decades, 20 countries—none of them the poorer developing countries that lack favorable natural resource endowments—have accumulated 83 percent of the total stock of FDI in the developing world and economies in transition (UNCTAD 2003). In 2002, 20 countries—again, none of them the poorer developing countries that lack favorable natural resource endowments—received 82 percent of all FDI flows in the developing world and economies in transition.

Not only are the relative amounts of nonextractive FDI to poorer developing countries small, but the efforts of would-be new hosts among the least developed to break into the ranks of those successfully using FDI for development are filled with stories of failure (Madani 1999). Business-unfriendly regulatory systems, red tape and bribery, overvalued exchange rates, and lack of reliable infrastructure hinder FDI's attraction and frustrate the expansion of investor activities when they arrive.

But the evidence from least developed regions—"even" from Africa and "even" from the tropics—does *not* support the proposition that poorer countries are unable to use FDI for development.

Indeed the country that caught Paul Romer's eye as the model for transforming a nation's development trajectory by importing "ideas" via FDI (Romer 1993b) was Mauritius, whose prospects were so poor that inhabitants with any skills had been advised by the British to emigrate to escape the stagnant economy (Meade 1961).

When a new government in 1982 turned away from protecting local industry to a strategy of foreign investor export-led growth, backed by a more realistic exchange rate, however, Mauritius turned itself into one of the more formidable success stories. Led by textile investors from Hong Kong, Mauritius achieved an average annual growth rate in manufactured products over the next two decades that placed it seventh—in the calculations of Steven Radelet (1999)—among the 15 leading exporters of manufactured products among low- and middle-income countries around the world. By 2000, 70 percent of all exports were manufactured goods, earning some \$1.2 billion annually and generating 80,000–90,000 jobs (International Monetary Fund, or IMF 2001).

Deliberately copying Mauritius, Madagascar established the same unexceptional package of reforms in 1989—macroeconomic stability, a realistic exchange rate, and a determination to facilitate foreign investor export-led growth—and managed to attract 120 foreign firms in the first five years. By 2000, the foreign investor-dominated export sector employed almost 40,000 workers and generated \$64 million in foreign sales (Economist Intelligence Unit 2000).

In both countries, foreign investor–employed workers received wages and benefits not just better than alternatives in the rural areas from which they came but higher than comparable jobs across the economy. Holding education level, work experience, and length of tenure constant, Mireille Razafindrakoto and François Roubaud (1995) found that export processing zone (EPZ) workers in Madagascar earned 15–20 percent more than other workers throughout the country. In Mauritius, real wages within the export-oriented manufacturing sector rose by more than 50 percent between the late 1980s and the late 1990s (Radelet 1999). In general, foreign direct investors paid more than domestic employers, with appropriate controls for plant size and worker skill level, in poorer as well as mid-level developing countries.¹⁸

More detailed research is needed on how other poorer countries—including the Dominican Republic, Honduras, El Salvador, and the Philippines—have achieved similar results, generating tens of thousands of jobs and tens if not hundreds of millions of dollars in exports. A first glance at the requirements for success in these cases suggests that the levels of macro, micro, and institutional reforms that were required were modest and—while politically difficult—not at all impossible.¹⁹ The countries did not have to rise to the top of the Institutional Investor’s charts or the Davos competitiveness index to do well.

The case study evidence from lesser and least developed countries does not suggest that an initial strategy of allowing foreign investors only into the lowest-skilled activities is necessarily devoid of externalities. In the early stages of export-led growth, foreign firms owned virtually all of the outward-oriented manufacturing facilities in Mauritius. As workers and managers gained experience in the foreign plants, they left to start up their own firms (Rhee, Katterback, and While 1990). Within 15 years indigenous investors represented 50 percent of the total equity capital in companies with EPZ status throughout the country. In the Dominican Republic, local firms took advantage of the favorable business setting provided for the foreigners, established operations alongside them, and accounted for 35 percent of all manufacturing exporters by 2000. For the Philippines, the comparable figure was 20 percent at the end of the 1990s. It would be useful to have a detailed look at the interaction between, and possible spillovers among, the foreign investors and the indigenous exporters.²⁰ Responding primarily—according

18. For surveys of evidence and methodologies, see Lim (2001) and Brown, Deardorff, and Stern (2002).

19. For an initial effort at this research, see Moran (forthcoming 2005).

20. In Mexico, Aitken, Hanson, and Harrison (1997) found that the probability of an indigenous Mexican plant engaging in exports is positively correlated with the proximity of that plant to foreign investors but uncorrelated to the overall presence of exporters in the region, suggesting that the presence of the foreign investors helps local firms to export rather than some geographical comparative advantage for exporting in general.

to investor surveys—to the presence of workers with basic high school and vocational school skill levels, foreign investors in electronics, auto parts, industrial products, medical devices, data processing, and business services initiated operations alongside plants producing garments and footwear, paying wages two to five times higher.²¹

This points to the third area in which further research would be particularly valuable: What measures can host countries take to stimulate the expansion of backward linkages and spillovers?

Host Country Policies to Expand Backward Linkages and Spillovers

A preliminary examination of the country cases listed above suggests that the challenge of expanding backward linkages and spillovers from local firms to foreign investor operations in poorer developing countries—as in richer developing countries—has some straightforward dimensions. Above all, it requires providing local firms with the same kind of liberalized environment that foreign investors demand for themselves: one cannot expect indigenous companies in the midst of hostile regulatory systems, burdened with high-priced inputs, lacking access to low-cost imports, required to buy from and sell to designated customers, dependent upon unreliable infrastructure, and used to favors and having to bribe to obtain timely services, to become first-class suppliers—let alone competitors—to foreign multinationals.

Beyond this, however, the question of how to enlarge backward linkages and spillovers becomes more tricky, and requires much more extensive research. There is an incipient literature on “vendor development” efforts that offers a model program in which host authorities contribute to the salary of a manager in certain foreign affiliates, who acts as a “spotter” to identify potential local suppliers and prescribe the machinery needed for their success. Host country agencies then provide special loans for the equipment required by the designated firms and special training for workers (UNCTAD 2001b; McKendrick, Donner, and Haggard 2000). These loans can then be paid back from the proceeds of foreign supplier contracts.

Even the most imaginatively constructed “vendor development” programs, however, raise complicated questions of targeting, separating winners from losers, avoiding cronyism, and escaping the rent-seeking behavior associated with industrial policy. Is there sufficient justification

21. Country studies for the Dominican Republic, Madagascar, Mauritius, and the Philippines can be found in Moran (2002). There the hypothesis that foreign investors pay higher wages to attract and retain better workers as their plant output grows more sophisticated and must meet higher quality control standards to compete in international markets is tested, with positive results. The surprising discovery is that as lower-skill-intensive plants and slightly higher-skill-intensive plants are mixed worker treatment across all plants improves dramatically.

for host governments to provide specialized services and subsidized loans to potential indigenous suppliers to MNCs rather than to all indigenous firms? Should small and medium-sized indigenous firms be favored over larger firms, or the reverse? Should resources for vocational and technical training of workers be devoted to meeting the needs of potential suppliers rather than to improving educational services for the population at large?

Implications for Policies Toward FDI

The preceding analysis has important implications for the trade and investment agenda in the Doha Round of the WTO, for the use of incentives to attract and hold multinational investor activities, and for the reconceptualization of the “Washington consensus” toward FDI and development.

Developing Country Policies Toward FDI and the Trade and Investment Agenda in the Doha Round

The differentiation of nonextractive FDIs into positive and negative categories has important policy implications not just for individual host countries but for the multilateral community at large.

Host country development objectives are not served by the attempt to use FDI for import substitution, or to generate backward linkages and spillovers by imposing domestic content, joint venture, and other technology sharing requirements. Many individual developing-country governments are coming to this conclusion on their own. Some leading developing-country representatives to the Trade and Investment Working Group of the Doha Round, however, have asserted just the opposite with the aim of reopening the Trade Related Investment Measures (TRIMs) Agreement in the World Trade Organization (WTO 2002).

The TRIMs agreement from the Uruguay Round has required all WTO members to eliminate domestic content requirements and import-export balancing requirements placed upon foreign firms. Developing countries that have petitioned for extensions of the 5–7-year phase-out period have been granted longer time periods in return for a specific schedule for removal. The logical conclusion from the previous analysis would be that developing country self-interests would be served by reaffirming the TRIMs agreement in the Doha Round and extending it to include mandatory joint venture and technology sharing requirements as well.

Instead some key developing countries are proposing to revisit, and rescind, the TRIMs agreement, arguing in one case that domestic content requirements are an “extremely useful and necessary tool” for promoting growth, and in another that “measures to encourage the use of products of domestic origin” should be allowed as a tool to expand the

industrial base of the host country (UNCTAD 2001a). The proposed objectives for trade-and-investment negotiations in the Doha Round include “imposition of manufacturing requirements on foreign investors, protection of domestic producers, use of binding obligations on technology transfer, and avoiding crowding out of domestic firms” (WTO 2002).

The failure of the Trade Ministerial in Cancún in September 2003 has made it unlikely that investment issues will be included in the Doha Round negotiations. Whatever the outcome, the preceding analysis shows clearly that the self-interest of the developing world will not be served by backsliding on the TRIMs Agreement prohibition of domestic content requirements.

More broadly, it is important to the policy debate that analytic agnosticism about the impact of FDI on development be replaced with a clear recognition of both positive and negative potential contributions from foreign investors as spelled out in this study.

Locational Incentives and Subsidies to Attract FDI

A second important policy issue concerns whether it makes sense for host countries in the developing world to provide incentives and subsidies to attract FDI.

On the one hand, the evidence reviewed above shows that foreign investment projects integrated into the global supply networks of the parent companies not only contribute to host economic growth but generate genuine spillovers and externalities that might justify a certain degree of subsidy on the part of the recipient country.

On the other hand, there is growing evidence that using incentive packages to either attract multinational investors or prevent them from leaving continues to increase and shows no signs of abating.

The conventional wisdom in business economics literature has long been that international companies do not base their basic global strategy for production on tax considerations. It gradually became apparent in the 1990s, however, that MNCs searching for a new plant site in the developing world would identify several roughly alternative production locations and then stimulate an incentive bidding war among the hosts that acted as—in the words of GM—a “tie breaker” (Harvard Business School 1993).

Somewhat more surprising, it has become evident that the competition between developed- and developing-country sites has been growing, and that multinational firms have become more responsive to various kinds of investment incentives—tax concessions, free land, and subsidized factory space—over time. Analyzing data from 14 home countries and 34 host countries over the past 20 years, Altschuler, Grubert, and Newlong (1998) show that the locational decisions of international direct investors have become increasingly sensitive to differential subsidy considerations. John

Mutti (2004) has found that the siting of export-oriented FDI is particularly responsive to host country tax breaks, and that this responsiveness is even greater with regard to developing-country sites than for developed-country locations. Developing countries regularly provide locational incentives to international investors, but they do not do so as massively or as effectively as the countries of Ireland, Portugal, and southern Italy, or the states of Alabama, South Carolina, and Kentucky (Thomas 2000, Shah 1995).

Rather than the current practice in which alternative host sites try to match the giveaways of others in a prisoner's dilemma game of massive proportions, the ideal public policy approach—however politically difficult to achieve—would be a global agreement to limit and roll back the incentive competition. If direct subsidies, free land and factory space, and tax breaks could be brought under control, whatever resources developing countries might want to devote to attracting externality-laden foreign investment could then be focused on creating effective educational and vocational training programs, efficient infrastructure, and effective public bureaucracies with low levels of red tape and corruption.

Revising the “Washington Consensus” on FDI and Development

During the heyday of the “Washington consensus,” conventional wisdom held that FDI—as long as it did not pollute the environment or blatantly abuse workers—was “good” for development, and “the more the better.” But the evidence presented here shows that this approach is far too complacent.

FDI in manufacturing, agribusiness, and other processing industries can make a positive contribution to development only if it occurs in a reasonably open setting, not protected and sheltered from competition. Therefore, public authorities and researchers alike must pay careful attention to the policy context within which FDI occurs, to determine whether the investment projects are likely to prove beneficial—or detrimental—to development.

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