The Role of Industrial Policy as a Development Tool:

New Evidence from the Globalization of Trade-and-Investment

Theodore H. Moran

Abstract

Emerging market countries that manage to diversify and upgrade their production and export base grow more rapidly and enjoy greater welfare gains than those that do not. Foreign direct investment in manufacturing is concentrated in middle- and upper-skilled activities – not lowest-skilled operations – and thus offers many opportunities for structural transformation of the host economy. But the challenge of using FDI to diversify and upgrade the local production and export base is fraught with market failures and tricky obstacles. Contemporary debates about industrial policy as a development tool focus on how best to overcome these market failures and other difficulties.

This paper identifies the ingredients for what it calls "light-handed" industrial policy to address these obstacles. To a certain extent, emerging market hosts can carry out the policy interventions recommended here on their own. But the evidence presented in this paper shows that external support is often essential to success. Developed countries, development agencies, and multilateral financial institutions have crucial roles to play. The paper concludes therefore with policy implications for developing countries, developed countries, and multilateral financial institutions.

Center for Global Development
2055 L Street NW
Fifth Floor
Washington DC 20036
202-416-4000
www.cgdev.org

Theodore Moran. 2015. "The Role of Industrial Policy as a Development Tool: New Evidence from the Globalization of Trade-and-Investment." CGD Policy Paper 071. Washington DC: Center for Global Development.
http://www.cgdev.org/publication/role-industrial-policy-development-tool-new-evidence-globalization-trade-and-investment

CGD is grateful for contributions from its funders in support of this work.

Center for Global Development
www.cgdev.org

CGD Policy Paper 071
December 2015

Contents

Overview

Thanks to Ricardo Hausmann, Dani Rodrik, Justin Lin – and others – new, subtle, and more sophisticated arguments have emerged about the role that industrial policy might play in designing development strategy in the contemporary period.[1]

Traditional views of industrial policy have typically begun with trade protection as a means to promote the creation of infant industries, with the hope that they will grow to become viable international competitors. This paper adopts a perspective quite different from the older trade-protection approach. It asks how developing countries can attract FDI within an open trade setting so as to bring the domestic economy to the frontier of technology, management, and production in the sectors that are targeted for FDI-promotion. This focus on attracting FDI to novel sectors in a developing economy is particularly important in light of the discovery that countries that manage to diversify and upgrade their production and export base grow more rapidly and enjoy greater welfare gains than those that do not.

But as Hausmann, Rodrik, Lin, and others point out, the challenge of diversifying and upgrading the local production and export base is fraught with market failures and tricky obstacles. The new contemporary debate about industrial policy as a development tool focuses on how best to overcome these market failures and other difficulties.

Here is where this paper hopes to make an important contribution – the most significant market failures and obstacles to using FDI to upgrade and diversify the host production and export base are slightly – but significantly – different from what the Hausmann-Rodrik-Lin framework leads us to conclude. *The design of industrial policy has to be refocused therefore to deal with the empirical discoveries about market failures and obstacles that are introduced herein.* At the same time, some popular conclusions adopted by some of those who use the Hausmann-Rodrik-Lin framework – notably Dani Rodrik himself -- can be shown to be counterproductive and even damaging to the prospects for development.

To a certain extent, emerging market hosts can carry out the policy interventions recommended here on their own. But the evidence presented in this paper shows that

---

[1] Dani Rodrik. 2011. "The Future of Economic Convergence." Jackson Hole Symposium of the Federal Reserve Bank of Kansas City. August. Ricardo Hausmann and Dani Rodrik. 2003. Economic Development as Self-Discovery. *Journal of Development Economics* 72: 603-633. Ricardo Hausmann and Dani Rodrik, 2005. "Self-Discovery in a Development Strategy for El Salvador." *Economia: Journal of the Latin American and Caribbean Economic Association*, 6 No. 1 (Fall): 43-102. Dani Rodrik. *Normalizing Industrial Policy* 2008. Washington, DC. The World Bank on behalf of the Commission on Growth and Development. Working Paper No. 3. Ricardo Hausmann and Dani Rodrik.. 2006. *Doomed to Choose: Industrial Policy as Predicament.* Harvard University: JFK School. Justin Yifu Lin and Celestin Monga. 2010. "Growth Identification and Facilitation: The Role of the State in the Dynamics of Structural Change." Washington, DC: The World Bank, Office of the Vice President for Development Economics. Policy Research Working Paper 5313. May. Justin Lin and Ha-Joon Chang. 2009. "Should Industrial Policy in Developing Countries Conform to Comparative Advantage or Defy it? A Debate Between Justin Lin and Ha-Joon Chang." *Development Policy Review,* 2009, 27 (5): 483-502

external support is often essential to success. Developed countries, development agencies, and multilateral financial institutions have crucial roles to play. The paper concludes therefore with policy implications for developing countries, developed countries, and multilateral financial institutions.

I. Industrial Policy in the Contemporary Era: Beginning with Insights from Hausmann-Rodrik-Lin

Industrial policy as a prospective development tool has traditionally been associated with a desire to use trade protection to promote infant industries that grow to become internationally competitive, while generating externalities and spillovers to compensate the domestic economy for the costs of protection. These are very high standards to meet, and the balance of empirical evidence suggests few successes. The challenges of having public officials target sectors better than the market, of using trade protection rather than subsidies, of avoiding capture by those protected, and of removing support as sectors become increasingly competitive internationally are shown in the literature on industrial policy to be immense.[2]

In fact, industrial policies even in legendary "success stories" like Japan turn out to be disorganized and often counterproductive, with sunset industries receiving more emphasis than sunrise industries while the more successful of the latter are burdened by paying for the former.[3] In the contemporary era, the prospect of using trade protection to spur development via the creation of infant industries is not considered encouraging by those scholars who have looked more closely at the evidence from the past (whether recent evidence from China contradicts this assessment will be discussed later).

New Perspectives on Industrial Policy

New perspectives introduced by Ricardo Hausmann and Dani Rodrik – as modified by Justin Lin and others – have introduced new sensitivity to the possible uses of industrial policy as a tool for promoting emerging market development.[4]

"The right way of thinking of industrial policy," argues Dani Rodrik, "is as a discovery process—one where firms and the government learn about underlying costs and

---

[2] Marcus Noland and Howard Pack. *Industrial Policy in an Era of Globalization: Lessons From Asia.* Washington, DC: Peterson Institute for International Economics. 2003. Ann Harrison and Andres Rodriguez-Clare. 2010. *Trade, Foreign Investment, and Industrial Policy for Developing Countries. Handbook of Development Economics*, Vol 5: 4039-4214.

[3] Compare Chalmers A. Johnson. MITI and the Japanese Miracle. Stanford University Press. (1981) and Clyde Prestowitz T*rading Places - How We Are Giving Our Future to Japan and How to Reclaim It*, Basic Books, (1993) with Daniel Okimoto, *Between MITI and the Market: Japanese Industrial Policy for High Technology*. Stanford University Press, 1990 and Richard Beason and David M. Weinstein. "Growth, Economies of Scale, and Targeting In Japan (1955-1990)." *The Review of Economics and Statistics*. Vol 78, No. 2, May 1996.

[4] Hausmann, Rodrik. Lim *op. cit*, footnote 1.

opportunities, and engage in strategic coordination."[5] The key to improving productive activity in an economy is having entrepreneurs undertake cost-discovery by trying out novel operations. But the very reason why such *cost-discovery* is so important – uncovering new information about production that can be shared across the entire economy – accounts for why it is under-supplied: the cost of trying out novel activities is private and must be absorbed by the entrepreneur when unsuccessful, whereas the benefits that result from success are socialized as imitators rush in to take advantage of any profitable discovery. *The market failure that hinders self-discovery therefore is an appropriation problem for first-mover investors,* which must be overcome by subsidizing first-mover activity.

Moreover devising programs to subsidize cost-discovery on the part of first movers may not be enough if the success of new ventures requires multiple complementary public sector investments, including investments in infrastructure, investments in information collection and dissemination, and the provision of public goods, at the same time. This creates a role for government to play in *overcoming coordination externalities*.

To the Hausmann-Rodrik focus on appropriation problems and coordination externalities for first movers, Justin Lin adds imperfections in information markets. "In order to be successful in a competitive market," argues Justin Lin, "firms in a developing country need information about which industries within the global industrial frontier align with the country's latent comparative advantage. Information has the same properties as public goods. The costs of collecting and processing information are substantial; however, the marginal cost of allowing one more firm to share the information is almost zero, once the information is generated. Therefore, the government can play a facilitating role by investing in information collection and processing and making information about the relevant new industries freely available to firms."[6]

These then are the key ingredients of contemporary industrial policy design:

- public sector initiatives to fill information gaps about new production possibilities;
- public sector subsidies to overcome appropriation problems for first movers in novel industries;
- and public sector interventions overcome coordination externalities.

The goal is to set in motion a process of structural transformation of the domestic economy.

---

[5] *Normalizing Industrial Policy. Op cit.* For a formal model that approximates this cost discovery phenomenon, see Ann Harrison and Andres Rodriguez-Clare. 2010. *Trade, Foreign Investment, and Industrial Policy for Developing Countries. Handbook of Development Economics*, Vol 5: 4039-4214.

[6] "Should Industrial Policy in Developing Countries Conform to Comparative Advantage or Defy it? A Debate Between Justin Lin and Ha-Joon Chang." *Development Policy Review, op cit.*

In this an accurate assessment of the market failures and other impediments to structural transformation of a developing economy, and an appropriate set of policy interventions to overcome such?

The answer is no, not quite.

Before examining the evidence to come to this conclusion, the paper first looks more closely at the objective of structural transformation.

II. Structural Transformation: New Data about the Prospects for Harnessing FDI to Diversify and Upgrade the Production and Export Base in Developing Countries

Why is structural transformation a central element in development strategy in the contemporary period?

A growing accumulation of evidence demonstrates that countries that are able to diversify and upgrade their production and export base grow faster and enjoy larger welfare gains than countries that simply do more and more of what they have traditionally done.[7] The key question is how to replace traditional static comparative advantage with dynamic comparative advantage that transforms a developing country economy in ways that are viable and competitive when exposed to international markets.

Some countries have been able to rely in important respects on their own indigenous entrepreneurs to diversify and upgrade their economies. In the eyes of Ricardo Hausmann and Dani Rodrik, Chile is a prominent example, where Fundacion Chile, a quasi-public venture fund, underwrote creation of the highly successful salmon industry, while other public programs helped with forest products and grape exports.

Other countries – from China and India, to Mexico and Indonesia – have looked more to foreign direct investment to try to propel the process of structural transformation.

Using Foreign Direct Investment for Structural Transformation

For developing countries that want to use foreign direct investment to help with structural transformation, there is uncontested but perhaps surprising good news.

Popular discussion often portrays foreign direct investment in manufacturing and assembly as flowing primarily to lowest-skill, lowest-wage activities in the developing world, such as garments and footwear. But a closer look at the data paints quite a different picture: by far

---

[7]Ricardo Hausmann, Jason Hwang, and Dani Rodrik. "What You Export Matters." *Journal of Economic Growth*. Vol. 12, No. 1, March, 2007.

the majority of manufacturing FDI in developing countries flows to more advanced industrial sectors, and the weighting toward more skill-intensive investor operations is speeding up over time.

As Table 1 shows, the flow of manufacturing FDI to medium-skilled activities such as transportation equipment, industrial machinery, electronics and electrical products, scientific instruments, medical devices, chemicals, rubber, and plastic products is nearly *ten times larger* per year in the most recent period for which data are available than the flow to low-skilled, labor-intensive operations. The ratio between higher and lower skill-intensive activities was roughly five times larger in the period 1990-1992, and reached approximately fourteen times larger in the period 2005-2007.

Table 1 – Manufacturing FDI Flows to Developing Countries
(millions of dollars**)**

	1990-1992 (annual average)	**2005-2007 (annual average)**	**2009-2011 (annual average)**
Lowest-Skilled Sectors	$758	$2,496	$5,308
Higher-Skilled Sectors	$4,155	$34,788	$51,411
Ratio of Higher-Skilled FDI to Lowest-Skilled FDI	5x (5.48x)	14x (13.94x)	10x (9.69x)

For a complete breakdown by sector, see Annex I (FDI flows) from the UNCTAD database 2014.

So the globalization of industry offers great potential for developing economies to tap into the middle- and higher-skill-intensive supply chains of multinational manufacturing investors. (The more limited likelihood of using foreign direct investment to build supply chains in extractive industries is discussed later.)

As a consequence of this deployment of middle-skill operations to emerging markets, most manufacturing FDI is not being driven by a search for the very lowest-wage workers, even though differences in relative wage levels between home and host economies may be substantial. The ILO and other organizations do not collect precise data on number of workers by job classification and level of compensation. But the evidence that is available supports the general proposition that as skill-levels increase so do wages. Survey data from industry sectors such as autos and auto equipment, electronics, chemicals, and industrial equipment -- in comparison to garments and footwear -- show that foreign investors in higher-skilled activities pay their workers *two to three times as much for basic production jobs*, and

perhaps *ten times as much for technical and supervisor positions,* in comparison to what is earned by employees in comparable positions in lower-skilled MNC operations.[8]

Not only do foreign investors in middle-skill-intensive operations pay higher wages and offer more benefits to their employees than what is received by workers in low-skill-intensive plants, but they typically pay a wage premium in comparison to comparable indigenous firms. Data on foreign investor wage premia come from Asia, Latin American, and Africa.[9] Indeed, Robert Lipsey characterizes as a "universal rule" that foreign-owned firms and plants pay higher wages than domestically owned ones.[10]

What accounts for this wage premium paid by foreign investors in the developing world?

In one of the most detailed studies of this phenomenon, Robert Lipsey and Fredrik Sjoholm draw on the unusually detailed data set of plant and worker characteristics from almost 20,000 firms in Indonesia to separate out the relative influences.[11] They found that foreign investors paid 33 percent more for blue-collar workers and 70 percent more for white-collar workers than did locally-owned firms. But foreign investor operations may have different characteristics than ostensibly similar indigenous companies. Controlling for education, MNCs paid more for workers with a given education level than domestically owned firms. Controlling for region and sector, the foreign pay differential showed up as 25 percent for blue-collar workers and 50 percent for white-collar workers. Controlling for plant size, energy inputs per worker, other inputs per worker, and proportion of employees that were female, the wage-premium in foreign-owned establishments equaled 12 percent for blue-collar and 22 percent for white-collar workers; that is, the foreign investors were paying their employees more than what might be explained by increased productivity coming from greater inputs per worker and higher efficiency resulting from larger scale of production.

They concluded that approximately one-third of the foreign investor wage premium could be attributed to region and sector, one-third attributed to plant size and use of other inputs, and one-third was left unexplained.

---

[8] ILO. 2007 *Decent Work: A Perspective from the MNE Declaration to the Present*. Geneva: International Labor organization.

[9] Brian Aitken, Ann Harrison, and Robert E. Lipsey. 1996. "Wages and Foreign Ownership: A Comparative Study of Mexico, Venezuela, and the United States." *Journal of International Economics* 40(3-4): 345-71; Dirk Willem te Velde and Oliver Morrissey. 2003. "Do Workers in Africa Get a Wage Premium if Employed in Firms Owned by Foreigners?" *Journal of African Economies*. Volume 12, Number 1, pp. 41-73.

[10] Lipsey, Robert. 2006, *Measuring the Impacts of FDI in Central and Eastern Europe Cambridge*, MA, National Bureau of Economic Research. NBER Working paper 12808. Alexander Hijsen. 2008. "Do Multinationals Promote Better Pay and Working Conditions?" In *OECD Employment Outlook*. Paris: Organization for Economic Cooperation and Development. Chapter 5.

[11] Lipsey, Robert E. and Fredrik Sjoholm. 2004, "Foreign Direct Investment, Education, and Wages in Indonesian Manufacturing," *Journal of Development Economics* 75 (1): 415-422.

So --quite at variance with the widespread notion that most foreign investors travel to developing countries to "exploit" local workers, or that mobile capital takes advantage of inherently fixed labor -- the pleasing puzzle in the data from Indonesia (which will be shown also in other countries later in this paper) is why multinationals pay local workers more than they "need to" to keep their plants operating efficiently. Perhaps foreign investors provide skill-training (unobserved by econometric analysis) that increases worker productivity; or perhaps foreign investors want to secure a more stable labor force by limiting turnover. Investigating these hypotheses requires further research.[12]

This leads to two conclusions for developing countries that want to use FDI for structural transformation:

- first, that manufacturing multinationals constitute a target-rich array for host authorities to try to attract,
- and second, that middle-skilled occupations paying above average wages are part of the payoff for those that succeed.

In the days of the Washington Consensus, it might have been comfortable to imagine that all would-be host governments had to do if they wanted to use this vast array of FDI in middle-skilled activities for structural transformation was to improve their domestic doing-business indicators and then sit back and wait for multinational manufacturing corporations to come knocking. But the Hausmann-Rodrik-Lin framework warns that this structural change in the domestic economy is not likely to take place simply by letting markets work on their own – their message is that important market failures and other obstacles will prevent international economic forces from functioning efficiently. Host country interventions are necessary to overcome such market failures and other obstacles.

To what extent does the Hausmann-Rodrik-Lin perspective identify the right market failures and imperfections for developing countries that have tried to use FDI to diversify and upgrade their production and export base?

III. Testing the Hausmann-Rodrik-Lin Model of Market Imperfections: Some Important Discoveries

What does the evidence from developing countries that have tried to use FDI for structural transformation demonstrate about the precise nature of market failures that must be overcome and the specific kinds of industrial policies that are needed to achieve success?

To answer this question, it would be desirable to have a large-N data-base covering the

[12] For a useful summary of research on the FDI wage premia, see Beata Javorcik. 2014. "Does FDI Bring Good Jobs to Host Countries?" working paper. She investigates the hypothesis of rent-sharing between investor and workers.

experiences of individual countries trying to attract FDI with micro-evidence about appropriability problems, about failures in information markets, and about coordination externalities through government policies. Such a data-base does not exist, and proxies for such subtle variables are likely to be hard to identify. So instead this paper goes in the opposite direction, and draws on five case studies in which micro-details are available about how to attract foreign investment into novel middle-skilled and higher-skilled activities, permitting identification of the precise market failures and impediments to structural transformation across all five cases.

These five case studies – successful investment promotion in Costa Rica, in Penang-Malaysia, and in the Czech Republic, contrasted with more problematic outcomes in Morocco and South Africa – provide enough detail to examine the key elements of the Hausmann-Rodrik-Lin framework, and uncover some important surprises.

Market Imperfections in Costa Rica, Malaysia, and the Czech Republic

The first thing to note is --as Justin Lin emphasizes -- how large are the imperfections in information markets, and how risk-averse are multinational investors when contemplating investment for sophisticated activities in novel and untried locales. To say that information markets worked imperfectly would be an understatement in the experience of Costa Rica. Intel had plans to build a new semiconductor fabrication plant, and was actively researching sites in Indonesia, Thailand, Brazil, Chile, and Mexico. But Costa Rica was not on the company's radar scope, and for more than two years Intel HQ would not even grant an appointment for CINDE to make the case for considering Costa Rica.

The experience of Malaysia – in particular, the state government of Penang – shows many of the same difficulties in attracting FDI into middle-skilled activities. In the Malaysian case the challenge was slightly different in that Penang and other states had been able to attract international electronics firms to carry out low skilled labor intensive activities like making printed circuit boards or assembling low-end products. The test for Malaysia was to induce international electronics investors to upgrade their operations to more complex sub-assemblies and final products, incorporating design functions and design teams and high performance quality control procedures within the Malaysian IT sector. Japanese investors resolutely kept design functions and higher level production facilities in the home economy until after the Plaza Accord of 1985. Initially US and European electronics firms also were hesitant to shift more advanced products, production processes, and design functions to Malaysia. Only once these latter operations had been shown to be successful in Singapore was the Penang Development Corporation – the investment promotion agency of Penang – able to make the case to US, European, and eventually Japanese multinationals that they might try out Malaysia as a cheaper but equally efficient location as Singapore.

The importance of Investment Promotion Agencies in overcoming imperfections in information markets has become widely accepted. There is a well-established case-study

literature showing that even after developing countries undertake macro-, micro-, and institutional reforms they must launch active marketing campaigns using investment promotion agencies like CINDE in Costa Rica and the Penang Development Corporation in Malaysia to place themselves on the informational horizon of multinational investors, especially multinational investors in non-traditional sectors.[13] But such evidence is not limited to case-study materials. Torfinn Harding and Beata Javorcik provide rigorous econometric backing for this kind of intervention.[14] Comparing data from 109 countries with an IPA and 31 without, Harding and Javorcik find that the presence of an IPA is correlated with higher FDI inflows, in particular higher FDI inflows into those sectors targeted by the IPA. They compare FDI inflows into targeted sectors, before and after targeting, to FDI inflows into non-targeted sectors during the same time period, and find that active IPA targeting doubles FDI inflows. They control for changes in host country business environment by including country-year fixed effects, for heterogeneity of sectors in different locations by including country-sector fixed effects, and for shocks to supply of FDI in particular sectors by adding sector-time fixed effects. In checking for reverse causality, they find no evidence that targeting took place in sectors with relatively high or low inflows in the years preceding targeting.

Reinforcing the observations from Costa Rica and Malaysia, Harding and Javorcik discover – in a separate study – that FDI targeting by IPAs can be used to raise the quality of exports from the host economy.[15] Examining evidence from 105 countries from 1984 to 2000, they relate unit values of exports at the four-digit SITC level to data on sectors treated by Investment Promotion Agencies as a priority in their efforts to attract FDI. They show that the sectors given priority by the host IPA have higher unit values of exports. These findings are robust to using two different data sets, and to instrumenting for the choice of priority sectors. The authors' data suggest that hosts can use foreign investment to increase the quality of exports both in absolute terms and in terms of bridging the distance to the quality frontier.

What is the imperfection in information markets that has to be overcome by host country policy? Is the imperfection in information market a problem of information asymmetries, as Hausmann, Rodrik, and Lin assert? Here is where the micro-data from the case studies of Costa Rica and Malaysia – plus the Czech Republic, Morocco, and South Africa – provide an important policy insight.

---

[13] Jacques Morriset and Kelly Andrews-Johnson. 2003. *The Effectiveness of Promotion Agencies at Attracting Foreign Direct Investment*. Foreign Investment Advisory Service Occasional Paper 16. Washington, DC: Louis T. Wells, Jr. and Alvin G. Wint. 2000. *Marketing a Country: Promotion as a Tool for Attracting Foreign Investment*, Revised Edition, Washington, DC: The International Finance Corporation, the Multilateral Investment Guarantee Agency, and the World Bank.

[14] Torfinn Harding and Beata Smarzynska Javorcik. 2011. "Roll Out the Red Carpet and They Will Come: Investment Promotion and FDI Inflows". *The Economics Journal*, Vol. 121, Issue 557, pp. 1445-1476.

[15] Torfinn Harding and Beata Javorcik. 2012. "Foreign Direct Investment and Export Upgrading." *The Review of Economics and Statistics*. 94 (4): 964-80.

Information asymmetry implies that one side (the host) has more and better information than the other side (the potential investor). *But the reality is that neither side knows whether a new and untried site will be an effective production location for investment in a novel economic activity*. In Costa Rica, CINDE did indeed provide detailed information about economic conditions, investment laws, and regulatory regimes to Intel negotiators. But the central preoccupation of Intel HQ was reassurance that a semiconductor fabrication plant in Costa Rica could be integrated seamlessly into the global production network upon which Intel's competitive position in international markets depended. CINDE had to figure out ways to deliver such reassurance, not simply provide more or better information.

Three issues dominated the nineteen negotiating sessions between Costa Rica and Intel. The first two were expensive, but non-controversial. First, CINDE – backed by personal involvement of President Figueres – had to offer infrastructure enhancements that included a speeded-up renovation of the national airport with special facilities for Intel freight, plus building a new power substation on the electrical grid dedicated to the prospective Intel seminconductor plant. Second, the Figueres administration had to form a public-private partnership for vocational training in which the national Technological Institute (Instituto Technological de Costa Rica) would co-design with Intel a training program for IT workers, supervisors, engineers, and managers. The third requirement was unavoidably controversial – Intel wanted to minimize the risk of work stoppages. Intel plants around the world were non-unionized, and Intel sought a location where labor organizing was not strong. Costa Rica had a low rate of unionized workers (seven percent of private sector employees), with a widespread alternative of Solidarity Associations between labor and management that provided services and financial benefits to workers. Consistent with the earlier data on wage-premia paid by middle-skilled multinational investors, Intel intended to pay superior wages (one-and-one-half times the national manufacturing average) and offer superior working conditions. Intel did not seek a legal prohibition on labor organizing, but had to be satisfied that their facilities would be unlikely to meet frequent threats of strikes.

Once the Figueres administration provided these reassurances about seamless integration between the prospective plant and the Intel global network, Costa Rica made it onto the Intel "short-list". Only then did the issue of investment incentives arise, as Intel negotiators used a tactic familiar in business school literature. They recounted what rival short-list hosts were offering, and insisted that Costa Rica match the others. In point of fact, Costa Rica's Minister of Foreign Trade did no more than promise to introduce an advantageous change in the tax law into the legislature, an amendment that did not actually pass until 1998, almost a year after Intel started construction of the plant.[16]

The same preoccupations with reassuring foreign investors in middle-skilled activities that they will be able to integrate plants in untried sites smoothly into their global production

[16]Roy C. Nelson, *op. cit.*, p. 58-59.

networks emerge prominently in the other case studies. In Malaysia, the building of the electronics complex in Penang began with infrastructure construction adjacent to the state's international airport on three sides. To induce multinational investors to upgrade their operations to include more complex tasks, the Penang Development Corporation broadened its investment promotion functions to include the Penang Skills Development Corporation (PSDC), in 1989. With a steering committee headed by Motorola, Hewlett-Packard, and Intel, PSDC induced twenty-four "founder" firms to contribute equipment and assign executives to teach at the new campus financed by the state of Penang. Within seven years – in 1996 – a USAID study ranked PDSC as one of the ten leading Workforce Development Institutions in the world. In terms of infrastructure upgrades, PDC meanwhile added IT improvements to transportation improvements. With intensive lobbying from PDC, the Malaysian central government began plans for the Multimedia Super IT Corridor, and in 2005 chose Penang to be the first in the country to be awarded Cyber-City status.

Changing its name to InvestPenang in 2004, the former Penang Development Corporation began to target FDI in advanced electronics with FDI in biotechnology, including, for example, electrical and electronic-based medical devices, automation-based medical devices, and diagnostic tools. To make sure that vocational training programs keep pace with the novel FDI promotion efforts, the Penang Skills Development Center founded a Micro-Electronics Center of Excellence located at Universiti Sains Malaysia which housed a world-recognized School of Pharmacology.

Replicating the controversial issue of labor flexibility encountered in Costa Rica, foreign investors insisted that unions be excluded from Malaysian export zones altogether during the early low-wage electronics assembly period, as well as being freed from any requirement to have local partners or to participate in the bumiputra system that gave preference to firms owned by indigenous Malays. As the multinational corporations moved into higher skilled operations, the government allowed in-house unions to organize, beginning in 1989. Wage levels in higher-skilled electronics rose substantially, but the emphasis on labor market flexibility has continued – layoffs, retrenchments, transfers and job assignments continued to be outside the scope of bargaining at the firm level. In the Global Competitiveness Index 2012-2013, Malaysia ranked twenty-sixth out of 148 countries in ease of hiring and firing, and second in the world in the relationship between pay and productivity.

Founded in 1992, CzechInvest first targeted what it characterized as "light industry". In anticipation of the accession of the Czech Republic to the EU, CzechInvest shifted its focus in 2001 to the attraction of investors with higher engineering-intensive operations, hiring IPA staff with expertise in the automotive, aerospace, IT, and electronics sectors. The Czech Republic had traditionally been very strong in technical fields – approximately one-third of all university graduates have a degree in a technical field. CzechInvest launched public-private training partnerships involving foreign firms with the Czech Technical University in Prague and other engineering programs in Plzeň, Liberec, Pardubice, Brno, Zlín and Ostrava.

At the same time, CzechInvest gained authority to provide construction grants for the development of business properties, and became a direct conduit for the co-financing of projects using EU structural funds. Between 2004 and 2013 it provided infrastructure support to more than 100 industrial zones.

The Global Competitiveness Index 2012-2013 portrays a more nuanced portrait of labor market flexibility in the Czech Republic than found in either Costa Rica or Malaysia. On the one hand, the ease of hiring and firing measurement places the Czech Republic 121st out of 148 countries, suggesting the presence of labor regulations and union strength in the tradition of counterpart economies in the EU. On the other hand, there is a close relationship between pay and productivity, placing the Czech Republic at the 19th most competitive out of 148 countries around the globe.

Costa Rica provides the clearest evidence of the role a single high-profile foreign investment can play in the subsequent structural transformation of the host economy. Within three years of Intel's arrival, the country tripled its stock of FDI, to $1.3 billion. Seventy-two percent of 61 multinationals with operations in Costa Rica reported that the Intel decision to build a plant played an important "signaling role" in their own decision to invest (36 in electronics, 13 in medical devices, 3 in business services, and 9 in other sectors).[17] Within ten years of Intel's initial investment, CINDE managed to attract new investments from fifty-six electronics firms, employing 11,000 workers. CINDE also targeted medical device investors, bringing in some twenty-three firms, employing 6,000 workers. Finally, CINDE developed a new focus on service investors, forty-eight firms, employing 5,000 people. Western Union chose Costa Rica to be its technical support center. Proctor & Gamble did the same for back-office services. As of 2014 there are some 250 multinational corporations with operations in Costa Rica, and the country competes with Chile as the most export-intensive per GDP economy in Latin America.

The structural transformation of Malaysia has been slightly slower than Costa Rica, but no less dramatic. Over a mere four decades, beginning in the early 1970s – approximately one generation -- Malaysia has shifted from being a resource-based economy, known throughout the world for rubber and tin, to a manufacturing powerhouse centered around large-scale electronics exports. Manufacturing's share of total exports rose from 6 percent in 1970 to over 70 percent by 2013. Before the worldwide recession hit in 2008, the electronics industry had become Malaysia's leading manufacturing sector, accounting for 29 percent of gross domestic output, 56 percent of exports ($75 billion), and 29 percent of total employment in the manufacturing sector (some 299,000 workers, supervisors, engineers, and managers). The

[17]Felipe Larrain, Luis F. Lopez-Calva, and Andres Rodriguez-Clare. 2001. "Intel: A Case Study of Foreign Direct Investment in Central America." In Felipe Larrain, ed., *Economic Development in Central America, vol. 1: Growth and Internationalization*. Harvard University Press.

economic downturn hit the Malaysian export sector particularly hard, but by 2012, Malaysian electronics exports had climbed back to $55 billion.

In the Czech Republic, the use of FDI to upgrade and diversify the country's production and export base is a work in progress. Between 2000 and 2013, CzechInvest helped some 2000 investment projects get started, with investments of approximately $28 billion, generating 215,000 jobs. These include more than 224 R&D centers, thirty-seven in the automotive sector and fifty-two in precision engineering. Czech automotive facilities include Porsch Engineering Services, Biseon, Bosch, Honeywell, Siemens, and TRW. Czech electronics plants include Panasonic, Bang & Olufson, ST Microelectronics, Flextronics, and AMI Semiconductor.

So the ingredients for success in using FDI to achieve structure change in Costa Rica, Malaysia (Penang), and the Czech Republic include aggressive investment promotion, backed by infrastructure improvement and public-private partnerships for vocational training, plus flexibility in labor market regulations. These are the measures these three countries have used to attract middle-skilled investors who want to ensure tight integration of local plants into their world-wide production network.

Perhaps the most understudied of these ingredients is the requirement of labor market flexibility. How important is this characteristic for would-be hosts in the developing world?

Here the case studies of Morocco and South Africa are instructive.[18]

Market Imperfections in Morocco and South Africa

In Morocco, inward flows of foreign direct investment rose from less than one percent of GDP in the 1990s to an average around four percent of GDP during 2003-2007 – before the international financial crisis caused FDI flows to plummet around the globe. But the larger volume of pre-crisis FDI flows into Morocco remained largely centered in low-skill, low value-added activities, and Morocco's export profile has remained less sophisticated than comparison countries such as the Philippines and El Salvador as well as China, India, Indonesia, and Thailand.[19]

The beginning of what was to become the transformation of the export profile of Morocco toward higher-skilled manufacturing sprang to a certain extent from fortunate – even lucky – circumstances. The spearhead for export upgrading originated in an unlikely sector – aerospace – and was launched by a Moroccan national named Seddik Belyamani, who had

---

[18] Full disclosure: I have worked on-the-ground in both Morocco and South Africa, in recent years, helping to strengthen investment promotion and supply chain development.

[19] IBRD and IFC: *Country Partnership Strategy Progress Report for The Kingdom of Morocco* for the period FY10-13. May 15, 2012. Kingdom of Morocco: Country Economic Memorandum, two volumes. Washington, DC: The World Bank, March 14, 2006.

risen to become Boeing's Executive President for Worldwide Sales in Seattle. Beginning in 1997, M. Belyamani led an internal search within Boeing for more than a year to identify what aerospace components might be reliably produced in Casablanca. Working with his counterpart senior executive in Royal Air Moroc, M. Hamid Benbrahim El-Andaloussi, the Boeing study led to creation of joint venture between Boeing, Royal Air Moroc, and a Moroccan firm Labinal – the JV took the name Matis -- to outsource assembly of wire harnesses to Morocco.

M. Belyamani and his American counterparts at Boeing in Seattle initially expected to achieve efficiency of no more than 30% of industry norms, but Matis productivity growth hit 70% of industry standards within two years. In 2002, M. Belyamani left Boeing and returned to Casablanca to become Chairman of Matis. Matis now builds wire bundles for the Boeing 737, 747, 757, 767 and 777 airplanes. Airbus, SNECMA, Bombardier, and Embraer have set up export facilities in the same industrial parks.

To ensure that current companies – and new investors – have access to an adequate supply of well-trained employees, the Organization of Moroccan Aeronautics Companies (Groupement des Industriels Marocain Aeronautique et Spatial, or GIMAS), the Union of Metallurgical Workers, and the Ministries of Labor, Industry, and Finance signed a convention in February 2009 – under sponsorship of King Mohamed VI – to set up an Institute for Aeronautical Training. With combinations of classroom and on-the-job training lasting between 23 and 42 weeks, the Institute aims to train technicians in capacities such as engine overhaul, metallurgy, electrical systems, and numerical systems and controls, as well as mid-management professional development. The Organization of Aeronautics Companies (GIMAS) plays a central role in the design of the curriculum, with continuous course renovation to meet the needs of current and potential employers.

Morocco is the exception that proves the rule with regard to the need for aggressive and effective investment promotion: the partnership between the two individuals who launched the creation of Morocco's aerospace cluster -- Seddik Belyamani and Hamid Benbrahim El-Andaloussi --personally made up for weaknesses in Morocco's Investment Promotion Agency (Investir au Maroc) that the World Bank IPA Benchmark exercise ranked as mediocre. In 2009, however, Morocco renovated its IPA (*Agence morocaine de development des investissement* –AMDI) and placed it under the direction of an experienced individual -- Ambassador Fathallah Sijelmassi -- whose earlier responsibilities included negotiation of the Moroccan-EU trade access arrangement and the US-Morocco FTA.

In recent years, Morocco has undertaken a major effort to upgrade its infrastructure in the North. In mid-2009 the Kingdom launched Tangier Med II, a large expansion and renovation of the Tangier port facilities on the south coast of Gibraltar. Port construction is expected to reach full capacity by the end of 2015 with the ability to move 8 million containers, 2 million vehicles, and 7 million passengers. The initial investment promotion priority is to try to turn Tangiers into an automotive hub with Renault as an anchor investor. Working together, Renault and Moroccan authorities are planning a center for vocational

training in the automotive sector, with a curriculum designed by the private sector participants. The next objective is to bring in a broad array of international parts companies.

But international investors are expressing serious concerns about making large commitments in Tangier Med II, even as the EU economy begins to recover.[20] In Moroccan labor law, there is no distinction between laying-off and firing workers, with a requirement of six months prior notice, plus a large but not authoritatively specified severance package to be awarded. This latter ambiguity means that the size of any given severance package will quite probably be challenged in court, with the company having to continue to pay the workers while the outcome is adjudicated. Labor market survey data show that severance costs are equal to 85 weeks of salary in Morocco versus 53 weeks on average elsewhere in the region. Morocco ranks 67th of 148 in the Global Competitiveness Index of the relationship between pay and productivity, and 93rd of 148 in ease of hiring and firing. Hiring new workers resembles a decision to bring them into the company for life, which is difficult when entering into an international supplier arrangement where demand may be highly cyclical in nature. The lack of labor market flexibility appears thus far as a major impediment to filling the industrial parks associated with Tangier Med II.

The issue of labor market flexibility is even more pronounced in the case of South Africa. The South African economy of course has long enjoyed a significant high-skill-intensive FDI-led industrial sector, in particular in autos and transportation equipment. The 2013-2015 Industrial Policy Action Plan (IPAP) proposes to draw in large numbers of foreign investors to expand the country's industrial base. The IPAP includes large-scale infrastructure expenditures to strengthen the country's three present industrial development zones (IDZs) -- in Richards Bay, East London, and Coega outside Port Elizabeth – as well as to begin the development of ten new Special Economic Zones (SEZs). The principal objective, as laid out in the New Growth Path 2010-2020, is to use indigenous and foreign investment to generate high paying jobs for South African workers.

But the three already existing industrial development zones have had a weak response to efforts to attract new investors. Despite impressive port and rail infrastructure on the northeast coast of South Africa, Richards Bay has only one investor as of 2013 (Tata Steel). The East London IDZ has a handful of auto parts investors, a diamond polisher, and a dairy. The information technology and electronics, acquaculture, agro-processing, renewable energy, and general manufacturing targeted-sectors in East London stand empty. Only the Coega IDZ, in operation since 1999, has managed to attract an appealing but modest portfolio of international investors. As of end-2012 there were twenty-three companies generating some 3500 jobs.

---

[20] Cf. US Millennium Challenge Corporation. RFP. Private Sector Engagement and Partnerships for Education and Workforce Development (Morocco, Georgia, and El Salvador). August 8, 2014.

A major obstacle to attracting FDI has been South African labor market regulations.[21] Minimum wage levels are relatively high, and there is no trial-wage or apprentice-ship wage to introduce workers into on-the-job training processes. Labor bargaining councils are dominated by large established firms and unions; their agreements are typically extended to all businesses in a sector. This practice retards the entry of new participants into the sector, and inhibits smaller or less-experienced companies from investing. At the same time, it is very expensive and costly in South Africa – like Morocco -- to lay workers off in response to changing conditions of external supply and demand. In 2012-2013, South Africa was ranked 147th out of 148 countries (next to last) in the ease of hiring and firing category of the Global Competitiveness Index, and 142nd out of 148 countries in the relationship between pay and productivity.

Across the South African economy, rigid labor market regulations are beginning to be recognized as a major contributing factor in creating unemployment rates above 30 percent, and higher for youth unemployment (the Centre for Development and Enterprise in Johannesburg estimates that the ranks of the unemployed in the South African economy totals 40 percent of the workforce; Jeffrey Herbst and Greg Mills calculate that unemployment is nearly 70% among South Africans under 30).[22] They are also a major impediment to attracting new foreign investments or stimulating strong reinvestment on the part of existing firms.

Appropriability Problems and Investment Incentives: A Surprise in the Data

These five case studies highlight the need for aggressive investment promotion to overcome serious imperfections in information markets, backed by packages of infrastructure improvements and public-private partnerships for vocational training, within a setting of labor market flexibility (not lowest possible wages) to ensure close integration between new foreign-owned plants and parent production networks around the globe.

---

[21] Centre for Development and Enterprise. 2012. *SPECIAL ECONOMIC ZONES: Lessons for South Africa from international evidence and local experience*. South Africa: Johannesburg. May. Jeffrey Herbst and Greg Mills. *How South Africa Works*. Johannesburg, South Africa: Pan Macmillan. 2015.

[22] Centre for Development and Enterprise. 2013. *Rethinking South Africa's Labour Market: Lessons from Brazil, India and Malaysia*. South Africa: Johannesburg. June.

BOX 1

Comparative Appraisal of Host Efforts to Use FDI to Upgrade and Diversify the Domestic Production and Export Base

	Doing Business Indicators*	Pro-Active Investment Promotion Agency	Infrastructure Packages	Public-Private Partnerships for Vocational Training	Labor Market Flexibility	FDI Upgrades and Diversification Outcomes
Costa Rica	+	+	+	+	+	+
Malaysia/Penang	+	+	+	+	+	+
Czech Republic	+	+	+	+	+	+
Morocco/Tangiers -Med	+	+	+	N/A	-	-
South Africa/IDZs	+	+	+	N/A	-	-

**Doing Business Indicators in Export Zones, without considering labor market flexibility*

What is notable is what does not show up in the three successful case studies – *there is no evidence of appropriation problems whatsoever*. In Costa Rica, first-mover Intel's behavior since its original investment of $115 million in 1997 does not appear to have been slowed by an inability to earn sufficient returns; if anything, Intel benefitted from cluster-effects as other investors moved in. Intel followed its first plant with a second, and then added a global distribution center. In the decade and a half since 1997, Intel has invested an addition $900 million in Costa Rica, while increasing the number of local employees from 500 to 2800. Then, as part of a worldwide retrenchment due to declining demand for PCs, Intel cut its assembly operations in Costa Rica in 2014, while at the same time adding some 250 "high value" jobs within its R&D group in the country.

Similarly, in Malaysia, there are no indications of appropriability problems as first mover electronics firms moved from low-wage assembly into higher-skill production and design activities. The US and European firms that led the upgrading of electronics operations – notably Motorola, Texas Instruments, Hewlett Packard, and Philips – steadily added more complex operations and design functions.[23] Firm-level micro-data document Motorola's

[23]R. Rasiah, *Foreign Capital and Industrialization in Malaysia*. New York: St. Martin's Press, 1995. See also, "Giovanni Capanelli.1997. Buyer-Supplier Relations and Technology Transfer: Japanese Consumer Electronics." *International Review of Economics and Business* 44, no. 3 (September): 633-62.

affiliate moving from rudimentary printed circuit-board assembly for pagers and private radio systems to worldwide responsibility for design, development, and automated manufacture of double-sided six-layer printed circuit boards and for design and development of integrated circuits for disk drives and other peripherals. Hewlett Packard progressed from assembly of calculators to manufacture, tooling development, process design, and even chips design for portable printers, desktop personal computers, and servers. Reflecting on the evolution of Texas Instruments in Malaysia, a TI executive observed, "We came for the cheap labor and the tax advantages, but we are staying because of the expertise we have built up here. As far as assembly and testing are concerned we have more expertise here than we have in the US. We sometimes have to send our Malaysian engineers to the States to solve their problems."[24] By the late 1980s Japanese overseas investment assumed the famous flying-geese pattern with great electronics firms following each other in formation to Malaysia as well as other locations in Southeast Asia. Over the four years after the Plaza Accord of 1985, the number of offshore units of Japanese parents in Malaysia tripled.[25]

In the Czech Republic, the buildup of automotive, electronics, and precision engineering plants ramped up steadily from 2000 until the great recession hit in 2008. Alongside production factories came the creation of more than two hundred R&D campuses.

The absence of appropriability problems – so central to the Hausmann-Rodrik-Lin model of market imperfections – has important implications for policymakers as well as policy analysts. In particular, the crucial notion of "cost-discovery" on the part of first-mover investors -- in the characterization of Hausmann and Rodrik – has to be refined to understand the actual challenges faced by both the investor or the host. As the evidence from these case studies shows, the potential investor in a novel middle- or higher-skill intensive operation wants to be reassured that the resulting goods or services can be integrated seamlessly into the global network upon which the parent's competitive position in international markets depends. The would-be host wants to figure out how best to deliver such reassurance by lessening the likelihood of interruption. This leads directly to the need to put together packages of infrastructure improvements and joint vocational training initiatives customized to the needs of the investor, alongside flexibility in hiring and laying-off workers when need be.

---

[24] Linda Lim and Eng Fong Pang. 1995. *Foreign Direct Investment and Industrialisation: in Malaysia*, Singapore, Taiwan and Thailand, Paris: OECD, p. 115.

[25] Urata, Shujiro and Hiroki Kawai, "Intrafirm Technology Transfer by Japanese Manufacturing Firms in Asia," in Takatoshi Ito and Anne O. Krueger, eds., *The Role of Foreign Direct Investment in East Asian Economic Development* (Chicago: The University of Chicago Press for the National Bureau of Economic Research, 2000).

Programs to Support Seamless Integration of Supply Chains Versus Tax Breaks and Investment Incentives

To be sure, from the perspective of cost-accounting, an electric power outage, a delay at the port or airport, or a shortage of technical workers can be entered into a spread-sheet that shows added costs of doing business. But reassuring the investor about the quality-control in production, and the speed and reliability of incorporation into the firm's global network, *cannot be addressed by simply providing a larger financial subsidy*, lowering tax rates, or offering sub-market input costs. Rather the would-be host needs to address the seamless-integration concerns of the investor head-on. This has direct implications for the powers entrusted to the Investment Promotion Agency or the inter-Ministerial Investment Promotion Committee. It has direct implications for programs to support investment promotion offered by external donors, including by the World Bank Group or regional development banks. Finally, of course, this has direct implications for the debate about the role of industrial policy in developing countries.

Do the challenges facing CINDE in Costa Rica, the Penang Development Corporation in Malaysia, or CzechInvest fit into economists' conventional paradigm of first calculating the externalities and then subsidizing FDI by a comparable amount?

The take-away for developing country policymakers from these case studies is just the reverse. Refusing to make the expenditures until the presence of externalities can be demonstrated, and gauging the level of expenditures as a function of the value of the externalities, *is simply not a plausible strategy* for host governments that want to use FDI for structural transformation of their economies. Quite the contrary, host authorities are going to have to make costly up-front expenditures to improve "business indicators", reform institutions, renovate investment promotion agencies, put expensive infrastructure and vocational training packages in place – and, alas, probably approve tax breaks and locational incentives to match competitor offers elsewhere -- while spillovers and externalities are no more than a gleam in the eye of the most optimistic public officials, and may only fully materialize down the road.

The best such officials may be able to manage is to structure as many expenditures as possible so as to benefit the economy as a whole, not just particular foreign investors. They can design the infrastructure improvements to the extent feasible as public goods that could be enjoyed by all actors in the domestic economy. They can create vocational training programs to train workers and engineers who could be employed across a spectrum of industries, not just to work in the plants of the foreign investors.

IV. Enhancing Backward Linkages from Foreign Investors to Local Firms: Recurrent Controversies and New Insights

The previous analysis has focused on attracting FDI to diversify and upgrade the host economy. The next logical task is to investigate policies to promote spillovers from foreign investors to other firms in the host country markets, especially (but not exclusively)

spillovers in the form of vertical local supplier networks to multinational investors. This is a fairly common-sense task, but requires overcoming some widespread analytical confusions and misperceptions along the way.

Horizontal Spillovers

Beginning with a look in the horizontal direction, it is widely recognized that foreign investors would prefer to avoid creating rivals to their own market position. But workers and managers leave foreign plants to start up their own. Local firms learn from watching the operations of foreigners. Competitive pressures from foreign entrants push indigenous companies to raise their performance. In Mauritius, six years after the beginnings of FDI-led export growth, fifty percent of the capital invested in Export Processing Zones came from indigenous companies founded by owners who had started in foreign firms nearby.[26] In Ghana, Holger Gorg and Eric Strobl trace the path of managers that leave multinational employers to set up their own companies: they find that local firms run by owners who worked for foreign firms in the same industry immediately before opening their own company are more productive than rivals in the industry who started up on their own.[27]

Besides the relocation of workers and managers, contemporary survey data from Eastern Europe show that indigenous firms observe and imitate foreign practices in the horizontal direction: one quarter of the managers of Czech firms and fifteen percent of the managers of Latvian firms in a sample collected by Beata Smarzynska Javorcik and Mariana Spatareanu in 2003 report that they gained knowledge about new technologies by studying foreign firms as the latter entered their industry.[28] Twelve percent of the Czech managers and nine percent of the Latvian managers added that they learned new marketing techniques and discovered new sales outlets by scrutinizing the foreigners' behavior.

Nonetheless it remains true that multinational manufacturing investors try to limit horizontal spillovers as much as possible.

---

[26] Yung Whee Rhee, Katharina Katterback, and Jeanette White, *Free Trade Zones in Export Strategies* (Washington, DC: The World Bank, Industry Development Division, December 1990), p. 39.

[27] Holger Jorg and Eric Strobl. 2005. "Spillovers from Foreign Firms though Worker Mobility: An Empirical Investigation." *Scandinavian Journal of Economics* 107 (4): 693-709.

[28] Beata Smarzynska Javorcik and Mariana Spatareanu. "Disentangling FDI Spillover Effects: What Do Firm Perceptions Tell Us," in *Does Foreign Direct Investment Promote Development? Op. cit.*

Vertical Linkages

In the vertical direction, in contrast, foreign investors often have a self-interest in creating low-cost reliable-quality suppliers in the host market. The outcome depends however on the structure and character of the industry involved.[29]

In the apparel industry, for example, recent studies show this sector to be so burdened with rules-of-origin trade constraints that the generation of backward linkages is extremely difficult.[30] Even after decades of exposure to FDI, country-by-country investigations of garments and apparel reveal very limited domestic supplier networks.

In the extractive sector, large modern mining and petroleum operations are so capital intensive -- with great economies of scale, and requirements for sophisticated engineering equipment -- that purchases from local firms other than simple service providers (catering, transport, security) may be largely infeasible. There are nonetheless exceptions as when company-confidential evidence shows a large mining company in an African country engaging a Swiss pump maker to train indigenous companies to make pump parts, finding a US investor to supervise local firms in making conveyer belts, and attracting a German firm to teach domestic companies how to do maintenance on relatively sophisticated imported machinery. Similarly, in Ghana, public information shows that foreign investors developed linkages to domestic suppliers of plastic piping, kilns and furnaces, and casting and grinding of mill liners.[31] Eighty-six percent of local firms in Ghana that began by supplying one foreign extractive investor expanded to more than one customer, with referrals from the initial buyer playing an important role. One third of all suppliers to foreign extractive investors surveyed in Ghana and 42 percent in Chile started to export directly as a result of supplying foreign investors. In the latter case, regional networks among indigenous supplier firms from Chile expanded across borders into Peru and Bolivia.

Promoting Vertical Linkages: External Investors

What host country policies are conducive to promoting backward linkages from foreign investors in manufacturing and assembly to local suppliers, and what policies are counterproductive or detrimental? How might external support be used to expand vertical supplier relationships within the host economy?

Somewhat surprisingly one of the most successful host policy initiatives turns out often to be quite controversial. This initiative consists of following up the attraction of prime multinational manufacturing investors with energetic efforts to induce their first-tier suppliers from around the world to accompany them into the domestic economy. The host

---

[29] Thomas Farole and Deborah Winkler, Editors. *Making Foreign Direct Investment Work for Sub-Saharan Africa: Local Spillovers and Competitiveness in Global Value Chains*. Washington, DC: The World Bank, 2014.

[30] *Ibid.*

[31] Farole and Winkler, *op. cit*, ch. 5.

IPA may team up directly with prime investors to pull the most prominent component producers to cluster near the primes. In the case of Penang, Hewlett Packard, IBM, Seagate, Ericsson, Philips, Nokia, and Samsung – as well as the electronics keiretsu associated with Fujitsu, Hitachi, and Panasonic – brought the electronics and telecom input providers from Japan, Korea, the US, and Europe that supplied them in their home markets to set up shop alongside their plants in Malaysia. In the Czech Republic, GM-Opel, Volkswagen, Fiat, and Suzuki have begun to induce their Original Equipment Manufacturers (OEMs) to follow them into the Czech economy to build auto-parts plants in the new automotive export clusters oriented toward supplying the EU. In some countries, private zone developers may work alongside the host IPA to pull first-tier suppliers as tenants into their zones.

Controversy about attracting first-tier suppliers from abroad arises, however, from apprehensions that these suppliers may denationalize the host industrial base, crowd-out local capital, and syphon off the best workers and managers.

Such apprehensions -- about denationalization, crowding out local capital, and syphoning off the best workers and managers -- require closer analytical scrutiny.

Here it might be useful to look in detail at carefully-investigated instances in which a host country opened a sector to foreign investors and their first-tier suppliers.

One of the most thoroughly analyzed cases comes from the liberalization of the transport sector in India. Here the McKinsey Global Institute shows that the lowering of trade protection and first-time permission for foreign multinationals to set up wholly-owned affiliates in the early 1990s sent a shock wave across the host auto industry.[32] In the horizontal direction, competitive pressures drove one of the largest indigenous auto firms (PAL) into bankruptcy while two others (HM and the Maruti-Suzuki joint venture) struggled as their capacity utilization dropped. The host country capital base in this initial period almost surely contracted. Over the next five years, however, foreign firms moved into India with world-scale sized plants: Daimler Chrysler ($54 million in 1994), General Motors ($223 million in 1994), Honda ($120 million in 1995), Hyundai ($456 million in 1996), Fiat ($455 million in 1997), Ford ($433 million in 1999).

In the vertical direction, participants in the previously protected Indian auto parts sector experienced severe competitive pressures, and many – if not most – did not survive (McKinsey does not provide precise data). But initial consolidation among indigenous firms was followed by extraordinary expansion on the part of both Indian and foreign investors. *The internal auto parts industry tripled in size, including both local Indian firms and international component suppliers*: Toyota set up a "Toyota Village" around its assembly plant to house its

[32] McKinsey Global Institute. 2006. *New Horizons: Multinational Company Investment in Developing Economies.* New York: McKinsey & Company. Pp. 95-121.

suppliers; Hyundai created an industrial park for providers of automotive inputs; Ford brought in Ford AGC (Auto Component Group); GM induced Delphi to come to India.

What this picture shows is that the entry of foreigners and their first-tier suppliers introduces *Schumpeterian winds-of-creative-destruction* that may lead to a beneficial restructuring of the entire industry, including opportunities for better performing indigenous horizontal participants and indigenous vertical suppliers, over time.

The entry of Wal-Mart into the Mexican retail market introduces a slightly different version of the same process, clearly filled with denationalization, crowding out local capital, and poaching of best workers and managers.

After passage of NAFTA, the Wal-Mart parent bought a controlling interest in its JV with the Mexican partner firm Aurerra in 1997. The new majority-owned affiliate, named Walmex, climbed rapidly over the ensuing decade to take a 46 percent share of the country's consumer goods market (sales rising to $10.1 billion in the first five years), forcing many smaller retailers out of business along the way. In the horizontal direction, the major Mexican supermarkets sought reinforcements via joint ventures with outsiders (Comercial Mexicana with Price-Cosco, Gigante with Carrefour and Office Depot), while the indigenous Mexican firm Soriana managed to remain competitive as a stand-alone Mexican firm.

In the vertical direction, Walmex did not pull many first-tier suppliers into the Mexican host market. But Walmex did revolutionize how warehousing, distribution, and inventory management were done, requiring drivers with certified credentials to set up appointments at centralized warehouses, and make deliveries on standardized palettes (rentable from Walmex) with contents shrink-wrapped and cushioned by corner protectors.[33] Suppliers were required to reduce prices and provide product innovations on an annual basis. The result was heavy competitive pressure within what had been -- as the Mexican participants themselves described the sector -- a protected, "clubby", and somewhat corrupt industry.[34] Many Mexican suppliers were driven out of the market, but the scale of opportunities for those that remained were much larger: roughly twenty-five domestically-owned small and medium-sized producers of store-brand (marca blanca) detergents and cleaners, for example, proved able to hold their own against national and international competitors.

Once again, the restructuring of the industry exhibited Schumpeterian "creative" as well as "destructive" dynamics that are not captured in conventional apprehensions about denationalization and poaching of superior workers and managers. As for the phenomenon

---

[33] Beata Smarzynska Javorcik, Wolfgang Keller, and James Tybout. 2006. "Openness and Industrial Response in a Wal-Mart World: A Case Study of Mexican Soaps, Detergents and Surfactant Products." *The World Economy*, vol. 31, issue 12, December 2008.

[34] Pp. 1565. It was subsequently revealed that Wal-Mart itself engaged in widespread bribery in setting up its retail outlets in Mexico

of crowding-in versus crowding out investment, the liberalization of investment in the Indian auto sector and the entry of Wal-Mart into Mexican retail show that the introduction of new foreign competitors often leads to some crowding-in and crowding-out simultaneously.

The important outcome to observe, however, is the changing economic performance of the entire sector, not some arbitrary measurement of the absolute amount of capital invested at any particular moment in time in the sector.[35]

From the point of view of the host country, it is surely desirable that indigenous firms rise to the occasion, improve their competitive skills, and flourish (a topic worthy of extensive discussion). But what if the survival of indigenous firms turns out to be relatively weak? Is having the best local workers incorporated into higher productivity activities within foreign firms less good for host country welfare or growth-potential than leaving those workers employed in lower productivity indigenous firms?

The analytics of what is best for an emerging market host economy might profit from a review of the "Who-Is-Us?" perspective, as refocused specifically to apply to developing countries. Originating in the debate about the pro's and con's of Japanese investment in the United States in the 1980s-1990s, the Who-Is-US? perspective argues that what is most beneficial to the host economy is a function of which firms create the highest-skilled, highest-paying jobs, the least expensive products, and the most competitive exports, independent the nationality of the owners.[36] That is, domestic policymakers – in developed as well as developing economies -- should focus on the quality of jobs and strength of productive potential from firms in any given sector, rather than instinctively giving preference to home-country owners.

If there are concerns about foreign ownership, they should be addressed objectively. Perhaps there is an implicit concern that foreign firms might reinvest less than domestic firms – but the evidence usually shows that successful foreign firms have a strong record of reinvestment. Might foreign firms be more skillful in using transfer pricing to avoid host country taxes? Quite possibly, but this risk should be addressed by improving arms-length price audit capabilities on the part of host tax agencies, not consigning whole economic sectors to subpar domestic firm performance. Does foreign ownership raise legitimate questions about national security? The conditions in which foreign ownership might pose

---

[35] For more thorough analysis of the extensive literature on crowding-in vs. crowding out of investment, see Moran (2011). *Foreign Direct Investment and Development: Launching a Second Generation of Policy Research, op. cit.*

[36] Robert Reich. "Who Is Us?" Harvard Business Review, January, 1990.

plausible threats to national security – as opposed to implausible apprehensions – are quite narrowly defined, and infrequently met.[37]

Promoting Vertical Linkages to Indigenous Firms

Turning from the attraction of MNC supplier firms from abroad to the creation of vertical supplier relationships among *indigenous* firms in the host economy, contemporary survey data from sectors as diverse as furniture, chemicals, food products, printing, pulp and paper, fabricated metals, and rubber – as well as electrical machinery, communications equipment, and motor vehicles –document that direct assistance between foreigner and local supplier takes multiple forms, including training, help with setting up production lines, coaching in management strategy and financial planning, advance payment and others kinds of financing, assistance with quality control, and introduction to export markets. [38]

Such survey observations are increasingly being backed up by careful econometric analysis.[39] In the vertical direction, a new generation of studies using firm-level micro-data – as exemplified, for example, by Garrick Blalock and Paul Gertler, and by Beata Javorcik – have established what is becoming the standard methodology to search for externalities upstream or downstream from foreign investors. Using evidence about manufacturing establishments in Indonesia collected by region since 1988 -- where FDI operations are predominantly export-oriented -- Blalock and Gertler investigate the relationship between the presence of foreign investors and the total factor productivity of domestic firms upstream and downstream from the foreign plants.[40] But the foreign firms may simply be settling in areas where productivity is already high, so the next step is to observe how total factor productivity of the indigenous firms changes as the presence of foreign investors increases. Again, however, there may be some external reason why foreigners would increase their presence as local productivity grows, such as improvements in the business climate. To deal with the possibility that foreign investors are choosing sites where suppliers are particularly productive already, they include establishment fixed-effects to judge whether the

---

[37] Theodore H. Moran.2009. *Three Threats: An Analytical Framework for the CFIUS Process*, Washington, DC: The Peterson Institute for International Economics.

[38] Beata Smarzynska Javorcik and Mariana Spatareanu. "Disentangling FDI Spillover Effects: What Do Firm Perceptions Tell Us", in *Does Foreign Direct Investment Promote Development? Op. cit.*

[39] This brief review of leading contemporary research is all the more important because Dani Rodrik, for example, cites quite dated skeptical appraisals and appears unacquainted with the newer investigative techniques and evidence. For an analysis of why the economics community was too-long diverted from recognizing the potential for vertical spillovers from FDI, see Theodore H. Moran. 2011. *Foreign Direct Investment and Development: Launching a Second Generation of Policy Research: Avoiding the Mistakes of the First, Reevaluating Policies for Developed and Developing Countries*. Peterson Institute for International Economics.

[40] Garrick Blalock and Paul J. Gertler. 2008. "Welfare gains from foreign direct investment through technology transfer to local suppliers." *Journal of International Economics*. 74(2), 402-421, March. Garrick Blalock and Paul J. Gertler. "Foreign Direct Investment and Externalities: The Case for Public Intervention." in *Does Foreign Direct Investment Promote Development? Op. cit.*

performance of upstream or downstream firms gets even better after the arrival of the foreigners. To deal with the possibility that some external factor is raising the productivity of all firms, they include industry-year fixed-effects, and region-year fixed-effects, to control for changes in conditions affecting all market participants. Finally, to deal with the possibility that suppliers would experience some exogenous improvement that was not part of industry-wide or region-wide changes, they employ a simultaneity correction (developed by Olley and Pakes).

At the end of these steps, they find productivity improvements in upstream and downstream local firms that are significantly associated with the rise in foreign investment and not derived from other factors. The better performance of these indigenous firms, in turn, results in lower prices, increased output, higher profitability, and increased entry of vertically-linked firms in the Indonesian economy.

But does correlation – however careful – actually show causation? And if causality can be established, what might be the mechanisms through which causality takes place? Here – highly unusual for the economics community – Blalock and Gertler supplement their econometric investigations with survey data from actors on both sides.[41] They report that the foreign investors and the Indonesian local company managers identified specific kinds of uncompensated assistance flowing between the parties, including help with production, quality control and business management. US and Japanese multinationals testified that they assisted target suppliers to increase efficiency and reliability, moving from small-scale orders to larger regular purchases from local firms that showed promise. In the case of Japanese investors, the usual practice was to introduce successful Indonesian suppliers to other members of the parent company group elsewhere in Southeast Asia, thus creating an export externality. But an positive outcome was by no means inevitable or automatic – some Indonesian firms failed to pass muster, some dropped out, some were abandoned by the foreigners due to sub-par performance.

Using many of the same econometric measurement techniques, Beata Smarzynska Javorcik finds productivity spillovers taking place between foreign investors and upstream domestic firms in Lithuania.[42] She finds productivity spillovers from foreign investors to affiliates with

---

[41] The authors report that they were required to drop most of the observational data here at the insistence of the *Journal of International Economics* editors and referees.

[42] Beata Smarzyska Javorcik. 2004. "Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers Through Backward Linkages". *The American Economic Review*. Pp. 605-627. May. To address the problem that there may exist unobserved firm, time, and region-specific factors that may affect the correlation between firm productivity and foreign presence, she uses time differencing as well as a full set of fixed effects for year, industry, and region. She estimates a separate production function (taking into account the Olley-Pakes correction) for each industry. Since foreign entry into downstream sectors may increase demand for intermediate products, which in turn will allow local suppliers to reap the benefits of scale economies, she introduces controls to provide confidence that the outcome can be attributed to the effects of knowledge spillovers rather than simply to larger scale economies.

shared local ownership, but no significant relationship with wholly-owned affiliates (an outcome she associates with the inclination of the latter to import more intermediate inputs). A one-standard-deviation increase in the foreign presence in downstream sectors is associated with a 15 percent rise in output of each domestic firm in supplying industries. She considers separately spillovers from export- and domestic-oriented affiliates, and finds that in this relatively competitive market setting both types of FDI generate spillovers to the supplying industries with no significant difference in magnitude.

So it is important to discover that vertical externalities from foreign investors to indigenous firms can be rigorously identified and objectively observed. But such spread of backward linkages has varied greatly across countries, and is by no means assured. What policies to promote backward linkages are more successful, and what policies are not?

Widespread evidence shows that the creation of local supplier networks in emerging markets depends upon how wide is the gap between the capabilities of the local business providers and the sophistication of what is demanded by the foreign purchaser. Ari Kokko shows that spillovers between foreign affiliates and local firms in Mexico varies as a function of the productivity difference between the two.[43] Ari Kokko, Ruben Tansini, and Mario Zejan observe the same phenomenon in the Uruguayan manufacturing sector.[44] So do Xiaming Lui, Chengang Wang, and Yingqi Wei in China.[45] Garrick Blalock and Daniel H. Simon discover a more nuanced outcome: local firms with larger size and greater absorptive capacity gain more from downstream FDI, but local firms with weaker productive abilities show stronger motivation to adopt new technologies provided by the downstream foreigners.[46]

A first order of business for developing country authorities therefore is to adopt policies that increase the productivity and reliability of indigenous companies. Indigenous firms no less than the foreigners they hope to serve need open, transparent, dependable conditions in which to expand and become competitive, including access to low-cost imports, relatively flexible labor markets, and protection of intellectual property rights.

Of particular importance is evidence that access to credit constitutes an important constraint to the development of indigenous supplier networks. Around the world domestic firms with

---

[43] Ari Kokko. 1994. "Technology, Market Characteristics, and Spillovers." *Journal of Development Economics* 43, no. 4 (April): 279-93.

[44] Ari Kokko, Ruben Tansini, and Mario C. Lejan. 1996. "Local Technological Capability and Productivity Spillovers from FDI in the Uruguayan Manufacturing Sector." *Journal of Development Studies* 32 (April): 602-11.

[45]Xiaming Liu, Chengang Wang, and Yinqi Wei. "Do Local Manufacturing Firms Benefit from Transactional Linkages with Multinational Enterprises in China?" *Journal of International Business Studies*. Volume 40, Number 7, September 2009, pp. 1113-1131.

[46]Garrick Blalock and Daniel H. Simon. "Do all firms benefit equally from downstream FDI? The moderating effect of local suppliers; capabilities on productivity gains." *Journal of International Business Studies*. Volume 40, Number 7, September 2009, pp. 1075-1095.

greater access to credit show themselves to be able to self-select into supplier status.[47] Using data from 72 countries for the period 1975-1995, Laura Alfaro, Sebnem Kalemli-Ozcan, and Selin Sayek show that countries with better functioning financial systems enjoy higher total factor productivity among suppliers. So reform of the financial sector is an important ingredient of providing a business-friendly setting for indigenous companies to grow and prosper.

Finally, a host may want to copy those emerging market authorities that have set up explicit "vendor development" programs with the goal of promoting backward linkages from foreign investors. The first step is to work with foreign investor business associations to set up programs that prepare local firms to acquire certification within appropriate parameters, including ISO 9000 (quality control). Beyond this, many countries have followed the Singapore's Economic Development Board (EDB) model for supplier development. Singapore's EDB reimburses the salary of an engineer or a manager in each foreign plant who is assigned to act as a "talent scout" to select and assist local firms to become suppliers. As part of its Local Industry Upgrading Program (LIUP), the EDB provides capital for indigenous firms to buy equipment recommended by foreign investors, to be paid back from purchase contracts awarded by the foreigners. Originally dedicated to building supplier relationships in the electronics sector, the LIUP now covers medical products, petroleum and petrochemical, marine, transportation and logistics, and information technology clusters. Looking beyond Singapore, Malaysia establishes secondary industrial zones alongside the major EPZs, with data banks and "marriage counselors" to assist in supplier selection. Penang's Skills Development Center has opened its doors to indigenous Malaysian firms to partake of a curriculum organized around specific needs and skill-gaps identified by foreign multinationals as important for their suppliers to master and overcome.

There are unsettled debates about how to establish links between foreign investors and potential indigenous supplier firms. Should the host set up industrial zones for local supplier candidates adjacent to formal export processing zones (as in Malaysia)? Or, should the host make export processing a legal-status – not a geographic designation -- that allows the foreigner to export from wherever is most favorable with potential suppliers following the foreign firm anywhere the latter settles (as in Mauritius)? In either case, it is important not to let export processing regulations discriminate against the creation of local supplier relationships. And, in every case, it is important that EPZs become the spearhead for broader business-friendly reforms throughout the host economy, and not a substitute for such reforms.

---

[47] Laura Alfaro, Sebnem Kalemli-Ozcan, and Selin Sayek. "2009. FDI, Productivity and Financial Development." *World Economy* 32, no. 1. (January): 111-136.

Promoting Vertical Linkages to Indigenous Firms: SMEs are Not the Best Candidates

The analysis of how to design policies to promote backward linkages would not be complete, however, without introducing one more controversial discovery into the debate. That is, contrary to popular rhetoric – *there is no empirical basis for giving preferential attention to small and medium-sized firms (SMEs) if the goal is to strengthen the supplier base*; the evidence shows that medium-sized and larger indigenous firms are usually better candidates to qualify as suppliers as the gap between their capabilities and the capabilities of those who wish to purchase their inputs is smaller than in the case of small firms.[48]

Developing country authorities frequently confound supply-chain creation with support for SMEs. So do CSR advocates, including corporate social responsibility officers within the MNCs themselves. A close look at case studies of supplier-development programs and vendor-development programs, however, does not support the proposition that small firms should be the preferred targets for host country match makers or MNC talent-scouts. Despite its title, the evidence in UNCTAD's *How to Create and Benefit from FDI-SME Linkages: Lessons from Malaysia and Singapore* (Best Practices in Investment for Development series, 2011), for example, shows that medium-sized and larger indigenous companies "are more likely than their smaller counterparts to possess capabilities needed for linkages that result in 'win-win' scenarios."[49] Host countries will be most successful in generating backward linkages from foreign investors to indigenous firms if they do not let supplier-support programs be captured by small-business lobbies.

V. Using FDI for Structural Transformation: Do's and Don'ts for Designing Industrial Policy

The evidence presented here shows clearly that developing countries that want to use FDI to diversify and upgrade the production and export base of the host economy cannot simply sit back and wait to see what international market forces bring to them. They need interventionist policies to overcome imperfections in information markets, assure potential investors that they will be able to integrate plants in untried sectors smoothly into their world-wide production networks, and overcome coordination externalities to make such assurances credible.

Investment promotion target selection can take place within a common-sense framework of comparative advantage, and IPA-sponsored feasibility studies will help confirm or cast doubt on the plausibility of success. Public sector "support" takes the form of creating industrial parks, reliable infrastructure, and vocational training with curricula designed by companies

---

[48]Caroline Freund. 2011. "Small & medium sized enterprises: not a silver bullet for growth and job creation". Voices and Views: Middle East and North Africa blog. The World Bank.

[49] UNCTAD. *How to Create and Benefit from FDI-SME Linkages: Lessons from Malaysia and Singapore* Best Practices in Investment for Development series, Geneva. 2011.

who wish to employ the graduates. These interventions surely qualify as a kind of industrial policy, and definitely cost public money. Multinational companies in some new sectors may thrive, while multinational companies in other new sectors may not prosper, or may never show up in the first place. These interventions need not include artificial subsidies for specific companies or protection for infant industries that cannot be withdrawn later. Public programs for supplier identification, vendor development, and certification can be conducted in a transparent competitive fashion, again with selection criteria laid out by those firms who will provide purchase contracts to those that qualify.

Analysts and policy practitioners familiar with the Hausmann-Rodrik-Lin perspective will find nothing surprising in the need for a good doing-business climate, for pro-active and customized investment promotion, for efficient infrastructure packages, and for public-private partnerships to provide vocational training. But the requirement for labor market flexibility is not a key ingredient that emerges from the H-R-L writings. Here the case studies of Morocco and South Africa are valuable, to confirm the integral importance of the labor market component.

Light-Form Industrial Policy, Not Heavy-Handed Performance Requirements

The policy recommendations identified here fit directly within Justin Lin's Comparative-Advantage-Following (CAF) framework for pro-competitive industrial policy.[50] These policy recommendations might be called *light-form industrial policy* to hitch FDI to development goals and generate backward linkages as deep as possible into the host economy.

This light-form industrial policy might be contrasted with policies that target specific domestic industries for special government support and protection, while excluding foreign investment altogether from the targeted industries or subjecting foreign firms therein to performance requirements in the form of domestic content mandates, joint venture mandates, and/or other technology-sharing pressures.[51] This alternative approach – among whose adherents Dani Rodrik often finds himself -- might be called *heavy-form industrial policy*.

The counterproductive results from trying to create internationally competitive local industries by simply imposing domestic content requirements on foreign investors, and from

---

[50] Justin Lin and Ha-Joon Chang. 2009. "Should Industrial Policy in Developing Countries Conform to Comparative Advantage or Defy it? A Debate Between Justin Lin and Ha-Joon Chang." *Development Policy Review*, 2009, 27 (5): 483-502.

[51] Dani Rodrik. *Growth after the Crisis.* Draft May 12, 2009. Aaron Cosbey. 2009. *A Sustainable Development Roadmap for the WTO.* Winnipeg: Institute for Sustainable Development. *Comments on the US Model Bilateral Investment Treaty (BIT)* submitted by the Center for Environmental Law, EarthJustice, Friends of the Earth US, Oxfam America, and Sierra Club, July 31, 2009. Kevin P. Gallagher and Daniel Chudnovsky. 2009. *Rethinking Foreign Investment for Sustainable Development: Lessons from Latin American.* London: Anthem Press. Working Group on Development and Environment in the Americas. 2008. *Foreign Investment and Sustainable Development: Lessons from the Americas.* Washington, DC: Heinrich Boll Foundation North America.

trying to induce multinationals to deploy their most advanced technologies when they are required to form joint ventures with local firms or share-technology according to host mandates, are well documented.[52] Arbitrary domestic content mandates typically reduce the competitiveness of local goods and services.[53] Unless the domestic component requirements can be produced in an efficient manner they run directly against international comparative advantage.

Joint venture requirements or other technology-sharing requirements induce foreign investors to withhold their cutting edge techniques and processes. Edwin Mansfield and Anthony Romeo and – later – Edwin Mansfield and J.-Y. Lee found that parent firms supplied technology to joint ventures in developing countries that was on average one-third older (3 to 4 years older) than technology introduced into wholly-owned subsidiaries.[54] Their samples included 65 observations spread across foreign investors in chemicals, drugs, electrical equipment and electronics, machinery, instruments, glass, food, and rubber.

Like joint venture mandates, host country requirements to share technology with local firms actually hindered technology transfer into the host economy. Magnus Blomstrom, Ari Kokko, and Mario Zejan find a negative correction between host policies that stipulate foreign investors must provide access to the parents' patents, perform research and development (R&D) in-country, or use the most advanced production processes available, and actual technology inflows into the host country.[55] When host authorities impose technology-sharing requirements on Japanese firms as a condition of entry, Shujiro Urata and Hiroki Kawai observe a negative coefficient for intra-firm technology transfer.[56]

Contemporary evidence from Eastern Europe and the successor states of the Soviet Union shows that only less efficient foreign investors (relative to other firms in their industry) are likely to choose a JV mode of entry into a country; foreign investors with more sophisticated

---

[52] For a comprehensive review of the effects of performance requirements see Theodore H. Moran. 2011. *Foreign Direct Investment and Development: Launching a Second Generation of Policy Research: Avoiding the Mistakes of the First, Reevaluating Policies for Developed and Developing Countries. Op. cit.*

[53] Gary Clyde Hufbauer,and Jeffrey J. Schott, with Cathleen Cimino, Martin Vieiro, and Erika Wada. *Local Content Requirements: A Global Problem. Policy Analyses in International Economics 102* Washington, DC. Peterson Institute for International Economics. September 2013. UNCTAD. 2007. *Elimination of TRIMs: The Experience of Selected Developing Countries. Op. cit.*

[54] Edwin Mansfield and Anthony Romeo. 1980. "Technology Transfer to Overseas Subsidiaries by US-based Firms." *Quarterly Journal of Economics.* 95:4. J.-Y. Lee and Edwin Mansfield, "Intellectual Property Protection and US Foreign Direct Investment," *Review of Economics and Statistics*, 1996, Vol. 78.

[55] Magnus Blomström, Ari Kokko, and Mario Zejan. 1992. "Host Country Competition and Technology Transfer by Multinationals." Cambridge, MA: National Bureau of Economic Research Working Paper #4131.

[56] Shujiro Urata and Hiroki Kawai, "Intrafirm Technology Transfer by Japanese Manufacturing Firms in Asia", in Takatoshi Ito and Anne O. Krueger, eds., *The Role of Foreign Direct Investment in East Asian Economic Development* (Chicago: The University of Chicago Press for the National Bureau of Economic Research, 2000).

technologies and marketing skills prefer entry via wholly-owned affiliate rather than joint venture.[57]

Looking at skill transfer within MNC networks more broadly, Vijaya Ramachandran finds that the number of parent company employees sent to a host country to bring a given technology on line and the number of host country employees sent to the parent country for training is significantly higher when the parent has 100 percent ownership than for joint ventures or licensees, across fourteen sectors as diverse as chemicals, medical products, metal products, rubber, food, transportation equipment, and electronics.[58]

Evidence from Korea, Taiwan, and (even) China

The Korean experience is sometimes invoked as offering a path to the frontier of world industry that excludes contact with and reliance on multinational corporations. Some developing country authorities – including contemporary Chinese government officials – argue that Korea represents an "alternative model" that demonstrates infant industries can grow up to become world class competitors independent of and parallel to the foreigners.

In industries where technology was stable and could be replicated via licenses and for-hire foreign engineers – namely, shipbuilding and steel – Korea followed a model of excluding FDI, requiring domestic production of inputs, and creating national champion companies via public support. But in industries where the international technological frontier was continuously pushed outward – especially computers, semiconductors, telecommunications, and high performance consumer electronics – Korea followed a different script. All three of the companies that became Korean "national champions" in electronics – Samsung, Lucky Goldstar, and Hyundai – grew up as contract manufacturers for multinationals (for Sony, Panasonic, Mitsubishi, Zenith, Toshiba, Philips, Zenith, RCA, and Hitachi). After some thirty years of business experience all three still relied on OEM contracts for sixty percent of their electronics exports. They expanded their own design expertise via learning-by-doing from foreign purchasers, not via forced technology-transfer or mandatory joint venture partnerships. They depended upon duty free imports of inputs for their own assembly, not domestic content requirements.

The Taiwan experience exhibits a similar pattern. Indigenous electronics firms began by selling components for calculators, clocks, and VCRs to the local affiliates of IBM, Hitachi, and Philips; the more successful graduated to contract manufacturing of printed circuit boards, monitors, and power supplies. All the major Taiwanese computer makers – including ACER, Tatung, and Mitac – entered export markets as OEM suppliers to foreign

---

[57] Beata S. Javorcik and Kamal Saggi. 2010. Technological asymmetry among foreign investors and mode of entry. *Economic Inquiry* 48, no. 2 (April): 415-433.

[58] Ramachandran, V. 1993, "Technology Transfer, Firm Ownership, and Investment in Human Capital", *Review of Economics and Statistics*. 75(4), pp.664-70.

multinationals, learning advanced design and own-brand marketing as they went. Not one became successful via forced joint-ownership with a multinational, or via mandatory domestic content requirements.

The Korean and Taiwanese experiences lead Michael Hobday (among others) to conclude that the route these countries followed -- from contract manufacturers learning to meet the specifications of outsiders, to original component designers, to own brand producers in international markets – has more in common with OEM suppliers in Singapore, Malaysia, and Thailand than to the forced-technology-transfer national-champion-creation model as romanticized, or demonized, in China.[59]

Despite the unpromising legacy of imposing explicit performance requirements on foreign investors, China is often viewed as the new testing ground.

Given the size and dynamism of the Chinese market, foreign investors can sometimes achieve the economies of scale that render domestic-oriented-industries elsewhere uncompetitive. In a handful of high profile industries, moreover, multinational corporations can be enticed into a "Faustian bargain" of deploying cutting-edge or near-cutting-edge technology in return for market access. High speed rail, wind technology and other green technologies, and perhaps aerospace and automotive investments, are examples.[60]

But a look at data from behind-the-headline investments in China reveal many of the same drawbacks of hard-form performance requirements deployed elsewhere. Long Guoqiang finds that wholly-owned or majority-owned affiliates in China are much more likely to receive the most advanced technology available to the parent than 50-50 or domestic majority-owned joint ventures.[61] Thirty-two percent of the wholly-owned foreign affiliates and 40 percent of the majority foreign-owned affiliates employed technology as advanced as used by the parent firm, whereas only 23 percent of the 50-50 share ownership affiliates and 6 percent of the majority Chinese-owned affiliates employed technology as advanced as the parent firm. The imposition of joint ownership requirements, in short, hinders foreign affiliates from reaching the technological frontier in China, as in other emerging markets.

---

[59] Michael Hobday. 1995. *Innovation in East Asia: The Challenge to Japan*. London: Aldershot. 2000. "East versus Southeast Asian Innovation Systems: Comparing OEM- and TNC-led Growth in Electronics." In Linsu Kim & Richard Nelson, eds., *Technology, Learning, & Innovation*, New York: Cambridge University Press, 2000.

[60] U.S. Congress. One Hundred Twelfth Congress, Second Session. 2012. Report to Congress of the U.S.-China Economic and Security Review Commission, November; U.S. Congress. One Hundred Thirteenth Congress, First Session. 2013. Report to Congress of the U.S.-China Economic and Security Review Commission, November; Joanna I. Lewis. 2013. *Green Innovation in China: China's Wind Power Industry and the Global Transition to a Low-Carbon Economy* (Contemporary Asia in the World), Columbia University Press. New York.

[61]Guoqiang Long. 2005. "China's Policies on FDI: Review and Evaluation". In Theodore H. Moran, Edward M. Graham, and Magnus Blomström. *Does Foreign Direct Investment Promote Development?* Washington: Institute for International Economics.

This observation is reinforced when Bruce Blonigan and Alyson Ma investigate whether Chinese domestic firms are "keeping up" or even "catching up" with foreign multinational investors in the volume, composition, and quality of their exports.[62] Blonigan and Ma show that foreign investors' share of exports by product category and foreign unit values relative to Chinese unit values are increasing over time, not decreasing. Of particular note for the debate about forced technology transfer here, their data show that joint venture partnerships with foreign firms do *not* lead to greater catching up in sophistication of output. Across the broad expanse of the domestic economy, heavy-form Chinese industrial policies to induce greater value-added within China and greater spillovers to Chinese firms are not showing notable success.

Recent research by Philippe Aghion, J. Cai, Luosha Du, Ann Harrison and Patrick Legros shows that Chinese tariffs that stifle competition have been systematically associated with worse firm performance than policies that worked to increase competition.[63] Luosha Du, Ann Harrison, and Gary Jefferson find that the increased competition that accompanied China's tariff reductions and entry into the WTO, in contrast, induced both backward linkages from foreign buyers to domestic suppliers and forward linkages from foreign suppliers to domestic buyers.[64] They argue that the elimination of domestic content requirements spurred technology transfer and other spillovers from foreign to domestic firms.

Overall, therefore, the evidence reviewed here affirms the need for a few specific public sector interventions to best harness FDI for development, but concludes that developing country authorities should confine their efforts to light-form industrial policy, and eschew more heavy-form industrial policies.

The conviction that there must be a short cut to making foreign investors contribute more to host development -- *simply by imposing performance requirements on foreign investors* to achieve "industrial development and diversification" – keeps reappearing, nonetheless. At developing country insistence, the 2005 Hong Kong WTO Ministerial agreed that members be allowed to maintain, for seven years, existing measures that deviate from their obligations under the TRIMs Agreement – in particular, be allowed to force domestic content requirements upon foreign investors -- and be free to introduce new measures that so deviate on a renewable basis, subject to general phasing-out by the year 2020.

---

[62]Bruce A. Blonigen and Alyson C. Ma. 2010. "Please Pass the Catch-Up: The Relative Performance of Chinese and Foreign Firms in Chinese Exports" in Robert C. Feenstra and Shang-Jin Wei, eds., *China's Growing Role in World Trade.* Chicago: University of Chicago Press for the NBER.

[63] P. Aghion, J. Cai, L. Du, A. Harrison and P. Legros "Industrial Policy and Competition", draft, April 25, 2014.

[64] Luosha Du, Ann Harrison, and Gary Jefferson. "FDI Spillovers and Industrial Policy: The Role of Tariffs and Tax Holidays". *World Development* Vol. 64, pp. 366–383, 2014.

Contemporary policy advice from some quarters continues to urge developing country policymakers in this direction, often without any acknowledgment of the empirical record of counterproductive results.[65] The desire to use performance requirements as an easy fix for development reappears in contemporary debate about whether developing countries need more "policy space" in trade and investment agreements to allow them to fashion more effective domestic regulations.[66] A strong case can be made that developing countries are too constrained today by the treatment of intellectual property rights – especially intellectual property rights in the pharmaceutical industry – in US FTAs and Bilateral Investment Agreements.[67] An equally defensible case can be made that the definition of expropriation and the requirement for compensation in investor-state dispute settlement must be loosened to allow for the exercise of effective environmental regulation that covers foreign as well as domestic firms.[68]

But the evidence simply does not support the contention that a weakened TRIMs Agreement – or more lenient treatment of joint venture mandates or technology sharing requirements – will serve developing countries who want to use FDI to upgrade and diversify the host economy.

VIII. Conclusions for Host Countries in the Developing World, Donor Countries in the Developed World, and Multilateral Financial Institutions

The preceding analysis leads to an agenda of seven – and perhaps eight – areas for policy response.

---

[65]Kevin P. Gallagher. US-China Investment Treaty: A Threat to Stability and Growth in China. Tufts University. GDAE Program. June 15, 2010. Dani Rodrik. *Growth after the Crisis*. Draft May 12, 2009. Aaron Cosbey. 2009. *A Sustainable Development Roadmap for the WTO*. Winnipeg: Institute for Sustainable Development. Comments on the US Model Bilateral Investment Treaty (BIT) submitted by the Center for Environmental Law, EarthJustice, Friends of the Earth US, Oxfam America, and Sierra Club, July 31, 2009. Kevin P. Gallagher and Daniel Chudnovsky. 2009. *Rethinking Foreign Investment for Sustainable Development: Lessons from Latin American.* London: Anthem Press. Working Group on Development and Environment in the Americas. 2008. *Foreign Investment and Sustainable Development: Lessons from the Americas*. Washington, DC: Heinrich Boll Foundation North America.

[66] Zdenek Drabek, ed. 2010. *Is the World Trade Organization Attractive Enough for Emerging Economies? Critical Essays on the Multilateral Trading System*. London Palgrave Macmillan. *Comments on the US Model Bilateral Investment Treaty (BIT)* submitted by the Center for Environmental Law, EarthJustice, Friends of the Earth US, Oxfam America, and Sierra Club, *op. cit*, July 31, 2009.

[67] Maskus, Keith. 2012. *Private Rights and Public Problems: The Global Economics of Intellectual Property in the 21st Century*. Washington, DC: Peterson Institute for International Economics.

[68]Gus Van Harten. 2010. "*Thinking twice about a gold rush*: *Pacific Rim v. El Salvador*". Vale Columbia Center for Sustainable International Investment: *Columbia FDI Perspectives, op. cit.*

1. Doing-Business Reforms for Both Foreign and Local Firms

The evidence reviewed here highlights the prime importance for would-be host countries to improve the business-friendly setting in which both foreign and indigenous firms can operate. This objective is particularly essential for developing countries that want to use FDI to diversify and upgrade their production and export base, and to generate competitive supply chains deep into the domestic economy. Reforms in on-the-ground treatment of foreign and indigenous companies have been shown here to be a necessary but not a sufficient condition for success. Host countries must supplement such reforms with carefully-constructed policy interventions to overcome market imperfections and other difficult obstacles along the way.

To a certain extent, emerging market hosts can carry out these policy interventions on their own. But the cases reviewed here show that external support is often crucial to success.

2. External Support: Investment Promotion

Contemporary discourse often suggests that with the explosion of international private sector investment flows there is less need for developed country donors and multilateral financial institutions to support growth-and-development programs – as opposed to pure poverty-reduction programs -- especially in middle-income emerging markets. But the evidence introduced in this paper shows that there is a vital role for external donors – including the aid agencies of developed countries, the World Bank Group, and the regional development banks – to improve the functioning of markets so that emerging countries can better harness FDI for development.

The logical place to start is to redouble support for effective FDI promotion efforts and strategies. The evidence presented here confirms that information markets are highly imperfect, and developing countries need help in learning how to use Investment Promotion Agencies to market their country effectively to multinational investors. To be sure, such marketing efforts will be futile, however, unless the Investment Promotion Agency has a "good product" to promote; that is, the ability to show that business-friendly macro-economic, micro-economic, and institutional reforms are in place or credibly underway. Repeatedly arguing in favor of Washington Consensus reforms from afar is not sufficient. Developing countries often need practical guidance about how to take pro-active steps to search out and attract new investors.

Investment promotion agencies must learn how to master simple tasks like being responsive to investor queries, answering their phones and responding to email with up-to-date information about economic conditions and regulations. IPA staff must be able to provide details – or mobilize responses – that go beyond what is already posted on the website.

Beyond being responsive, however, the evidence introduced in this paper confirms once again that there is a demonstrable pay-off to targeting investors pro-actively in particular sectors, and to developing expertise about the characteristics and needs of international

companies in those sectors. This is a complicated and expensive undertaking, and would-be hosts that want to use FDI to upgrade and diversify the production and export base of their economies need training and counseling to succeed. The cases examined here are particularly useful in showing how to design trade-and-investment strategies to move lesser-developed countries toward the ranks of those with more developed economies.

In addition to help with marketing strategies, IPAs must be shown how to achieve the oft-claimed – but less often achieved – status of serving as a one-stop-shop in securing permits, permissions, and appropriate regulatory treatment for those investors that want to launch a new operation. How successful IPAs have managed to accomplish this tricky feat deserves more detailed comparative research, which can then be passed on to developing country recipients.

In addition to marketing the country and attracting initial investors, Investment Promotion Agencies need to be shown the importance of after-investment care. The energy devoted to following-up with initial investors is significant because of the size of potential reinvested earnings, because of the demonstration effect of satisfied-investors in attracting other new investors, and because of the potential for cluster-development as first-tier suppliers follow primes into the host market.

External support for this follow-on function opens the door to the controversial area of identifying policy-reform-champions in the host economy and helping these champions engage in policy advocacy. That is, external donors can help *fashion alliances of multinational investors, indigenous companies, and reform-minded agencies* to influence the political economy of policy-formation in the host country.

3. Domestic and External Support for Infrastructure Improvements, Public-Private Partnerships for Vocational Training, and Labor Market Flexibility

For FDI in middle- and upper-skilled industrial activities, the evidence examined here offers some particularly important insights. Host governments that want to use FDI to upgrade and diversify their industrial production and export base need the resources to integrate investment promotion per se with programs of infrastructure support and vocational training. Alongside such programs, then, host authorities and international donors must acknowledge the importance of labor market flexibility, in particular flexibility for firms to adjust the size of the workforce in response to fluctuations in supply and demand (as pointed out *infra*, the key issue is ease of hiring and laying off workers, not hiring and firing workers as if the latter were termination for cause). Donor support in fashioning such investment promotion packages *will not be effective if the outcome includes only two and not all three of these ingredients*. To be sure, external advocacy to combine all three – infrastructure upgrades, vocational training partnerships, and labor market reforms – may be awkward but nonetheless necessary.

4. Promoting Local Supply Chains

Turning to promotion of backward linkages from foreign investors to local suppliers, the design of host strategies to meet the challenges involved has become a central focus in relating trade-and-investment to vigorous domestic development.

In this endeavor the most important observation is also the most obvious: to repeat earlier admonitions, the prospects for creating reliable and competitive domestic supplier firms requires a business-friendly environment no less favorable than what is enjoyed by international investors. Supply chain development will falter if domestic companies do not enjoy efficient judicial systems, predictable regulatory regimes, and competitive market conditions.

Once again, however, while favorable doing-business indicators are a necessary condition for indigenous supplier development, they may not be sufficient for success. The evidence reviewed here shows positive benefits from external advice and support in creating supplier data-bases, setting up qualification and certification programs, training talent scouts and marriage brokers, and forming equipment financing programs backed by purchase agreements from foreign buyers. But host policy interventions can go too far, generating negative and counterproductive consequences from imposing mandatory domestic content requirements, joint venture mandates, and technology-sharing regulations on foreign investors in the hope of creating viable supplier networks.

5. No Preferences for SMEs

Even when host supplier-development programs are carried out in an appropriately light handed manner, however, the more promising candidates to achieve OEM status or other certification – contrary to popular rhetoric -- are usually medium-sized or larger local companies, not smaller businesses. The tendency of supply chain development programs to be captured by small business interests – and the willingness of international donors to tolerate or even promote this – has adverse consequences for emerging economies.

With regard to middle- and higher-skilled manufacturing FDI, the evidence reviewed here shows that the payoff from help in promoting local supply chains is quite sizable. And when indigenous firms achieve OEM or other supplier certification, the international corporations that purchase their goods and services not infrequently introduce the local companies to sister affiliates of those corporations in the region, creating an export externality. The newly launched supplier firms meanwhile often spin off simpler functions to second- and third-tier local providers in the original host economy.

6. Trade Liberalization and Trade Facilitation, Alongside Investment Promotion

For developing countries, developed countries, and multilateral financial institutions, the goal of trade policy liberalization remains an important component of the development

agenda. Alongside trade policy liberalization, trade facilitation has well-justified standing as a key objective for international assistance. But in the contemporary era in which trade-and-investment are increasingly intimately linked, support for emerging market economies to use FDI to upgrade and diversify their production and export base – and to develop reliable and competitive supply chains deep into the local economy – is *the new frontier* for assistance from the developed country and multilateral donor community, looking to the future.

7. Support from Developed Countries: the US Lags

Most developed countries recognize that they serve their own interests as well as the interests of the developing world by helping home country companies identify investment opportunities – as well as export opportunities – abroad. Sixteen of the twenty-two major developed countries help home-based multinationals both export to and invest in the developing economies; three, the United States, Ireland, and Belgium do not.[69] The US Foreign Commercial Service, for example, assists US firms in bidding on foreign contracts and developing export markets, but the FCS is not trained or allowed to assist American companies in setting up supply chains abroad. A persistent preoccupation in the United States is the fear that outward investment by US multinationals weakens the domestic economy and undermines the potential for job creation at home. This is a debate too vast for thorough treatment here, but -- to summarize recent research -- careful analysis of the data affirms that outward investment from the US (and other developed economies) complements rather than substitutes for economic activity in the domestic economy.[70]

Due to protectionist pressures in the United States, constraints on the US Overseas Private Investment Corporation (OPIC) are particularly severe. Whereas fourteen of nineteen official political risk insurance agencies in the developed world provide crucial coverage for projects with powerful development impact – including labor-intensive FDI export projects from least developed countries, and middle-skill intensive FDI export projects from more advanced developing countries – OPIC is prohibited from offering coverage to what US labor organizations consider "sensitive sector" investments including textiles, auto parts, or electronics, or to agricultural processing projects if the crops grown are "in surplus" in the United States.[71] Concern about Congressional reaction also effectively prevents OPIC from offering support to investors that wish to establish or manage Export Processing Zones. What is needed instead is to rededicate OPIC to its original mission of "promoting development" by providing political risk insurance to those projects that most benefit poorer

---

[69] *Foreign Policy*/Center for Global Development. *Commitment to Development Index 2010-2011.* Investment Component. 2010-2012.

[70] Gary Hufbauer, Theodore Moran and Lindsay Oldenski. 2013. *Outward Foreign Direct Investment and US Exports, Jobs, and R&D: Implications for US Policy.* PIIE Policy Analyses in International Economics 101. August 2013. The Peterson Institute for International Economics.

[71] Center for Global Development. *Commitment to Development Index 2010.* Investment Component. Theodore H. Moran. *Reforming OPIC for the 21st Century.* 2003. Washington, DC: The Peterson Institute of International Economics.

countries. Alongside OPIC, meanwhile, the US Millennium Challenge Corporation should work with recipient countries to design compacts that overcome constraints to investment, tying local entrepreneurs to global markets and helping authorities implement compacts that facilitate both local and multinational private sector activity.

8. For the Future: Limits on Locational Incentives?

Finally, looking toward the distant horizon, developed countries – as well as developing countries – would benefit from a serious multilateral effort to limit locational incentives, subsidies, and other giveaway programs as alternative sites compete to attract international investment around the world.[72]

[72] Ana Teresa Tavares-Lehmann, Perrine Toledano, Lise Johnson, and Lisa Sachs. *Investment Incentives: Multidisciplinary Perspectives.* New York: Columbia University Press. Forthcoming.

Appendix I

Manufacturing FDI Flows to Developing Countries
(millions of dollars)

	1990-1992 (annual average)	2005-2007 (annual average)	2009-2011 (annual average)
Lowest-Skill Sector			
Food, beverages and tobacco	$512	$1,693	$3,622
Textiles, clothing and leather	$130	$439	$1,063
Wood and wood products	$116	$363	$623
Total	$758	$2,496	$5,308
Higher-Skilled Sectors			
Publishing, printing and reproduction of printed materials	$0	$48	$56
Coke, petroleum products and nuclear fuels	$113	$1,659	$1,448
Chemicals and chemical products	$544	$2,514	$4,335
Rubber and plastic products	$22	$186	$771
Non-metallic mineral products	$126	$555	$1,015
Metals and metal products	$212	$2,375	$4,828
Machinery and equipment	$190	$2,531	$1,778
Electrical and electronic equipment	$284	$1,714	$3,142
Precision instruments	$20	$22	$161
Motor vehicles and other transport equipment	$212	$754	$2,136
Other manufacturing	$129	$311	$691
Unspecified Secondary	$2,302	$22,119	$31,049
Total	$4,155	$34,788	$51,411

Source: UNCTAD database 2014

Bibliography

Aghion, Philippe., J. Cai, Luosha Du, Ann Harrison and Patrick Legros "Industrial Policy and Competition", draft, April 25, 2014

Aitken, Brian Ann Harrison, and Robert E. Lipsey. 1996. Wages and Foreign Ownership: A Comparative Study of Mexico, Venezuela, and the United States. *Journal of International Economics* 40 No. 3-4: 345-71

Alfaro, Laura Sebnem Kalemli-Ozcan, and Selin Sayek. 2009. FDI, Productivity and Financial Development. *World Economy* 32, No. 1. (January): 111-136.

Beason, Richard and David M. Weinstein. Growth. 1996. Economies of Scale, and Targeting In Japan (1955-1990). *The Review of Economics and Statistics*. Vol 78, no. 2, (May).

Blalock, Garrick and Daniel H. Simon. 2009. Do all firms benefit equally from downstream FDI? The moderating effect of local suppliers; capabilities on productivity gains. *Journal of International Business Studies*. Volume 40, No. 7. (September): 1075-1095.

Blalock, Garrick and Paul J. Gertler. 2008. Welfare gains from foreign direct investment through technology transfer to local suppliers. *Journal of International Economics*. 74 no. 2 (March): 402-421.

Blomström, Magnus, Ari Kokko, and Mario Zejan. 1992. *Host Country Competition and Technology Transfer by Multinationals*. NBER Working Paper 4131. Cambridge, MA: National Bureau of Economic Research.

Blonigen, Bruce A. and Alyson C. Ma. 2010. Please Pass the Catch-Up: The Relative Performance of Chinese and Foreign Firms in Chinese Exports In *China's Growing Role in World Trade* ,Robert C. Feenstra and Shang-Jin Wei, eds.,. Chicago: University of Chicago Press for the NBER.

Capanelli, Giovanni.1997. Buyer-Supplier Relations and Technology Transfer: Japanese Consumer Electronics. *International Review of Economics and Business* 44, no. 3 (September): 633-62.

Center for Environmental Law, EarthJustice, Friends of the Earth US, Oxfam America, and Sierra Club. 2009. *Comments on the US Model Bilateral Investment Treaty (BIT)* July 31.

Center for Global Development. *Commitment to Development Index 2010*. Investment Component.

Center for Global Development. *Commitment to Development Index 2010-2011*. Investment Component. 2012.

Centre for Development and Enterprise. 2013. *Rethinking South Africa's Labour Market: Lessons from Brazil, India and Malaysia*. Johannesburg South Africa: (June).

Chalmers, Johnson. A. 1993. *MITI and the Japanese Miracle* . Stanford University Press. (1981) and Clyde Prestowitz T*rading Places - How We Are Giving Our Future to Japan and How to Reclaim It*, Basic Books.

Cosbey, Aaron. 2009. *A Sustainable Development Roadmap for the WTO*. Winnipeg: Institute for Sustainable Development.

Dani, Rodrik,. 2011. The Future of Economic Convergence. Jackson Hole Symposium of the Federal Reserve Bank of Kansas City. (August).

Dani, Rodrik. 2009. *Growth after the Crisis*. Draft May 12,.

Drabek, Zdenek ed. 2010. *Is the World Trade Organization Attractive Enough for Emerging Economies? Critical Essays on the Multilateral Trading System*. London: Palgrave Macmillan.

Du, Luosha, Ann Harrison, and Gary Jefferson. "FDI Spillovers and Industrial Policy: The Role of Tariffs and Tax Holidays". *World Development* Vol. 64, pp. 366–383, 2014.

Farole, Thomas and Deborah Winkler, Eds. 2014. *Making Foreign Direct Investment Work for Sub-Saharan Africa: Local Spillovers and Competitiveness in Global Value Chains*. Washington: The World Bank.

Gallagher, Kevin P. 2010. US-China Investment Treaty: A Threat to Stability and Growth in China. Tufts University. GDAE Program. (June) 15.

Gallagher, Kevin P. and Daniel Chudnovsky. 2009. *Rethinking Foreign Investment for Sustainable Development: Lessons from Latin American.* London: Anthem Press.

Garrick Blalock and Paul J. Gertler. Foreign Direct Investment and Externalities: The Case for Public Intervention. In *Does Foreign Direct Investment Promote Development? New Methods, Outcomes and Policy Approaches* (Institute for International Economics Monograph Titles). Theodore H. Moran, Edward M., Professor Graham, and Magnus Blomström eds. Washington: Institute for International Economics.

Harding, Torfinn and Beata Javorcik. 2012. Foreign Direct Investment and Export Upgrading. *The Review of Economics and Statistics*. 94 No. 4: 964-80.

Harding, Torfinn and Beata Smarzynska Javorcik. 2011. Roll Out the Red Carpet and They Will Come: Investment Promotion and FDI Inflows. *The Economics Journal*, Vol. 121, Issue 557, pp. 1445-1476.

Harrison, Ann, and Andres Rodriguez-Clare. 2010. *Trade, Foreign Investment, and Industrial Policy for Developing Countries. Handbook of Development Economics*, Vol 5: 4039-4214.

Hausmann, Ricardo and Dani Rodrik, 2005. Self-Discovery in a Development Strategy for El Salvador. *Economia: Journal of the Latin American and Caribbean Economic Association*, 6(1) (Fall): 43-102.

Hausmann, Ricardo and Dani Rodrik. 2006. *Doomed to Choose: Industrial Policy As Predicament*. Harvard University: JFK School.

Hausmann, Ricardo, Jason Hwang, and Dani Rodrik. What You Export Matters. *Journal of Economic Growth*. Vol. 12, No. 1, March, 2007.

Herbs, Jeffreyt and Greg Mills. *How South Africa Works*. Johannesburg, South Africa: Pan Macmillan. 2015.

Hijsen, Alexander. 2008. Do Multinationals Promote Better Pay and Working Conditions? In *OECD Employment Outlook*. Paris: Organization for Economic Cooperation and Development. Chapter 5.

Hobday Michael. 1995. *Innovation in East Asia: The Challenge to Japan*. London: Aldershot. 2000.

Hobday, Michael. East versus Southeast Asian Innovation Systems: Comparing OEM- and TNC-led Growth in Electronics. In Linsu Kim & Richard Nelson, eds., *Technology, Learning, & Innovation*, New York: Cambridge University Press, 2000.

Hufbauer, Gary Clyde and Jeffrey J. Schott, with Cathleen Cimino, Martin Vieiro, and Erika Wada. 2013. *Local Content Requirements: A Global Problem*. Policy Analyses in International Economics 102. Washington: The Peterson Institute for International Economics.

Hufbauer, Gary, Theodore Moran and Lindsay Oldenski. 2013. *Outward Foreign Direct Investment and US Exports, Jobs, and R&D: Implications for US Policy*. PIIE Policy Analyses in International Economics 101. (August). The Peterson Institute for International Economics

Hummels, David and Peter J. Klenow. 2005. The Variety and Quality of a Nation's Exports. *American Economic Review*. 95 no. 3: 704-723. (P. 718).

IBRD and IFC: Country Partnership Strategy Progress Report for The Kingdom of Morocco for the period FY10-13. May 15, 2012. *Kingdom of Morocco: Country Economic Memorandum*, two volumes. Washington, DC: The World Bank, March 14, 2006.

ILO. 2007. *Decent Work: A Perspective from the MNE Declaration to the Present*. Geneva: International Labor organization.

Lee, J.-Y. and Edwin Mansfield. 1996. Intellectual Property Protection and US Foreign Direct Investment. *Review of Economics and Statistics*, 78.

Javorcik, Beata. 2014. "Does FDI Bring Good Jobs to Host Countries?" working paper.

Javorcik, Beata, Wolfgang Keller, and James Tybout. 2006. "Openness and Industrial Response in a Wal-Mart World: A Case Study of Mexican Soaps, Detergents and Surfactant Products." *The World Economy*, vol. 31, issue 12, December 2008.

Javorcik, Beata S. and Kamal Saggi. 2010. Technological asymmetry among foreign investors and mode of entry. *Economic Inquiry* 48, no. 2 (April): 415-433.

Javorcik, Beata Smarzynska and Mariana Spatareanu. 2005. Disentangling FDI Spillover Effects: What Do Firm Perceptions Tell Us? In Does Foreign Direct Investment Promote Development? New Methods, Outcomes and Policy Approaches (Institute for International Economics Monograph Titles) eds., Theodore H. Moran, Edward M., Professor Graham, and Magnus Blomström. Washington: Institute for International Economics.

Javorcik, Beata Smarzyska. 2004. Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages. *The American Economic Review*. (May): 605-627.

Jorg, Holger and Eric Strobl. 2005. Spillovers from Foreign Firms though Worker Mobility: An Empirical Investigation. *Scandinavian Journal of Economics* 107 no. 4: 693-709.

Kokko, Ari Ruben Tansini, and Mario C. Lejan. 1996. Local Technological Capability and Productivity Spillovers from FDI in the Uruguayan Manufacturing Sector. *Journal of Development Studies* 32 (April): 602-11.

Kokko, Ari. 1994. Technology, Market Characteristics, and Spillovers. *Journal of Development Economics* 43, no. 4 (April): 279-93.

Larrain, Felipe Luis F. Lopez-Calva, and Andres Rodriguez-Clare. 2001. Intel: A Case Study of Foreign Direct Investment in Central America. In Felipe Larrain, ed., *Economic Development in Central America, vol. 1: Growth and Internationalization.* Harvard University Press.

Lewis, Joanna I. 2013. *Green Innovation in China: China's Wind Power Industry and the Global Transition to a Low-Carbon Economy* (Contemporary Asia in the World), New York: Columbia University Press.

Lim, Linda and Eng Fong Pang. 1995. *Foreign Direct Investment and Industrialisation: in Malaysia*, Singapore, Taiwan and Thailand, Paris: OECD:115.

Lin, Justin and Ha-Joon Chang. 2009. Should Industrial Policy in Developing Countries Conform to Comparative Advantage or Defy it? A Debate Between Justin Lin and Ha-Joon Chang. *Development Policy Review* 27 no. 5: 483-502.

Lin, Justin Yifu and Celestin Monga. 2010. *Growth Identification and Facilitation: The Role of the State in the Dynamics of Structural Change* Policy Research Working Paper 5313. Washington, DC: The World Bank, Office of the Vice President for Development Economics.May.

Lipsey, Robert E. and Fredrik Sjöholm. 2004. Foreign Direct Investment, Education, and Wages in Indonesian Manufacturing. *Journal of Development Economics* 75 no. 1: 415-422.

Lipsey, Robert. 2006, Measuring the Impacts of FDI in Central and Eastern Europe. NBER Working paper 12808. Cambridge, MA: National Bureau of Economic Research.

Liu, Xiaming Chengang Wang, and Yinqi Wei. 2009. Do Local Manufacturing Firms Benefit from Transactional Linkages with Multinational Enterprises in China? *Journal of International Business Studies* 40, no. 7. (September): 1113-1131.

Long, Guoqiang 2005. China's Policies on FDI: Review and Evaluation.In Theodore H. Moran, Edward M. Graham, and Magnus Blomström. *Does Foreign Direct Investment Promote Development?: New Measurements, New Outcomes, New Policy Approaches,* Theodore H. Moran, Magnus Blomström, and Edward Graham eds. Washington: Institute for International Economics.

Mansfield, Edwin and Anthony Romeo. 1980. Technology Transfer to Overseas Subsidiaries by US-based Firms. *Quarterly Journal of Economics*. 95 no. 4.

Maskus, Keith. 2012. *Private Rights and Public Problems: The Global Economics of Intellectual Property in the 21st Century*. Washington, DC: Peterson Institute for International Economics.

McKinsey Global Institute. 2006. *New Horizons: Multinational Company Investment in Developing Economies*. New York: McKinsey & Company.

Moran, Theodore H. 2009. *Three Threats: An Analytical Framework for the CFIUS Process*, Washington: The Peterson Institute for International Economics.

Moran, Theodore H. 2011. *Foreign Direct Investment and Development: Launching a Second Generation of Policy Research: Avoiding the Mistakes of the First, Reevaluating Policies for Developed and Developing Countries*. Washington: Peterson Institute for International Economics.

Moran, Theodore H. 2003. *Reforming OPIC for the 21st Century*. . Washington: Peterson Institute for International Economics.

Morriset, Jacques and Kelly Andrews-Johnson. 2003. *The Effectiveness of Promotion Agencies at Attracting Foreign Direct Investment*. FIAS Occasional Paper 16. Washington, DC: Foreign Investment Advisory Service.

Nelson, Roy C. 2009. *Harnessing Globalization: The Promotion of Nontraditional Foreign Direct Investment in Latin America*. University Park, Pennsylvania: The Pennsylvania State University Press.

Noland, Marcus and Howard Pack. 2003. *Industrial Policy in an Era of Globalization: Lessons from Asia*. Washington, DC: Peterson Institute for International Economics.

Okimoto, Daniel 1990. *Between MITI and the Market: Japanese Industrial Policy for High Technology*. Stanford University Press,

Ramachandran, V. 1993, Technology Transfer, Firm Ownership, and Investment in Human Capital. *Review of Economics and Statistics*. 75 no. 4: pp.664-70.

Rasiah, R. 1995. Foreign Capital and Industrialization in Malaysia. New York: St. Martin's Press.

Reich, Robert. 1990. Who Is Us? Harvard Business Review (January).

Report to Congress of the U.S.-China Economic and Security Review Commission, November.

Rhee, Yung Whee, Katharina Katterback, and Jeanette White. 1990. *Free Trade Zones in Export Strategies* Washington, DC: The World Bank, Industry Development Division, December p. 39.

Ricardo, Hausmann, and Dani Rodrik. 2003. Economic Development as Self-Discovery. *Journal of Development Economics* 72: 603-633.

Rodrik, Dani. 2008. *Normalizing Industrial Policy*. Commission on Growth and Development Working Paper No. 3. Washington, DC: The World Bank

Schott, Peter K. 2004. Across-Product Versus Within-Product Specialization in International Trade. *Quarterly Journal of Economics*. 119 no. 2: 647-678.

Spar, Debora. 1998. *Attracting High Technology Investment: Intel's Costa Rican Plant*. Foreign Investment Advisory Service Occasional Paper 11, Washington: World Bank Group.

Spar, Debora. 2006. *The Impact of Intel in Costa Rica: Nine Years After the Decision to Invest.* Washington, DC: The World Bank Group, Foreign Investment Advisory Group, and Multilateral Investment Guarantee Agency.

Tavares-Lehmann, Anna Teresa,Perrine Toledano, Lise Johnson, and Lisa Sachs. *Investment Incentives: Multidisciplinary Perspectives*. New York: Columbia University Press. Forthcoming.

te Velde, Dirk Willem and Oliver Morrissey. 2003. "Do Workers in Africa Get a Wage Premium if Employed in Firms Owned by Foreigners?" *Journal of African Economies*. Volume 12, Number 1, pp. 41-73.

U.S. Congress. One Hundred Twelfth Congress, Second Session. 2012. Report to Congress of the U.S.-China Economic and Security Review Commission, November; U.S. Congress. One Hundred Thirteenth Congress, First Session. 2013.

UNCTAD. 2011. *How to Create and Benefit from FDI-SME Linkages: Lessons from Malaysia and Singapore* .Best Practices in Investment for Development series.

UNCTAD. 2007. *Elimination of TRIMs: The Experience of Selected Developing Countries*.

Urata, Shujiro, and Hiroki Kawai. 2000. Intrafirm Technology Transfer by Japanese Manufacturing Firms in Asia. in, *The Role of Foreign Direct Investment in East Asian Economic Development* Takatoshi Ito and Anne O. Krueger, eds. Chicago: The University of Chicago Press for the National Bureau of Economic Research.

Van Harten, Gus. 2010. *Thinking twice about a gold rush*: *Pacific Rim v. El Salvador*. Vale Columbia Center for Sustainable International Investment: *Columbia FDI Perspectives*

Wells, Jr., Louis T. and Alvin G. Wint. 2000. *Marketing a Country: Promotion as a Tool for Attracting Foreign Investment*, Revised Edition, Washington, DC: The International Finance Corporation, the Multilateral Investment Guarantee Agency, and the World Bank.

Winnipeg Institute for Sustainable Development. *A Sustainable Development Roadmap for the WTO*.

Working Group on Development and Environment in the Americas. 2008. *Foreign Investment and Sustainable Development: Lessons from the Americas*. Washington, DC: Heinrich Boll Foundation North America.