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## Globalization of Industry via FDI: Consequences for Developed-Country Home Economies

What are the consequences of outward FDI for the developed-country home economy? FDI in the extractive sector increases the supply and lowers the price—*ceteris paribus*—of imported oil, natural gas, and minerals for the home country of the outward investors. But if there is little transparency about revenue streams and weak accountability on the part of host authorities, FDI in the extractive sector may undermine—or even ruin, at least in the medium term and quite probably over the longer term—host-country prospects for broad economic and social development. This has economic, foreign policy, and national security consequences for home countries, in particular (but not limited to) the United States.

FDI in infrastructure improves the functioning of power, telecommunications, water, sewage, and transport systems around the world, which is not likely to detract in any way from home-country welfare unless, as a condition of the foreign investment, host authorities are made to bear all foreign exchange risk—and all supply-and-demand risk via take-or-pay contracts—within a multinational dispute settlement regime that considers inability to pay as unwillingness to pay. This also has economic, foreign policy, and national security consequences for home countries, once again in particular (but not limited to) the United States.

But what about FDI in manufacturing?

There has been growing concern across developed countries about the consequences for the home economy as multinational corporations (MNCs) spread technology and reposition production around the globe. Nowhere has this been more apparent than in the United States, where President Obama has pledged that his administration will “end tax breaks for corporations that

ship jobs overseas.”<sup>1</sup> Nobel laureate Paul Samuelson’s 2004 critique of whether trade liberalization always confers net positive benefits to all partners and Lawrence Summers’ suggestion in 2008 that the economic success of developing countries (particularly China) might be damaging to US interests (and particularly the interests of American workers) have added sophisticated new dimensions to the debate.<sup>2</sup>

“Historically, US workers used to have kind of a de facto monopoly access to the US’s superlative capital and know-how (scientific, engineering and managerial). All of us Yankees, so to speak, were born with silver spoons in our mouths,” declares Samuelson (2004). Are US multinationals, as well as multinationals of other nations, taking those “silver spoons” and delivering them to “non-Yankees” in a manner that leaves workers, firms, and communities at home less well off? Does the globalization of industry via FDI come at the expense of home-country economic interests, or does it complement and strengthen the home economy?

## **Rekindling an Old Debate about US MNCs and US Economic Interests**

Preoccupation with outward manufacturing investment—be it about “runaway plants” or a “hollowing out” of the industrial base—have long been a subject of intense controversy in the United States and abroad. The questions of Paul Samuelson and Lawrence Summers about the role of multinationals in shifting technology across borders in ways that might harm workers and communities in the home economy require fresh examination in terms of how the globalization of industry via FDI takes place.

Economic history, asserts Samuelson (2004), is replete with examples where a nation or a region suffers permanent measurable loss in per capita real income from the “adverse headwind” generated from low-wage competitors and technical imitators. A prime example, cites Samuelson, was the movement of textile, shoe, and other manufacturers from New England to the low-wage South early in the last century.

The Samuelson concern that the United States might start to suffer lower permanent per capita real income as a result of the globalization of trade and investment rests on two formal assessments of how the outcome might be detrimental: first, an assessment of whether the United States continues to enjoy positive gains from trade; and second, an assessment of whether the United States has begun to suffer unfavorable terms of trade (Edwards and Lawrence, forthcoming). These assessments require examining whether

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1. President Barack Obama, State of the Union Address, January 27, 2010, available at [www.whitehouse.gov](http://www.whitehouse.gov) (accessed on February 1, 2011).

2. Samuelson (2004); Lawrence Summers, “America Needs to Make a New Case for Trade,” *Financial Times*, April 27, 2008; and “A Strategy to Promote Healthy Globalization,” *Financial Times*, May 4, 2008.

consumers and producers continue to reap benefits from specialization, division of labor, and economies of scale as globalization proceeds; and investigating the relative prices of US exports versus US imports along the way (does the evidence show the United States having to generate higher levels of exports to pay for a given level of imports?).

These formal models draw on traditional trade theory in which the location of production is determined by relative costs that are a function of the natural endowments of countries around the world. Exogenous changes in technology add a dynamic dimension to how the global structure of production might evolve. But, as noted in chapter 7, traditional trade theory does not adequately encompass the phenomenon of multinational corporate investment: International companies operate according to a centralized strategy in imperfectly competitive markets, creating technology (including management, quality control, and marketing procedures) that headquarters can then deploy at home or abroad with some margin of choice about where to locate specific activities and how to integrate the stages of production.

Standing apart from the formal assessment of trade effects—and the tests of whether the United States continues to enjoy gains from trade and favorable terms of trade—is a separate and distinctive concern about the consequences of the current behavior of MNCs. Preoccupation with multinational corporate transfer of technology and placement of production pervades the Samuelson critique and reappears in the Summers commentary. The concerns take three forms: (1) that US-based MNCs may follow a strategy that leads them to abandon the home economy, leaving workers and communities to cope on their own with few appealing alternatives after the multinationals have left; (2) worse, that US-based MNCs may not just abandon home sites but drain off capital, substitute production abroad for exports, and “hollow out” the domestic economy in a zero-sum process that damages those left behind; and (3) worst, that US-based MNCs may deploy a rent-gathering apparatus that switches from sharing supranormal profits and externalities with US workers and communities to extracting rents from the United States.

These concerns cannot be ignored. The globalization of economic activities is no longer simply a function of impersonally evolving trade flows. MNCs are a major force in creating technology, establishing the international structure of production, determining the location of high-valued jobs and activities, and dictating the consequent pattern of trade. Indeed, for the United States, some 38 percent of all goods exports and 26 percent all service exports are intrafirm transactions within the confines of MNCs themselves.

But do multinational investors deploy their operations according to their own self-interested and profit-driven strategies in ways that are disadvantageous or harmful to the economic interests of the home country, which for Samuelson/Summers means the United States? Each of the three concerns above contains a hypothetical outcome that can be compared with contemporary evidence from the United States and other home countries.

## Outward FDI and Abandonment of the Home Economy?

The first proposition that underlies the “new critique” of the globalization of industry is that developed-country MNCs—in the Samuelson/Summers analysis, US-based MNCs—take self-interested actions without regard to their country of origin that lead them to abandon their former sites, leaving workers and communities in the home economy bereft of productive activities and well-paying alternatives.

This proposition has its origin in an analogy. When confronted with the opportunity to use cheap Southern labor, observes Samuelson, the owners of textile, shoe, and other manufacturing firms in New England left early in the 20th century to set up alternative facilities in South Carolina or Alabama. Lowell, Massachusetts, and other New England locations were left to struggle with finding some other industry; of the few options they had, almost all involved lower-paying and less desirable jobs than before the textile and shoe companies departed. It took many decades for appealing alternatives to emerge—IT companies along Route 128, biotech firms along the Charles River, financial management and insurance firms in Boston and Hartford—all of which owed nothing to the original textile, shoe, and other manufacturing firms that had departed.

How closely does this analogy—textiles, shoes, and manufacturers abandoning New England and moving to the low-wage South early in the last century—match evidence about outward manufacturing FDI during the contemporary period?

To be sure, the globalization of industry via trade and investment does include US companies relocating operations abroad, as examined next. It includes dislocating workers and forcing communities to search for new industries. However, contrary to the “abandonment” portrait, the globalization of economic activities via the actions of US multinationals features an ongoing presence in the home economy on the part of the parent corporations that undermines the essence of the analogy.

A US multinational is defined as a business enterprise headquartered in the United States that has a 10 percent or more ownership stake in at least one affiliate in another country (Barefoot and Mataloni 2009).<sup>3</sup> In absolute numbers, the ranks of US MNCs are rather small, including less than 1 percent of all US firms (2,278 US MNCs with 25,796 foreign affiliates in 2007). But US MNCs continue to have a disproportionately large economic impact on the US home economy: They generate 19 percent of total US employment and 24 percent of total US output. Also important to note, however, is that their operations remain overwhelmingly concentrated in the home economy. In 2007 (latest data available), US MNCs generated total value added of \$3.706 trillion, with more than 70 percent located in the United States, and 30 percent abroad. They employed 22 million workers in the United States, and 10 million abroad.

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3. The latest Bureau of Economic Analysis (BEA) data are from 2007.

**Table 8.1 Employment in US multinational corporations, 2000–2007**  
(thousands of employees)

<b>Year</b>	<b>Total</b>	<b>United States</b>	<b>Non-US</b>
2000	32,057	23,885	8,171
2001	30,929	22,735	8,194
2002	30,373	22,118	8,255
2003	29,347	21,105	8,242
2004	29,843	21,177	8,667
2005	30,573	21,472	9,101
2006	31,245	21,748	9,497
2007	33,741	22,003	10,017

Notes: *Business Week* cites Bureau of Economic Analysis data to the effect that from 2000–05, US multinationals cut more than 2 million jobs at home. But this is true only in the sense that by 2006, US multinationals' domestic employment rolls had not yet returned to the all-time high reached in 2000. Michael Mandel, "Multinationals: Are They Good for America?" *Business Week*, March 10, 2008, 41–46.

Over time, US MNCs have increased employment and output in an absolute sense, with a slightly rising share of total US output and a slightly declining share of total US employment. In 1982 (the first year for which annual MNC employment data were collected), US MNCs employed 18.7 million American workers (25 percent of the total civilian workforce); in 2007, they employed 22 million workers (19 percent of the total civilian workforce). In 1994 (the first year for which annual output data were collected), the value of domestic output by US MNCs was \$1.3 trillion or 24 percent of total private US output; in 2007, the value of domestic output was \$2.6 trillion, also 24 percent of total private US output. In cyclical terms, US MNCs' output and employment both peaked in 2000, started to decline, then saw output rebound in 2003 and employment in 2004–06.

Between 1984 and 2004, US MNCs expanded employment at their foreign affiliates by 3.8 million and at their home operations by 3.2 million. From 1990 to 2000, this ratio was particularly beneficial for the United States, as US MNCs created almost two jobs at home for each job created abroad. Between 2000 and 2003, however, US MNCs continued to expand employment abroad but decreased the number of jobs at home (during the downturn in the US business cycle after the dotcom bubble burst). Then, between 2004 and 2007, US MNCs returned to expanding payrolls both at home and abroad, adding 826,000 jobs in the United States and 1.4 million jobs overseas (table 8.1) (Barefoot and Mataloni 2009).

Under the umbrella of complementary job creation, it is logical to expect that US multinationals will create jobs in line with relative growth rates in the countries where they have operations, with the United States sometimes growing more slowly than various other markets. The types of operations in the home country are likely to be more capital-intensive, R&D-intensive, and skill-intensive—and hence fewer in number—than more labor-intensive production and assembly activities in the developing world. Borga and Lipsey (2009) show that US parent firms are more capital-intensive than their foreign affiliates, and that affiliates located in developed countries are more capital-intensive than those located in developing countries. An assessment of the strength of the contribution home-country multinationals make to the home-country economy should not depend therefore on whether the number of jobs created or the rate of growth of job creation by US MNCs at home and abroad happen to be equal or not.

The principal contribution that US MNCs should be expected to make to the home economy is to reallocate economic activity in ways that raise US living standards. Here, benefits emerge in the form of the new, better, cheaper, and more reliable goods and services that US MNCs produce at home and import from abroad, and from the competition they generate in the economy more broadly. But another key measurement is the specific kinds of jobs and activities that these multinationals generate at home. The plants of US MNCs are the most productive plants in the United States in terms of both total factor productivity and labor productivity. They are also the most technology-intensive and pay the highest wages. US multinational parents accounted for 29 percent of all US private-sector investment in 2007 and 74 percent of all US private-sector R&D. The plants of US MNCs show labor productivity 16.6 percent higher than large domestic firms, and 44.6 percent higher than small US firms (Doms and Jensen 1998; Bernard, Jensen, and Schott 2009). Their total factor productivity is 4.2 percent higher than that of large domestic firms and 11.1 percent higher than that of small domestic firms. The plants of US MNCs use more technologies from the US Census Bureau's Manufacturing Technology Survey's list of 17 advanced technologies than do large or small domestic firms.<sup>4</sup> Finally, US MNCs pay wages that are 7 to 15 percent higher than wages at comparable domestic plants (Richardson 2005a, 113).

In addition to the high productivity, value added, and wages directly associated with US multinational parents in the United States, these multinational firms also purchase large amounts of goods and services from US suppliers and account for a sizable amount of US exports. In 2007, US MNC purchases from US home-country firms amounted to \$6 trillion, some 89 percent of all their purchases. In the same year, US MNCs exported goods from the United States valued at \$559 billion, nearly half (49 percent) of all US goods exports in 2007 and more than half (51 percent) in 2006. Of these, \$215 billion (38 percent) were shipped directly from US plants to sister affiliates abroad.

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4. US Census Bureau, [www.census.gov](http://www.census.gov) (accessed February 1, 2011).

In short, far from supporting the Samuelson “abandonment” hypothesis, US MNCs continue to make a large and growing contribution to the home economy even as they move outward from the United States. The home-country focus of MNCs is not limited to US corporations. Rugman (2005, 3) finds that for the 500 largest MNCs from the United States, Europe, and Asia, 320 average 80 percent of their sales in their own home region of the triad.<sup>5</sup>

The globalization of industry brings inward investment into the home economy at the same time outward investment is taking place, a phenomenon that is not present in the model in which manufacturers abandoned New England. In 2006 (the latest data available), US affiliates of foreign multinationals owned \$5.5 trillion in assets, produced \$515 billion of goods and services in the United States, and accounted for 6.1 percent of total US private output, up from 3.8 percent in 1988 (Anderson 2008). US affiliates of foreign multinationals employed 5.3 million workers, equal to 4.6 percent of the US workforce, up from 3.5 percent in 1988. They accounted for a disproportionately large share of US exports (19 percent), physical capital expenditures (10 percent), and R&D expenditures (14 percent) (Bernard, Jensen, and Schott 2005). So the globalization of industry involves vast flows of technology, production, and job creation *into* the United States at the same time that outflows to offshore locations take place.

In terms of raising US living standards by improving access to quality jobs, foreign-owned plants in the United States are more capital-intensive, more productive, use a higher proportion of nonproduction workers, and pay higher wages than the average US-owned plant (Doms and Jensen 1998). Controlling for industry, size, age, and state (location), foreign-owned plants in the United States still show superior operating characteristics compared to domestically owned plants. The performance of foreign affiliates is second only to the performance of the US plants of US MNCs multinationals. Foreign-owned plants in the United States pay wages 2.5 to 7 percent higher than do comparable domestic plants (Richardson 2005a). Figlio and Blonigen (2000) find that foreign-investor firms raise local real wages more than domestic firms do.

Similarly, foreign investors in the United States spend more on R&D in the country than other similar firms, only slightly behind the rate of R&D expenditures of US parents of US MNCs (the most R&D-intensive of all firms in the United States) (Graham and Marchick 2006, chapter 3).<sup>6</sup> In some subsectors—such as computer manufacturing and communications equipment (which includes telecommunications equipment)—the affiliates of foreign firms spend a greater portion of value added on R&D than do US parents of multinationals in the same subsector. Whether because of these R&D expenditures or because of imports of external R&D, it turns out that these inflows of

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5. Rugman reports that these 500 largest MNCs account for more than 90 percent of the world’s stock of FDI, but he does not provide more detail on their stocks or flows.

6. The comparison is for majority-owned affiliates of foreign investors in the United States.

foreign investment into the United States constitute an important channel for technology spillovers to domestic companies, especially in high-tech sectors. Keller and Yeaple (2009) calculate that between 8 and 19 percent of all productivity growth among US firms between 1987 and 1996 was derived from the growing presence of non-US investors in the US economy. The disproportionately large positive impact on the US high-tech industry includes such sectors as chemicals, computers and office equipment, electronic components, scientific instruments, and medical instruments.

One illustration of the contribution of foreign affiliates to the US economy (along with the potential for technology spillovers) is that a key to the success of General Motors' potential turnaround is the Chevrolet plug-in hybrid Volt, and one of the keys to the success of the Volt, in turn, is the lithium-ion polymer battery. GM awarded the contract for the battery to the winner of GM's 2009 Supplier Recognition Award, LC Chemicals of Korea. LC Chemicals ships the battery cells from Korea to GM's Global Battery Systems Lab outside Detroit, where battery packs are assembled and tested. GM conducts joint R&D with LC Chemicals in both Korea and the United States, and has joined with the University of Michigan to create a battery-specific engineering curriculum and battery lab. In April 2010, GM began an \$8 million expansion of the Global Battery Systems Lab in Warren, Michigan, nearly doubling the size of what is already the largest automotive battery lab in the United States. In July 2010, President Obama drove the Volt with the lithium-ion polymer battery at the Detroit-Hamtramck assembly plant.

Turning to the home-country export base, a majority of US goods exports are generated within multinational corporate networks: In 2006 (latest data available for combined analysis), the export of goods by US parent companies, by US affiliates of foreign companies, and by unaffiliated companies in the United States via purchases from US-owned affiliates abroad amounted to \$727 billion, 70 percent of all US goods exports. Of this total, US multinational parents exported \$532 billion (51 percent of total US exports in 2006), while US affiliates of foreign multinationals exported \$195 billion (19 percent of total US exports). Almost half of these exports consisted of intrafirm trade within multinational networks; that is, goods exports from US parent companies to their foreign affiliates and US-based affiliates to their foreign parent companies constitute approximately 35 percent of all US goods exports.

Looking at US trade in goods overall (imports as well as exports), Bernard, Jensen, and Schott (2009) find that the "most globally engaged" firms in the United States—US-headquartered multinationals and US affiliates of foreign multinationals—account for approximately 80 percent of all US trade flows into and out of the country, and employ 18 percent of the entire US civilian workforce. These most globally engaged firms have a higher probability of survival than other firms, and if they engage in some form of related-party transfers with affiliates outside the United States they have even lower failure rates than firms that trade at arm's length. Despite fears that the import behavior of these most globally engaged firms might swamp domestic produc-

tion plus exports—and thereby destroy US jobs on a net basis—new entrants that joined this grouping between 1993 and 2000 experienced employment growth of close to 100 percent.

Multinationals also play a large and growing role in the export of services. Service exports from US parents to their foreign affiliates and from US affiliates to their foreign parent companies totaled \$103 billion in 2006, representing 26 percent of all US private service exports (and accounting for almost one-third of all growth in US private service exports) over the previous decade (Jensen and Kletzer 2008). The United States shows a strong comparative advantage in the export of high-wage, high-skill services; US MNCs and US affiliates of foreign MNCs are likely to remain an important channel for exploiting this comparative advantage (Jensen, 2011 forthcoming).

Thus, in the contemporary period, the globalization of industry leaves the home economy with a high-performance, high-productivity, and high value-added core—exceptionally R&D-intensive and dynamic—that exploits the evolving comparative advantages in the country. To be sure, these industries may be located in sites different from eras gone by—in Raleigh-Durham, Austin, Palo Alto, and Seattle rather than Detroit, Gary, and Toledo—and the costs of churning and displacement are no less real in the contemporary period than they were a century ago. But the focus of public concern and public policy should be on dealing with these genuine burdens of dislocation without being burdened by a New England analogy that is inaccurate, misleading, and outdated.

## **Outward FDI, Runaway Plants, Lost Capital?**

The second testable proposition in the Samuelson/Summers critique of globalization envisions a fate worse than abandonment, namely that outward investment by home-based MNCs (US-based MNCs) substitutes external production for exports, drains off capital, and “hollows out” the home economy in a zero-sum process that damages those left behind.

This proposition contains two distinct assertions: first, that outward investment by US-based MNCs replaces exports that might be sent from multinational plants at home with external production; and second, that outward investment by US-based MNCs siphons away capital, replacing investment that might be made at home. The common theme is that outward investment by US-based MNCs is a win-lose phenomenon that harms the economy where the FDI originates.

The concern that US MNCs set up production abroad to substitute for exports that otherwise could be made from the home economy has a long and venerable history, beginning with the Burke-Hartke legislation (sponsored by the AFL-CIO) in the 1970s and culminating—at least rhetorically—with Ross Perot’s “great sucking sound” characterization of the North American Free Trade Agreement (NAFTA).

But does the evidence from the United States (and other developed countries) show that MNC production abroad actually substitutes for exports that otherwise could be produced in the home economy?

To determine the answer, one must look closely at the counterfactual—what would happen in the home economy if the MNC did *not* make the outward investment? This is crucial both to evaluate the substitution hypothesis and to appraise the oft-suggested policy proposal to make it more expensive and difficult for home-country MNCs to build plants abroad.

A pioneer in the testing of the substitution hypothesis was Thomas Horst (Bergsten, Horst, and Moran 1978, chapter 6). Subsequent analysis, summarized next, has grown increasingly sophisticated. But reviewing the Horst approach is particularly useful because his method shows clearly what the counterfactual would be if the outward investments undertaken by MNCs did not take place.

To conduct a fair test, it is not enough to acknowledge simply that MNCs invest more at home and export more from home plants than the typical or average home-country firm. As Horst noted, MNCs are not “typical” or “average”—they are larger, do more R&D, engage in more advertising, and have other characteristics that set them apart. This is a methodological insight that continues to be neglected in contemporary analysis. Both the McKinsey Global Institute (2010) and Slaughter (2010), for example, report that US MNCs make a disproportionate contribution to the US economy in comparison to other firms along a number of metrics.<sup>7</sup> But US MNCs should be expected to perform better than other companies because they are different from other companies and found in nonaverage sectors. Perhaps they should be expected to do even more investment at home or engage in even more exporting from home plants.

To discover whether US MNCs substitute production abroad for exports from the US home economy, what is needed is to compare the export behavior of “likes with likes” while varying only the extent of outward investment. In other words, one must compare the export behavior of large firms that undertake outward investment with those that do not, and compare the export behavior of firms with high R&D or extensive advertising that undertake outward investment with those that do not.

Table 8.2, which is constructed from Horst’s arrangement of the data, does even better than this. The table compares the export behavior (exports as a percentage of domestic shipments) of likes with likes by measuring the exports of group types of firms: those firms that essentially stay at home in the United States (first column), that have begun to engage in just a bit of outward investment (second column), that have expanded their outward investment substantially (third column), and those that have thoroughly globalized their production (fourth column).

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7. McKinsey and Slaughter examine the same latest BEA data as does this volume.

**Table 8.2 Export performance of particular types of industries by foreign investment levels** (exports as percent of domestic shipments)

Industry	Low or none	Low to middle	Middle to high	High
High technology	2.3	7.8	9.7	7.6
Low technology	1.3	3.0	2.5	3.5
High level of advertising	1.0	2.8	2.4	4.6
Low level of advertising	1.4	4.8	7.5	7.7
High level of unionization	1.9	5.5	4.4	3.8
Low level of unionization	1.3	3.2	7.0	7.8

Notes: These figures are introduced to illustrate the methodology and the counterfactual. More recent data are cited in the text.

Source: Adapted from Bergsten, Horst, and Moran (1978, table 3.3).

This set of like-with-like comparisons demonstrates that US firms that undertake outward investment actually achieve higher levels of exports as a percentage of domestic shipments than firms that stay at home in the United States, and that this superior export performance—and demonstration of superior competitiveness in the face of global pressures—increases as they globalize their operations. The percentage of domestic shipments that leaves the home market destined for external markets rises as the MNC engages in larger amounts of international investment (the exact relationship in the fourth column is somewhat murky in this set of comparisons, but subsequent statistical analyses below show a persistent positive correlation). This demonstrates that outward investment by US MNCs enhances the competitiveness of their home-country operations, measured in comparison to similar kinds of firms that do not undertake, or do not undertake as much, outward investment. Outward investment is in fact a *complement* to greater production at home, not a *substitute* for it.

Most important, this set of like-with-like comparisons provides a clear picture of the counterfactual—what would the situation in the home market look like if MNCs did not engage in outward investment at all, or did not engage in outward investment so extensively? The performance of firms shown in columns 2, 3, and 4 of table 8.2 would resemble the performance of their look-alike peers in column 1. This shows that the stay-at-home option does not strengthen the home industrial base or lead to more exports from home. On the contrary, the stay-at-home option leads to a less competitive industrial base in the United States and fewer exports from the United States. If US MNCs were prevented from moving abroad, or if obstacles and disincentives were put in their path, the United States would be weaker and the labor market less filled with export-related jobs; that is, the good job/bad job ratio in the US labor market would be *worse*, not better.

Somewhat surprisingly, this positive relationship between outward investment and exports holds for US low-tech (low-R&D) industries just as for high-tech industries, and for heavily unionized industries just as for nonunionized ones. That is, outward investment creates more export-related jobs in the US economy for low-tech workers and unionized workers, just as it does for US workers overall, in comparison to US firms with similar workers that do not engage in outward investment.

Subsequent studies, relying on more sophisticated statistical techniques, have consistently demonstrated the complementarity between MNC outward investment and exports from a more competitive industrial base at home. Lipsey and Weiss (1981) found a positive correlation (after controlling for firm characteristics) between outward investment and exports for all levels of investment. They discovered moreover that the level of manufacturing activity in a given country by US firms was positively associated with US exports from the same industries to that country and negatively associated with exports by producers of rival nationalities. Along the same lines, they noted that the presence of firms from foreign countries in a given country was negatively related to US exports and positively related to foreign countries' exports. In a somewhat mercantilist vein, they concluded that direct investment by US MNCs in any one country tended to increase US exports and market shares in that country and reduce those of producers of rival nationalities, and that non-US MNCs' operations tended to raise their countries' exports and market shares, and reduce those of US firms. A smaller US MNC presence outside the United States would reduce MNC exports to, and market share in, other countries. Lipsey and Weiss' counterfactual outcome was the same as Horst's: Making home-country MNCs cut back on outward investment hurts the access of home-country workers to export-related jobs.

A later study by Lipsey and Weiss (1984) showed that the complementarity between outward investment and domestic exports was strong not only for intermediate goods sent abroad for further processing but also for exports of finished products shipped by the parent US firms. This study found that a higher proportion of foreign operations by US firms was associated with higher average compensation at home.

Nor is this complementarity an idiosyncratic finding about US MNCs. As Swedish MNCs were subjected to criticisms from domestic labor, Blomström, Lipsey, and Kulchick (1988) found a similar complementary relationship between outward investment by Swedish multinationals and home-country exports and employment. Outward investment by Japanese MNCs shows the same kinds of effects at home (Lipsey, Ramsterrer, and Blomström 2000). The complementarity is almost as great for manufacturing as for distribution—Head and Ries (2001) calculate that a 10 percent rise in FDI abroad in manufacturing and distribution would increase exports from home plants in Japan by 1.2 and 1.5 percent, respectively.

More recent studies confirm that the relationship between outward investment and home-country exports is predominantly complementary (Markusen

and Maskus 2003). When labor substitution does show up in the data, it is almost entirely limited to competition between alternative low-wage locations in the developing world, rather than vertically between parent and affiliates in less-developed regions (Brainard and Riker 1997).

Further evidence about whether outward investment might be transferring production abroad that otherwise would remain competitive at home can be found in a comparison of unit values at home and at overseas plants in the developing world. Edwards and Lawrence (forthcoming) argue that if outward investment by multinationals simply relocated production from the home economy to developing countries, one would expect a rise in unit values for production and exports of goods in the sector involved in the latter location. But they find within-sector unit values to be much lower in the new developing-country plants in comparison to the home market—between 15 and 30 percent of medium- and high-technology products in the same category exported by the United States in the case of China—with no change in these relative unit values over the entire period from 1990 to 2006. Edwards and Lawrence conclude that what is taking place is production-fragmentation via FDI—the transfer of low-skill-intensive, low-unit-value operations abroad—rather than production relocation of higher-skill-intensive, higher-unit-value operations in which the home market continues to have a comparative advantage.

Turning to the contention that outward investment by US MNCs “drains off” capital that otherwise would be invested at home, the evidence also suggests complementarity rather than zero-sum dynamics in parent MNC strategy. Desai, Foley, and Hines (2005a) discover that years in which US multinational firms make greater capital expenditures abroad coincide with greater capital spending by the same firms at home. But the correlation between the domestic and foreign growth rates of multinational firms might occur for reasons other than an interaction between operations in both locales—a pharmaceutical company may discover a new drug or a software company may develop a new process that leads to simultaneous increases in activity at home and abroad. Desai, Foley, and Hines (2005b) use an instrumental variable that predicts foreign investment but does not directly affect domestic operations. Their instrumental variable is a firm-specific weighted average of foreign GDP growth that can be used to forecast growth rates of foreign investment in that country by the MNC. These predicted growth rates in turn can be traced back to explain possibly related changes in home-country activity by the MNC. Using this procedure, they find that 10 percent greater foreign investment by the MNC triggers 2.2 percent additional domestic investment. They show that there are similar positive relationships between foreign investment and home-country exports, R&D spending, numbers of employees, and employee compensation.

Looking specifically at one of the most sensitive target locations for outward investment, Branstetter and Foley (2010) find that US firms that invest in China simultaneously invest more in the US home market as well.

The evidence thus paints a picture in which outward investment is an integral part of MNC strategy to maximize the competitive position of the whole corporation, a goal for which headquarters raises the needed amount of capital from sources all around the globe. In determining where to deploy capital and where to locate production, relative costs—including relative wages and benefits (as well as relative skills and relative productivity)—play a definite role. But in the end, operations at home and abroad complement each other as the MNC parent tries to make the deployment of tangible and intangible assets most productive and profitable. As pointed out earlier, in 2007 US MNC plants accounted for 49 percent of all US goods exports, of which 38 percent were shipped directly to overseas affiliates of the US parent (Barefoot and Mataloni 2009). US MNC capital investment in the domestic economy in 2007 was \$483 billion in comparison to \$169 billion outside the United States. Thus, for every \$1 invested abroad, US MNCs invested \$2.85 at home.

The finding that home-country firms that engage in outward FDI export more from home than similar firms that do not engage in outward investment bears directly on the composition of good jobs/bad jobs in the home-country market, since export-related jobs across all developed countries offer a wage and benefit premium in comparison to other jobs in comparable firms. In the United States, export jobs pay wages 10 to 11 percent higher than non-export-related jobs (Richardson 2005a). Thus, outward investment by US MNCs results in a higher proportion of good jobs (relatively high wages and benefits) compared with bad jobs (relatively lower wages and benefits) at home.

The benefits that accrue to US companies that engage in outward investment are not limited to their superior export performance. US MNCs that invest abroad use frontier production processes more frequently in their home-country plants, have higher levels of worker productivity, and enjoy more rapid growth rates of overall productivity than others (Bernard, Jensen, and Schott 2005). Taken together, American-owned firms that engage in outward investment pay their blue-collar production workers 7 to 15 percent more than comparable nonoutward investors (7 percent more in large US MNC plants, 15 percent more in small US MNC plants) (Richardson 2005b). Given their higher productivity, US firms that invest abroad enjoy lower levels of bankruptcy and are less likely to suffer job loss than similar firms that do not engage in outward investment. This outcome makes intuitive sense, but as it contrasts strongly with conventional wisdom, it is worth restating: Contrary to popular perception, outward investment by US MNCs leads to a more stable job base at home.

EU multinationals that establish affiliates abroad are larger, more profitable, and more productive than firms that do not. Using large-firm-level data from 12 countries of the euro area for 2003 and 2006, Geishecker, Görg, and Taglioni (2009) find that EU firms that engage in outward investment enjoy a higher rate of productivity growth and a higher survival rate. Their higher performance is associated with a larger number of affiliates and more numerous locations.

To be sure, these findings do not imply that the home-industry sector where the outward investment originates is always expanding on a net basis. What is striking, however, is that US firms that engage in outward investment offer better prospects for their workers than firms that do not in both expanding and contracting industries. That is, home-country companies in contracting sectors that are “globally engaged,” to use Richardson’s characterization—importing, exporting, engaging in outward investment, or connected to inward investors—show themselves to be the most successful participants in those sectors. Across sectors, whether expanding or declining, the superior benefits associated with “globally engaged” firms accrue to average-skilled as well as high-skilled workers, to union members as well as nonunion workers, to minorities, and to those who live in small towns as well as large urban areas.

To illustrate this result in a declining sector, it is useful to revisit the family history (“Pam’s family”) that Lewis and Richardson (2001) trace through five generations. Pam’s great-grandmother, grandmother, and mother worked as seamstresses in Cumberland, Maryland for the minimum wage. Pam herself worked her way up from sewing to customer service at the Schwab garment company, responsible for the Ralph Lauren line of children’s clothes, via computer courses at a local community college. Over the course of the 1990s, the total number of jobs at Schwab remained remarkably constant (unusual for the sector), but their composition changed as sewing and cutting moved offshore, replaced by marketing, distribution, and business-service occupations. As of 2001, Pam supervised five managers and 18 contract supervisors with the task of ensuring that correct bar codes, labels, and prices arrived at correct destinations around the globe on time. Pam’s son, meanwhile, became manager at Schwab’s distribution center in Martinsburg, West Virginia. Both Pam and her son enjoyed wages and benefits—and profit sharing—that placed the family more squarely in the middle class than the grandmother and great-grandmother could have ever achieved.

The more frequent story for declining industries may involve net job losses. Between 2002 and 2006, North Carolina lost some 72,000 manufacturing jobs concentrated in textiles and furniture fabrication (Kletzer, Levinsohn, and Richardson 2007). To attempt to replace these jobs, North Carolina partnered with newly arriving businesses to design courses in the state’s community college network to provide the skills their workforce would need.<sup>8</sup> A state recruitment director singled out Regina Whitaker as a model for their effort. In 1996, just out of high school, Regina took a job at the same yarn texturing plant where her mother had worked for three decades. As that company relocated labor-intensive production operations to China and Brazil, workers in the Piedmont region were laid off. In 2003, Regina enrolled in biotechnology

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8. Peter S. Goodman, “In North Carolina, a Second Industrial Revolution,” *Washington Post*, September 3, 2007.

classes at Forsyth Technical Community College, and when she graduated was hired as a lab technician at Targacept, a biotech firm in Winston-Salem, with a salary that she reported was “significantly more” than she had earned at the yarn factory. Over this period the number of workers in biosciences increased from 20,000 to 47,000.

Looking at companies that remained in the North Carolina textile sector finds support for the Richardson “global engagement” rule that even in declining industries there may be international opportunities for US firms, workers, and communities. As Glen Raven lost out in the struggle to sell nylon pantyhose from its Piedmont plant, the US parent shifted to producing and weaving high-grade industrial yarn, as used in upholstery.<sup>9</sup> These more capital-intensive operations downsized from 225 to 156 employees, while compensation rose, with wages rising from \$10.50 to \$22 per hour. The largest destination for Glen Raven’s exports from North Carolina became China, increasing fivefold between 2003 and 2006, to \$52 million per year. Although Glen Raven has not yet invested abroad as other successful high-end US textile firms have, the company’s story illustrates the more general finding that US firms can exploit the changing international dimensions of industries that are in decline at home.

Turning to middle-skill industrial sectors in which the United States has historically had worldwide comparative advantage but which are now increasingly beset by international competition, it may be more useful to ask not whether aggregate employment has expanded or contracted but what would have happened if US companies were hindered or restricted in their ability to invest abroad. One of the best-selling and most successful trucks in the world historically has been Ford’s F150 series. In 2004–05, Ford fundamentally redesigned the F150 line, making the Ford Essex Engine Plant in Windsor, Canada the exclusive source of the 5.4 liter, 32-valve, high-performance Triton V-8 engine and choosing Ford’s contract manufacturer, IMMSA of Monterey, as the sole supplier of the M450 chassis, using inexpensive but reliable Mexican steel alloy. Ford’s prospects for holding its share of the truck market vis-à-vis the Toyota Tacoma and the Isuzu D-Max, as well as the Chrysler Dodge Ram, depend on this NAFTA-integrated supply chain. Despite the United Auto Workers’ visceral condemnation of NAFTA, the fate of UAW workers at Ford’s US assembly facilities depends on that agreement.

Finally, the disk drive industry represents a sector where US MNCs demonstrate ongoing prowess along the international frontier. Seagate is the world’s leading provider of hard disk drives, whether computed on the basis of revenue or units shipped, with approximately 45 percent of the global market (McKendrick, Donner, and Haggard 2000; Seagate Technology 2008). Seagate products are found in computers (servers, desktops, laptops, and notebooks), digital video recorders, video game consoles, portable media players, and auto-

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9. Ibid.

motive navigation systems. For fiscal years 2006–08, approximately 30 percent of Seagate disk drive revenue came from customers in North America, 27 percent from customers in Europe, and 43 percent from customers in the Far East. Hewlett-Packard and Dell each account for approximately 10 percent of Seagate revenue, Lenovo less. Sony PlayStation 3 and Microsoft Xbox are the largest buyers for video game consoles.

Seagate has management, R&D, and design facilities in California (Sunnyvale and Scotts Valley), Massachusetts (Shrewsbury), Minnesota (Minneapolis), Colorado (Longmont), Pennsylvania (Pittsburgh), Oklahoma (Oklahoma City), and Singapore. The company's principal wholly owned manufacturing facilities are located in China, Malaysia, Northern Ireland, Singapore, Thailand, and, in the United States, in California and Minnesota. Seagate's worldwide employment was 45,000 in 2008—8,000 managers, engineers, and other staff in the United States, and 37,000 abroad, mostly production line personnel. Providing a clear illustration of the discussion in chapter 4 of the *Parental Supervision* (Moran 2001) paradigm, Seagate's competitive position in world markets depends—as do 8,000 relatively high-compensation employees in the United States—on tight integration between home-country and overseas facilities. Seagate's principal competitors are Fujitsu, Hitachi, Toshiba, Samsung, GS Magicstor (Japan), and Western Digital (United States).

Overall, as some sectors where there is outward investment expand and other sectors contract, there will surely be job losses and dislocations for some workers while others gain new opportunities. Indeed, Bernard and Jensen (2007) show that once favorable plant characteristics that enable the plants to survive (size, age, employment of skilled labor) are controlled for, US MNC-owned plants are more likely to close, justifying anxiety on the part of their better-treated workers. Multinational firms simply have more readily available margins to adjust than do nonmultinationals—that is, they can make changes in the mix of technology, marketing, and supplier inputs more easily than nonmultinationals and they can respond to changes in market conditions more rapidly. They embody attributes extraordinarily valuable to the home economy (frontier practices, large-scale operations, superior jobs) that are less frequently possessed by nonmultinationals, and these attributes are accompanied by more speedy mechanisms for modification.

Changing patterns of MNC investment, like changing patterns of technology deployment more generally, contribute to job losses and dislocations for some workers as well as to new opportunities for others. The appropriate response by home-country authorities is to design adjustment and retraining programs to cushion the impact on those adversely affected, not to impede capital flows and engage in a futile effort to preserve jobs in uncompetitive home-country economic activities.

## Outward FDI, Strategic Trade Theory, and the Capture of Rents Abroad?

The third testable proposition in the Samuelson/Summers critique of globalization embodies the most nightmarish scenario of all, that US-based MNCs may deploy a rent-gathering apparatus that switches from sharing supranormal profits and externalities with US workers and communities to extracting rents from the United States.

The theory behind FDI is that companies take the trouble to build plants and coordinate activities across borders—rather than simply sell products or license technology—because they possess “intangible assets” that afford them higher profits when they maintain control over all operations. FDI takes place only in industries where markets are not perfectly competitive. The presumption is that MNCs, when successful, can collect rents from their activities, some of which may be shared with their workers, and generate externalities that benefit countries where their operations are located.

Summers argues that the United States may not “necessarily benefit from the economic success of its trading partners” if the economies of those trading partners become powered by MNCs, thereby shifting rent collection to the new host states. “Stateless elites whose allegiance is to global economic success and their own prosperity rather than the interests of the nation where they are headquartered” may share rents and externalities that used to be captured by US workers and communities with external workers and communities in new MNC locations.<sup>10</sup>

To quote Paul Samuelson again, “Historically, US workers used to have kind of a de facto monopoly access to the US’s superlative capital and know-how (scientific, engineering and managerial). All of us Yankees, so to speak, were born with silver spoons in our mouths.” Perhaps multinational corporate investment is offering monopoly access—and silver spoons—to “non-Yankees.”

A first look at the evidence supports apprehension about possible rent shifting. Popular outrage about sweatshops and the possible abuse of workers often leaves the impression that multinational manufacturing and assembly investors predominantly engage in labor-intensive operations and that the work consists primarily of low-skilled, low-wage jobs. But the data presented earlier in table 4.1 reveal a different thrust by manufacturing multinationals. As shown there, by far the majority of manufacturing FDI flows to higher-skilled industrial sectors in developing countries, and the relatively higher growth of more skill-intensive investor operations is speeding up over time. These data show that the globalization of industry around the world via FDI in manufacturing expands opportunities available to medium- and higher-skilled workers in developing countries. It might be quite plausible to argue therefore

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10. Lawrence Summers, “American Needs to Make a New Case for Trade,” *Financial Times*, April 27, 2008.

that auto workers and managers at MNC plants in Mexico and Brazil or electronics workers and managers at MNC plants in Malaysia and Thailand—or for that matter workers at Intel’s semiconductor plant in Costa Rica who earn 150 percent of the average national manufacturing wage—partake of the rents associated with their employers in ways only US workers and managers were able to do 30 years ago.

But other evidence tempers this conclusion. From 1978 through 1990, Lawrence (1996)—extending work first done by Katz and Summers—shows that average rents earned by production workers and managers in US manufacturing did not change much. Moreover, Lawrence reminds us, most trade in high-rent sectors takes place among developed countries; trade involving developing countries typically involves low-rent sectors.

Might this be changing? The evidence that FDI takes place predominantly in higher- rather than lower-skilled activities offers the possibility that the answer might be affirmative. But this evolution probably fits better with Vernon’s (1971) product-cycle model of gradual dispersion of middle- to higher-skilled assembly operations than with Brander and Spencer’s (1981) strategic trade model of one highest-rent, highest-externality location abruptly replacing another. These FDI activities are not the “commanding heights” of highest-rent strategic trade industries and do not appear to be heading in that direction very rapidly (Krugman 1986).

As for the possibility of extracting rents from US consumers or generating adverse terms of trade for the United States, the evidence from one of the most controversial cases—exports from China—shows just the opposite: Average prices of goods exported from China to the United States fell by an average of 1.5 percent annually between 1997 and 2005 (Amiti and Freund 2008). Schott (2004) finds that while China exports more products in common with OECD countries than would be expected given the country’s level of development (thanks largely to FDI), Chinese exports sell for a substantial discount relative to OECD varieties of the same product. The reason would seem to be that quality upgrading in each product category takes place more rapidly in OECD countries than in China.

At the end of the day, the data show no more than that US-based workers and managers may be less unique in their ability to extract rents from outsiders, rather than revealing that multinational investment has allowed non-US-based workers and managers to capture some new powerful ability to extract rents from Americans.

Moreover, the answers to the question of what it means when multinational investors transfer technology into the country that is generating the most contemporary anxiety—China—show some surprising results.

## How Is FDI Transforming the Chinese Economy?

In 2003, China overtook the United States as the largest destination for foreign investment in the world, and then settled into second place.<sup>11</sup> FDI inflows reached \$168 billion in 2008, declining slightly to \$143 billion in 2009 (UNCTAD 2010c, annex table 1). As shown below, these FDI flows have transformed China's industrial base, shifting the composition of Chinese exports from low-skill-intensive to high-skill-intensive goods and services.

This transformation of China that is being carried out by multinational manufacturing investors raises important questions and generates profound anxieties. Is FDI helping propel China to become an export superpower, “displacing Japan as the predominant economic power in East Asia,” as Preeg (2008, 130) declares, making the country the “economic hegemon” in the region?

The evidence shows clearly that MNCs in manufacturing have been the force that has carried China's exports from low-skill-intensive to high skill-intensive products. In 1992, the low-skill-intensive sectors in China accounted for 55 percent of its exports (Amiti and Freund 2010). By 2005, these same low-skill-intensive sectors' share had fallen to 33 percent. The composition of exports had shifted from a predominance of agriculture, apparel, textiles, footwear, and toys to machinery and transport products. Here the strongest export growth has been machinery, and within this broad classification telecom equipment, electrical machinery, and office machines constitute the largest shares. These more sophisticated sectors are dominated by processing trade, an arrangement in which imports are allowed into the country duty-free and are then assembled for export. Processing trade exports of machinery and electrical products grew from \$9 billion in 1992 to \$323 billion in 2006, that is, from 22 to 63 percent of all exports. Processing trade, in turn, is dominated by foreign multinationals (called foreign-invested firms, including both joint venture and wholly owned affiliates of foreign multinationals), especially for more sophisticated products. The buildup of the foreign presence has been nothing short of remarkable (Feenstra and Wei 2010). In 1992, foreign multinationals accounted for 5 percent of exports in ordinary trade and 45 percent of processing exports; by 2006, those figures had risen to 28 and 84 percent, respectively.

The share of processing trade—and the foreign firm share of exports—climbs rapidly as the skill intensity of the products increases (Koopman, Wang, and Wei 2008). For apparel, processing exports as a share of industry exports in 2002 was 45.1 percent, with foreign firms accounting for 39.2 percent of industry exports. For household electrical appliances, those figures were 79.1 and 56.9 percent, respectively; for electronic devices, 89.7 and 87.5 percent; for telecommunications equipment, 91.2 and 88.4 percent; and for computers,

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11. This section draws on Moran (forthcoming).

99.1 and 99.4 percent. In short, FDI flows have revolutionized China's industrial base and shifted the composition of Chinese exports from low-skill-intensive to high-skill-intensive goods and services.

The rapid growth in Chinese exports of what are classified as advanced technology products (ATPs) to developed countries, and a Chinese surplus in ATP goods in China-US bilateral trade, leads to speculation that China is "leapfrogging" ahead technologically (Ferrantino et al. 2010). But foreign investors have been responsible for more than 92 percent of all Chinese ATP exports since 1996 and 96 percent since 2002. Within this 96 percent foreign-investor-dominated channel, there has been a shift to wholly owned MNC exporters from joint venture companies. State-owned enterprises have an ATP trade deficit with the United States, while private Chinese firms and collective enterprises contribute very little to ATP trade. There is a sizable technological gap between Chinese ATP imports and exports. Chinese ATP imports from the United States consist of large-scale, sophisticated, high-valued equipment and devices, whereas ATP exports to the United States are small-scale products or components in the low end of the ATP value-added chain. Some 40 percent of the unit-value ratios between US-exported and Chinese-exported ATPs are between 1 and 10 times greater for the US ATP exports to China, one-third are between 10 and 100 times greater, and more than 13 percent are at least 100 times greater. In some categories, China both imports and exports the same product (e.g., microscopes), but the types imported from the United States cost 10 to 20 times more than the types exported to the United States, suggesting a sizable difference in features and capabilities.

Separate measurements by Edwards and Lawrence (2010) and Edwards and Lawrence (forthcoming) show similar results: The unit values of US imports of medium- and high-technology goods from China lie between 15 and 30 percent of the same-category products exported by the United States. Remarkably, Edwards and Lawrence find that there has been no significant change in these relative prices over the entire period 1990–2006. They conclude that US imports of so-called high-technology products from China are not close substitutes for US high-technology exports to China.

So, despite the emergence of a handful of Chinese national champions (perhaps seven to nine), foreign MNCs dominate the commanding heights of China's high-tech export sector. The Columbia University Vale Center–Fudan University ranking in 2010 of the largest 18 Chinese multinationals lists just four firms in the manufacturing sector: Lenovo, Shanghai Automotive Industry Group, ZTE, and Haier.<sup>12</sup> UNCTAD's list of the top 100 nonfinancial transnational corporations from developing and transition economies lists four Chinese manufacturing firms: ZTE, Lenovo, China Minmetals, and TVP

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12. Report by the Vale Columbia Center on Sustainable International Development and the Fudan (China) University School of Management, "Chinese Multinationals Gain Further Momentum," December 9, 2010, [www.vcc.columbia.edu](http://www.vcc.columbia.edu) (accessed on February 1, 2011).

Technology (UNCTAD 2010c, annex table 27). To this rather small roster, one might want to add Huawei, TCL, and Gree.

In the processing trade, there is some debate about how the import share of Chinese processing trade has evolved. Nicholas Lardy (2002) has gathered data that indicate the import share of Chinese processed exports has declined from approximately 85 percent in 1989 to about 55 percent in 2009. Koopman, Wang, and Wei (2008) estimate that Chinese domestic value added in processed exports was 18 percent in 1997, 26 percent in 2002, and 18 percent in 2006, suggesting that the import share of Chinese processed imports has remained roughly constant during the period they survey. They show that the percentage of the value of the final product that derives from imported components rises as the sophistication of that final product increases and as the predominance of foreign investors rises. As of 2002, for wearing apparel, the percentage of the value of the final product that derives from imported components was 62.4 percent; for household electrical appliances, 76.3 percent; for electronic devices, 85.2 percent; for telecommunications equipment, 91.6 percent; and for computers, 96.1 percent.

Linden, Kraemer, and Dedrick (2007) provide a fascinating look at who captures value in advanced electronics products exported from China, and where those who capture value are located. “Value capture” means the margin for the firm after paying for inputs and labor. The authors’ target is Apple’s iPod, assembled in China with a retail price of \$299 in 2005. In their estimation, by far the most costly input in the iPod is the 30GB hard drive from Toshiba, which costs \$73, or more than 50 percent of the total input cost, with a margin for Toshiba of about \$20, which the authors assign to Japan. The second most valuable input is the display, with a factory price of \$20, plus a margin of \$6 for Toshiba-Matsushita, which they again assign to Japan. Next are two microchips from US companies, Broadcom and PortalPlayer, leading to a \$7 margin assigned to the United States. The SDRAM Memory comes from Samsung, with \$0.67 assigned to Korea. There are more than 400 additional inputs, with values ranging from \$4 to fractions of a penny. Apple’s gross profit meanwhile is \$80, or \$155 if distributed through Apple’s own retail outlet. The margins for the companies involved in the creation of the iPod (above costs of materials and labor) total \$190. Of that total, if the iPod is sold in the United States, \$163 accrues to the United States, \$26 to Japan, and \$1 to Korea. Some portion of \$75 allocated to retail and distribution would go to other players if the iPod were sold outside the United States.

Linden, Kraemer, and Dedrick (2007, 10) conclude that “the value added to the product through assembly in China is probably a few dollars at most” (the popularly accepted figure is \$4). They argue that while Apple’s margins are high within the electronics sector, the “geography” of value capture for the iPod is fairly representative for the industry. Koopman, Wang, and Wei (2009) support this contention with their finding that Japan, the United States, and Europe (EU-15) are the main sources of foreign content for computers and electronics in China, accounting for about 60 percent of imported components.

At the end of the day, China's high-tech export explosion represents MNCs bringing high-skill-content and high-value-added inputs into China, assembling them into final products (or semi-assembled intermediates), and exporting them to world markets. The increase in skill content of Chinese exports since 1992 is largely due to the increased skill content of imported inputs that are then assembled for export. At the same time, FDI payments for Chinese materials and labor used in the operations of the foreign plants have remained low because domestic value added has remained low, especially for more sophisticated skill-intensive products. From a comparative perspective, the share of domestic value-added in FDI operations in China in high-skill-intensive sectors such as computers and telecommunications ranges from less than one-half to slightly more than one-half of what is found in other developing countries where comparable measurements can be made, such as Mexico.

The evidence comes from de la Cruz et al. (2009; 2010, tables 7 and 8), who are able to compare the outcome of manufacturing FDI in China rigorously to other developing countries where there are similar processing-trade regimes. The most accurate comparison can be made with Mexico, where the maquiladora firms and the government's Program for Temporary Imports to Produce Export Goods resemble China's processing trade system.

In low-skill-intensive industries, such as apparel, the FDI-dominated processing industries show a relatively large share of domestic value added in both countries: a 35.4 percent share for Mexico and a 37.6 percent share for China.

In the middle-skill-intensive automotive sector, the FDI-dominated processing industries show what de la Cruz et al. characterize as "medium" domestic value-added in both countries: a 35.2 percent share in motor vehicles and 23.9 percent share in auto parts for Mexico, and a 33.8 percent share in motor vehicles and 28.7 percent share in auto parts for China. Mexico, however, scores a much higher 43.8 percent domestic value-added share in "other transportation equipment" (for which there is no comparable category in the authors' data for China). For China, Lardy (2002) notes that for some vehicle lines the domestic content has been climbing over time: The popular Santana, produced by a joint venture between Volkswagen and Shanghai Automotive, was launched in 1985 with a domestic content of 2 percent but recorded domestic content well over 90 percent by the late 1990s. Other large volume production vehicles, such as the Buicks produced by GM and Shanghai Automotive, followed a similar track.

For high-skill-intensive sectors, such as computers and telecommunications equipment, both countries have a much lower share of domestic value-added in the FDI-dominated processing sectors. What is interesting to note is that Mexico's small domestic value-added share (8.5 percent share in computers, 14.9 percent share in telecommunications) is nonetheless nearly twice as large as that for China for computers (3.4 percent) and even larger for telecommunications (8.4 percent).

Moreover, leaving aside the duty-free intermediates that make up the final electronic and machinery products, it is not clear that there has been significant change either in the extent or in the skill content of China's own processing activities (Dean, Fung, and Wang 2009; Amiti and Freund 2008).

Turning from measurement of domestic content in foreign-owned factories to measurement of impact from FDI on surrounding firms in China, assessments of horizontal and vertical spillovers from multinational investors to indigenous Chinese firms (private or state-owned) appear to be relatively weak in comparison to other countries in Asia, as do export externalities (Moran, forthcoming). The reasons include lower pay at Chinese companies and brain drain from them to foreign MNCs, gaps in technology and quality control standards, adaptability limitations, and intercultural communication problems.

Blonigen and Ma (2010) investigate the extent to which Chinese domestic firms are keeping up or even catching up with foreign exporters. They do not try to measure spillovers directly. Instead, they compare the volume, composition, and quality of exports of the two groups. They find that the general pattern over 1997–2005 runs exactly counter to what one would expect if Chinese firms were catching up—foreign firms' share of exports by product category and foreign unit values relative to Chinese unit values are increasing over time, not decreasing. In other words, Chinese exporters are not even catching up, let alone keeping up, with foreign multinational investors in China.

Deepening the impact of foreign investment on the indigenous economic base in China—expanding the linkages from international investors and deriving more spillovers from their presence—will require improving the business climate for domestic firms, upgrading worker skills, creating engineering and managerial talent, reforming financial institutions, and improving infrastructure. All these reforms are under way, to a greater or lesser extent.

Thus far, however, the aggregate data simply do not show FDI to be a powerful source for indigenous-controlled industrial transformation.<sup>13</sup> The result is that China has remained a low-value-added assembler of more sophisticated inputs imported from abroad—a “workbench” economy largely bereft of the magnified benefits and externalities from FDI enjoyed by other developing countries. Despite the appearance of a small number (seven to nine) of increasingly well-known Chinese national champions in manufacturing in the domestic market and abroad, most of the burgeoning new activities taking place in China have been remarkably well constrained to and contained within the plants owned and controlled by foreign multinationals and their international suppliers.

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13. Branstetter and Foley (2010) note that US MNCs actually do relatively little R&D in China (three-tenths of 1 percent of their worldwide R&D and less than 13 percent of their R&D in the Asia-Pacific region), and most R&D activity in China appears to consist of customizing innovations discovered elsewhere for the Chinese market.

In their dissection of the “value capture” flows for Apple’s iPod, described earlier, Linden, Kraemer, and Dedrick (2007) suggest that the value added attributed to the parent company that contributes a component or performs an integrative function to a product in China flows directly back to MNC headquarters. This is almost surely too simplistic—especially for US MNCs—given the American territorial tax system with the foreign tax credit and deferral that encourage US MNCs to use transfer pricing to keep accumulations of earnings offshore. Rather than try to track down capital flows and hiding places in integrated MNC networks, the more sensible approach is to ask a slightly different kind of question: If MNC headquarters use earnings from China, like earnings from elsewhere, to fortify their corporate position in world markets, what kinds of activities will those earnings help maintain or expand, and where will they be located?

In coming to an answer to this question, it is striking to note even in today’s globalized world how remarkably home-based MNCs from developed countries have remained. For the United States, the most recent data show that US-headquartered MNCs have 70 percent of their operations, make 89 percent of their purchases, spend 87 percent of their R&D dollars, and locate more than half of their workforce within the US economy (Barefoot and Mataloni 2009). This predominant focus on the home economy has persisted over time and changes only very slowly at the margin.

The home-market-centered orientation for MNCs across the developed world is not dissimilar (Rugman 2005). Thus, while manufacturing MNCs may build plants in China, shift production to Vietnam, outsource to Mexico, take a chance in Costa Rica or the Czech Republic, or develop a new application in Israel, the largest impact from deployment of worldwide earnings is to bolster their operations in their home markets.

## **Maintaining the Home Economy as a Competitive Base for MNC Investment**

The analysis presented here shows that the globalization of industry and services via FDI may well be, in Lori Wallach’s famous phrase, “trade on steroids.” But the pejorative connotations associated with this phrase are almost entirely inaccurate empirically. To be sure, FDI generates losers as well as winners. But MNCs do not spread technology and capital in ways that harm the aggregate interests of workers in the developed countries. MNCs do not locate their operations in a zero-sum manner that favors host economies at the expense of the home economy. The two-way flow of inward and outward investment does not create an outcome that can be reasonably characterized in any way as “hollowing out” the home economy.

Outward FDI from the United States or from other home countries is understandably the most controversial phenomenon. MNCs do close plants at home and build plants abroad, and they demonstrably threaten workers in labor negotiations that they will ship jobs overseas if the workers ask for wages

or benefits that the MNC considers excessive. But the evidence consistently shows that the expansion of MNC operations abroad and the strengthening of MNC operations in the home country are complementary. The answer to the counterfactual—would the home country be better off, or would workers in the home country be better off, if home-country MNCs were prevented from engaging in outward investment?—is negative time and time again.

Of particular note is the empirical support for Richardson's (2005b) observation that outward FDI takes place in home-country industries in decline as well as in home-country industries in ascent, but that in both cases, firms that are "globally engaged," including involved in FDI, perform better than counterpart firms that are not.

Looking more specifically at possible policy changes for the United States, President Obama has pledged that his administration will "end tax breaks for corporations that ship jobs overseas."<sup>14</sup> This is widely interpreted to mean that the Obama administration will end deferral for US MNCs. At first glance, the analysis presented here would appear to support such a position—the "classical" conclusion is that home countries should pursue the objective of equalizing the tax burden on foreign and domestic income so that multinationals make investment decisions based entirely on commercial considerations, not tax concerns (capital-export neutrality).<sup>15</sup>

Capital export neutrality ostensibly justifies the elimination of deferral. The latest assessments by Hufbauer and Kim (2009) suggest, however, that this would be counterproductive: US tax policy already places US multinational operations at home at a competitive disadvantage vis-à-vis rival multinationals. Hufbauer and Kim recommend that the US tax regime be shifted toward a territorial system, coupled with favorable expense allocation rules (the United States would tax all income earned at home, but would not tax active business income earned abroad). A shift of US policy that instead places obstacles in the way of US MNCs using the home economy as the hub of their global operations would penalize them in comparison to their rivals, and leave their US suppliers, workers, and local communities less competitive and worse off.

Evidence about outward investment and home economy competitiveness from other developed countries parallels what is found for the United States. However, notwithstanding concerns about the leakage of technology to Eastern Europe, the export of jobs from Sweden, or the "hollowing out" of Japanese manufacturing, the data show a complementary relationship between investment at home and investment abroad across the developed world, not a zero-sum threat to home-country welfare.

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14. President Barack Obama, State of the Union Address, January 27, 2010, available at [www.whitehouse.gov](http://www.whitehouse.gov) (accessed on February 1, 2011).

15. Bergsten, Horst, and Moran (1978, chapter 6) calculated that US tax policy was closer to capital export neutrality than commonly supposed. Deferral gave outward investment only a small advantage, which was offset by the denial of the US investment tax credit and acceleration of depreciation.