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Measuring success in the global economy: international trade, industrial upgrading, and business function outsourcing in global value chains

An essay in memory of Sanjaya Lall
Timothy J. Sturgeon and Gary Gereffi *

This article contributes to an assessment of the scholarly work of Sanjaya Lall, especially as it relates to improved measures of industrial upgrading and technological learning. We argue for the collection of new statistics, in addition to reworking and linking existing data sets. Changes in the global economy, especially the rise of global value chains (GVCs), have created measurement problems that require not only continued innovation in the use of existing data sources, but also the development and deployment of new measures that analyze GVCs more directly. Specifically, we advocate for the collection of establishment-level economic data according to *business functions*. Data collected according to a standardized set of generic business functions can provide researchers and policymakers with a better map of the value chain, reveal the roles that domestic establishments, firms, and industries play within GVCs, and offer a unique view of the competitive pressures facing domestic firms and industries.

Keywords: global value chains, international trade, business function outsourcing, industrial upgrading, technological learning

1. Introduction

This article contributes to an assessment and celebration of the scholarly and policy work of the late Sanjaya Lall. As Rasiah (2009) highlights, Lall's work was at once broad, deep and intensely focused. Over his long career, Lall and his many collaborators used the lenses of the transnational corporation (TNC), competitiveness, globalization and technological learning to uncover

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the determinants of economic change – or lack thereof – in the developing world. There is a clear continuity to this intellectual path, one that reveals Lall’s commitment to empirical investigation, his skepticism of conventional wisdom, his open-mindedness and his sustained focus on improving the lot of those in the world who have less.

During his early career, a time when TNCs were driving rapid economic development in pockets of the developing world, he did not simply celebrate or demonize their presence in host economies, but explored both their positive impact (such as local linkages and technology transfer) and their negative effects (such as crowding out of domestic firms and international transfer pricing). With the organizational fragmentation that came with global outsourcing and the rise of more advanced capabilities in the developing world, Lall added questions related to globalization and technological learning. What is most admirable is that Lall adapted his research and shifted his policy targets as the world economy evolved, while retaining his central focus on the key agents of change and their implications for developing countries. This is the path of a pragmatic, observant and curious mind, guided by a strong moral compass.

The focus of this article is narrower. We assess a single aspect of Lall’s work, his technological classification of exports, and related research utilizing international trade statistics, from the point of view of global value chains (GVCs). We see this work on international trade as useful, but ultimately limiting. While the techniques for estimating the technological content of trade can certainly be further refined by constructing more sophisticated and detailed product-based analyses of trade flows within or across industries, there is an urgent need to enrich existing metrics with additional data resources and measures that allow us to investigate GVCs more directly. In our view, changes in the global economy, and especially the rise of GVCs, have created measurement problems that require new information and new methods. In an effort to be constructive as well as critical, we propose one possible approach: the collection of economic data according to a generic and parsimonious list of *business functions*.

2. Tracking global shifts: conceptual and measurement issues

Among the enduring mysteries of political economy is why some places surge ahead in the global economy while others grow more slowly or fall behind in relative or even absolute terms. Is it sound macroeconomic policy, the development of human capital, protection

under the geopolitical umbrella of a superpower, sector-specific industrial development policies, natural resource endowments, or some combination that has led to the success of certain countries, especially in East Asia (Deyo, 1987; World Bank, 1993)? There are also debates about the optimal industry structures for technological learning and industrial upgrading. Is a concentrated industrial structure best because large firms can afford to invest in major research and development (R&D) efforts, or are open, flexible networks of small and medium-sized firms better able to identify and fit into the ephemeral niches of a fast changing global economy (Piore and Sabel, 1982; Amsden, 1989; Wade, 1990)? The institutional basis for development has also been a topic of much debate (Evans, 1995; Berger and Dore, 1996; Hall and Soskice, 2001).

For Sanjaya Lall and many others (e.g. Kimura, 2007), learning is the key to industrial upgrading. For places that are behind, learning must, at least in part, come from absorbing knowledge created elsewhere. Many mechanisms for this have been examined, from arm's-length technological "borrowing" (Amsden, 1989) through a range of practices that encompass technology licensing, reverse engineering, the injection of equipment and know-how through foreign direct investment, and firm-level adaptation to demands made by both foreign affiliates and overseas buyers (Gereffi, 1994; Feenstra and Hamilton, 2006).

Answers to these questions are complex, and debates about what shapes economic development outcomes will certainly continue. However, we are now at a critical juncture where rising complexity in the global economy has begun to overwhelm the slow and partial analytical progress that has been made in the past 25 years. Recent examples, such as how firms based in the United States, Japan, the Republic of Korea, and Taiwan Province of China interact with each other and with local firms to produce Apple iPods in southern China for export to world markets (Linden et al., 2007), illustrate both the intricacies of economic globalization and the limits of existing data. In this setting, some of the core assumptions of mainstream economics – that demand begets supply, that nations draw mainly on their own knowledge and physical resources to compete with other nations, that exports reflect the industrial capabilities of the exporter, that firms and individuals act independently, rationally and at arm's-length, and so on – appear, if not as gross distortions, then as quaint reminders of simpler times. But if the tools of mainstream economics are being blunted by global integration, so too are those offered by other social science disciplines, which typically assume levels of institutional and cultural cohesiveness and economic autarky that no longer exist.

For us, the GVC framework provides a useful guide as we seek answers to questions about the dynamic political economy of industries.¹ GVC analysis highlights three basic characteristics of any industry: 1) the geography and character of linkages between tasks, or stages, in the chain of value added activities; 2) how power is distributed and exerted among firms and other actors in the chain; and 3) the role that institutions play in structuring business relationships and industrial location. These elements help explain how industries and places evolve, and offer clues about possible changes in the future. The chain metaphor is purposely simplistic. It focuses on the location of work and the linkages between tasks as a single product or service makes its way from conception to end use.

The analysis of GVCs identifies new actors in the global economy (e.g. global buyers and global suppliers) and shows how their emergence alters the ways that industries are organized and governed across borders (Gereffi, 2005). Recent theorizing about the governance of GVCs highlights three key determinants that affect the organization and power dynamics within GVCs (complexity, codifiability and supplier competence), and characterizes three distinct business network forms (modular, relational and captive) that lie between the classic duality of arm's-length markets and hierarchies (i.e. vertically integrated firms) (Gereffi et al., 2005). The GVC governance types were derived from direct field observation in a variety of global industries, including footwear and apparel (Gereffi, 1999; Schmitz, 1999; Bair and Gereffi, 2001), horticulture (Dolan and Humphrey, 2000), bicycles (Galvin and Morkel, 2001), electronics (Borrus et al., 2000; Lee and Chen, 2000; Sturgeon, 2002), and motor vehicles (Humphrey, 2003; Sturgeon and Florida, 2004).

Qualitative industry research and conceptual theory-building of this sort have been extremely helpful in developing the framework, in identifying emerging trends in GVCs, and in providing researchers and policymakers with a vocabulary to discuss some of their key features without getting bogged down in industry-specific nomenclature. The framework has been used, challenged and extended in recent research on industries such as tourism (Barham et al., 2007), electronics (Vind and Fold, 2007), textiles and apparel (Evgeniev, 2008), motor vehicles (Sturgeon et al., 2008), and coffee and tea (Neilson and Pritchard, 2009), and in regions such as Latin America (Pietrobelli and Rabellotti, 2007) and East Asia (Kawakami and Sturgeon, forthcoming).

¹ See www.globalvaluechains.org for more detail on this approach and a list of publications and researchers that directly engage with it.

A major impediment to using qualitative research and conceptual theories to support specific policy interventions is the lack of comparable and detailed data on the industrial capabilities of firms, industries, and countries and the roles that they play in the global economy. The GVC framework provides a conceptual toolbox, but quantitative measures are lacking. While the development of objective, industry-neutral measures of GVC governance is a laudable goal, and survey questions are currently being fielded to collect data on the governance character of inter-firm linkages in both cross-border and domestic sourcing relationships,² better information to characterize the roles of firms, regions and countries in GVCs is urgently needed.

In this article, we examine the state of the art in GVC metrics and chart a way forward. First, we summarize some of the best recent academic research that has used official statistics to examine issues related to GVCs and industrial upgrading, including Lall's (2000) technological classification of exports, Feenstra and Hamilton's (2007) trade-data archeology, research on intermediate goods trade, and efforts to enrich trade data by linking it to "micro-data" underlying national statistics and policy programmes. We then point to what is perhaps the most glaring data gap of all: the appallingly poor level of product detail in international services trade.

While the research we review provides useful insights into the dynamics of GVCs, and helps to identify some of the key drivers of industrial upgrading, we are left with a dilemma. The rise in intermediate goods trade strongly suggests that countries no longer rely only or even primarily on domestic resources to develop and export products to the rest of the world. Countries and regions do not make products and deliver services in their entirety, but have come to specialize in specific functions within larger regional and global value chains. Surging trade in services complicates the picture. As a result, industrial output and trade statistics provide a very partial and even misleading view of where value is created and captured in the global economy.

Even the best trade statistics, as they currently exist, can only hint at what is happening in GVCs and how this sort of "integrative trade" (Maule, 2006) is shaping development outcomes. If key GVC-related questions are not asked on any official survey and do not exist

² Specifically, Statistics Canada, in an international sourcing survey currently being tested, asks firms if relationships with important suppliers are simple market relationships or something more complex, and if transactions involve the exchange of codified or tacit information.

on any administrative form, then existing data resources can never yield adequate results. Thus, there is an urgent need to collect new information. To illustrate, we present a new business function classification scheme that is currently being developed and deployed by statistical agencies and academic researchers in North America and Europe in the hope that it will soon be standardized and adopted more broadly.³

3. What trade statistics can reveal about global value chains

Data on international trade in physical goods and commodities are available in considerable detail online in the United Nations Statistical Division's Commodity Trade Statistics Database (known as UN COMTRADE). The database contains import and export statistics reported by the statistical authorities of nearly 200 countries, from 1962 to the most recent year, currently 2006 to 2008, depending on the country.⁴ Because these data are collected from many different national statistical agencies, they vary in quality and coverage. Nevertheless, the UN COMTRADE database provides information on imports and exports by value and in some cases by the number of units or volume shipped, according to seven different product (commodity) lists, the most detailed being the 2002 Harmonized Tariffs Code list, which at the six-digit level includes more than 8,000 product descriptions.⁵

The fine-grained product detail and the ease of access to COMTRADE data have allowed researchers to create alternatives to the industry classification schemes that its commodity lists are based on. While industries are an important and often relevant category, they typically contain products that are very heterogeneous in terms of labour or capital intensity, technological content, and so on. This section examines three distinct approaches to analyzing trade data that shed light on distinct aspects of GVC development and industrial upgrading. The first is Sanjaya Lall's (2000) classification of technological sophistication, which groups products based on their technological requirements. Increases in "high technology" exports suggest that learning and industrial upgrading is taking place in the exporting country. Second is the trade-data archaeology approach developed by Feenstra and

³ See, for example, the National Science Foundation funded Project, "A National Survey of Organizations to Study Globalization, Innovation and Employment." <http://www.nsf.gov/awardsearch/showAward.do?AwardNumber=0926746&version=noscript>.

⁴ See <http://unstats.un.org/unsd/comtrade/>.

⁵ The United States data, published by the Department of Commerce, is available at the ten-digit HTC level, and it includes more than 16,000 product descriptions.

Hamilton (2006), which tracks highly detailed export flows from the Republic of Korea and Taiwan Province of China to the United States over long periods of time. This approach reveals that specific products, rather than broad industries, have been key to upgrading in these countries (e.g. microwave ovens from the Republic of Korea, not white goods in general; computer monitors from Taiwan Province of China, not electronics in general). Feenstra and Hamilton also tie these exports of narrow product categories to the strategies of United States retailers and marketers to show how buyer-driven GVCs have influenced development outcomes in East Asia. The third is work on the relationship between GVCs and intermediate goods trade. Increases in intermediate goods trade signals the geographic fragmentation of the production process driven, we argue, by the increasing importance of GVCs in international trade.

3.1 Upgrading as learning: Sanjaya Lall's technological classification of exports

Gereffi (2005, p. 171) defines industrial upgrading as “the process by which economic actors – nations, firms and workers – move from low-value to relatively high-value activities in global production networks”. Lall et al. (2005) share this view, and start with a reasonable assumption, that the learning required to export high value added, technology-intensive products will be greater than for simpler products. Even if the knowledge embedded in imported intermediate inputs and machinery and know-how from foreign affiliates and global buyers is invisible in export statistics, as it typically is, we can at least assume that technology-intensive exports heighten the *potential* for rapid learning by local actors.

To examine the path of technological learning in the global economy using export statistics, Lall (2000) devised a technological classification of goods exports. To provide an example of how we can assess industrial upgrading for export-oriented economies, we examine shifts in the technology content of China's and Mexico's exports over time. Following Lall (2000), we divide each country's exports into five product groupings, which are listed in ascending levels of technological content: primary products, resource-based manufactures, and low-, medium-, and high-technology manufactures (see table 1).⁶ The main

⁶ Sanjaya Lall (2000) developed this technological classification of exports based on 3-digit Standard International Trade Classification (SITC) categories. His article provides the detailed list of products under each category.

contributing industries to each category (agro-forest products, textile and apparel, automotive, and electronics) are broken out to simplify the analysis.

Table 1. Lall's technological classification of exports

Classification		Examples
Primary products (PP)		Fresh fruit, meat, rice, cocoa, tea, coffee, wood, coal, crude petroleum, gas
Manufactured products		
Simple Manufactures	<u>RB: Resource-based manufactures</u>	
	RB1: Agro/forest based products	Prepared meats/fruits, beverages, wood products, vegetable oils
	RB2: Other resource based products	Ore concentrates, petroleum/rubber products, cement, cut gems, glass
	<u>LT: Low-technology manufactures</u>	
	LT1: Textile/fashion cluster	Textile fabrics, clothing, headgear, footwear, leather manufactures, travel goods
	LT2: Other low-technology	Pottery, simple metal parts/structures, furniture, jewellery, toys, plastic products
Complex Manufactures	<u>MT: Medium-technology manufactures</u>	
	MT1: Automotive products MT2: Medium-technology process industries	Passenger vehicles and parts, commercial vehicles, motorcycles and parts Synthetic fibres, chemicals and paints, fertilizers, plastics, iron, pipes/tubes
	MT3: Medium-technology engineering industries	Engines, motors, industrial machinery, pumps, switchgear, ships, watches
	<u>HT: High-technology manufactures</u>	
	HT1: Electronics and electrical products	Office/data processing/telecommunications equipment, TVs, transistors, turbines, power-generating equipment
	HT2: Other high-technology	Pharmaceuticals, aircraft, optical/measuring instruments, cameras
Other transactions		Electric current, cinema film, printed matter, special transactions, gold, works of art, coins, pets

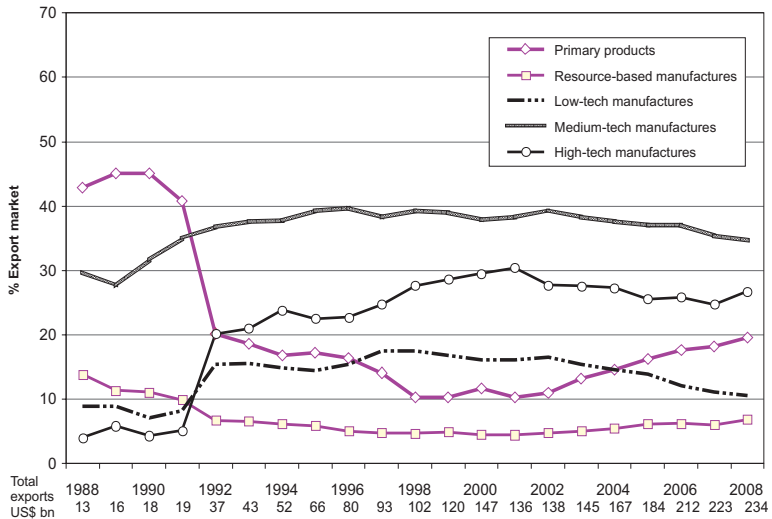
Source: Lall (2000, p. 341).

In figure 1, panel 1, we see that in 1988, 45 per cent of Mexico's total exports to the United States market were primary products, the most important of which was oil. In 1993, one year prior to the establishment of the North America Free Trade Agreement (NAFTA), medium-technology manufactures (mainly automotive products) and high-tech manufactures (largely electronics items) moved ahead of raw materials in Mexico's export mix. By 2008, over 60 per cent of Mexico's exports of \$234 billion to the United States market were in the medium- and high-technology product categories, followed by primary products with 20 per cent of all exports (which rebounded from their nadir of 10 per cent of total exports in 2001) and low-technology manufactures (such

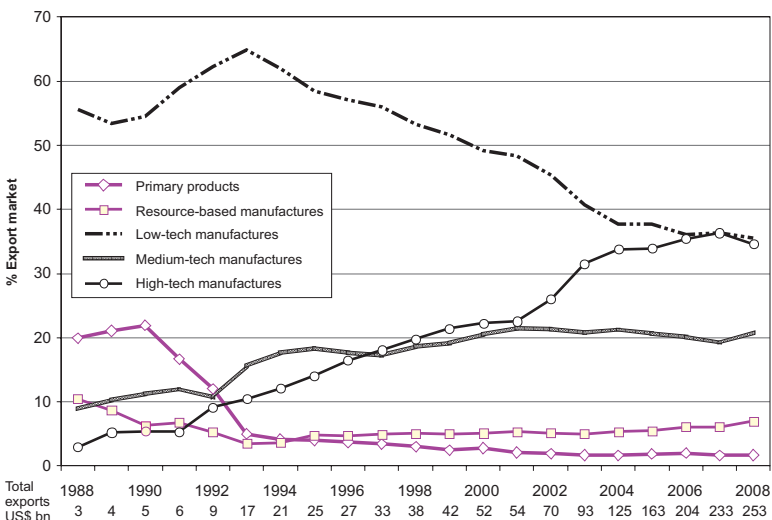
as textiles, apparel, and footwear). Thus, in just two decades, Mexico's export structure was transformed from one based on raw materials to one dominated by medium- and high-technology manufactured items.

Figure 1. Technological composition of Mexico's and China's exports to the United States, 1988–2008

Panel 1: Technological composition of Mexico's exports to the United States



Panel 2: Technological composition of China's exports to the United States



Source: UN COMTRADE (<http://comtrade.un.org/db/dqBasicQuery.aspx>).

In figure 1, panel 2, we see the composition of China's exports to the United States market during the 1988–2008 period. Unlike Mexico, the leading product category in China's exports to the United States market in 1988 was low-technology manufactured goods. These were primarily made up of a wide variety of light consumer goods – apparel, footwear, toys, sporting goods, house wares, and so on. These products accounted for about two thirds of China's overall exports to the United States in the early 1990s. By 2008, however, high-technology exports had increased to 35 per cent of China's total exports to the United States market, and were virtually tied with low-technology exports for the top spot in China's export mix.

Thus, Mexico and China have had a number of commonalities in their export trajectories to the United States market during the past two decades. Both are diversified economies, with a range of export product types. In both cases, manufactured exports are more important than primary product or resource-based exports; within manufacturing, high- and medium-technology exports are displacing low-technology goods. While these export data have limitations as indicators of industrial upgrading, as we will discuss below, both economies appear to be increasing the technological sophistication of their exports.

3.2 Trade-data archaeology

Feenstra and Hamilton (2006) utilize highly disaggregated international trade statistics to shed new light on the debate surrounding the origins of the “East Asian miracle”. Conventional explanations of East Asia's economic success, beginning with Japan in the 1950s and 1960s, and including the Republic of Korea, Taiwan Province of China, Hong Kong (China) and Singapore in the 1970s and 1980s, revolve around the role of markets and states in promoting export-oriented industrialization in this region. The World Bank and neoclassical economists have favoured the market-friendly explanation, which focuses on the solid macroeconomic fundamentals in the early East Asian industrializers (World Bank, 1993), while other scholars have highlighted the directive role of the state in promoting this transition (Amsden, 1989; Wade, 1990; Evans, 1995). Feenstra and Hamilton offer a contending demand-side perspective to account for the sustained export success of the Republic of Korea and Taiwan Province of China, which ties their performance to the retail revolution and the rise of “big buyers” in the United States (see also Gereffi, 1999).

Using what they call “trade-data archaeology”, Feenstra and Hamilton recreate the export trajectories of the Republic of Korea and

Taiwan Province of China, not merely at the level of industries, but by tracing the flow of very specific products over several decades from the early 1970s to the present. This approach reveals that the Republic of Korea's and Taiwan Province of China's dramatic export success was actually concentrated in a handful of product categories, such as garments, footwear, bicycles, toys, televisions, microwave ovens, computers and office products. The analysis shows that although exports from Taiwan Province of China and the Republic of Korea were in the same industries, they specialized in different kinds of products within these industries: the Republic of Korea's large vertically integrated *chaebol* firms emphasized mass-produced, standardized items, while Taiwan Province of China excelled in making a wide variety of more specialized products that fitted the capabilities of the smaller firms that dominate the island's diversified economy.

The authors go beyond standard supply-side accounts of East Asia's export success, by showing precisely how these exports were linked to the "retail revolution" in the United States, where retailers (such as Sears, JC Penney, Kmart and Wal-Mart) and companies with global brands (such as Nike, Liz Claiborne, Disney and many others) set up international sourcing networks to tap and expand the global supply base. It was the dynamics within GVCs, as much as any supply-side market or state-society characteristics, that fuelled the export-oriented development model that has been promoted by the World Bank and a variety of international development agencies since the 1980s. The fact that both the Republic of Korea and Taiwan Province of China developed these "demand-responsive" economies has important theoretical implications for economic sociology and international trade theories alike (Hamilton and Gereffi, 2008).

3.3 Examining intermediate goods trade

Merchandise trade has increased dramatically since the 1970s, far surpassing pre-World War I peaks in most OECD countries. Feenstra (1998) notes a sectoral shift in United States imports away from agricultural products and raw materials and towards capital and technology-intensive goods. Explanations include trade liberalization, falling transportation costs, and equalization of gross domestic products (GDPs) among trading countries, given the tendency for countries of similar size to trade more than countries of disproportionate size. Of course, there are many other possible explanations for these shifts, including rising production skills and better capital stock in poor countries, and speedier transportation, which opens up trade for perishable goods

such as fresh vegetables as well as for goods with very volatile prices, such as computer memory.

The rise of GVCs is not only enabled by these factors, but is itself a cause of trade increases. As Feenstra (1998, p. 36) argues, the geographic fragmentation of production causes increases in the volume of total trade because intermediate inputs may cross borders several times before final products are delivered to end users. Thus, the trade content of an average product rises when it is made in the context of GVCs.

The fact that intermediate goods trade is rising much faster than overall trade has stimulated a vast body of research and multiple labels, including a new international division of labour (Fröbel et al., 1980), multistage production (Dixit and Grossman, 1982), slicing up the value chain (Krugman, 1995), the disintegration of production (Feenstra, 1998), fragmentation (Arndt and Kierzkowski, 2001), vertical specialization (Hummels et al., 2001), global production sharing (Yeats, 2001), offshore outsourcing (Doh, 2005), and integrative trade (Maule, 2006). Sturgeon and Memedovic (forthcoming), using the United Nations' broad economic categories of consumption, capital, and intermediate goods, calculate that global trade in intermediate goods has far outpaced these other categories (figure 2). This rise is most dramatic after 1988, when the developing world was linked more systematically in GVCs. Developing countries' share of global intermediate good imports rose from 5.2 per cent to 29.6 per cent from 1988 to 2006, while their share of intermediate goods exports increased even more dramatically, from 3.9 per cent to 31.7 per cent.

Figure 2. Intermediate, capital, and final goods trade, 1962–2006
(Millions of constant United States dollars)



Source: Sturgeon and Memedovic (forthcoming).

While soaring intermediate goods trade is a strong indicator of the rise of GVCs, their growing dominance of world trade can lead to odd and confusing metrics. For example, because Malaysia imported so many intermediate goods for inclusion in exports, its ratio of exported goods and services to GDP in 2005 reached 123.4 per cent (World Development Indicators, 2007). Such ratios are not uncommon in classic entrepôt economies such as Singapore, and Hong Kong (China), and as a comparative measure of trade integration this is fine, but upon seeing such statistics without reference to GVCs, one has to wonder how a country can export more than it produces.

Clearly, the global economy is changing. Rising intermediate goods trade means that goods are flowing, increasingly, within the same industry. Research on intra-industry trade (Grubel and Lloyd, 1975; Lloyd and Lee, 2002) has shown steady increases of about 4–5 per cent per year in countries trading the same or seemingly similar products. This challenged the central tenet of Ricardian trade theory: country specialization according to factor-based comparative advantage that would lead only to inter-industry trade. Finger (1975) claimed that coarse industry classifications disguised vast heterogeneity within industries; in other words, countries could specialize within the same industry, especially in intermediate inputs versus final goods.

For Krugman (1991), intra-industry trade is driven by firms seeking increasing returns from large-scale production, thereby generating exports, while consumer demand for product variety stimulates imports of very similar products. Although this work was based on horizontal differentiation (of similar products), the quality ladder growth models from Grossman-Helpman (1991), which are formally very similar to Krugman's model, have a vertical dimension that includes intermediate goods. Others have tested and refined these theories in the context of East Asia's economic rise (Ng and Yeats, 1999) and provided evidence of increasing "vertical" specialization in intermediate inputs (Hummels et al., 2001). Using updated statistics, Brühlhart argues that, "since the 1990s, [the increase in intra-industry trade] appears to be driven to a significant extent by the international fragmentation of vertical production chains" (Brühlhart, 2008, abstract).

Our argument is that trade statistics can only hint at the changes occurring in the global economy. Trade statistics alone contain very partial information about the location of value added, and no information about ownership of productive assets and output, where profits are reaped, or how these increasingly complex systems are coordinated. Certainly,

work will continue on the causes and meaning of inter-industry trade. But there are limits to what can be learned from trade statistics alone.

4. Using administrative and micro-data resources to understand global value chains

Linking trade statistics to other datasets can enhance their usefulness. Through careful matching, or by taking advantage of especially rich administrative data,⁷ researchers can sometimes push beyond the limitations of published statistics. A host of government programs collect detailed economic data. Typically more detailed “micro-data” underlie what is ultimately made available to the public. While these data are usually confidential, researchers who gain security clearance and have their proposals accepted by data collection agencies can gain access, as long as government personnel screen the results before the research is published. Some micro-data sets have also been assembled by data agencies and released, with confidential information removed, as public-use files. Over the past decade, a burgeoning body of research has relied on government-collected micro-data. In this section, we provide a few examples.

Feenstra and Hanson (2004, 2005) take advantage of administrative data from China and from Hong Kong (China) to reveal new information about the workings of GVCs. Specifically, the data contain re-export values for Hong Kong (China), and information about factory and input ownership in China. These data allow the authors to estimate the mark-up charged by Hong Kong-based GVC “intermediaries” such as Li and Fung, a trading company. The authors also use these data to calculate the share of China’s exports to Hong Kong (China) that are re-exported (45.4 per cent in 1998), an indicator of the important coordination role that companies like Li and Fung play in GVCs, especially in apparel and other consumer goods industries. By taking advantage of data that describe the ownership of factories exporting from China, the authors are able to show that independent suppliers working under “export processing” arrangements (i.e. suppliers that are provided with inputs by intermediaries and their customers) are much more likely to send goods through Hong Kong (China) for re-export than exporting factories that are wholly owned by non-Chinese firms.

Feenstra and Spencer (2005) use the same Chinese data, from 1998 through 2000, to explore the relationship between outsourcing

⁷ Governments collect data for the purpose of administering their programmes such as tax collection, compliance with environmental protection laws, and the like. For this reason, such data are typically referred to as “administrative data”.

arrangements (arm's-length vs. contractual) and the proximity of suppliers (onshore vs. offshore) and find that relationships vary according to the technological sophistication of the product being outsourced. The more technologically sophisticated the product, the more likely it is that firms will source from affiliates or outsource to suppliers located nearby. Dani Rodrick and his collaborators (Hausman et al., 2006) use these data to show that the basket of goods exported by China is of higher technological content than would be predicted by its GDP per capita (using averages for all other countries' export mixes).

By linking these same data to Chinese input-output data, Dean, Fung and Wang (2007) estimate that China's "vertical specialization", that is, the use of imported intermediate inputs in exported goods, increased between 1997 and 2002 in most industries. This is the opposite of what one would expect. Instead of engaging in progressive import substitution as domestic capabilities rise, as most theories of development predict, China increased its reliance on imported intermediates as exports increased. Here we see that, because of the intricacies of production and trade networks within GVCs, we cannot assume deterministic causal linkages between export-led industrialization, the technological content of exports, and industrial upgrading.

Researchers have creatively used micro-data to explore specific questions related to GVCs. For example, Bernard et al. (2005) link administrative data from United States Census mailing lists⁸ to the universe of import and export transactions for 1993–2000, revealing a detailed picture of the characteristics of firms that do and do not trade. Harrison and McMillan (2006) and others have used the parent and foreign affiliate micro-data from the Bureau of Economic Analysis surveys on TNCs to examine the relationship between affiliate activity and United States employment. Swenson (2005) has examined the permanency of offshore assembly arrangements using extremely detailed data from United States International Trade Commission (USITC) reports. Kletzer (2002) has used micro-data from the Displaced Worker Survey to explore the experiences of workers displaced from manufacturing industries associated with increased foreign competition, and has made policy recommendations based on her findings.

⁸ We are referring here to the United States Census Bureau's Business Register, which is the sampling frame used for the Economic Census. The data included are business name, address, a unique establishment-level identifier, industry, employment, and the identity of the firm that owns the enterprise. Data about ownership allows the enterprises in the Business Register to be aggregated to the firm level. Jarmin and Miranda (2002) have assembled the Business Register into a time-series for 1976–2002, referred to as the Longitudinal Business Database (LBD).

Administrative micro-data from public surveys and linked data sets can enrich our view of how domestic firms engage with the global economy. Micro-data collected from TNCs, for example, when combined with data on international trade, can provide new information about the cross-border activities of TNCs and how they use local resources in offshore locations. Such approaches can be difficult to replicate and extend, however, because not all researchers can access confidential micro-data, and because the painstaking work of cleaning and matching raw micro-data files can be very difficult for other researchers to understand and replicate. Furthermore, unique administrative data sets tend to be available only for individual countries, and data collected in support of specific policy initiatives are commonly phased out after the programmes they were intended to support come to an end. As a result, studies based on micro-data can have limited scope with regard to multiple countries and longer-term trends.

5. What trade statistics hide

The easy availability and richness of UN COMTRADE data has led to their wide use among researchers and policymakers. However, we need to keep in mind what trade statistics do not tell us, and even what they might obscure. First, trade data contain no actual information about the process by which products are made. Certain production processes, such as semiconductor wafer fabrication, involve the manipulation of items so small, or require tolerances so exact, that they have moved beyond the limits of human dexterity and must always be carried out by machines. Other processes, such as sewing, have so far resisted automation and can only be done by hand. But for a very wide range of products and processes, the labour content of production is variable. The degree of labour or capital intensity used in production is, in many instances, a strategic managerial choice rather than an intrinsic characteristic of the product. Thus, we cannot rigidly associate technological content or capital requirements with most specific categories or classes of products. Industries are even poorer indicators of technological sophistication.

Furthermore, the technological content of high-technology exports may be embodied in imported components, subsystems, or production equipment. The highest value added elements of high-technology exports from developing countries are often produced in a third country. Even if these “high-tech” inputs are produced locally, and final assembly processes are truly technology-intensive, they may be carried out by foreign-owned and operated firms with few meaningful linkages to the local economy. With rising wages, worker militancy, political friction or even a prolonged natural disaster, such footloose firms might easily

pack up and move elsewhere. Thus, trade statistics run a real risk of over-stating the technological competence of exporters, and especially of local firms.

Even when production is carried out by local firms and is truly technology-intensive, the reality of GVCs is that the innovative work of product conception, design, marketing and supply-chain management may well continue to be conducted outside of the exporting country. These “intangible assets” cannot be measured by current international trade statistics. The value of imports plus the intangible assets held by the most powerful firms in GVCs, such as lead firms with global brands, suppliers with platform leadership (Gawer and Cusumano, 2002) and large retailers, can be extremely high.

For example, Linden et al. (2007) estimate that only \$4 of the \$299 retail price of an Apple 30 gigabyte video iPod MP3 player is captured in China, where they are assembled and tested by the contract manufacturers based in Taiwan Province of China, Hon Hai (also known as Foxconn), Asustek and Inventec. This is, in part, because iPods are assembled from components made mostly in other countries, such as the United States, Japan and the Republic of Korea. But more importantly, it is because Apple, which conducts high-level design work and software development in-house, and orchestrates the product’s development, production, marketing and distribution, is estimated to capture \$80 of the sale price. This study also estimates that \$83 is captured in the United States by Apple’s technology suppliers and by retailers. Clearly, assigning the \$183 per unit wholesale price of exported iPods (as would be reported in trade statistics) to the Chinese economy misrepresents where value is created in the global economy. Concluding that Chinese firms have the capability to develop and market products such as the iPod, simply because the country is the source of exports, would also be a mistake.

5.1 A glaring data gap: services trade

The easy availability and richness of UN COMTRADE data has tilted research on international trade towards the goods sector. While this work has contributed greatly to our understanding of international trade and its impacts on various national economies and industries, the lack of similar detail or global coverage on international trade in services has created a significant knowledge gap. In the case of the United States, the Bureau of Economic Analysis collects import and export data for only 17 service product categories (see table 2). Statistics Canada collects

only 28, and the OECD, which relies on member countries for data, publishes only 11. Contrast the poor detail in traded services with detail on goods in the COMTRADE database (8,000 product codes) and the magnitude of the data gap becomes clear.

Because of this data gap, we lack the basic knowledge about services trade needed to even glimpse trends in industrial upgrading driven by services. The paucity of detail in services means that we have no information about what is happening in the service product categories that have been mentioned as moving “offshore” from developed to developing countries, including back-office functions such as accounting, customer support, R&D and software programming.

Why are the data resources related to services so poor? One reason is that the data are difficult to collect. While companies might track the source of every physical input to manufacturing, for warranty or quality control purposes, services expenditures are typically grouped into very coarse categories, such as “purchased services”. The absence of tariffs on services, and their non-physical character, means that when service work moves across borders, no customs forms are filled out and no such data are generated. Another reason is that service work has historically been thought to consist of non-routine activities that require face-to-face contact between producers and users. Services as different as haircuts and legal advice have traditionally been consumed, in place, as soon as they are produced. The customized and ephemeral nature of many services has led them to be considered “non-tradable” by economists or at least very “sticky” in a geographic sense relative to the production of tangible goods. Finally, services have long been viewed as ancillary to manufacturing, either as direct inputs (e.g. transportation) or as services provided to people who worked in manufacturing (e.g. residential construction, retail sales etc.). As such, services have been viewed as a by-product, not a source, of economic growth. Thus, data collection on services has been given a low priority by statistical agencies.

Nevertheless, services trade is burgeoning, both domestically and internationally. Computerization is allowing a growing range of service tasks to be standardized, fragmented, codified, modularized, and more readily and cheaply transported between producers and consumers who might be at a great distance. As in goods production, the application of information technology to the provision of services allows some degree of customization within the rubric of high-volume production, or what Pine and Davis (1999) call “mass customization”. With computerization and inexpensive data storage, the second defining feature of services, that they cannot be stored, has also become less true than in the past. With

deregulation, business process outsourcing, and the rise of the Internet, services have become the focus of intense international competition and rampant innovation. Clearly, the assumptions behind current data regimes have changed and statistical systems must catch up.

Table 2. The seventeen product categories collected by the United States Bureau of Economic Analysis for traded services

Travel, passenger fares, and other transportation services (1)	Royalties and licence fees (2)	Education (3)
Financial services (4)	Insurance services (5)	Telecommunications services (6)
Business, professional, and technical services		
Computer and information services Computer and data processing services (7) Database and other information services (8)	Management and consulting services (9)	Research, development and testing services (10)
Construction, architectural, engineering services (11)	Industrial engineering services (12)	Operational leasing services (13)
Installation, maintenance, and equipment repair services (14)	Advertising services (15)	Legal services (16)
Other business, professional, and technical services (17)		

Source: United States Bureau of Economic Analysis.

Recent progress has been made in the context of NAFTA. In the spring of 2006, the United States Census Bureau, in collaboration with its counterpart agencies in Canada and Mexico, completed the development of 99 detailed product lists that identify and define the significant products of about 370 service industries. Work to date on the North American Product Code System (NAPCS) has focused on the products made by service industries in 12 two-digit industry sectors (48–49 through 81). In all, more than 3,500 individual service products have been defined so far. The NAPCS product definitions are extremely detailed in terms of what they do, and in many cases do not, include. This level of detail, if fully deployed, would go a long way toward filling the data gap in services trade.⁹

To sum up, data resources are falling behind economic realities. Innovative work to create new classification schemes from disaggregated datasets, to mine “micro-data” from government surveys and administrative records (as well as from private sources), and to combine and match data to create new data resources, is breaking new ground and providing important insights. A few of the most severe data gaps could eventually be filled. However, more needs to be done to collect

⁹ For more information on NAPCS, see <http://www.census.gov/eos/www/napcs/napcs.htm>.

data specifically designed to provide insights into the characteristics and effects of GVCs. Work of this sort is proceeding along multiple fronts, including the surveys that test the GVC governance framework developed by Gereffi et al. (2005) and the quantification of value capture in specific GVCs (Linden et al., 2007). Equally important is the ongoing stream of detailed field-based research on the functioning of GVCs in particular industries and places (e.g. Kawakami and Sturgeon, forthcoming). In the next section, we propose another approach: the collection of a broad range of economic data, such as employment, sourcing locations and job characteristics according to an exclusive, exhaustive, parsimonious and generic list of *business functions*.

6. Collecting new data on business functions

Vertical fragmentation and the growth of integrative trade – the very stuff of GVCs – has served to expand the arena of competition beyond final products to the vertical *business function* slices that can be offered (horizontally, to diverse customers) as generic goods and services within and across industries. This dynamic has raised the performance requirements for firms and workers that may have been insulated from global competition in the past. Workers, almost regardless of their role, can suddenly find themselves in competition with a range of consultants, vendors, suppliers, contractors and affiliates from places both far and near. Global value chains raise, among other things, the possibility that entire societies can become highly specialized in specific sets of business functions, while others fail to develop or atrophy. Development paths that include heavy GVC engagement can have positive or negative consequences for wealth creation, employment, innovation, firm autonomy, social welfare and economic development (Whittaker et al., forthcoming). Despite their growing importance as discrete realms of value creation, competition and industry evolution, we currently have no standard method for collecting data about business functions.

While there are a host of business functions that have long been disembodied from specific industries (e.g. from janitorial to IT to manufacturing services), qualitative research has shown that managers often experiment with a wide variety of “make” or “buy” choices and onshore or offshore sourcing (Berger et al., 2005). Decisions about how to bundle and unbundle, combine and recombine, and locate and relocate business functions have become a central preoccupation of strategic decision-making. Because industry classification schemes typically describe only the main output or process of the firm, and input-output statistics refer only to those products that the firm buys or sells, existing enterprise and establishment-level data resources are not well suited to

capturing the dynamics of business function bundling or revealing the spatial and organizational patterns that result.

In our view, this data gap will become more important over time as the capabilities that reside in the domestic and global supply bases continue to rise, increasing the potential for fragmenting, outsourcing and relocating a wide variety of business functions. A standardized list of exclusive and generic business functions is needed. An exclusive list will have no overlap between categories and will account for all of the functions of the firm. A generic list will be equally applicable to all firms and organizations, regardless of industry. The list should be extremely parsimonious at first, with detail collected only after the main categories have stabilized through field testing. While this is a difficult and time-consuming prospect, work to develop business function lists, and deploy them in surveys, is well underway.

6.1 Developing, deploying and refining business function lists: a brief history

To our knowledge, the earliest use of a business function list to collect economic data was for the EMERGENCE Project (Huws and Dahlman, 2004) funded by the European Commission. This research used a less-than-generic list of seven business functions tailored to collect information about the outsourcing of information technology-related functions, such as software development and data processing. Industry-specific bias in business function lists can simplify data collection and focus research on specific questions, but the results cannot be easily compared to or aggregated with other data, and they increase the risk of creating non-exhaustive lists. When business function lists are non-exhaustive, they leave some functions unexamined and block our view of how specific business functions contribute to the total employment or output of a firm. Business function lists should seek to include the full range of activities that all establishments must either do in-house or have done by others, *regardless of industry*.

In his 1985 book, *Competitive Advantage*, Michael Porter published a list of nine generic business functions: R&D, design, production, marketing and sales, distribution, customer service, firm infrastructure, human resources, and technology development. A list similar to Porter's was developed for the European Union (EU) Survey on International Sourcing (Neilsen, 2008) and adopted by Statistics Canada for the Survey of Changing Business Practices in the Global Economy. This list, while not industry-specific in any way, was not fully exhaustive because it included an "other functions" category. Such

categories are useful as checks on the exhaustiveness of the list used, but researchers should then combine them with an exiting category or, if needed, define a new, exclusive category, rather than accepting an undefined category of data.

Firms, especially at the establishment level, typically have a main output, be it a product or service. The main operational function that produces this output is associated with the firm's standardized industrial code. Instead of counting all output and employment under this classification, as business censuses typically do, business function lists can be used to measure economic activity (e.g. employment, occupational mix, wages paid etc.) in other functions as well. In business function frameworks, this main productive function has been designated variously as "production" (Porter, 1985), the "core function" (Neilsen, 2008), and "operations" (Brown, 2008). In contrast, the EMRGENCE project list (Huws and Dahlman, 2004) and a more recent list developed by the Offshoring Research Network for the purpose of detecting R&D offshoring (Lewin et al., 2009) did not include a category for the firm's main operational function, but instead used a list of commonly outsourced functions (product development, IT services, back office functions, call centres etc.). A business function list cannot be considered exhaustive unless it includes a category that captures the main productive function of the firm, a function that can be partially or even completely outsourced.

The United States Bureau of Labor Statistics' (BLS) Mass Layoff Statistics (MLS) Program has developed a list to collect data on business functions fulfilled by workers who have been separated in large-scale layoffs in the United States (Brown, 2008). In the 2007 MLS survey of establishments, respondents were asked a question about the primary and secondary roles, or "business functions", performed by laid-off workers. According to Brown (2008, p. 56), "'Do not know' responses to the business function question remained low [less than 6%], indicating that the correct person is being reached for the interview and that most respondents in fact think in terms of business functions". In other words, the BLS found business function data to be highly collectable because company officials appear to recognize the business function concept. A tabulation of respondents' literal responses generated a very long, non-exclusive list of business functions that were then coded by BLS personnel to create detailed, mutually exclusive categories. This list was further coded to nine higher-level business functions (named "business processes" in the MLS), similar to the Porter list. It is the bottom-up methodology used by the BLS – beginning with literal responses rather

than using a list that researchers develop subjectively or iteratively with industry informants – along with its exhaustive, exclusive, and generic character, that gives us a high level of confidence in the BLS list.

6.2 A proposed list of business functions

The growing use of business function lists in survey research suggests a need to delve within the firm to observe the details of organizational design, organizational change, outsourcing and industrial location. Clearly, new realities are spurring researchers to develop these new metrics. In our view, the sooner a business function classification scheme can be standardized and broadly deployed, the better.

Table 3 presents a proposed list of 12 business functions, along with their definitions. The list adds four business functions to the 2007 BLS MLS list. First, there is a function called “strategic management”. This reflects the common separation of the command, control and strategy-setting activities of top management from more mundane managerial

Table 3. Twelve generic business functions and their definitions

Business function	Definitions
1) Strategic management	Activities that support the setting of product strategy (i.e. deciding what “new product development” works on), choosing when and where to make new investments and acquisitions, or sales of parts of the business, and choosing key business partners (e.g. suppliers and service providers).
2) Product or service development	Activities associated with bringing a new product or service to market, including research, marketing analysis, design and engineering.
3) Marketing, sales and account management	Activities to inform buyers, including promotion, advertising, telemarketing, selling, retail management.
4) Intermediate input and materials production	The fabrication or transformation of materials and codification of information to render them suitable for use in operations
5) Procurement	Activities associated with choosing and acquiring purchased inputs
6) Operations (industry code)	Activities that transform inputs into final outputs, either goods or services. This includes the detailed management of such operations. (In most cases, operations will equate with the industry code of the establishment or the activity most directly associated with the industry code.)
7) Transportation, logistics and distribution	Activities associated with transporting and storing inputs, and storing and transporting finished products to customers.
8) General management and corporate governance	Activities associated with the administration of the organization, including legal, finance, public affairs, government relations, accounting, and general management.
9) Human resource management	Activities associated with the recruiting, hiring, training, compensating and dismissing of personnel.
10) Technology and process development	Activities related to maintenance, automation, design/redesign of equipment, hardware, software, procedures and technical knowledge.
11) Firm infrastructure (e.g. building maintenance and IT systems)	Activities related to building maintenance, and ITC systems
12) Customer and after-sales service	Support services to customers after purchase of good or service, including training, helpdesks, customer support for guarantees and warranties.

Source: Adapted from the United States Bureau of Labor Statistics, Mass Layoff Statistics Program.

functions that can sometimes be located offshore and/or carried out in supplier firms. The most recent BLS MLS surveys distinguish strategic management from a set of “general management” functions. Second, because they typically occur at nearly opposite ends of the value chain, procurement has been separated from distribution, transportation and logistics. Third, our list breaks out “intermediate input and materials production” from operations. This is meant to capture the very common practice of externally sourcing physical parts or blocks of services for inclusion in larger products and systems. In the BLS MLS list, intermediate input production is considered part of operations. Fourth, because they contain very different activities, firm infrastructure has been broken out from general management (and corporate governance). Despite these differences, the lists are compatible, since the functions in Table 3 can be combined to match the BLS MLS list.

6.3 Collecting data on the geography of business functions

Although business function data can be used to inform other research questions, as the BLS’ Mass Layoff Statistics Program does in identifying the functional role of laid-off workers, our main interest in using it is to identify patterns of business function bundling (i.e. organizational design) and the locational characteristics of outsourcing and offshoring. Because business functions can be bundled and located differently, we can identify four non-exclusive quadrants for any given function: 1) domestic in-house; 2) domestic outsourced; 3) offshore in-house (i.e. the MNC affiliate); and 4) offshore outsourced. However, it is important that business function surveys that seek to capture data on global engagement be designed not only to capture all four, but also the ways that firms combine them. Firms can, and typically do, combine internal and external sourcing of specific business functions. For example, some intermediate inputs may be produced in-house while others are outsourced. Operations may be outsourced, but only when internal capacity is fully utilized. Firms might combine internal and external sourcing for strategic reasons (Bradach and Eccles, 1989).

The same can be said of location. Managers can decide to locate business functions in proximate or distant locations, in high- or low-cost locations, near customers, suppliers, specialized labour markets, and so on, but most typically, they combine these approaches and motives. This is why detailed information about the location of business functions is of great interest. Surveys that identify sourcing locations and either domestic or international are not very helpful. Outsourcing from the

United States to Germany, for example, will likely involve different functions and have very different motivations and implications than outsourcing from the United States to China. But even on the domestic front, outsourcing to a vendor in the same city is very different from outsourcing to a supplier located in a distant, rural location.

The surveys on international sourcing fielded by Eurostat, Statistics Canada and the Offshoring Research Network collect no data on domestic locations and use predetermined lists of geographic locations to identify countries of great interest (e.g. India, China), but combine others into vast, amorphous groupings (e.g. “other Asia”). It is better, in our view, to ask respondents to provide geographic information according to city and country. In this way, a single question can begin to identify, with great precision, both domestic and international patterns of outsourcing and offshoring. Geographic aggregations can be made after the fact, and detailed locational coordinates can allow the use of geographic information system (GIS) software to create and examine a host of potentially important variables (e.g. clustering, distances, travel times, prevailing labour market conditions).

Data collected according to business function can provide researchers and policymakers with a rough map of the value chain; reveal the roles that domestic establishments, firms and industries play within GVCs; and offer a unique view of the competitive pressures facing domestic firms and industries. Over time, it will be possible to develop a hierarchy of business functions to provide information about business functions in greater detail, but in the shorter term, a parsimonious, high-level list can provide important information, such as an at-a-glance perspective on how enterprises bundle value chain functions, and a benchmark for how this is changing. As metrics for the key variables of GVC governance and the five GVC governance modes described earlier are developed, they can be used to characterize the internal and external linkages between specific business functions, testing our assumptions about the relationships between GVC governance and the “offshorability” and location of work. Nationally representative surveys can begin to characterize business function gaps and specializations in specific countries, while international surveys can develop comparisons between trading partners. When combined with existing data on employment, occupations, wages, worker career paths, firm performance, e-commerce, trade etc., new data on business functions will open up important new avenues for research and policy analysis.

6.4 A new European survey on business functions

To provide an example of the usefulness of business function data, we present some preliminary data from the EU Survey on International Sourcing. So far, the survey has been administered in 14 out of 27 European Union (EU) member states and 60,000 responses have been collected, but only the data from four Nordic countries have been tabulated (see Nielsen, 2008 for details). Figure 3 and tables 4 and 5 overleaf show the results from Denmark, where the survey was carried out as a census for all 3,170 private sector non-agricultural enterprises with 50 or more employees.¹⁰ Because a few of the core questions were mandatory, the response rate for this group of establishments was 97 per cent. The questions about business functions on this survey were straightforward: Were business functions outsourced domestically or internationally in the 2001-2006 period (table 4), and if so, what kind of business partner was used (table 5), and (from a predetermined list) where were internationally sourced functions located (figure 3).

The data in table 4 show that Danish firms sourced the majority of business functions in-house. About 88 per cent were not engaged in international sourcing of any kind. Facilities management was the most commonly outsourced function (37 per cent), but because vendors provide these services on-site, the source was invariably domestic. The business function that was sourced internationally the most frequently was the “core” function (10 per cent of all firms), analogous to “operations” in table 3, followed by information technology and communications (ITC) services. Twenty-nine percent of the 1,567 functions reported as internationally sourced were core functions, followed by ITC services (16 per cent), distribution and logistics functions (13 per cent), engineering functions (11 per cent), administrative functions (10 per cent), marketing and sales functions (10 per cent), and research and development functions (9 per cent).

These data support anecdotal evidence that international sourcing is most advanced in manufacturing (a “core” function for goods-producing firms). This assumption gains further support when firms reporting their core function as manufacturing are compared to service-producing firms. Only 28 per cent of service-producing firms in Denmark reported international sourcing of their core function, while 70 per cent

¹⁰ The survey was also administered to 1,968 smaller Danish manufacturing and business services firms. For simplicity’s sake, these data are not presented in this paper. In general, they show similar patterns, but slightly less domestic and international outsourcing across business functions than the sample of larger firms.

of manufacturing firms did so (Nielsen, 2008, p. 24). Table 5 shows that less than half of the reported international sourcing by Danish firms in the 2001–2006 period was to independent firms. The bulk of in-house international sourcing went to existing affiliates, as opposed to recently acquired or newly established “greenfield” affiliates.

Table 4. External and international sourcing of business functions by Danish firms, 2001–2006

Business function	Not outsourced	Domestically outsourced	Internationally sourced
Core function	88%	4%	10%
ICT services	71%	24%	6%
Distribution and logistics	82%	15%	4%
Administrative functions	90%	7%	4%
Engineering	88%	9%	4%
Marketing, sales etc.	91%	6%	3%
R&D	94%	3%	3%
Other functions	96%	4%	1%
Facility management	63%	37%	0%

Source: Eurostat International Sourcing Survey, courtesy of Statistics Denmark (Nielsen, 2008).

Notes: n=3,170 Danish enterprises with more than 50 employees. Rows may not add to 100% because a few firms reported more than one source for a given business function.

Table 5. Internationally sourced business functions by Danish firms, by supplier type, 2001–2006

Business function	Existing affiliate	Recently acquired affiliate	Recent greenfield affiliate	Independent firm (< than 50% owned)
Core function	29%	8%	18%	46%
Distribution and logistics	43%	5%	15%	37%
Marketing, sales etc.	48%	8%	14%	30%
ICT services	46%	3%	6%	44%
Administrative functions	50%	3%	13%	34%
Engineering	33%	6%	16%	45%
R&D	34%	8%	9%	49%
Facility management	NA	NA	NA	NA
Other functions	9%	9%	0%	81%

Source: Eurostat International Sourcing Survey, courtesy of Statistics Denmark (Nielsen, 2008).

Notes: n= 611 Danish enterprises engaged international sourcing.

Figure 3 summarizes the geography of international sourcing by Danish firms. It shows that new EU member states (mostly in Eastern Europe) account for 31 per cent of the cases of international sourcing of core functions during the 2001–2006 period, followed by China (22 per cent) and old EU member states (19 per cent). When the focus is

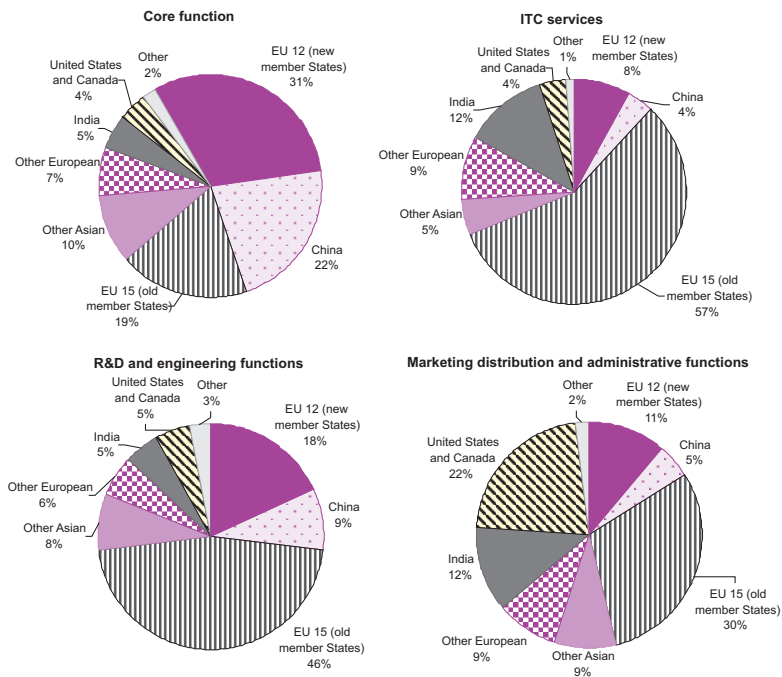
shifted to ITC services, the importance of the new member states falls to only 8 per cent, while old member states account for 57 per cent of the cases of international sourcing. India, a country typically identified as a destination for ITC outsourcing in the popular press and in qualitative research, is identified as a source country in 12 per cent of the cases of ITC sourcing, in comparison with only 5 per cent of the international sourcing cases for core functions. International outsourcing of R&D and engineering functions is also concentrated in Western Europe (42 per cent) with China (9 per cent) and “other Asian” countries (8 per cent) playing a larger role than in ITC services. Interestingly, the role of India in R&D outsourcing is very small. The combined shares of marketing, distribution and administrative functions show a more balanced pattern across locations.

The results presented here are largely unsurprising. They confirm both qualitative GVC research and, to some extent, popular perceptions. Of the business functions that are sourced outside of Denmark, 30% to 50% are outsourced to independent suppliers, a substantial but not dominant share. Existing affiliates provide most of the in-house international sourcing, but international acquisitions and the establishment of new “greenfield” facilities are not unheard of. Core functions, mostly manufacturing, are the most commonly outsourced and offshored, followed by ITC services. Functions based on tacit and local knowledge, such as marketing and sales, engineering, and R&D are less likely to be internationally outsourced or offshored. Most international sourcing by Danish firms is within Europe, but China is a popular location for sourcing core functions (mainly manufacturing). While India is more likely to be a source location for ITC service functions (12 per cent of cases) than for core functions (5 per cent of cases), it is notable that the majority (57 per cent) of instances of international ITC services sourcing are to the original 12 member states of the EU.

While it is important to have our impressions confirmed, the greater value of these data is that they establish a baseline for future research. Is the practice of outsourcing to independent suppliers becoming more prevalent? Will India grow as a location for ITC sourcing at the expense of old European Union member states? Will the outsourcing of engineering and R&D functions grow, and if so, where? Will service-producing firms increase the outsourcing and offshoring of core functions (operations)? If these are trends, then how quickly will they progress? Will Eastern Europe lose out to East Asia? These are some of the most pressing policy questions of the day. When and if new rounds of business function data are collected, we will be in a much better position to provide answers.

What the Eurostat international sourcing survey did not collect was employment and wage data according to business function. Such data would begin to quantify the importance of specific business functions within firms, industries and countries, and provide a benchmark for comparison with other countries that could reveal patterns of organizational design and national specialization within GVCs. It is our hope that future surveys will collect these data. One way could be to code census data that reveal performance metrics such as sales, employment and payroll according to a business function framework.

Figure 3. International sourcing of business function by Danish firms, 2001–2006



Source: Eurostat International Sourcing Survey, courtesy of Statistics Denmark (Nielson, 2008).

Notes: Other is Latin and South America plus Africa. Other Europe is Switzerland, Norway, Turkey, the Russian Federation, Belarus, Ukraine and the Balkan states. n=611 Danish enterprises engaged international sourcing

7. Conclusions

In the mosaic of value chain specialization and intermediate goods flows that underlie the most recent trends in global integration, ownership and capability development cannot so easily be linked to the

domestic context, even if we allow that it is based in part on “borrowed” technology. The implications for policy are far-reaching. How can workers, firms and industries be provided with the best environment for engaging with the global economy? How can we be sure that enough wealth, employment, and innovative capacity are generated at home as global integration proceeds? How much national specialization – and by extension, interdependence with other societies – is too much? These are open questions. Even if policymakers seek few direct interventions in the areas of trade, industrial or innovation policy, global integration can make the process of economic adjustment more difficult because it accelerates the pace of change.

Because the picture of global integration provided by current official statistics is incomplete, the causal links to economic welfare indicators such as employment and wages tend to be weak and unconvincing. New thinking is required to develop useful insights into the character and implications of our increasingly globally integrated national economies. Perhaps the most pressing need is for new kinds of data to be collected, data that shed light on the position of domestic firms, establishments and workers in GVCs. As a partial solution to this data gap, we advocate the collection of establishment-level economic data according to a standardized set of generic business functions. We share with Lall the desire to move beyond given industry and product classifications, and to create broad analytical frameworks and data collection tools to examine aspects of global integration that cut across specific industries and countries. The GVC framework, the business function scheme, and Lall’s technological classification of exports are all attempts to create intellectual tools and data classification schemes of exactly this sort.

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The co-evolution of international business connections and domestic technological capabilities: lessons from the Japanese catch-up experience

An essay in memory of Sanjaya Lall

John Cantwell and Yanli Zhang*

We undertake an examination of the technological catch-up experiences of the leading Japanese industrial firms in the twentieth century, based on both qualitative and quantitative historical evidence. We argue that the international business connections of Japanese firms had a strong influence on the industrial composition of the catch-up of their technological capabilities, and that in turn that catch-up has led to a change in the nature and form of their international business connections. We speculate on some similarities and differences with the current catch-up of firms in emerging market economies.

Key words: technological catch-up, technology transfer, international business connections, business networks, Japan, China

1. Introduction

During the course of the twentieth century, and especially between the 1920s and the 1970s, the largest Japanese firms caught up economically and technologically with their United States and European counterparts (e.g. Minami, 1994). Their technological capabilities were initially basic and highly imitative, grounded on the achievement of operational efficiency and standard product design, but over time, they steadily became more complex and sophisticated, and increasingly knowledge-intensive. In the course of this transition, they increasingly relied on knowledge creation and absorption, leading to the development of internal research and development (R&D) capabilities. At the firm level, the leading Japanese companies went from being aspiring emulators of Western models of organization and technology to being world-class companies in their own right. At the industry level, there

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was industrial upgrading, in the sense of a structural shift towards industries whose products were more science-based or characterized by more complex engineering methods and design capabilities (Ozawa, 2000, 2005). Such structural change tends to become more difficult as a country or a national group of firms moves up to higher rungs on the ladder of economic development (Lall, 2001).

The technological learning of firms has been a central part of every catch-up story, although this micro aspect has often been neglected in the macro-institutional and policy environment studies that have dominated the catch-up literature (e.g. Gerschenkron, 1962; Fagerberg and Godinho, 2005). While these studies provide valuable discussions of the role of the institutional changes that have facilitated catch-up at the national level (such as in the banking or education systems), they typically have little to say about the variations across firms and industries with regard to the firm-specific factors associated with capability-building over time. Unlike the neoclassical view of catch-up as the accumulation of physical and human capital, the evolutionary perspective frames catch-up as a process of gaining access to and mastery of the technologies used by the leading countries of the era (Nelson and Pack, 1999). Firms are repositories of knowledge/technology (Kogut and Zander, 1993), and the competitive advantage of firms in a country is the foundation of national competitiveness.

We know that firms co-evolve with their institutional environment (Murmann, 2003; North, 1990), be it in the domestic or international context. In the catch-up experience of developing countries, the importance of international business connections for a country's development has been observed repeatedly (Dunning and Narula, 1996). In Japan, international business connections played a critical role in the catch-up of its firms, although the forms of these connections have changed over time (Ozawa, 1997). The propensity of Japanese society and firms for adopting and adapting foreign practices has long been noted, and their approaches to catch-up emphasized imitation by the leading firms of the more advanced western countries ever since the late nineteenth century.¹

Therefore, largely in accordance with the approach of Sanjaya Lall (Lall, 1992, 2000), the central research question addressed in this paper is somewhat different from the usual aggregate-level perspectives offered by most economic development theories. We focus on the changing relationship between international business connections

¹ See e.g. Westney (1989).

and the technology development paths of the largest Japanese firms, especially in terms of their changing industrial structure, allowing for the specific context provided by the institutional environment in Japan.

In this paper, we argue that the evolution of the innovative capabilities of the largest Japanese firms was strongly influenced by their earlier international business connections. The industries in which international business connections were most significant and most effective were also those in which the subsequent catch-up of indigenous capabilities were strongest – an effect that seems to have persisted in a path-dependent fashion long after the relevant international business connections were discontinued or loosened. Moreover, we contend that there was also an effect in the reverse direction: as Japanese firms caught up technologically, the nature and form of their international business connections shifted over time. This was partly because there was a change in the forms of international business connections sought or required by large Japanese firms at different stages of development, and partly because of changes in the relevant policy or support regime provided by the Government.

More specifically, there was a shift from a strong form of dependency in the interwar period on close affiliations or interactions with foreign-owned subsidiaries located in Japan to the arm's-length cross-border licensing of foreign technology in the post-war period, while all the time being accompanied by vigorous autonomous in-house R&D efforts. However, while these looser international business connections of cross-border licensing were sufficient in the early post-war period to build world-class electrical equipment and motor vehicle industries, they also led Japanese industry to become locked into a particular path of locally driven development. Therefore, in more recent times, as world leaders themselves in an environment of greater international knowledge connectedness, Japanese firms have begun to shift back towards closer forms of international business connections again. They have come to recognize the desirability of building international innovation systems involving cross-border networks (which may be, to some extent, at the expense of the traditional domestic business groups), and hence require a rise in both inward and outward foreign direct investment (FDI).

We claim further that studying the experience of firms in Japan may offer some lessons for firms in other countries as well, once we take account of the specificities of different historical periods. Bearing in mind the different context for catch-up today compared to that of 50 years ago, we consider some aspects that firms in emerging market

economies today may be able to learn from Japanese firms, as well as those they may now need to do differently.

In the following sections, we examine Japanese firms' technological catch-up and post-catch-up experience, beginning from the interwar and post-war periods. In doing so, our goal differs from the predominant approach in business research, in that we are trying to draw analytical inferences from historical experience to help establish a framework for examining the co-evolution of international business connections and indigenous corporate technological capabilities, rather than imposing or testing some given prior theory. The main contribution of our paper is in our interpretation of the evidence and in making analytical connections between various trends (notably between the paths of international business connection and domestic firms' capability-building) that are consistent with the historical evidence. Based on archival evidence, and on historical data on technology licensing and corporate patenting, we note how the technological catch-up experience of Japanese firms relates to their changing international business connections over time. Then, in some concluding thoughts, we consider the extent to which one might legitimately extrapolate from these historical lessons, and in doing so, we speculate on some similarities and differences with the contemporary experience of catching up in other emerging market economies, most notably those in East Asia.

The paper is structured chronologically, to follow the relevant sequence of catch-up processes that we are interpreting. In the next section, we review the role and composition of the international business connections of Japanese firms in the interwar period. These international business connections played an extremely important role in the early technological catch-up experience of Japanese firms, which benefited a great deal from close relationships with foreign firms, which resulted in knowledge spillovers and technology transfer. In the third section, we consider the catch-up process of the post-war period. Japanese firms initially borrowed and imitated foreign technologies acquired through international licensing. At the same time, they engaged in their own R&D to modify and recombine the technologies learned, and thereby gradually built their own more advanced capabilities. We show that the industrial composition of catch-up reflected the pattern of international business connections from the interwar years, as well as the then contemporary composition of technology licensing. In the fourth section, we examine the shift back towards closer international business connections through (outward as well as inward) FDI in more recent years, as Japanese firms themselves have become world leaders and need to keep at the cutting

edge of technology development worldwide. In the final section, we discuss some observed similarities and differences in the catch-up of firms in emerging market economies today, and reflect on how these relate to the contemporary global economic environment.

2. Interwar knowledge transfer and spillovers from FDI

In this section, we focus on the first stage during the modern Japanese catch-up process – the interwar period – and illustrate the critical importance of inward FDI in the earlier phase of the technological catch-up of Japanese firms. The main inferences we draw in this section are as follows. First, when local capabilities are still at an early stage of development, relatively close forms of international business connections (which may include local participation through FDI) seem more desirable. Second, in industries in which such close connections can be established with innovative foreign firms, local capability development can gain a substantial and lasting momentum.

After the Meiji Restoration of 1867, Japan made a determined effort to catch up with the western countries. The Government put special emphasis on education, entrepreneurship, and learning the technologies and organizational systems of western countries. Hired foreigners (*Oyatoi Gaikokujin*) played an important role in transmitting scientific knowledge, mainly from the United States and Europe. Through this continuous process, Japanese firms had accumulated considerable technological capabilities by the beginning of the twentieth century, which formed the foundation for their ability to absorb the new technologies from western countries during the country's industrial revolution.

It is well known that during the interwar period, many leading transnational corporations (TNCs) expanded their business in Japan. The existence of foreign affiliates or joint ventures served as a fertile learning ground for the acquisition of technical, managerial and organizational knowledge in the host country (Chandler and Hikino, 1997; Lockwood, 1954). Being the key pioneers of modern technologies, these TNCs were used as a model for the technological learning of Japanese firms. It was a critical period, in which Japanese firms built the foundation and capability needed for modern industries, and this capability enabled Japanese firms to catch up quickly later, despite having to overcome the devastation of the Second World War.

Many of the major Japanese companies today and their respective industries benefited significantly from their interwar relationships with

western companies. Japanese companies used the more mature industrial technologies of their western partners as a model for their technological learning and catch-up. Many alliances and joint ventures were formed in the interwar period, mostly at the request of large Japanese enterprise groups known as *zaibatsu* (the pre-Second World War predecessor of the current *keiretsu*), as they were well aware that they were lagging behind the West in their technologies and felt the urgency to catch up with the advanced technologies and rapid rate of innovation in the Western countries (Fujita, 1989). The size and power of the *zaibatsu*, the span over different industries, and the breadth of technological capabilities within *zaibatsu* groups allowed *zaibatsu* firms to better absorb a diversified set of technologies from foreign partners, and brought about the process of catching up over a broad front of technologies and products.

Thus, FDI in Japan during this period proved highly significant in terms of its qualitative transformational effect, even though the total value of inward FDI in Japan during the interwar period was small (Dunning, 1983; Udagawa, 1989). Table 1 shows the state of the foreign-affiliated manufacturing companies operating in Japan surveyed by the Ministry of Commerce and Industry in 1931. This table is illustrative of the influence of inward FDI during the interwar period upon the subsequent technology development paths of Japanese firms. According to this survey, there were 88 foreign or jointly-owned companies operating in Japan. We can see that the more competitive industries found in Japan today generally had more linkages with foreign-owned firms during the interwar period, especially in the case of firms in the machinery and electrical apparatus industries. Corporate technology development is a path-dependent and firm-specific process (Nelson and Winter, 1982; Rosenberg, 1982; Cantwell and Fai, 1999), and the initial conditions under which technology is developed are often critical for the subsequent accumulation of capabilities. The evidence portrayed in this table suggests that the foundation of what became the strongest indigenous Japanese industries can be traced back to the linkages built up with large western companies in the interwar period, and their success at that time in utilizing these linkages effectively to learn and master the then modern technologies in the process of catch-up.

In the remainder of this section, we turn to more detailed evidence on two industries to showcase the significant role of international business connections in the technology development of Japanese firms. The focus here is on the motor vehicles and electrical equipment industries, in both of which Japanese firms have grown to positions of significant competitiveness in the post-war world economy.

Table 1. Foreign-affiliated companies in Japan (manufacturing), by product and type of ownership (as of January 1931)

I. Foreign corporations (sales offices): 29 companies			
By country of origin		By product	
United States	15	Machinery	18
United Kingdom	5	Electrical apparatus	3
Germany	5	Food	3
Switzerland	2	Movies	2
Czechoslovakia	1	Art	1
Luxembourg	1	Petroleum	1
		Silk yarn	1
II. Corporations under Japanese law			
A. Fully owned and operated by foreigners: 13 companies			
By country of origin		By product	
United States	6	Electric apparatus, machinery, automobiles, and food	2 in each
United Kingdom	5	Records, rubber products, petroleum, machinery, and photographic paper	1 in each
Germany	2		
B. Mostly owned and operated by foreigners: 10 companies			
By country of origin		By product	
United States	6	Records	5
United Kingdom	2	Machinery	3
Germany	2	Automobiles and rubber products	1 in each
C. Jointly owned by foreigners and Japanese, operated by Japanese: 36 Companies			
By country of origin		By product	
United States	9	Electric apparatus	8
United Kingdom	9	Cotton yarn	6
Germany	8	Rayon	3
China	2	Steel	3
Switzerland	1	Wool products	2
France	1	Machinery, gas, glass, ice, celluloid, matches	1 in each
Unidentified	6	Unidentified	6

Source: Udagawa (1989).

At the turn of the twentieth century, amid such rapid technical advances in electrical machinery, Japanese companies found that the gap in technology was too wide for them to bridge by themselves. Because this was considered such an important and fast-developing industry, most of the major electric machinery manufacturers in Japan (most of them *zaibatsu* companies) established affiliation with leading western companies in the interwar period to learn cutting-edge technologies. In the heavy electrical equipment industry, for example, the four dominant companies, which were all *zaibatsu* affiliates, all became associated

(with the exception of Hitachi) with foreign heavy electrical machinery manufacturers. Shibaura Engineering, an affiliate of the Mitsui zaibatsu, formed a link with General Electric. Mitsubishi Electric, an affiliate of the Mitsubishi zaibatsu, formed an affiliation with Westinghouse Electric in 1923 and offered Westinghouse 10 per cent of its stocks. The Fuji Electric Co. was established in 1923 as a joint venture of Furukawa Electric Industry, a company of the Furukawa zaibatsu, and Siemens (Udagawa, 1989).

A particularly prominent example in the heavy electrical equipment industry was the tie-up between two of the major Japanese companies – Tokyo Electric and Shibaura Engineering – and General Electric, one of the world's most technologically advanced and diversified firms at that time (and today). General Electric formed an equity joint venture with Tokyo Electric in 1905 and Shibaura Engineering (Mitsui affiliated) in 1909, at the request of the Japanese zaibatsu.² General Electric received equity – Tokyo Electric allotted 51 per cent of the stock to General Electric at the start of the joint venture and Shibaura Engineering transferred 24.75 per cent of the stock to General Electric – for the technical assistance it provided and also royalties for the sale of equipment. These associations with General Electric allowed Tokyo Electric and Shibaura Engineering to rapidly raise their technological levels and to diversify into related technological fields. The joint ventures allowed Japanese electrical equipment companies to receive technological know-how and guidance, and also to buy plant and equipment. New production methods such as the integrated production system of large United States companies (vertical integration) were adopted, and the frequent dispatching of personnel to the home base of the tie-up partner was critical to the success of technological learning (Chokki, 1989; Fujita, 1989).

As the result of the technological assistance from General Electric, Tokyo Electric's light bulb production technology was rapidly modernized. All the necessary plant and equipment was ordered from General Electric. The output increased two-fold and the cost reduction was large. The capacity to produce carbon filaments and metal caps was boosted with the installation of production machinery with an output capacity of 10,000 carbon filaments per day and a set of metal-cap-fabricating machinery. Furthermore, light bulbs produced by Tokyo Electric were marketed after 1906 under the Edison trademark, and the brand impact strengthened their acceptability in the national market (Chokki, 1989). At the time of the joint venture with General Electric,

² Tokyo Electric and Shibaura Engineering later merged in 1939 to form Toshiba.

Shibaura Engineering was the sole domestic maker of heavy electrical machinery, but its production was limited to generators of less than 100 kW, far below the level of western makers (Chokki 1989; Fujita, 1989). When the tie-up between Shibaura Engineering and General Electric formally started in 1909, General Electric provided technical designs and supplied necessary raw materials and parts, but sent only one or two directors. General Electric received a royalty of 1 per cent of sales (Fujita, 1989). Many key personnel dealing with design and production in Shibaura Engineering were sent to General Electric in April 1910 to study their technology and visit their factories. Shibaura Engineering continued to send trainees to General Electric, and occasionally dispatched employees to observe work and learn technologies at General Electric. As a result of the connection with General Electric, Shibaura acquired the ability to manufacture large generators, transformers and induction motors. Subsequently, its productivity, profits and dividends rose. Furthermore, this facilitated its entry into the manufacture of fans and household appliances as well as radio communications equipment, thereby establishing the foundation for developing into a general electrical equipment manufacturer (Chokki, 1989).

As an illustration of General Electric's technical support to Shibaura Engineering, General Electric helped Shibaura Engineering set up from scratch the new Tsurumi plant for electric locomotives, for which General Electric provided total support in all aspects from building the plant to technology provision and factory management (Chokki, 1989). Many materials from that time in the General Electric archive in Schenectady (which we, the authors of this paper, have examined for this purpose) attest to the significant help from General Electric to Japanese firms and Japan's massive modernization and electrification process. Among them, we can find a warm personal letter from the president of Shibaura Engineering to General Electric to thank it for its help in the building of the Tsurumi plant after the 1923 Kanto Earthquake, pictures of General Electric engineers working on the plant site as well as in the factories helping set up activities in the new plant. Articles from the General Electric magazine (GE Digest) in the interwar period described the relationships between General Electric and Shibaura Engineering and Tokyo Electric, and how General Electric helped bring a broad array of products that were new to Japan, including larger generators, transformers and induction motors, household appliances and radio communication, and motors for electric trains and the Tokyo subway system.

The motor vehicle industry was another new industry that emerged in Japan during the interwar period under the aegis of American influence (Wilkins, 1989). The indigenous motor vehicle industry in Japan started from an entirely foreign-owned sector in the 1930s, when companies such as Toyota and Nissan, both small start-up companies at that time, decided to enter. Nissan bought the vehicle design and technology from Graham-Paige (the 14th largest auto maker in the United States), and acquired technological assistance from Graham-Paige and its suppliers. Graham sold machinery, arranged for Nissan employees to study at its plant, and also built a prototype for Nissan. Nissan signed contracts with several of Graham's suppliers in the United States and had them send casting machinery to Japan, set it up, and teach Nissan engineers how to operate it. Nissan also initially hired American engineers to direct all Nissan's operations and set up the production. These head engineers not only taught the Japanese how to operate the equipment properly, but also applied modern techniques for process control and standardization to improve Nissan's machine processing (Wilkins, 1989).

Unlike Nissan, Toyota developed its own vehicle from the very beginning, by studying and reverse engineering the American vehicle models, since Toyoda Automatic Loom (predecessor of Toyota) had already accumulated engineering capabilities needed in automobile production. Toyota engineers disassembled and studied American cars, and the first car they built was a hybrid, with a Chrysler body, a Chevrolet engine, and Chevrolet and Ford parts. Toyota also sent its employees to visit foreign factories. For example, in January 1934, Toyoda Automatic Loom's specialist on engine casting visited Ford, General Motors, Chrysler, Packard, Graham-Paige and others to study factory design, parts manufacturing, and materials, and came back with machine tools (Cusumano, 1985).

In spite of the different approaches that Nissan and Toyota took, they both initially relied heavily on United States manufacturers, sending employees to the United States to study factory design and operation, vehicle assembly and parts manufacturing, and to obtain machine tools and materials. Furthermore, the take-off and development of these two companies owed much to the presence and efforts of Ford and GM in Japan for setting up the infrastructure and training employees and suppliers (Ozawa, 1997).

In the 1920s, Ford and General Motors established assembly plants in Japan in response to the large demand for trucks by the Japanese army. Attracted by the demand in Japan, Ford established Nippon Ford (Ford Japan) in 1925, and later constructed a larger factory in Yokohama

to assemble cars and trucks. In 1926, General Motors, impressed by Ford's profits in Japan, followed suit and opened its large plant in Osaka in 1927 and started assembling vehicles in Japan. Besides cars, Ford and General Motors also produced many trucks for military use, as well as three-wheeled vehicles. Although no joint ventures were formed in this industry, the demonstration effect (Dunning, 1958) from the local presence of United States car companies in Japan was enormous. There are principally four ways in which United States companies contributed to the start-up and development of the Japanese motor vehicle industry.

First, as discussed above, the emerging Japanese car manufacturers used American cars as their models. In spite of the different approaches that Nissan and Toyota took, they both benefited a great deal from sending personnel to United States car companies. At that time, United States companies such as Ford and GM were not afraid to transfer their technology to Japanese manufacturers; they had no fears about nurturing future competitors because of their own strength and confidence (Wilkins, 1989). At one point, around 1935, Ford was even prepared to transfer technology for the highest value-added components – the transmission mechanism and the engine – to Toyota in order to form a joint venture to allow it go into manufacturing, although it failed to do so due to government and army opposition (Mathews, 1996).

Second, Ford and GM trained and developed automobile parts suppliers, which were critical to establishing a local motor vehicle industry. As Ford and General Motors began assembly operations, they began to buy parts locally in line with their worldwide practice. One of Ford's early suppliers was Nissan, and Nissan acknowledged that its major motive for becoming a supplier to Ford was to learn (Cusumano, 1985). Local suppliers trained by Ford and General Motors became a critical factor for Japanese local companies in their attempt to start an indigenous motor vehicle industry. In the mid-1930s, when Toyota and Nissan decided to manufacture motor vehicles, there were already a group of capable local suppliers. Subsequently, these suppliers were urged to defect from Ford and GM, and sell to Japanese companies (Wilkins, 1989).

Third, Ford and GM set up a dealer network in Japan and adapted it to the Japanese market. Their networks were later utilized, imitated and taken over by Japanese car companies. The dealership system is an American innovation that contributed greatly to the development of the motor vehicle industry. Before Ford and GM began operations in Japan, there were no sales agents dealing in such durable consumer goods as automobiles. Ford and GM therefore both developed their own

dealer organizations in Japan. By about 1930, Ford and GM each had between 70 and 80 franchised dealers, and had set up qualifications and regulations for their dealers. In that sense, the automobile industry in Japan had from its outset an extremely modern and rational sales organization (Udagawa, 1981).

Fourth, American companies trained Japanese personnel for assembly operation, purchasing and sales, who later contributed to the local industry's development. In the case of Ford, it started with mainly foreign personnel. Over time, Ford hired more Japanese employees. By 1932, Ford had 381 Japanese employees and GM had 719 (Mason, 1987). Many of them later worked for Japanese motor vehicle companies, taking the skills and knowledge they had learned with them. The personnel linkage effects in this industry were formidable. For example, Kamiya Shotaro, the highest-ranking Japanese staff member at GM, joined Toyota in 1935 as sales manager. Together with the knowledge of a good sales network, he brought with him Hinode Motors, a leading GM dealer and two of his principal subordinates in the sales and publicity department, and he also went about convincing Ford and GM dealers to join the Toyota organization (Cusumano, 1985). Technological progress played an important role in Japan's economic growth. As estimated by Minami (1992), 65 per cent of the growth of per capita production in mining and manufacturing in the period 1908–1938 is accounted for by the residual factors, i.e. mainly technological progress. The main sources of this technological progress were both developing indigenous technology and learning from foreign technology (Odagiri and Goto, 1996).

3. Post-war technology licensing and structural upgrading

However, like the situation in the other industries, the dominant position of American companies in the Japanese market in the late 1920s generated opposition from the army and the Government. Later, they began to make conditions increasingly difficult for the United States-owned companies. Realizing that Japanese firms had, by then, built up their own basic capabilities, the Government started to limit foreign businesses in Japan. In the case of the electrical equipment industry and motor vehicle industries, as local capability accumulation progressed, the desired form of international business connections became one of looser and less direct relationships, but those industries and firms that had once enjoyed close international business connections continued to benefit

from the strong initial momentum that they had gained, collaborating with foreign firms for a considerable time to come.

In the case of General Electric, towards the later part of the interwar period, the growth in domestic Japanese firms, together with nationalism and militarism, resulted in General Electric's involvement in Japan being sharply reduced (Chokki, 1989). In the early 1930s, the Board of Directors of Tokyo Electric expressed a desire to reduce the "foreign" influence. The company decreased its capital stock, gradually reacquiring General Electric's holdings, which were cut from 57.0 per cent in 1931 to 32.5 per cent in 1936. In July 1939, Tokyo Electric and Shibaura Engineering merged to form Tokyo Shibaura (or Toshiba). At first, General Electric's share was 32.8 per cent, with the second-largest shareholder being the Mitsui zaibatsu at 14.8 per cent. But not long afterwards, General Electric's share in the company was halved (Wilkins, 1982).

In the case of the motor vehicle industry, by the 1930s, the Government had passed legislation which allowed only Japanese companies to manufacture locally. The most important pre-war legislation, passed in 1936, restricted imports and assembly of vehicles by foreign companies in Japan. Ford and GM tried to bypass Government regulation by forming joint ventures with Toyota or Nissan, but failed to do so due to Government and army opposition (Wilkins and Hill, 1964). The result was that whereas Japan Ford, Japan General Motors and other foreign companies had accounted for more than 95 per cent of new vehicle registrations between 1926 and 1935, the production share of Nissan, Toyota, and Isuzu rose to nearly 57 per cent by 1938 and to 100 per cent in 1938, when Japan Ford and Japan General Motors ceased operating and Japanese motor vehicle companies had practically taken over the market, supplier network, and employees of Ford and GM in Japan (Cusumano, 1985).

We can see that the Government's policies towards FDI, which were initially encouraging but became restrictive later, played a central role in the development of modern Japanese industries. The Government and indigenous firms would take the lead in inviting foreign companies to invest in Japan or to set up joint ventures, but would then limit or eliminate their operations once local firms had learned the modern technologies from foreign firms and achieved a certain level of capabilities. What this suggests is that policy and firm capabilities co-evolved through the different phases of catch-up, rather than one leading the other.

Another example in this regard is the telephone industry. Having become dissatisfied with the quality of telephone sets produced by Japanese firms, the Ministry of Communications sent officials to the United States and Europe and adopted some of the Western Electric system (Mason, 1989). At the strong encouragement of the Government, in 1899, Western Electric combined with the Japanese company Iwadare Kunihiko to form the joint venture Nippon Electric Company Ltd. (NEC). At its inception, the company's capital was 200,000 yen, and the initial Western Electric holding was 54 per cent of the shares (Morris-Suzuki, 1994).

However, in common with the fate of many other industries with significant involvement of foreign companies, government policy subsequently changed. In the late 1920s, the authorities began to shift more of their procurement to Japanese-run manufacturers such as Oki Electric and Toa Electric – which by then had become able producers of many types of communications equipment. The Ministry of Communications took this new policy direction one step further and decided in 1930 that only telephone manufacturers whose capital was primarily held by Japanese interests would qualify for privileged consideration in domestic procurement (Mason, 1989).

Owing to the rising power of the military leading up to the Second World War, TNCs were practically forced out of Japan in the 1930s. After the Second World War, FDI in Japan was highly restricted for many years, and Japanese firms relied on licensing in place of FDI for technology transfer, which was possible because Japanese firms had already built a foundation for modern industries from their earlier direct involvement with foreign companies through joint ventures or the presence of foreign TNCs in Japan. The leading Japanese industrial firms had achieved a certain level of absorptive capacity, so that they could rely on arm's-length licensing to fulfil their technological requirements in the post-war period.

The Government regulated technology importation, guided the direction of technology imports, and approved technology licensing agreements on a case-by-case basis. The Foreign Investment Law, enacted in 1950, was to promote an inflow of foreign capital and technology. In 1950, there were only 27 technology purchase contracts with an effective life of more than a year, but subsequently this number grew markedly to reach 1,061 in 1969 (Ozawa, 1974). Technology imports contributed a great deal to the post-war development of technological capabilities in Japanese firms.

R&D by indigenous firms in Japan was stimulated and accompanied by licensed technologies. Thus, licensing and R&D together provided the foundations for the performance of Japanese firms. The structure of what became the most successful post-war Japanese industries and their leading companies was built on the technological foundations laid in the interwar period with the assistance of foreign firms. The pattern of technological specialization was then augmented through inward technology licensing, which was reinforced and further enhanced by firms' own increasing R&D efforts. In particular, we can clearly see a pattern of path-dependency with steady industrial upgrading in the technological endeavours of Japanese firms from the 1920s through to the 1980s.

After the Second World War, the zaibatsu groups were broken up by the Occupation Authorities. However, owing to the long-standing institutional tradition, a new form of inter-firm networking, the keiretsu, soon emerged in place of the original zaibatsu. The keiretsu differed from the pre-war zaibatsu in that companies were now more loosely connected. No holding company was allowed, and they did not have the kind of monopoly power that the pre-war zaibatsu had once enjoyed (Bieda, 1970).

Table 2 shows the number of technology introduction contracts over the period 1950–1997. From this table emerge the dual themes of path-dependency (from the international business connections of the interwar period) and industrial upgrading of technology development (drawing upon international business connections through licensing in the post-war years). This table shows that three industries – chemicals, machinery (which includes general machinery, transportation equipment and precision machinery), and electrical machinery – consistently accounted for around 60–80 per cent of the technology introduction contracts during the post-war years. The industry classification here is a broad one, partly due to data constraints, but it is convenient for our purposes since it also reflects the primary technological categories. The predominance of these industries in technology licensing owed much to the post-war industrial policy of the Government, especially in the early years, which prioritized the chemical and heavy (machinery and transport) industries. But more importantly, it also shows the path-dependency and the self-reinforcing tendency of technology development. As each of these industries had built up a significant prior technical base during the interwar years, they were more readily able to absorb foreign technology. Thereafter, we see a fast and steady growth of technology

imports in these industries, which happened to the greatest extent in the electrical machinery industry, enabling it to surpass the other industries and become the leader in foreign technology introduction from 1982.

Table 2. The average number of foreign technology introduction in major Japanese industries
(Number of contracts)

Fiscal year	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963
Manufacturing (A)	76	188	252	235	213	184	310	254	242	378	588	601	757	1,137
Chemicals	32	61	71	59	81	69	134	101	75	111	173	143	155	231
Machinery	27	51	80	40	29	46	50	40	45	104	138	172	260	429
Electrical machine	6	20	32	61	33	20	20	34	19	38	113	75	100	167
Subtotal (B)	65	132	183	160	143	135	204	175	139	253	424	390	515	827
Ratio (B/A)	86	70	73	68	67	73	66	69	57	67	72	65	68	73

1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
1,041	958	1,153	1,295	1,744	1,629	1,768	2,007	2,403	2,450	2,093	1,836	1,893	1,914	2,139	2,116	2,142
233	195	247	292	362	264	361	390	358	354	335	234	212	232	255	265	298
343	376	439	399	582	638	547	655	746	768	618	561	675	570	723	666	709
106	126	102	146	256	225	229	257	349	367	249	304	297	404	377	416	414
682	697	788	837	1,200	1,127	1,137	1,302	1,453	1,489	1,202	1,099	1,184	1,206	1,355	1,347	1,421
66	73	68	65	69	69	64	65	61	61	57	60	63	63	63	64	66

1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
2,076	2,229	2,212	2,378	2,436	2,361	2,709	2,834	2,898	3,211	3,175	3,224	3,029	3,161	3,901	3,145	2,685
228	201	208	190	258	215	221	246	240	218	214	226	175	180	176	170	126
600	595	535	526	530	479	452	506	451	441	428	388	344	354	351	330	312
448	633	696	817	900	934	1,274	1,341	1,604	1,972	1,988	2,132	2,023	2,092	2,105	1,996	1,735
1,276	1,429	1,439	1,533	1,688	1,628	1,947	2,093	2,295	2,631	2,630	2,746	2,542	2,626	2,632	2,496	2,173
62	64	65	65	69	69	72	74	79	82	83	85	84	83	68	79	81

Source: Data kindly made available by Kyohei Hirano at Kobe University, compiled from Kagakugijyutsucho [Agency of Science and Technology] (each year), *Gaikoku Gijyutsu Donyu Nenji Hokoku [Annual Report on Foreign Technology Introduction]*, Kagakugijyutsucho Kagakugijyutsuseisaku Kenkyuijyo [Science and Technology Policy Research Institute] (each year), *Gaikoku Gijyutsu Donyu no Gaiyo [Summary on Foreign Technology Introduction]*.

With the introduction of foreign technologies, the R&D expenditures of Japanese firms also started to increase in the late 1950s. Japanese firms did not simply imitate foreign technologies. The technology imports of Japanese firms were complemented by their own vigorous efforts in R&D. Japanese firms invested heavily in

R&D, which proved crucial in developing the knowledge to support the steady building of the organizational capabilities needed to absorb foreign technologies; to learn how they could best apply them in the specific Japanese context; to modify and recombine technologies; and to innovate around them and improve upon them. Table 3 shows the R&D expenditures of the three major sectors of manufacturing (corresponding to the sectors in table 2) from 1959 to 1998. In line with the findings of table 2, table 3 also exhibits the themes of path-dependency and industrial upgrading. Again, the three industries – chemicals, machinery, and electrical machinery – consistently accounted for around 70–80 per cent of total corporate R&D expenditures in manufacturing, with the

Table 3. R&D expenditures in major Japanese industries
(In millions of yen)

Fiscal Year	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Manufacturing (A)	858	1,121	1,430	1,614	1,881	2,234	2,320	2,688	3,505	4,646	5,780	7,609
Chemicals	234	270	368	420	524	657	627	691	913	1,108	1,373	1,751
Machinery	156	249	280	297	363	472	523	616	817	1,116	1,371	1,863
Electrical machinery	212	281	390	434	504	507	515	652	858	1,258	1,693	2,278
Subtotal (B)	602	800	1,038	1,151	1,391	1,636	1,665	1,959	2,588	3,482	4,437	5,892
Ratio (B/A)	70.2	71.4	72.6	71.3	74.0	73.2	71.8	72.9	73.8	74.9	76.8	77.4

1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
8,107	9,532	11,935	14,594	15,365	17,274	19,231	20,987	24,471	28,956	33,742	37,555	42,572	47,765
1,937	1,992	2,382	3,042	3,221	3,519	3,860	4,042	4,898	5,583	6,174	6,875	7,745	8,528
2,088	2,594	3,329	4,231	4,409	4,684	5,862	6,339	7,085	8,287	9,963	10,871	11,850	13,131
2,292	2,767	3,415	3,974	4,005	4,917	5,013	5,805	6,942	8,172	10,062	11,764	14,162	16,345
6,317	7,353	9,126	11,247	11,635	13,120	14,735	16,186	18,925	22,042	26,199	29,510	33,757	38,004
77.9	77.1	76.5	77.1	75.7	76.0	76.6	77.1	77.3	76.1	77.6	78.6	79.3	79.6

1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
55,436	57,396	61,012	67,546	77,062	86,603	91,954	89,711	84,546	83,655	87,744	92,632	98,164	98,071
9,364	9,836	10,959	11,902	13,139	14,168	15,477	16,047	15,614	15,488	15,549	15,933	16,093	16,309
15,201	15,681	15,926	17,762	20,697	24,822	24,971	24,778	22,797	22,502	24,215	26,112	28,703	29,174
19,382	19,800	21,635	24,516	28,081	31,463	33,828	32,205	30,198	30,648	32,736	34,936	37,194	37,128
43,947	45,317	48,520	54,180	61,917	70,453	74,276	73,030	68,609	68,638	72,500	76,981	81,990	82,611
79.3	79.0	79.5	80.2	80.3	81.4	80.8	81.4	81.1	82.0	82.6	83.1	83.5	84.2

Source: Data kindly made available by Kyohei Hirano at Kobe University, compiled from Kagakugijyutsuho [Agency of Science and Technology] (each year), *Gaikoku Gijyutsu Donyu Nenji Hokoku [Annual Report on Foreign Technology Introduction]*, Kagakugijyutsuho Kagakugijyutsuseisaku Kenkyuijyo [Science and Technology Policy Research Institute] (each year), *Gaikoku Gijyutsu Donyu no Gaiyo [Summary on Foreign Technology Introduction]*.

electrical machinery industry showing the fastest rate of upgrading, allowing it to surpass the chemical and machinery industries in R&D from the 1980s onward.

In the 1960s, Japanese firms began to produce their own original technology derived from internal learning processes (Ozawa, 1974). With technology imports and firm R&D, the corporate patenting of Japanese firms began to take off from the late 1960s and early 1970s. Our examination of United States patents granted to Japanese firms shows that corporate patenting was not significant until the late 1960s. For example, we looked into the number of patents of the Toyota Group (including the Toyota Motor Company and its key affiliated suppliers such as Aisin Seiki, Nippon Denso) from the 1920s to the 1960s, as shown in table 4. We see that Toyota had no or very few patents before the 1960s; this number began to grow in the mid-1960s, but starting from 1969, the number of patents almost doubled each year, from 14 in 1968 to 204 in 1972, over a four-year period.

Thus, table 5 shows the patenting activities of Japanese firms since 1969. It indicates the annual average of Japanese patents granted by the United States Patent and Trademark Office (USPTO) based on four- or five-year intervals from 1969 to 1995. Due to the different sources of the data, the industry classifications in tables 5 and 6 are more detailed than in tables 2 and 3. The machinery industry in tables 2 and 3 is aggregated to include general machinery, transportation equipment and precision machinery. In table 5 we see that the six major Japanese industries listed here accounted for a substantial proportion of innovative activity, around

Table 4. Number of United States patents by the Toyota Group from the late 1950s to the early 1970s

Year	Number of United States patents by the Toyota Group	Year	Number of United States patents by the Toyota Group
1920–1956	0	1965	11
1957	0	1966	8
1958	0	1967	15
1959	0	1968	14
1960	0	1969	35
1961	1	1970	58
1962	3	1971	125
1963	3	1972	204
1964	3

Source: Information compiled by the authors from the United States Index of Patents, and the United States Patent Gazette, 1920–1972, both published by the USPTO (United States Patent and Trademark Office).

90 per cent of the total patents in manufacturing by Japanese firms, with four industries – namely electrical machinery, transport, chemicals and instruments – being particularly intensive in their patenting efforts. We can also see that the electrical machinery industry stands out in that it had the highest number of patents consistently throughout the period 1969–1995. The strong foundation in electrical machinery manufacturing that Japanese firms built in the interwar period helped them catch on to the fast technological growth in this area and contributed a great deal to the technological prowess of Japan (Cantwell, 1992; Mowery and Teece, 1992). In addition, the transport and instruments industries also showed high patent number growth, and they had caught up with chemicals and joined the rank of top Japanese performers in patenting by the 1990s.

The pattern of patenting shown here in different industries helps to further illustrate the dual themes of path-dependency and upgrading in technology development. On the one hand, we see the theme of continuity, in that the industries that have the most patents tend to be those that had earlier built up a foundation of capabilities in the interwar period and had also benefited from technology licensing in the early post-war period. On the other hand, we also see the theme of technology evolution and upgrading, as Japanese firms have been continuously innovating to broaden the industrial base they laid earlier. This is particularly reflected in the rapidly rising number of corporate patents in each of the industries, but most prominently in the electrical machinery, transport and instrument industries, probably due to the importance of technological progress in these industries in the post-war

**Table 5. Number of patents in major Japanese industries
(average number of United States patents granted per year)**

	1969–72	1973–77	1978–82	1983–86	1987–90	1991–95
Manufacturing (A)	2,000	3,656	4,650	7,792	11,948	14,242
Chemicals	435	734	757	1,023	1,569	1,704
Metals	115	222	235	398	550	754
Non-electrical machinery	32	100	162	230	276	291
Electrical machinery	814	1,253	1,648	3,190	5,322	7,251
Transport	231	569	830	1,511	2,104	1,706
Instruments	153	361	588	932	1,462	1,824
Subtotal (B)	1,780	3,239	4,219	7,284	11,281	13,530
Ratio (B/A)	0.89	0.89	0.91	0.93	0.94	0.95

Source: United States patent database compiled by Professor John Cantwell, with the cooperation of the United States Patent and Trademark Office.

period, and because these engineering-based areas best represented the comparative advantage in innovation of Japanese firms in developing smaller, cheaper and more efficient products.

Table 6 reports the export performance of the major Japanese industries from 1950 to 2000. From this table, we can see that total Japanese exports have been growing rapidly ever since the 1950s. This growth was especially marked during the high-growth period in the 1960s and 1970s, with exports growing five- or six-fold during the periods 1961–1971 and 1971–1980. At the same time, we can also see that the six major industries listed here played an increasingly important role in the export performance of the Japanese economy, with their combined share in total exports rising from 36 per cent in 1951 to 76 per cent in 1971, and to over 85 per cent after 1980. This is consistent with the pattern of technology acquisition of Japanese firms displayed in table 5, and demonstrates the competitive performance that resulted from their increasing innovative capabilities.

Thus, Japan's post-war development can be represented as a structural upgrading process which passed through several consecutive stages of transformation, proceeding from simpler to more sophisticated technologies (Ozawa, 2000). The data presented in the tables above show the industrial upgrading of the Japanese economy, the process of technological accumulation, and the growing importance of the transportation and electrical machinery industries. Especially in the electrical machinery industry, Japanese firms were able to capitalize upon the dynamic nature of this industry and its central position in the

Table 6. Export performance of major Japanese industries
(Millions of United States dollars)

Industry	1951	1961	1971	1980	1990	2000
Chemicals	52	205	1,698	7,050	15,399	33,906
Metals	312	621	4,576	21,334	19,562	26,452
Non-electrical machinery	61	313	2,448	16,876	45,526	78,769
Electrical machinery	15	337	2,874	24,263	85,242	149,279
Transport equipment	30	455	5,269	34,370	71,827	100,428
Instruments	13	106	1,464	6,479	15,119	38,667
Subtotal (B)	483	2,037	18,329	110,372	252,675	427,501
Total exports (A)	1,355	4,236	24,019	129,248	286,965	479,247
Ratio (B/A)	0.36	0.48	0.76	0.85	0.88	0.89

Source: *International Trade Statistics Yearbook*, various years from 1951 to 2000, published by the United Nations Conference on Trade and Development (UNCTAD).

current technological paradigm (Freeman and Louçã, 2001), and used it as an engine of growth and a source of inter-industry spillovers.

4. Back to FDI and knowledge sourcing through closer international business ties in the post catch-up era

After being defeated and left with a devastated economy, Japan had successfully caught up with western countries within only a generation. Japanese industrial firms became highly competitive in the world, with about one in six of the world's largest firms coming from Japan. The successful catch-up of Japan has been attributed, to a large extent, to its achievement in the area of technology, as we have seen the growth in the number of United States patents by Japanese firms (table 5). Japanese patenting in the United States increased by more than 650 per cent during the period from the mid-1960s to the mid-1980s, far greater than any other industrial economy (Mowery and Teece, 1992). By the late 1980s, Japanese firms had become the acknowledged technology leaders in many advanced industries.

The primary contention we set out to establish in this section is that as the technological capabilities of firms become more advanced and as the environment for innovation becomes more globally interconnected, firms must rely increasingly on closer cross-border relationships for knowledge exchange that include FDI, and international inter-firm networks. With Japanese firms becoming technological leaders themselves, technology imports via licensing have become increasingly inadequate to keep them at the cutting edge of technological development. At the same time, in an increasingly globalized and knowledge-based economy in which technologies have become more complex, interrelated and locationally dispersed and differentiated with local pockets of expertise, firms are finding it necessary to tap into capabilities residing elsewhere to keep pace with the fast-developing technologies (Cantwell, 1989; Cantwell and Mudambi, 2005; Dunning, 1996a; Nohria and Ghoshal, 1997). The technology strategies of Japanese firms post-catch-up began to shift again to place more emphasis on outward FDI and overseas R&D investment.

The growing success and technological competitiveness of Japanese industries gave rise to a growth in outward FDI from the 1970s onwards. Table 7 shows the outward FDI stock of the major Japanese industries from the 1970s to the 2000s. As we can see, following the growth of corporate innovation, outward FDI began to take off by the

late 1970s, and the growth of FDI stock was particularly rapid in the 1980s. Industry-wise, we see that again, electrical machinery took over the leading position in the total stock of outward FDI from the 1980s onwards.

Table 7. Stock of outward FDI in major Japanese industries
(Millions of United States dollars)

	1960	1965	1970	1977	1980	1984	1990	1995	2000	2004
Chemicals				1,369	2,626	3,849	10,940	18,784	37,568	73,767
Metals				1,051	2,619	4,805	10,308	18,783	37,566	74,081
Non-electrical machinery				513	894	1,619	7,932	10,958	21,916	43,319
Electrical machinery				843	1,579	3,234	20,360	26,016	52,032	103,221
Transport				538	979	2,746	10,880	15,143	30,286	60,034
Total	529	1,394	4,339	21,223	36,497	71,431	310,808	445,692	889,990	1,754,418

Source: *IRM Directory of Statistics of International Investment and Production*, Dunning and Cantwell, London, Macmillan, 1987; *World Investment Directory*, UNCTAD, 1992; and JETRO.

Realizing the importance of global technology sourcing, Japanese firms began investing intensively in R&D sites abroad. Japanese R&D investments overseas have grown rapidly since the 1980s (e.g. Berry, 2006; Granstrand, 1999; Kogut and Chang, 1991; Iwasa and Odagiri, 2004; Pearce and Papanastassiou, 1996; Penner-Hahn and Shaver, 2005). According to Florida and Kenney (1994), as of 1990, Japanese corporations operated 174 stand-alone R&D laboratories in the United States alone and spent \$1.2 billion on United States-based R&D, up from \$307 million in 1987. Granstrand (1999) found that foreign R&D expenditures in selected leading Japanese corporations grew very fast, at a 48 per cent annual growth rate, over four times as fast as the annual growth of their total R&D expenditures (11 per cent), raising their foreign share of R&D expenditures from 1.58 per cent in 1987 to 5 per cent in 1991.

Empirical studies on overseas R&D by Japanese firms have found that knowledge sourcing is one major motivation for overseas R&D, particularly in the United States and Europe (Florida and Kenney, 1994; Granstrand, 1999). The R&D sites of Japanese firms abroad usually serve either or both of two purposes: to engage in product adaptation and to tap into the local science and technology base (Papanastassiou and Pearce, 1994). While demand considerations (i.e. to support local production and markets) are still important, creating access to foreign science and technology was the strongest driving force behind the increase in

internationalization of Japanese R&D across sectors (Granstrand, 1999; Florida and Kenney, 1994; Freeman, 1987).

Similarly, Florida and Kenny (1994) found from their comprehensive data on Japanese R&D labs in the United States that although a large share of Japanese overseas R&D facilities are product development facilities that customize products for the local host country market and provide technical support to manufacturing, a smaller but significant number of Japanese overseas R&D investments are scientifically oriented basic research facilities, located near major research centres and universities. Their objective is to secure access to new sources of scientific and technical talent, and to harness the knowledge and ideas embedded in regionally based centres of innovation. It is these types of overseas R&D facilities that have engaged in active and effective knowledge sourcing (Belderbos, 2003; Todo and Shimizutani, 2005). They have tended to be heavily concentrated in technologically advanced industries such as electronics and automobiles, and many of them are located in regional innovation clusters, such as Silicon Valley in electronics and the Detroit area in automotive technology (Freeman, 1987; Iwasa and Odagiri, 2004).

However, despite the vigorous R&D investments abroad, innovation originating from overseas has played a minor role for Japanese firms (e.g. Belderbos, 2001; Patel, 1995; Cantwell and Zhang, 2006). Table 8 examines the share of United States patents of the largest Japanese-owned firms attributable to overseas research in the context of the world's largest firms from other countries of origin. Overall, the share of foreign-located R&D by Japanese-owned firms in the most recent period is only 1.08%, compared with the world average of 11.24%. Japan's low degree of internationalization has been unusual in comparison with the other industrialized economies, which Japan had caught up with long ago.

This unusually low degree of internationalization of innovation of Japanese-owned companies can be largely attributed to the particular institutional characteristics of Japan, most notably the Japanese system of innovation. It seems more difficult for Japanese firms to integrate R&D abroad with their core innovation networks at home because of the closely-knit R&D organization of these firms. Westney (1994) found that the Japanese system of innovation often involves the development of a domestic R&D network that runs even more extensively than usual (for large companies), beyond the boundaries of individual firms. Therefore, as Japanese-owned companies have expanded their networks across international borders, they have found that integrating offshore

R&D centres and foreign partners into these networks is more difficult than they had anticipated, partly because of the already complex system of innovation at home, and partly because they often need to involve the same set of domestic partners abroad.

The institutional environment also explains why Japan is such a minor recipient of inward FDI compared with other large economies. Japan's FDI outward stock in 2001 was about 6 times higher than its inward stock, and this gap has only been decreasing slightly since the mid-1990s (UNCTAD, 2006). In the period 1988–1990, only 1.4 per cent of the total FDI flows from the United States and EC countries went to Japan (Pearce and Papanastassiou, 1996, p. 6), and sales of foreign-owned firms in Japan around 1993 accounted for only 1 per cent or so its GNP, compared with 5 per cent or so in other advanced host countries such as France, Germany, the United Kingdom and the United States (Yoshitomi and Graham, 1996). The main reason is that inward FDI into Japan was severely restricted during the post-war years, and this policy has only been relaxed since the 1990s, associated with an increasing

Table 8. The share of United States patents of the world's largest firms attributable to research in foreign locations, organized by the nationality of the parent firms, 1969–1995
(Percentage)

Country	1969-72	1973-77	1978-82	1983-86	1987-90	1991-95
United States	4.91	5.88	6.41	7.54	7.91	8.63
Germany	12.77	11.05	12.07	14.47	17.05	20.72
United Kingdom	32.27	33.41	32.95	37.76	39.95	43.01
Italy	13.39	16.03	13.85	12.59	11.14	16.47
France	8.16	7.74	7.17	9.19	18.17	33.18
Japan	2.63	1.88	1.22	1.26	0.93	1.08
Netherlands	63.07	57.32	55.60	61.78	59.52	62.79
Belgium	50.00	54.32	56.27	71.21	59.04	67.25
Switzerland	44.36	43.63	43.78	41.59	42.99	52.47
Sweden	17.82	19.90	26.20	28.94	30.60	42.42
Canada	41.19	39.30	39.49	35.82	40.12	43.96
Total, of all countries	10.03	10.67	10.55	11.02	11.24	11.24
For Reference: Comparison of Japanese-owned patents from research in foreign locations with the equivalent from both home and foreign locations						
Japan (patents from foreign locations)	210	343	284	392	442	771
Japan (total patents from both home and foreign locations)	7998	18278	23249	31169	47793	71212

Source: United States patent database compiled by Professor John Cantwell, with the cooperation of the United States Patent and Trademark Office.

realization that international business may be needed as a catalyst for the institutional changes required to help address the problems that had by then arisen in the economy (Ozawa, 2003). Apart from government restrictions, the low level of inward FDI can also be attributed to other specificities of the institutional environment in Japan, such as the industrial structure, the keiretsu influence and the wider pervasiveness of local inter-firm networks (Dunning, 1996b).

Table 9 presents the share of research activity undertaken by non-Japanese firms in Japan, i.e. the inward penetration of foreign-owned firms to undertake R&D in Japan. It shows the inward penetration from foreign-owned firms is generally very low in Japan, especially in those industries in which Japan is strong, such as electrical equipment, motor vehicles, and professional and scientific instruments, with shares standing at only 1.13%, 1.78%, and 0.67% respectively in the period 1991–1995. The exceptions are industries in which Japan has traditionally been weak, and Japanese policy is more encouraging in bringing in foreign firms to boost innovation in these industries, e.g. the pharmaceutical-biotech industry.

Table 9. The share of United States patents of the largest non-Japanese-owned firms attributable to research in Japan, as a proportion of the number due to research in Japan by all Japanese and non-Japanese large firms, organized by the industrial group of the parent firms, 1969-1995 (Percentage)

Sector	1969-72	1973-77	1978-82	1983-86	1987-90	1991-95
Food	6.84	3.80	8.51	2.55	5.74	3.75
Chemicals	5.56	6.92	5.30	4.01	3.64	6.38
Pharmaceuticals	6.80	11.75	13.70	15.07	19.40	24.94
Metals	3.81	2.82	1.84	2.21	2.77	1.68
Mechanical Engineering	7.41	8.97	5.77	4.97	5.93	2.30
Electrical equipment	3.63	2.16	1.23	0.99	1.29	1.13
Office equipment	11.80	24.85	13.27	17.95	11.15	17.41
Motor vehicles	0.46	0.19	0.74	3.04	3.35	1.78
Aircraft	100.00	100.00	100.00	100.00	100.00	100.00
Other transport equipment	2.70	0.00	0.00	0.00	0.00	0.00
Textiles	1.65	1.70	1.51	1.46	0.33	0.79
Rubber products	8.20	1.21	0.00	0.37	1.86	1.36
Non-metallic mineral products	1.56	0.55	0.23	1.46	1.42	0.95
Coal and petroleum products	39.62	13.87	34.57	10.81	15.78	17.00
Professional and scientific instruments	0.33	0.06	0.10	0.30	0.43	0.67
Other manufacturing	5.79	10.16	3.16	4.95	14.50	91.32
Total	4.57	4.29	2.99	3.19	3.04	3.85

Source: United States patent database compiled by Professor John Cantwell, with the cooperation of the United States Patent and Trademark Office.

5. Concluding remarks

Before concluding, we are reminded that in describing and theorizing about what happened in the past, we need to appreciate that history is always to some extent unique, made up of a number of complex and contingent factors. While there are certain lessons that might be drawn from past events, we need to resist the temptation to over-theorize or prescribe recommendations for the future using past evidence. We need to be aware that specific historical periods and national business contexts have elements of distinctiveness. With this caveat in mind, we may draw the following inferences from the illustrative examples we have considered in this paper:

(a) International business connections are extremely important for firms in countries catching up and learning new technologies. We have seen how, in the interwar period, Japanese firms and the Government of Japan lured foreign firms to invest in the country, so that these foreign-owned firms could help train indigenous firms through joint venture or supplier or other local contractual relationships, as well as through the knowledge spillovers they generate. We have also seen how the nature of Japanese firms' international business connections shifted from being close in the interwar period (involving a foreign presence in Japan), becoming looser in the early post-war period (through arm's-length cross-border technology imports via licensing), and then reverting to being close again once capabilities had caught up (through outward and inward FDI, incorporating R&D).

A critical difference between the earlier catch-up of Japanese firms and firms in a late-industrializing country today is that countries such as Japan and the Republic of Korea caught up in a broad range of industries and technologies, while countries catching up more recently, especially East Asian countries, tend to be part of global supply chains. Modularization and fragmentation of the value chain and the consequent specialization of firms in certain segments of the value chain have made developing countries a critical part of a global production process. Hence, an inherent international connectedness of production activities is central to the catch-up efforts of today's emerging economies, in contrast to the experience of Japan and the Republic of Korea.

(b) A further general pattern is that international business connections are significantly more important during the very earliest stages of a successful development experience. This applies both to developing countries today and Japan historically. Firms first develop basic capabilities through local initiatives that may, especially in more established or mature industries, incorporate imitation and adaptation of

products and technology transfer from foreign companies (Athreye and Cantwell, 2007). The further progression of such capabilities depends upon intensive in-house firm-specific learning efforts that are not easy or automatic but rely on deliberately undertaken and costly strategies for capability upgrading (Lall, 2001), which ultimately may lead R&D efforts to more advanced and sophisticated capabilities. Modifying and re-combining technologies learned through interactions with firms based in the established industrialized countries usually relies in the first instance on relatively close forms of international business connections. One example is the Japanese motor vehicle industry, which in the early stages might not have invented many “new to the world” products, since most of the technologies and prototypes came during the interwar period with the help of foreign firms. Yet this indigenous industry did make some original adaptations and set in train a process of internal learning that led eventually to more fundamental capabilities, and it was soon able to innovate to improve the production process and efficiency of factory operations.

(c) As Japanese firms caught up with those in western countries in technological capabilities, arm’s-length cross-border technology imports via licensing became increasingly insufficient, and Japanese firms tried to forge more direct and closer international business connections via outward and inward FDI and R&D. Many Japanese scholars and officials themselves have come to appreciate this and are calling for Japan to be more open and to allow international connections to facilitate innovative regeneration (Ozawa, 2003; Best, 2000). Former Prime Minister Shinzo Abe appointed Mr. Kiyoshi Kurokawa, a medical professor, as special innovation advisor to head the Government’s Innovation 25 initiative. Realizing that “Japan must join the world before it can lead it”, the initiative set out to reform dramatically Japan’s rigid structures of scientific education, funding and decision-making, and also to open up to international interaction, in order to boost technology and innovation in the country. Professor Kurokawa has been retained as the science advisor by the current Prime Minister (at the time of writing) Yasuo Fukuda, and many of the recommendations coming from Innovation 25 are being gradually implemented (Red Herring, 2007).

In closing, we may note that institutional reform in Asia has increased international business connections in many economies. However, Lall (2001) commented on how different forms of international business associations have prevailed across Asian countries that have been successfully catching up in technological capabilities. In other words, there is more than one potentially viable model for an effective relationship between international business connections and

local capability-building. Singapore, in which FDI has made a highly dynamic contribution to local technological development, has been at the opposite extreme to Japan or the Republic of Korea in this respect. Which model is best suited depends upon the national political and institutional context, and on the extent to which foreign-owned firms can legitimately become embedded within domestic business networks, and hence become regarded as an integral part of the national business or innovation system. What we have stressed here is that, when viewed in a longer-term perspective, what is regarded as the appropriate model for the relationship between international business connections and technological capability development in indigenous firms tends to evolve over time, as the context or setting for international business connections shifts. The experience of Japan in this respect has helped us to explain the circumstances under which we observe different models of international business connections, and why and how indeed each of these may have its place.

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EU enlargement and consequences for FDI assisted industrial development

An essay in memory of Sanjaya Lall
Rajneesh Narula and Christian Bellak*

Many of the new member states as well as candidate and accession countries of the EU are confident that membership will result in substantially increased inward foreign direct investment (FDI) in manufacturing. This paper discusses the policy issues and challenges that cohesion and accession countries face, applying lessons that by now have become mainstream in the parallel discussion of FDI-assisted development in the developing economies. We argue that globalization has attenuated the benefits that accrue from EU membership for latecomers, and that they must now compete for FDI not just with other European countries but also with non-EU emerging economies. We posit that they should not base their industrial development strategy on mere passive reliance on FDI flows without considering how to concatenate their industrial development and the nature of the TNC activities they attract.

Key words: FDI, EU, transnational corporations, absorptive capacity, globalization, development, enlargement

JEL classification: F02, F23, O14, O19

1. Introduction

Policymakers in most European countries consider inward foreign direct investment (FDI) as an indispensable part of their industrial development strategy. Many of the less economically developed, more “peripheral” economies of the EU-15, such as Greece, Ireland, Portugal and Spain (referred to here as the ‘cohesion’ countries) followed this approach, and, partly as a result of their success, these policies have been pursued much more explicitly by the new member states (NMS) and those wishing to join, a large number of both groups being located in central and eastern Europe (CEE) (referred to in this paper either as the accession countries or CEE countries, irrespective of

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their membership status). Although this paper focuses on the accession countries as a group, we acknowledge that this classification subsumes important differences between several subgroups which are themselves made up of heterogeneous countries. Important subgroups include the 12 new member states that joined in 2004, the two new members that joined in 2008, namely Bulgaria and Romania, and other candidate countries such as Croatia or Turkey. However, our aim is to discuss the broader aspects of the role of FDI in industrial development, the principles of which, in our estimation, are broadly similar and relevant to all countries, rather than particular aspects and policy implications for individual countries. This paper will discuss the costs, benefits, opportunities and limitations of an FDI-based industrial development strategy in these countries.

The literature on FDI-assisted development is one which has evolved much more thoroughly in the context of developing countries and to which Sanjaya Lall was a seminal contributor for much of his career.¹ Many (but not all) of the challenges that face the peripheral economies of Europe in pursuing an FDI-based industrial policy have increasingly much in common with those that many developing countries have faced in the past, although cross-fertilization between the two strands of literature has been sparse.

We will attempt to raise some of the most important of these issues that derive from Sanjaya's work over the years,² while at the same time framing these within the context and particular challenges that derive from EU integration. We will focus on discussing the policy issues and challenges that accession and cohesion countries face, applying lessons that by now have become mainstream in the parallel discussion of FDI-assisted development in the developing world. Our attention will primarily be on FDI in the manufacturing sector, despite the fact that a large share of FDI in the accession countries is carried out by and in the services sector of the countries in question. However, despite its smaller share, it has considerably greater economic and political significance for at least two reasons. First, the manufacturing sector tends to be regarded as more significant in terms of its potential to promote economic

¹ See contributions to Narula and Lall (2006) for a review of the literature.

² We have not attempted to thoroughly reference each and every idea to specific contributions of Sanjaya Lall – given his prolific output over the years, the richness of his contributions and the seminal nature of his much of his work; this would make the paper unduly long. His contributions have played such an important part in this field that it has become almost impossible to distinguish his contributions from the contributions of those whom he has influenced.

growth through spillovers and externalities. Second, a substantial part of the demand for services is derived from manufacturing activities (i.e. producer-related services such as banking, consulting, R&D, design).

This paper discusses the policy options of cohesion, accession and candidate countries for FDI-assisted development strategies in light of the ongoing enlargement process of the European Union.

2. Some stylized facts about FDI-assisted development strategies

Although inward FDI is not the only option available to promote economic catching-up, it may be the most efficient option (Dunning and Narula, 2004). FDI, however, is not a sine qua non for development. There are at least four main preconditions that need to be satisfied:

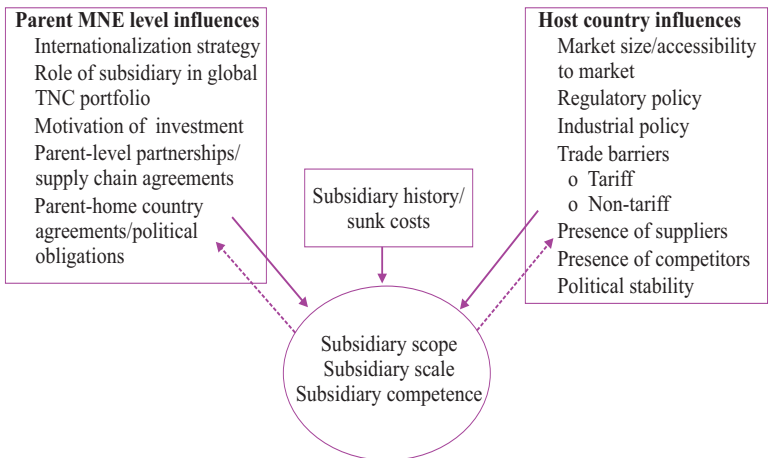
1. The FDI being attracted must generate significant spillovers.
2. The domestic sector needs to develop the capacity to absorb these spillovers.
3. The FDI being attracted should be complementary to domestic industry, rather than substitutive.
4. A regulatory and institutional environment must be developed in order to facilitate the integration of the foreign affiliates into the domestic economy.

These conditions tend to make FDI more sticky and sustainable in particular locations. It is true that the determinants of economic development are similar to the determinants of FDI, but this does not mean that there is a simple cause and effect between them. Particular types of FDI tend to be attracted to countries with certain levels of economic development and appropriate economic structures. But simply to “pump” a country full of FDI will not catapult it to a higher stage of development. In other words: there are no automatic gains from FDI (see e.g. Mencinger, 2003). For instance, FDI may not compensate for the low ratio of domestic savings in the host countries; nor do we know whether inward FDI will generate sufficient externalities.

We highlight two points about the significance and nature of the positive externalities of FDI. First, even if FDI were attracted through large subsidies, it is unlikely to become embedded or provide significant externalities and spillovers to the host economy without the appropriate domestic absorptive capacity (Criscuolo and Narula, 2008). From

a developmental perspective, externalities only matter if they can be captured by other economic actors in the host economy. For externalities to be optimally utilized, there needs to be an appropriate match between the nature of potential externalities and the absorptive capacities of domestic firms. It is ironic that the countries that receive the kind of FDI that has the highest potential benefits vis-à-vis industrial development are those that already have a highly developed domestic absorptive capacity. In other words, domestic capacity – whether in the form of knowledge infrastructure or an efficient domestic industrial sector – remains a primary and crucial determinant of high-competence foreign affiliates (Radosevic, 1999; UNCTAD, 2005; Barnes and Lorentzen, 2006). One of the most important lessons from Lall’s work has been his emphasis on the failure by governments to promote their domestic sector when focusing on attracting TNCs as the primary aspect of their industrial development strategy. If no viable domestic sector exists, then by definition, spillovers from FDI are largely irrelevant.³ Even where a domestic sector does exist, this does not mean that TNCs will necessarily establish links with them – in a perfectly liberalized world where market failures are minimized, TNCs have the capacity to bypass domestic firms completely. They can do so by either importing all their inputs, or by encouraging their captive suppliers from abroad to relocate.

Figure 1. Determinants of the competence, scope and scale of a foreign affiliate



Source: Authors.

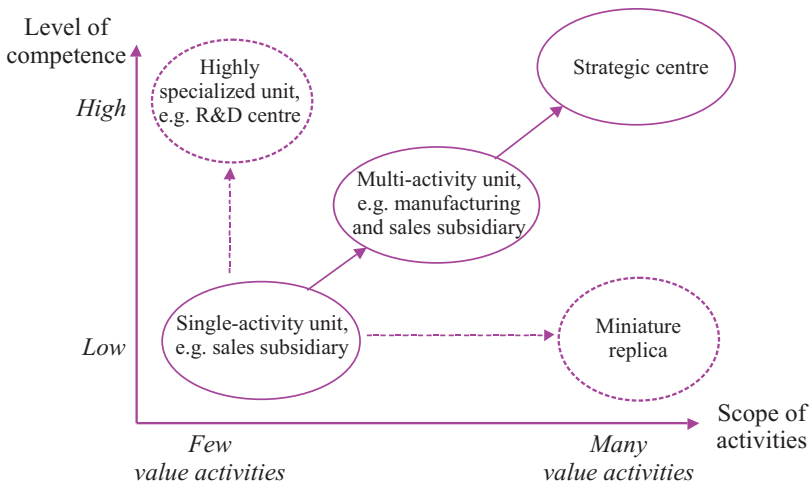
³ Empirical evidence for the CEE countries is provided by Konings (2001) and Nicolini and Resmini (2006).

Second, not all FDI is equal in the nature of the benefits it provides (Lall and Narula, 2006). The quality of the spillovers that derive from an investment are associated with the scope and competence level of the subsidiary, and these are co-determined by a variety of factors (see figure 1). These include TNC internal factors such as their internationalization strategy, the role of the new location in their global portfolio of subsidiaries, and the motivation of their investment, in addition to the available location-specific resources which can be used for that purpose (Benito et al., 2003). High competence levels require complementary assets that are non-generic in nature and are often associated with agglomeration effects, clusters, and the presence of highly specialized skills (Lall and Pietrobelli, 2002). In other words, firms are constrained in their choice of location of high-competence subsidiaries by local resource availability. For instance, R&D activities tend to be concentrated in few locations, because the appropriate specialized resources are associated with only a few locations. The embeddedness of firms is often a function of the duration of the TNCs' presence, since firms tend to build incrementally. TNCs most often rely on location advantages *that already exist* in the host economy, and deepening of embeddedness generally occurs in response to improvements to the domestic technological capacity. However, while the scope of activities undertaken by a subsidiary can be modified more or less instantly, developing competence levels takes time. TNC investments in high value-added activities (often associated with high competence levels) have the tendency to be "sticky". Blomstrom and Kokko (1997) suggest that some of the host country characteristics that may influence the extent of linkages – and thereby in the longer term the extent of spillovers – are market size, local content regulations and the size and technological capability of local firms. They argue that there is a propensity for linkages to increase over time, as the skill level of local entrepreneurs grows, new suppliers emerge and local content increases.

In other words, government incentives and subsidies are rarely pivotal in determining the scope and competence of TNCs (which normally imply greater potential for greater technological spillovers). TNCs do not make their proprietary assets available at the whims of governments. Instead, they tailor their investment decisions to existing market needs, and the relative quality of location advantages, but especially the skills, capabilities and infrastructure in which the domestic economy has a comparative advantage. It is also clear that the kind of FDI activity a country might attract (or wish to attract) is different at different stages of its industrial development (Dunning and Narula, 1996, 2004; Boudier-Bensebaa, 2008). The motive of the investment is crucial in determining the extent to which linkages and externalities develop. The

motive of an investment helps to determine (in conjunction with the host-country-specific factors) the kind of TNC affiliate and therefore the potential for spillovers. It is generally acknowledged that there are four main motives for foreign investment: 1) to seek natural resources; 2) to seek new markets; 3) to restructure existing foreign production through rationalization; and 4) to seek strategically related created assets. These, in turn, can be broadly divided into two types. The first three represent motives which are primarily asset-exploiting in nature: that is, the investing company's primary purpose is to generate economic rent through the use of its existing firm-specific assets. The last is a case of asset-augmenting activity, whereby the firm wishes to acquire additional assets that protect or augment their existing created assets in some way. In general, developing countries are unlikely to attract much asset-augmenting FDI, but tend to receive FDI that is primarily resource-seeking, market-seeking or efficiency-seeking. Empirical evidence (e.g. Bellak et al., 2009a) shows that in the CEE countries, besides market size, the level of infrastructure plays a crucial role for attracting FDI, while unit labour costs are comparatively less important.

Figure 2. Different types of subsidiaries, and their relationship to scope and competence levels



Source: Benito et al. (2003).

The point here is that not all affiliates provide the same opportunity for spillovers. A sales office or an assembly unit may have a high turnover, or employ a large number of staff, but the technological spillovers will

be relatively fewer than, say, those from a manufacturing facility (figure 2). Likewise, resource-seeking activities can be capital-intensive, but also provide fewer possibilities for spillovers than say, a market-seeking type of FDI. Prior to economic liberalization and EU integration, TNCs responded to investment opportunities primarily by establishing truncated miniature replicas of their facilities at home, although the extent to which they were truncated varied considerably between countries. The extent of truncation was determined by a number of factors, but by far the most important determinant of truncation – and thereby the scope of activities and competence level of the subsidiary – were associated with market size, and the capacity and capability of domestic industry (Dunning and Narula, 2004). There is thus a hierarchy of the quality of FDI activity in Europe which reflects the stage of industrial development. At the “bottom” are countries that are at an early stage of transition (and furthest away from convergence with the EU norm), with a very limited domestic sector and with low domestic demand. Such countries have been host to the most truncated subsidiaries, often single-activity subsidiaries, primarily in sales and marketing, and in natural resource extraction. The most advanced economies with domestic technological capacity (such as the core EU members) have hosted the least truncated subsidiaries, often with R&D departments. Cohesion countries (with the exception of Greece) have been in the middle.

Miniature replicas are increasingly a concept of the past, particularly within the EU. Rationalization of activities within the single market has, in many cases, led to a downgrading of activities from truncated replica to single-activity affiliates. TNCs have taken advantage of the EU single market to rationalize production capacity in fewer locations to exploit economies of scale at the plant level, especially where local consumption patterns are not radically different to justify local capacity and where transportation costs are not prohibitive (i.e. there is a proximity – concentration trade-off). This has meant that some miniature replicas have been downgraded to sales and marketing affiliates, which can be expected to have fewer opportunities for spillovers.

It is an open question to what extent the accession countries will be able to benefit from an increase in the quality of FDI that they receive due to EU membership. Although there will be some investment in new affiliates resulting in new (greenfield) subsidiaries that did not exist previously, there will also be a downgrading of subsidiaries (as discussed above). TNCs may divest their operations in response to better location advantages elsewhere in the EU (as Spain and Portugal are experiencing as their low-cost advantages are eroded), or reduce

the intensity of operations by lowering the level of competence and/or scope of their subsidiary, and shifting from truncated replicas to single-activity affiliates. There may also be a redistribution effect. That is to say, sectors that were dominated by domestic capital are transferred to foreign ownership, particularly where domestic capitalists have failed to improve their competitive advantages to compete effectively with foreign firms. Indeed, in many of the CEE countries, the share of foreign ownership in total capital stock is already typically much higher than in older EU member states, although with considerable variation across sectors.

3. Overestimating the effect of EU membership on FDI inflows?

Membership of the EU has two important implications with regard to FDI. First, it allows countries that have small domestic markets to expand their de facto market size. Firms located in the EU have access to the entire EU. However, as the number of countries in the EU increases, this advantage is currently shared by 27 member countries (and in the future, possibly by the three candidate countries as of 2008 – Croatia, the former Yugoslav Republic of Macedonia, and Turkey) and even more if one includes countries that have preferential access to the single market through various lesser forms of trade agreement. Thus, this advantage has considerably less value to the accession countries than it had for the cohesion countries, and this is exacerbated by the fact that domestic firms in many of the CEE countries have little experience in dealing with competition in a market economy which further attenuates the benefits that derive from the competition effect.

Second, membership suggests political, economic and legal stability. Although the absence of efficient institutions can retard the efficient accumulation and transfer of knowledge (e.g. Rodrik, 1999; Rodrik et al., 2004; Meyer and Peng, 2005; Asiedu, 2006), EU accession countries are not competing with the least developed countries for FDI. Indeed, it is a requirement for membership that candidate countries demonstrate convergence and overlap of formal and informal institutions. This acts as a location advantage vis-à-vis non-member countries with poorly developed institutions (e.g. some countries in Latin America, or the Russian Federation) but not necessarily so compared to non-members who are stable (for instance, some East Asian countries), or indeed relative to other long-standing EU members. Again, the greater the number of countries that are members, the less stability counts as a unique advantage to potential investors. For example, Fabry and Zeghni

(2006) find that FDI in 11 former communist countries is sensitive to *specific and local* institutional arrangements.

As such, EU membership per se does not necessarily lead to an increase in the quality or the quantity of FDI that a country receives, and this is best illustrated by the case of Greece. In 1980, inward FDI stock per capita was \$470 (all figures in current prices) compared with \$315 and \$137 for Portugal and Spain respectively. By 2007, FDI stock per capita in Greece had grown to only \$4,740, compared with \$10,750 and \$12,138 for Portugal and Spain respectively.

To take just one example from the NMS for comparison, Hungary's FDI per capita in 2007 was already more than double that of Greece (\$9,711). A substantial part of these flows took place before Hungary became an EU member in 2004. In this respect it is important to highlight that while EU membership may help promote FDI, we argue that the positive effects of EU membership for FDI are decreasingly important, partly because these advantages are less significant as the number of EU members increases. Furthermore, globalization and the growth of supranational agreements (particularly those associated with the WTO) mean that several of these benefits are not as unique as they once were. Firms from outside the EU are no longer "forced" into EU-based production, since tariff and non-tariff barriers are fewer. It is worth remembering that a large part of the inward FDI flows from outside the EU prior to 1992 was spurred by the fear of "Fortress Europe". These fears have largely proven to be unfounded. Finally, the growth of peripheral trade and investment agreements with non-EU members also may impact on the effects of EU membership.

The point here is that the benefits that accrued from EU membership to the countries that joined earlier are substantially attenuated for later entrants to the EU because of globalization. First, because global financial, political and economic liberalization, which forms a large part of the globalization process, has "levelled the playing field" in lowering the risk associated with trade and investment in most parts of the world (Narula, 2003). With growing technological convergence, increasing homogeneity of consumption patterns and improved communication and transportation facilities, these factors have reduced the costs associated with supplying EU markets from East Asia or the Americas.

As such, many of the new entrants to the EU are faced with increased competition for FDI not just from other European countries but also from other parts of the world, most notably Asia. The total flows of FDI are not fixed, and thus, in principle, countries need not compete

for FDI. Therefore, FDI need not be a zero-sum game. Nonetheless, particularly when host countries are at a similar level of development, substitution effects may occur, and hence they de facto compete for a limited amount of FDI.

The empirical evidence on the effects of EU membership and the shift from the cohesion countries to the NMS by and large confirms our skeptical view of FDI flows to the cohesion and accession countries. Ex ante studies on the effects of EU membership on the shift of FDI, not unexpectedly, have found a wide range of effects. These studies are mainly simulations based on theoretical models: As early as the mid-1990s, Lankes and Venables (1996), Baldwin et al. (1997), Brenton and DiMauro (1999), Pfaffermayr et al. (2001) and Galego et al. (2004) examined various aspects of the shift of FDI from the periphery to the CEE countries. Other papers (e.g. Gorg and Greenaway, 2002) examined the FDI potential of the CEE countries upon accession. Altomonte and Guagliano (2003) go beyond the cohesion countries and examine the potential of the CEE countries compared to the Mediterranean region, which can be considered as a competitor location. Clausing and Dorobantu (2005) found significant effects of key European Union announcements regarding the accession process. Garmel et al. (2008), in a growth model, predict that three quarters of capital in the NMS will ultimately be acquired by investors from the “core” member states in the long run. Ex post studies have generally found some, but no dramatic shift of FDI.⁴

This increased competition for FDI challenges both the cohesion countries and the CEE countries. Many (but not all) of these countries have sought to compete globally on the basis of two primary location advantages: low labour costs and EU membership. As we have discussed above, EU membership is not as much of an advantage in a liberalized, stable and shrinking world where distance does not form as much of a barrier to trade and investment as it once did. For similar reasons, the cost advantage of these countries has also been dissipated in many cases, particularly where productivity gains in China and other Asian economies have grown (Kalotay, 2004) partly as a result of their superior technological infrastructure. Spain and Portugal have experienced some displacement of FDI or lost sequential FDI because they have not been able to develop location advantages in knowledge- and capital-intensive activities to compensate for the rising labour costs that have eroded their industrial base in low-value-adding activities, a development that also

⁴ See, for example, Buch et al. (2003), Meyer and Jensen (2003) and Kalotay (2006).

has been observed in CEE countries, where already some production activities have been shifted “further east”.

4. FDI and the cohesion countries: policy implications

In the light of the empirical evidence discussed in the previous section, in the case of Ireland, Portugal and Spain, we expect to see some level of displacement to the new members in industries where:

1. low-cost labour remains the primary reason for location and where the TNC subsidiary has not expanded its original low value-adding activities towards knowledge-intensive areas in which the domestic economy has a competitive advantage;
2. the TNC subsidiary is not embedded through important linkages to other firms in the host economy;⁵
3. the sunk costs of an FDI in the host economy are low;
4. productivity gains have overcome disadvantages associated with rising labour costs; and
5. skill levels are not particularly high and thus employees are easy to substitute,⁶ since in these cases (tacit) know-how hardly limits the slicing of the value-chain.

In other words, the most obvious long-term solution for cohesion countries is to improve their location advantages in other areas, towards more science-based technological sectors. Ireland has succeeded in doing so with its focus on the ICT sectors (Barry, 2004), although Portugal and Spain have so far failed to make significant moves towards more science-based sectors. Beyond the fact that science-based sectors and knowledge-intensive activities fit the current comparative advantage of these countries much better, they are also less footloose. This is partly because these sectors tend to rely on location-specific and location-bound assets that are less easily substitutable.

Disinvestments in the cohesion countries are, of course, not happening suddenly, because although they do rely on cheap factor

⁵ In contrast, when the TNC subsidiary is located close to an important customer or supplier, and proximity is important (e.g. because of just-in-time delivery), it is unlikely that the firm will relocate.

⁶ The EU KLEMS database, at <http://www.euklems.net/index.html>, has detailed accounts for high-, medium- and low-skilled by industry for a large range of countries and for long time periods.

inputs, they are also capital-intensive. They are also less footloose, partly because they are in industries in which these host countries are firmly established locations within the major TNCs' global production networks. In each of these locations the TNC affiliates are well embedded in the local economy, and the specialized infrastructure to support this sector is well developed.

It is not immediately obvious that when TNCs begin to disinvest from the cohesion countries, thus will automatically result in increased investments in the accession countries in the same industries. In the automobile industry, for instance, the efficiency of a new greenfield plant tends to require a relatively large minimum efficiency scale. TNCs are therefore reluctant to start out in greenfield sites, which is a further deterrent to setting up new investments in the CEE countries. Except where strong domestic sectors and specialized knowledge-based clusters exist – whether public or private – the CEE countries are unlikely to receive major inflows of FDI that are intended to supply the EU as a single market.

The lesson here for most peripheral countries is very much the same as one that development policy experts (see e.g. Rodrik, 1999; Lall, 1997b, 2004; Haque, 2007) have been arguing for the developing countries: dependence on static and generic location advantages – whether drawing from the development of institutions, infrastructure, stability, or low-cost labour – is necessarily short-term and short-sighted. The last two decades of increasing liberalization, falling transportation and communication costs, and investment in knowledge-based activities in East Asia has meant that the peripheral EU countries are no longer as attractive (although it should be noted that the lack of strong IPR enforcement in some Asian countries does provide a small window of opportunity). It is axiomatic that as industrial development takes place, the comparative advantage of these countries needs to shift away from low value-adding activities to higher value-adding activities, which are necessarily science-based.

It is only in those sectors where “specialized” location advantages associated with higher value-adding exist that host countries can benefit significantly from TNC activity in the long run. This requires a considerable amount of government interaction and investment into tangible and intangible infrastructure. As countries reach a threshold level of technological capabilities, governments need to provide more active support through macro-organizational policies. This implies developing and fostering specific industries and technological trajectories, such that

the location advantages they offer are less “generic” and more specific, highly immobile, and such that they encourage mobile investments to be locked into these assets. Many of the CEE countries have the basis for creating such science-based location advantages. For instance, Poland has strengths in certain natural and life sciences, as does Hungary in electro-mechanical sectors. The Czech Republic has opted to focus on the automotive industry, given the existence of large automotive plants, while Slovakia has attracted a number of greenfield automotive plants. Of course, adapting to such challenges is not costless, for three reasons. First, countries need considerable resources to invest in such vertical industrial policy actions. Second, they require considerable political will and discipline, because other industries will necessarily need to be “wound down”. Third, fostering new sectors requires major institutional change. Innovation systems and firms designed, developed and ingrained within central-planning models and their associated institutional arrangements do not function effectively in a market economy (Narula and Jormanainen, 2008). Such radical systemic change requires resources and an effective period of transition, given the inertia associated with formal and informal institutions.

There are two points of caution that need to be raised here. First, in pursuing such a strategy, the peripheral EU countries face competition not just from Asia, but also from the “core” economies of the EU, which have systematically developed strengths in technology-intensive sectors over decades, and can often out-compete weaker, peripheral economies in terms of resources, incentives and opportunities. Nonetheless, there are several niches and gaps in their technological competences that can be effectively exploited by the peripheral economies.

Second, such a strategy requires systematic long-term investment, both in terms of building the appropriate public infrastructure, and in promoting domestic capacity in supplier and related activities. Many of the CEE countries have a well-trained and skilled work force, but the availability of a large stock of suitably qualified workers does not in itself result in efficient absorption of knowledge, or in its efficient use in industrial development, especially if the level of relevant infrastructure is much lower (Bellak et al. 2009a). Efficient absorption of knowledge requires the presence of institutions and economic actors, and the efficient use of markets and hierarchies, be they intra-firm, intra-industry or intra-country. This knowledge is not costless, and must be accumulated over time. Important externalities arise which impinge on the ease of diffusion and efficiency of absorption and utilization of external knowledge (Criscuolo and Narula, 2008).

Industrial policy where certain industries are selected for rapid growth by focused investments through intensive development of created assets can and do accelerate economic development. The examples of both the more advanced industrializing countries (such as the Asian NIEs) and emerging economies such as Brazil and Malaysia illustrate this. Attracting specialized FDI to a particular sector can alter the sequence of industrial upgrading (Williamson and Hu, 1994), because specialized FDI may help improve the created assets associated within a sector (say, consumer electronics production). Created assets in this sector may have significant knowledge-flow externalities in another (say micro-electronics design), which in turn may represent significant input to another sector (say, software development). But this assumes the presence of a virtuous circle and the development of appropriate clusters.

Specifically, for the CEE countries, it is argued that both proactive and reactive policies are needed to achieve sustainability of FDI. Proactive policies are geared to attract FDI and therefore affect the sustainability via sectoral targeting. Reactive policies aim to make FDI more sustainable through three distinct policy channels, namely through strengthening comparative advantage, enabling firms to benefit from economies of scale, and supporting agglomeration forces. In this respect, emphasis should be put on providing specific bundles of location factors as public goods for closely defined value-added activities of the TNC (Bellak and Leibrecht 2007, p. 234).

There is empirical evidence that a clear gap exists between “old” and “new” member states’ policies to attract additional FDI (Bellak et al., 2009b). The older member states gained most by focusing on infrastructure and R&D policies. “New” member states’ policies have tended to focus on reducing the share of low-skilled workers (for example by encouraging firms to restructure production and increase capital intensity) and through a reduction of labour costs via a decrease in non-wage labour costs. The fact that different policy areas are relevant in the two groups of countries opens the possibility for focused policy approaches geared to the needs of individual sectors.

FDI-assisted growth requires the capacity to be a “strategic follower” (Ramos, 2000). This requires a systematic understanding of what technological capabilities need to be developed or enhanced; it also requires seeking to actively coordinate potential users with sources of the appropriate technologies. Asian governments that have pursued such a strategy successively have actively sought to identify, acquire and transfer technologies, with government agencies acting as market-

makers. Left to their own means, firms have a tendency to be risk-averse, and to avoid the financial and technological risk of upgrading their technological assets as long as these continue to provide a reasonable rate of return. This short-term myopia is not unique to firms of any given nationality. Many governments recognize this problem, and seek to overcome or at least reduce the perceived risk levels by providing subsidized loans and other incentives to domestic firms that restructure their existing operations by adopting new technologies in the products and processes that promoted international best practice.

The economies with the most successful technological upgrading – the Republic of Korea, Taiwan Province of China and, to a lesser extent, Brazil – allocated subsidies in what Amsden and Hikino (2000) and Amsden (2001) call a “reciprocal control mechanism”. That is, incentives and subsidies, whether to upgrade technologically, promote local content, expand exports or reduce import-dependence were subject to performance standards that were actively monitored, and in Amsden’s (2001) words, were “redistributive in nature and results-oriented” and acted to prevent government failure.

To be sure, upgrading of the technological capabilities of domestic firms can no longer be pursued in quite the same way in a globalized world. International competition is a given, and there can be no return to the infant industry model (except for few particular industries). While a number of CEE countries have had considerable investment in R&D, a majority of the formal R&D efforts were conducted by state-owned enterprises and the non-firm sector. While the role of the state must necessarily continue to be that of a significant investor in innovation, these policies need to be orchestrated with the private firm sector, whether domestic or foreign. Given that the CEE countries prior to their EU membership have to accept the *acquis communautaire*, discrimination of domestic and foreign firms is no longer possible as stated in the competition policy regulations of the EU.

Market forces cannot substitute for the role of governments in developing and promoting a proactive industrial policy (Lall, 1996, 1997a, 1997b, 2003). Firms necessarily take a shorter-term, profit maximizing view because they are largely risk-averse. TNCs and unrestrained flows of inward FDI may well lead to an increase in productivity and exports, but they do not necessarily result in increased competitiveness of the domestic sector or increased industrial capacity, which ultimately determine economic growth in the long run. FDI per se does not provide growth opportunities unless a domestic industrial sector exists which has the necessary technological capacity to profit from the externalities

from TNC activity. Yet, as there are only very few domestic firms left in some industries in the CEE countries, this possibility of growth may be limited. This is also well illustrated by the inability of many Asian countries which have relied on a passive FDI-dependent strategy to upgrade their industrial development. It should be remembered that unrestrained FDI inflows often result in “crowding out” of the domestic sector. FDI and domestic capabilities and a domestic sector need to be concatenated and properly phased if positive results are to be achieved. The lesson here is not that the role of governments should be substituted by the market, but that markets and governments can co exist.

The lessons of developing countries cannot of course be applied without some modification to understanding the impact of FDI on the development strategies of the NMS and the cohesion countries. As we have emphasized here, there are additional layers of complexity that derive from “deep” integration within such a powerful economic and political bloc. However, these are – by and large – positive, in the sense that “insider” status within the EU provides a considerable boost to the location advantages of these countries, even if they are less significant than in previous rounds of EU expansion. The biggest challenge is that of institutional restructuring, and the move – especially for the CEE countries – away from national champions and state ownership of key sectors, and state-defined priorities, which has been achieved in the CEE economies to different degrees, partly as a result of specific funds made available to these countries by the European Commission. On the other hand, these countries are also limited in their competition for FDI by EU policies, particularly those associated with regulation, competition and state aid.

5. Specific challenges for the accession countries

Many of the new and accession member states have yet to confront the difficulty in embedding inward FDI into domestic economic and innovation systems. One of the challenges in creating embeddedness is associated with matching the industrial structure and comparative advantage of the region⁷ with the kinds of FDI that are being attracted. As highlighted in the previous sections, benefits from FDI are maximized when the kinds of investment projects being attracted are matched with the potential clusters of domestic competitiveness that the TNCs may be able to tap into.

⁷ Again, it should be noted that we do not aim at addressing issues of particular countries, but rather try to provide a sketch of the broader aspects.

In the case of the accession countries, many have well-developed components of science and technology systems. Some are even endowed with considerable capacity in high value-adding activities such as R&D, software development and design. This has been used as a basis to attract and embed highly specialized high-competence TNC facilities.⁸ Nonetheless, one of the considerable disadvantages these countries face is the challenge of dismantling centrally planned innovation systems that are driven primarily by planners and bureaucrats rather than by demand conditions and the specific needs of firms. Such restructuring has to deal with considerable inertia in the institutional arrangements (Narula and Jormanainen, 2008), which is often difficult to overcome.

Foreign affiliates interact with knowledge organizations such as local universities and public research institutes, which undertake basic or applied research, produce R&D manpower and provide technical services to firms (UNCTAD, 2005). Foreign affiliates may cooperate with these institutions, e.g. by providing financial support and conducting joint research projects. Such collaboration can also help R&D by other enterprises, by raising the research capabilities of knowledge institutions, bringing them into contact with industrial work and promoting spin-offs. At the same time, however, TNCs may also be locked into existing supplier relationships, partnerships and R&D networks in other locations, and may be reluctant to seek to establish new associations with as yet unproven local suppliers and universities. Indeed, as TNCs increasingly seek to rationalize their activities, decisions about local linkages are not always made at the subsidiary level, but at the headquarters level, by comparing the various options available to the TNC globally. Thus, governments need to create incentives for the TNC to consider local partners, and not expect these to happen “naturally”. In circumstances where domestic firms are not present, linkages between foreign affiliates may represent the sole available mode of industrial upgrading and capability development in the CEE countries. As long as industrial and technological upgrading happens and spills over to other firms, it does not matter who the beneficiary is, as long as it serves to further embed the TNC affiliate in the host country.

Often, there may not be domestic firms and organizations that properly match the potential needs of the TNC, and this also requires government intervention. At one level, projects need to be led by government investment, through establishing science and technology incubators for small groups of industry-facing researchers who help bridge the research undertaken in public institutes to the commercial

⁸ Kokko and Kravtsova (2007) provide case studies on these aspects.

needs of TNC affiliates. It is important that the focus of these incubators be on the collaboration with TNC affiliates, and the provision of the infrastructure and environment to foster competitive R&D. At another level, it may also be necessary to create (and encourage the creation of) new, more nimble and entrepreneurial smaller firms, and not attempt to force a “fit” between the older, large and formerly state-owned enterprises whose competences do not properly match the needs of the TNC affiliates. In the case of the accession countries, there has been a historical trend to focus on large firms, and the absence of special treatment for start-up firms and SMEs means that bureaucratic red tape prevents the establishment of such a policy.

The challenges that the accession countries face vis-à-vis developing countries are plainly easier in many ways, because membership does provide them with important location advantages. They have access to a much larger and more affluent market; valuable resources are made available by the EU to improve their basic infrastructure; they are obliged to converge their institutional arrangements with EU standards; they are protected by EU regulation and laws; and they have the political and economic clout of the EU in the areas of competition policy, trade policy, and so forth. However, they are also in the “home region” of some of the world’s largest TNCs, and thus face greater and immediate competition, and cannot afford to be passive.

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The United Nations and transnational corporations: a review and a perspective*

Theodore H. Moran **

The UN and Transnational Corporations: From Code of Conduct to Global Compact

Tagi Sagafi-Nejad, in collaboration with John H. Dunning
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312 pages

1. Introduction

The volume, *The UN and Transnational Corporations: From Code of Conduct to Global Compact*, by Tagi Sagafi-Nejad (in collaboration with John H. Dunning), originates in an extraordinarily important endeavour – the creation of an intellectual history of the role of the United Nations in helping to shape global governance in the second half of the twentieth century and the beginning of the current millennium. The work of the United Nations can be divided into two broad categories: promoting economic and social development, and enhancing regional and international security. Within the former sphere, this book presents the record of the United Nations Commission on Transnational Corporations, the United Nations Centre on Transnational Corporations (UNCTC), and the ultimate shift of TNC-related activities within the United Nations system from New York to United Nations Conference on Trade and Development (UNCTAD) in Geneva.

This study celebrates – but, as I shall argue below, significantly understates! – the importance of these TNC-related endeavours at the United Nations, and the individuals who led them, staffed them and advised them, in shaping our understanding of the relationship between foreign direct investment (FDI) and broad-based sustainable development.

* The author would like to dedicate this article to the memory of Edward M. “Monty” Graham, tireless participant in the debates chronicled here.

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2. The early period (1972–1992): an era of misdirection?

The entry of the United Nations into exploration of what this volume calls the TNC *problématique* came in the midst of severe turbulence. In 1972, Jack Anderson, an investigative reporter in the United States, asserted that the International Telephone and Telegraph Company (ITT) had plotted with the United States Central Intelligence Agency in 1970 to block the election of Salvador Allende – who had threatened to nationalize ITT’s 60 per cent share of the national phone company – in Chile. These allegations prompted the United States Senate Foreign Relations Committee to establish the Subcommittee on Multinational Corporations, which held highly publicized hearings critical of TNCs in the developing world under Senator Frank Church from 1973 to 1976. On another front, critics accused the Swiss giant Nestlé of dressing its sales personnel to look like doctors and nurses to discourage breastfeeding of babies and to substitute what the sales people claimed to be medically superior baby formula. At the United Nations, Philippe de Seynes, United Nations Under-Secretary-General, crafted a resolution in 1972 calling for the formation of a Group of Eminent Persons “to study the impact of multinational corporations on economic development and international relations” (Sagafi-Nejad, 2008, p. 52). The goal was to create a “focal point” within the United Nations to develop the “institutions needed for a new international economic order”. The Group’s hearings and report led to the establishment of the United Nations Commission on TNCs and the UNCTC in New York in 1974. The UNCTC’s terms of reference included providing information, analyzing policy, and offering advisory services, technical assistance and capacity-building.

The Group of Eminent Persons launched many important and controversial initiatives, such as urging TNCs to refuse to comply with apartheid in South Africa, and to threaten divestment if the apartheid system was not abolished. A central recommendation of the Group, however, and “almost certainly the most significant and contentious policy issue at the UNCTC” was work on drafting a code on TNCs, a task that “took center stage” (Sagafi-Nejad, 2008, p. 108). The Group of 77 developing countries, supported by the socialist bloc, demanded a legally binding international instrument of rules to govern the activities of TNCs. The representatives of the developed market economies insisted on a voluntary code of principles. The debate represented a clash between those who believed in government-directed development and those who preferred the primacy of the market mechanism. To simplify

the terms of the conflict, the former tended to see TNC–host relations as a zero-sum struggle, in which developing countries lacked bargaining power. The latter tended to view foreign investment as yielding positive-sum gains for all participants.

For almost two decades, from 1975 to 1992, the UNCTC struggled over the code. Three important executive directors presided over the UNCTC during this period, Klaus Sahlgren, Sidney Dell and Peter Hansen. The perspectives on the code quoted in this volume represent a spectrum of often fiercely held views. Oswaldo Sunkel, a prominent Latin American intellectual, warned that TNCs possessed “sufficient power and influence to try to set the rules of the game” (Sagafi-Nejad, 2008, p. 75). Jose Campillo Sians, an undersecretary in the Government of Mexico, declared. “If we have lost any foreign investment as a result of our policies, it has been well lost” (Sagafi-Nejad, 2008, p. 74). Edith Penrose, Professor at the School of Oriental and African Studies at the University of London, argued that creating an agency that simply gathered and analyzed data about TNCs would be “the most effective type of action that an international organization could take” (Sagafi-Nejad, 2008, p. 72). G. A. Waagner, president of the Royal Dutch Petroleum Company, asserted that “multinational enterprises have been major contributors to the development process... and engines of growth” (Sagafi-Nejad, 2008, p. 67). For 73 pages – the longest single component of the volume – the book presents a mausoleum of charges and counter-charges about TNC behaviour (pro and con) from this period, easily remembered by those *emeriti* who witnessed the interaction as if they were exchanged yesterday.

By 1992, the volume concludes that the efforts to fashion a code framework for TNC activities “failed”; the negotiations “came to naught” (Sagafi-Nejad, 2008, p. 122). In his report to the General Assembly, Secretary-General Boutros Boutros-Ghali declared that “no consensus was possible”, and thereby “the final nail was driven into the code’s coffin”.

What emerged from two decades of struggle, concludes the volume, was “the promotion of FDI through incentives and the Washington Consensus. Jeanne Kirkpatrick and like-minded conservatives must have felt exonerated by the swing” (Sagafi-Nejad, 2008, p. 124).

But should this 20–year inability to negotiate a code to govern the behaviour of TNCs be labelled as failure? Did this outcome in 1992, on the eve of the United Nations moving TNC-related operations to

Geneva, simply represent a victory for one ideological point of view over another?

From today's vantage point, it is difficult to recall how little was understood about the dynamics of FDI when this United Nations initiative was launched – let alone the most appropriate policy responses to capture benefits and avoid damage – and how slowly evidence and reliable analysis built up over the early era from 1972 to 1992.

The period from 1950 to 1970 had seen the beginnings of an explosive growth in the magnitude and importance of FDI. Accumulating raw data on FDI that was anywhere near reliable, complete and comparable became one of the early significant accomplishments of the United Nations. The number of foreign affiliates of United States-based TNCs alone – “transnational corporations” was the term of art preferred by UN agencies, rather than “multinational corporations” or “multinational enterprises” – grew from approximately 7,400 in 1950 to 23,000 in 1966, with the rate of expansion averaging nearly 10 per cent. Worldwide FDI flows equalled some \$3 billion in 1960 – when a billion dollars still represented a considerable sum – almost tripling to \$8.5 billion by 1970.

But what motivates FDI? What hinders FDI? What is the impact of FDI on the welfare and growth of developing countries? These were subjects of perplexity and confusion. The international economics community in developed and developing countries alike was trained to think in terms of trade analysis. The movement of firms across borders to set up operations was something of a puzzle, not because there were no explanations, but because the most commonsense explanations were clearly wrong. A common question-answer sequence was: What motivates FDI? – FDI represents a movement of investment from a region of capital abundance to a region of capital scarcity. But most FDI was moving from one region of capital abundance (the United States) to another region of capital abundance (Europe), and even more baffling was the phenomenon of cross-investment among capital-abundant regions (United States FDI into Germany, and vice versa). A second question-answer sequence was: What motivates FDI? – FDI represents a flow of business operations from a region of high wages to a region of low wages. But most FDI was moving from one region of high wages to other regions of high wages, with cross-investment among high-wage areas again adding to the puzzle.

What was the attraction of FDI to be drawn to the developing world? Transnational corporate investment in oil, copper, bauxite, or

gold seemed straight forwardly determined by geology. TNC investment in Latin American utility monopolies was not hard to fathom. TNC investment in Asian or African rubber and banana plantations adhered closely to comparative advantage in trade theory.

But what about the burgeoning FDI in manufacturing and services? The answer to this question emerged from a small group of insightful researchers, which included Stephen Hymer, Charles Kindleberger and Raymond Vernon, and centrally featured John H. Dunning, a collaborator in the production of this volume and a recurrent participant in the evolution of United Nations dealings with TNCs.¹ These breakthrough intellectual figures, and their collaborators and students, began to understand FDI flows as the awkwardly phrased but analytically brilliant internalization of intangible assets. Functioning as an alternative to exporting or licensing, FDI was a strategy to maintain or extend a firm's ability to extract oligopoly rents via controlling and integrating operations across borders. Within this framework, there were two parallel motivations for manufacturing (and service) FDI in the developing world – the contemporary business school jargon is “market-seeking” FDI versus “efficiency-seeking” FDI. But these buzzwords obscure the principal distinction. One motivation was for TNCs to set up plants behind trade barriers in protected host country markets, designed as cash cows to fund external TNC worldwide endeavours. The alternative motivation was for TNCs to build plants fully integrated into the firms' global sourcing network, designed to help reinforce the firms' competitive position in international markets directly.

In the 1970s, there was legitimate ideological debate about which of these two forms of TNC entry might best contribute to host country development, without sufficient empirical evidence to settle the issue one way or another. Perhaps a protected host country market could be used to induce TNCs to accept weighty performance requirements like domestic content, joint venture, and technology-sharing mandates, creating the setting for the successful emergence of infant industries. Perhaps export-oriented TNCs that typically insisted on whole or majority ownership, and freedom from domestic content requirements, would limit their activities to screw driver operations of little benefit to the host economy. In fact, over the course of the 1980s and 1990s, empirical reality turned out to be the opposite. TNCs operating in protected host markets regulated by performance requirements built sub-scale plants and used technology well behind the industry frontier, often assembling

¹ One of the best surveys of the emergence of the theory of FDI remains Dunning (1993).

knocked-down “kits” of previous-generation products. TNCs oriented toward external global markets built full-scale plants with cutting-edge technology, and in their own self-interest – under some conditions – created supplier-networks of component producers that stretched deep into the host economy.²

The use of TNCs for infant industry development in India – or the use of TNCs for informatics sector development in Brazil and Mexico – did not bring industry-frontier practices into the host economy or create internationally competitive national champions, as policy advocates had wished. Instead, the dynamics of industrial success in South-East Asia and the creation of auto plant poles in Brazil and Mexico became a “contract-manufacturing” or original-equipment-manufacturing (OEM) phenomenon associated with outward-looking TNC operations. Even the Korean electronics industry – often considered an “alternative model” – grew up through OEM contracts to United States, Japanese and European TNCs, only very gradually moving up a learning curve from OEM guidance to Original Design Manufacturing to (in a few cases) Own Brand Manufacture.³

It took painstaking investigation – often using firm-level micro-data, industry case studies, and cost-benefit analyses of specific FDI projects – to figure out the impact of TNC operations in a way that could be used to inform host-country policy. Evidence about backward linkages from manufacturing FDI was initially worrisome but – in local business-friendly settings, with access to indigenous skilled labour, engineers, managers, unimpeded imports and finance, as the *World Investment Report 2001* showed – became more promising as TNCs settled into host economies. Evidence about counterproductive results from simply imposing joint venture or technology transfer requirements on FDI emerged gradually, but have been consistent with recent data (e.g. from China).⁴ Confirmation that formation of infant industries via FDI usually did not offer the scale economies and the dynamic learning needed to launch competitive “adult” firms took time to accumulate.

From 1972 to 1992, unravelling how various forms of FDI might affect development and what the most useful host policies might be was a work in progress. Gradually it became clear that heavy-handed and overly legalistic binding-code regulation was probably not a suitable or even desirable approach for developin-country authorities. But neither

² For what these conditions were, see the discussion of the *World Investment Report 2001*.

³ Hobday (1995, 2000).

⁴ Long (2005).

was the “laissez-faire, hands-off, and just let international markets work” approach. As discussed in more detail later, there were subtle market failures (and poor policy design) that prevented TNCs from contributing as much as they might, and from generating positive externalities as they operated. There were market failures (and poor policy design) that allowed TNC investment to distort development and leave a legacy of negative externalities as they went. There was a crying need for standards to ensure good governance and sustainable operations on the part of TNCs, a form of international public good that the market would not supply on its own.

After Secretary-General Boutros Boutros-Ghali dismantled the UNCTC (Sagafi-Nejad, 2008, p. 131) and gave the staff the option of remaining in New York or moving to continue their work on TNCs in Geneva, the field was not merely ceded to a simple-minded characterization of the Washington Consensus – that TNC investment is good, and the more the better! Quite to the contrary, the work of the United Nations after the shift of TNC affairs to UNCTAD in Geneva did much (along with other research endeavours and advisory initiatives elsewhere) to ensure a much more complex and practical treatment of the challenges of harnessing investment by TNCs to development.

3. The later period (1992–2008): helping to guide a paradigm shift

In retrospect, it has become clear that FDI comes in at least three – or four – distinct forms: FDI in extractive industries, FDI in utilities, FDI in manufacturing, and (perhaps separately) FDI in services. Each type of FDI poses specific and singular policy challenges that determine how extensively TNC operations can potentially contribute to host-country development, or – conversely – detract from host-country welfare, slow host-country growth, and undermine host-country governance and stewardship of the environment.⁵ Athwart all categories are important cross-cutting policy themes: investment promotion; technology transfer and the generation of backward linkages; transparency and anti-corruption; competition policy; environmental policy and enforcement; and capacity-building for civil servants, parliamentarians and civil society.

While not generally sponsoring original policy research, UNCTAD kept in close touch with the evidence on the ground about

⁵ For an effort to separate out the evidence and address the policy challenges for each of these categories of FDI, see Moran (2009).

the impact of FDI in each category, and the reality of the policy space of host governments for each type of FDI (arranging meetings of experts, offering courses, and providing advice to host officials and negotiators). Along the way, UNCTAD became a major contributor – in some respects, the most important contributor around the world – in assembling basic statistics on TNC investment flows and stocks, and gradually upgrading the accuracy and comparability of the TNC investment data base. At the same time, however, UNCTAD did not fall into the trap of running regressions of undifferentiated FDI flows on host-country growth, productivity (total factor productivity or labour productivity), or other development indicators that had snared analytic assessment elsewhere.⁶ Instead, UNCTAD research summaries and policy discussions showed sensitivity to the distinctive features of each major kind of FDI.

Throughout the period 1993–2008 (the TNC unit did not arrive in Geneva until 1993), UNCTAD provided on-the-ground policy analysis and capacity-building services throughout the developing world. Many individuals contributed, but the key figure in guiding the evolution of the Division and building its stature was Karl P. Sauvant, who had joined the United Nations in 1973 (shortly prior to the establishment of the UNCTC) and became acting Officer-in-Charge and later Director of the Investment Division until his retirement in 2005.

Perhaps the clearest record of the contribution to empirical analysis and policy debate during the UNCTAD years emerges from the annual *World Investment Report (WIR)*. This history volume provides

⁶ In Moran (2009), I go so far as to argue – and show – that the work of researchers who run regressions using data that mix FDI in the extractive sector with FDI in utilities, with FDI in manufacturing, with FDI in services to produce a single measure of “the impact” of FDI on the host economy simply has to be, well, discarded and redone. It is analytically absurd to jumble evidence from FDI in Nigeria’s oil industry (where the outcome varies as a function of policies related to the resource curse and Dutch disease), with FDI in Argentine utilities (where the outcome varies as a function of policies related to foreign currency obligations/local revenues mismatch), with FDI in Malaysian electronics (where the outcome varies as a function of policies related to backward linkages and vertical spillovers), with FDI in Singaporean services (where the outcome varies as a function of policies related to competition policy) and find a single “contribution” that some generic FDI brings to some generic host economy. This critique touches even the most distinguished investigators, such as V. N. Balasubramanyam, M. Salisu, and David Sapsford; E. Borensztein, J. De Gregorio and J. W. Lee; Maria Carkovic and Ross Levine; Bruce Blonigan and Miao Grace Wang. Attempts to model FDI flows as a single phenomenon, with a common motivation and dynamic, then tested with undifferentiated FDI data, is likewise misdirected. This includes the basic writings of superstars that include Elhanan Helpman, James Markusen, David Carr, Keith Maskus, Tony Venables and Rob Feenstra, all of whom appear to be characterizing TNC activities solely as engaging in multi-plant manufacturing FDI.

a useful once-over review of each of the UNCTAD *WIRs*, but does not go far enough in highlighting the conceptual breakthroughs or policy audacity that occasionally emerge. In addition, the UNCTAD effort devoted to the straightforward dissemination of the *WIRs* around the world, accompanied by appropriate elaboration of themes and on-the-spot publicity, constituted – and continues to provide – an important public service, especially in developing-country capitals.

In the *WIR 2007* on TNC investment in extractive industries, for example – this *WIR* appeared too late for full treatment in the volume – there is sophisticated and nuanced discussion of the resource curse and Dutch disease phenomena, repeated stress on the necessity for transparency about revenue flows to prevent corruption, and appropriate emphasis on the need to strengthen environmental enforcement capabilities rather than mere enactment of environmental laws. There is honest assessment that prospects for the spread of backward linkages, or the building of extractive industry “clusters”, are limited in comparison to FDI in manufacturing. There is frank acknowledgement that TNC investors from non-OECD states must join in exercising good governance standards: “the ‘new players’, whether State-owned or not, should derive long-term operational benefits from complying with basic human rights standards as part of wider policies for responsible investment. Attention to human rights compliance may be needed to defend themselves against accusations of complicity with various abuses” (*WIR 2007*, p. 178). Finally, *WIR 2007* marches up close to the daring recommendation that TNC investment be delayed or denied when host countries are manifestly ill-ruled: “When mineral deposits are found in weakly governed or authoritarian states, foreign companies need to decide whether to invest there or not, since they may end up – directly or indirectly, or even unwittingly – supporting or strengthening the existing order” (*WIR 2007*, p. 184).

WIR 2008 on TNC investment in infrastructure also appeared after this history was drafted. FDI in infrastructure raises issues that overlap with TNC involvement in extractive industries as relate to transparency and anti-corruption. *WIR 2008* provides a carefully documented assessment of pros and cons of privatization, especially TNC-led privatization, with regard to provision of services and implications for universal access (treating electricity, telecommunications, transport, water and sanitation separately). The document offers cutting-edge criticisms of relying on dispute settlement provisions in international investment agreements, especially bilateral investment treaties (BITs) for settling disputes with multinational investors, in light of the consequent reduction in the

host government's regulatory flexibility. The text draws attention to instances where the TNC "does not carry out due diligence in assessing the feasibility of the project, or is negligent in the implementation of the investments but then blames the commercial loss on government action" (*WIR 2008*, p. 168). *WIR 2008* lays the groundwork for forthcoming investigation of dispute settlement mechanisms that seek an amicable solution via mediation and conciliation in contrast to contemporary arbitration (*WIR 2008*, p. 169).

As far back as 1993 – with treatment of TNCs and integrated international production systems – many *WIRs* focused on issues surrounding FDI in manufacturing and assembly. *WIR 1994* on employment and the workplace, for example, acknowledged that TNCs' use of capital-deepening and labour-saving technologies might appear to limit the number of TNC-generated jobs. But *WIR 1994* introduced widespread evidence that TNCs paid more than their domestic counterparts, and tended to create qualitatively better employment, both in terms of working conditions and human resource development.

WIR 1994 was published too early to record data that were beginning to emerge from the UNCTAD TNC database itself – namely, that far from being primarily a lowest-skilled, lowest-wage phenomenon, the flow of TNC manufacturing investment to medium-skilled activities such as electronics and electrical products, transportation equipment, industrial machinery, chemicals, rubber, and plastic products is nearly ten times larger each year than to investments in garments, footwear, toys and the like – and the differential is speeding up over time.⁷ While complete evidence is not available, ILO survey data indicate that TNCs with these higher-skilled plants pay their workers two to three times as much for production-line jobs, and perhaps ten times as much for technical and supervisory positions than in plants devoted to lower-skilled labour-intensive operations.

WIR 1996, appearing shortly after the ratification of the Uruguay Round and the establishment of WTO, emphasized the complementarity between trade liberalization and the ability to realize the full potential from FDI in manufacturing. After all, TNCs accounted for two thirds of world trade, about half of which was between affiliates of the same parent. Already in 1996, there was abundant evidence that higher levels of trade and more rapid rates of growth go together, but there was also spirited debate about the direction of causation (do higher levels of trade cause more rapid rates of growth, or do more rapid rates of

⁷ For data, see chapter III-3. table 2 and annexes I and II in Moran (2009).

growth lead to higher levels of trade?) Research subsequent to 1996 provides the important new finding that when trade liberalization and FDI liberalization go together, there is a causal link to higher rates of host-country economic growth.⁸ *WIR 1998*, published after the onset of the Asian financial crisis, noted that FDI proved to be more stable and less subject to the swings in financial markets than other types of private capital flows.

Of particular importance is *WIR 2001* on TNCs and backward linkages. Developing-country host authorities need to recognize, *WIR 2001* argued, that vibrant backward linkages depend upon a supportive business-friendly environment for local firms no less than for TNCs; that indigenous companies need a setting with contract enforcement, regulatory reliability, and access to imported inputs, capital, and dependable services no less than foreign investors, in order to become participants in deep multi-tiered supplier networks.

Conscientiously drawing on empirical studies from *World Development*, *Journal of Development Economics*, *Journal of Development Studies*, *Transnational Corporations*, *Oxford Bulletin of Economics and Statistics* and *Cambridge Journal of Economics*, and the international political economy series published by Princeton, Stanford, Cornell, Cambridge, and Oxford University Press, *WIR 2001* catalogued the growing array of micro-level evidence of TNCs providing production assistance, recommendations on machinery purchases, and advance payments to indigenous firms to help them become competitive suppliers. *WIR 2001* provided detailed investigation of TNC talent-scout and vendor-development programmes in Singapore and Malaysia (and Wales), as host authorities sought to expand local TNC supplier chains. These indigenous suppliers did not remain captive producers, but used the expertise acquired from foreign TNCs to become independent market players. In some cases, TNCs introduced local suppliers in a given host country to sister affiliates in other countries in the region, whereupon the suppliers began to operate in international markets on their own. In short, these were backward linkages that included externalities from FDI conferred upon the host economy – productivity externalities and export externalities – rigorously defined.

As noted earlier, UNCTAD did not generally aspire to undertake independent research on the relationship between FDI and development, but nonetheless remained in closer touch with reality on the ground than other organizations and individuals who did. To illustrate the contrast,

⁸ Melitz (2005).

a reader of the principal publications of the United States economic community – including some of the leading academic investigators such as Robert Lipsey, Dani Rodrik or Gordon Hanson, for example – would have found near-unanimous affirmation well into the twenty-first century that “an abundance of evidence that FDI generates positive spillovers does not exist” (Hanson, 2005, p. 178). The common referents for this conclusion were two ill-designed econometric studies that looked at FDI in the heavily protected import-substitution regimes in the Bolivarian Republic of Venezuela and pre-1995 Morocco and failed to find substantial benefits from FDI in these highly distorted markets.⁹ These studies did not separate export-oriented FDI from FDI oriented towards protected domestic markets, did not control for wholly-owned versus minority-owned FDI, did not distinguish FDI required to meet domestic content requirements from FDI free to source from wherever the TNC wished. Without such controls, it is impossible to arrive at reasonable conclusions about the impact of FDI on host economies throughout the world. Yet these two econometric studies led the economic academic community to generalize that FDI around the globe fails to generate positive spillovers, provide externalities or offer any distinctive contribution to development.

The findings from these analyses of FDI in heavily regulated import-substitution regimes continue to be ritually repeated in the foremost economics journals long after the generalizability of the original studies has been discredited. This is analogous to finding that contemporary submissions to *The Astrophysical Journal* begin by showing deference to the geocentric arguments of Ptolemy.

A new “second generation” of econometric research is now beginning to provide the basis for judging when, how, and why horizontal and vertical total factor productivity externalities, export externalities, and labour market externalities do accompany FDI, or do not – alternative outcomes where, as noted in *WIR 2001*, the openness, competitiveness, and business-friendly setting for indigenous as well as foreign firms is crucial.¹⁰ More recent research highlights the importance of access to finance as a key determinant of successful indigenous supply-chain formation (Javorcik and Spatareanu, 2009).

⁹ For detailed dissection of these two studies, see Moran (2008).

¹⁰ This “second generation” of econometric research includes (for horizontal and vertical TFP externalities) Garrick Blalock and Paul J. Gertler, Beata Smarzyska Javorcik, Sourafel Girma and Yundan Gong; (for export externalities) Brian Aitken, Gordon H. Hanson and Ann E. Harrison, Deborah Swenson; (for labour market externalities) Robert Lipsey and Fredrik Sjöholm, Alexander Hijzen.

As a kind of ideological carry over from the earlier period 1972–1992, UNCTAD publications on TNCs were perpetually in conflict about the merits of imposing performance requirements on manufacturing TNCs. Over time, the push of those who favoured the use of domestic content and joint-venture mandates to force TNCs to build the host-country industrial base and compel technology transfer to indigenous firms performed an unintended service by insisting on periodic assessments of the use of TRIMS (Trade Related Investment Measures). The WTO negotiations specified that TRIMS in the form of domestic content and trade-balancing requirements be phased out, but advocates of performance requirements fought for extension of their use.

UNCTAD studies on TNCs noted that export performance requirements had been useful in Mexico and Thailand because they had induced the major auto TNCs to build full-scale world-class export plants. Export performance requirements that merely used trade-rents from TNC operations in protected markets to subsidize external shipments from sub-scale host plants, in contrast, did not lead to internationally competitive results. Domestic content requirements and technology-sharing requirements repeatedly showed themselves to be counterproductive, detracting from the competitive performance of the firms subjected to them. The legacy of UNCTAD surveys of the use of TRIMS – the most recent in 2007, covering Argentina, Ethiopia, Pakistan, the Philippines and Viet Nam – has been to affirm, and reaffirm, how meagre is the evidence that imposing performance requirements on TNCs can be a useful policy tool to promote development.¹¹

WIR 2004, subtitled “The Shift Toward Services”, noted that the share of services in the national product of most countries has risen rapidly, to reach 72 per cent of developed, 52 per cent of developing and 57% of former socialist-bloc countries in 2001. Services FDI has grown more rapidly than FDI in other sectors, quadrupling between 1990 and 2002 from an estimated \$950 billion to over \$4 trillion (based on 61 countries accounting for over four fifths of the world’s stock of FDI, extrapolated to the world), with communications, finance, electricity, gas, water, tourism, trade, and business activities being the largest concentrations of FDI for developing economies.

WIR 2004 acknowledged that services provide crucial inputs into products that compete in domestic and international markets. The text appropriately notes that “services” includes diverse industries,

¹¹ UNCTAD (2007a).

some of which have natural monopoly characteristics, and need careful regulatory attention. The policy analysis, however, reflects something of a schizophrenic oscillation between appreciation of increased competition from service FDI and wariness of “crowding out” less efficient indigenous service providers.¹² *WIR 2004* appeared too early to pick up more recent econometric research showing that liberalization of service sectors – including increased access for service FDI – has a strong independent effect on the productivity of domestic manufacturing firms.¹³ In India, for example, most explanations for the post-1991 expansion of the country’s manufacturing sector focus on the liberalization of imports of goods and on industrial de-licensing. But the evidence indicates that banking, telecommunications and transport reforms all had significant positive effects on manufacturing productivity too – a one-standard-deviation in the index of services liberalization resulted in a productivity increase of 6 per cent for domestic Indian firms and 7.5 per cent for TNCs operating within India.¹⁴

WIR 2006, subtitled “FDI from Developing and Transition Economies: Implications for Development”, pointed out that the stock of outward FDI from developing and transition countries in 2005 reached \$1.4 trillion, up from \$335 billion ten years earlier. The sources of such FDI moreover multiplied, to include such countries as Argentina, Chile, India, Malaysia, Nigeria, South Africa, Thailand, Turkey, the Russian Federation and the Bolivarian Republic of Venezuela, alongside China, Singapore, Brazil and Mexico. The study celebrated potential advantages that TNCs from developing states might bring as part of South–South investment, including technology, marketing, and product design especially suited to less affluent economies. Survey materials showed that many developing countries were actively soliciting FDI from developing and transition economies, most especially African states looking for investors from China. *WIR 2006* noted the importance of corporate social responsibility (CSR) for such TNCs, and identified some – including Cemex (Mexico) and Petrobras (Brazil) – that were among the leaders in their respective industries in adopting CSR principles. The text acknowledged that “some TNCs are based in home countries that lack a civil society that can freely voice its opinion....The practices of TNCs in such situations are not subjected to the same level of public scrutiny that has raised the level of awareness of CSR issues elsewhere A significant number of large TNCs from developing and transition

¹² For an iconoclastic reappraisal of evidence surrounding FDI and the crowding-in/crowding-out debate, see Moran (2009).

¹³ Arnold, Javorcik, and Matoo (2008).

¹⁴ Arnold et al. (2009).

economies are state-owned and active in extractive industries...which raises potential issues related to corporate governance and transparency” (*WIR 2006*, p. 233). The text refrained, however, from showing the rather sharp edge that was to appear in *WIR 2007* about TNCs from developing and transition economies undermining industry-accepted governance standards and even being complicit in various abuses.

At the end of the day, the empirical conclusions and analytic results that emerge from the UNCTAD TNC legacy are a far cry from simple “promotion of FDI through incentives and the Washington Consensus”. The paradigm shift that the United Nations system helped foster – along with the efforts of many other researchers and institutions – showed clearly that each of the principal categories of FDI (FDI in extractive industries, FDI in infrastructure, FDI in manufacturing, and FDI in services) can be a force for improvement in host country welfare, productivity, growth, and sustainable development within carefully designed policy constraints, or a force for damage and harm when those policy constraints are mis-designed or absent.

4. The future

Looking to the future, what is the most vital and effective role the United Nations might be able to play in enhancing the contributions of TNCs to development while avoiding harmful or negative impacts?

From beginning to end, this volume exudes a fascination with ever-higher High Level Meetings, with ever more eminent Eminent Persons, to endorse ever more towering Charters and Principles. The culminating endeavour treated in the text is the United Nations Global Compact, an initiative of Secretary-General Kofi Annan, first proposed at the World Economic Forum in Davos in 1999. The goal, as enunciated in the volume, is to promote “responsible” global capitalism; that is, to promote the idea, through an ongoing process of dialogue and discourse, that TNCs “can do well by doing good” (Sagafi-Nejad, 2008, p. 195).

The Global Compact asks companies to embrace, support, and promote a set of ten principles relating to human rights, labour, the environment, and anti-corruption. This lofty undertaking should not be dismissed out of hand. There is clearly a role for the United Nations in standard-setting on international corporate governance as a much-needed public good. By 2008, over 4,700 businesses in 120 countries around the world had signed up to the principles. The volume endorses proposals that the Global Compact office undertake increasingly

intensive reporting on what exactly signatories are – or are not – doing to comply with the terms of the compact (Sagafi-Nejad, 2008, p. 212).

This volume is forthright in acknowledging some of the drawbacks of working within the United Nations apparatus: “There is little doubt that there is duplication, redundancy, and waste within the United Nations system. (...) Dignitaries gather, make declarations, and leave chronic problems unresolved” (Sagafi-Nejad, 2008, p. 213).

Looking to the future, this volume provides acknowledgement and well-deserved praise for the expansion of CSR codes and endeavours over the past 40 years. One of the principal recommendations is that: “the United Nations should rededicate itself to creating a special focal point on TNCs within the United Nations (like the UNCTC in New York) to interface with TNCs about their relations with home and host countries on matters of good corporate citizenship and their impact on the developmental process” (Sagafi-Nejad, 2008, p. 215).

All well and good, but such an undertaking should not divert attention from the fundamental finding that pervades the United Nations’ TNC analysis: the real transformational contributions that TNCs can make to broad-based sustainable development come when extractive investors, infrastructure investors, manufacturing and service investors operate their main line activities within well-designed host-country policy frameworks – generating revenues in a transparent fashion, providing reliable power and transport, creating backward linkages and vibrant supplier networks, diversifying exports and moving into middle-skilled and higher-skilled endeavours; not – merely – when they build clinics, giving grants to regional micro-finance institutions, providing an audio-visual record of “the intangible cultural heritage” of a tribe or people, or supporting local charities (valuable as these may be). The principal input – good or bad – that TNCs can provide to host countries comes from their core operations, not from their philanthropy. The magnitude of the latter, moreover, cannot be allowed to substitute for the meagreness of the former. The endorsement of CSR themes throughout this volume should not obscure the contribution that UNCTAD TNC analysis and policy support has provided – and can continue to provide – to ensure these mainline activities are appropriately structured and allowed to expand with vigour.

It is important to reiterate that there is a vital role for public actors to play in ensuring positive TNC contributions to development. This volume may be right in showing some weary scepticism toward

the never-ending United Nations TNC debates over more than decades; it quotes Rubens Ricupero, a former UNCTAD Secretary General, as saying “a typical creature of the 1960s, UNCTAD...gave impetus to a project with which it became indissolubly linked: the dynamic movement towards the creation of a New International Economic Order, in capital letters as the phrase was written then....Today, all this sounds unbelievable and absurd” (Sagafi-Nejad, 2008, pp. 124–125). But the “swing of the pendulum”, to use the volume’s analogy, has not settled at what the text sometimes morosely characterizes as a Jeanne Kirkpatrick/Ronald Reagan end point, today.

It is not necessary to invoke Jeanne Kirkpatrick and Ronald Reagan to observe that the strongest force to reduce poverty, improve infant mortality and raise broad living standards is to improve the productivity and growth of developing-country economies, or that the key to achieving this is to provide conditions for a vibrant and competitive private sector (domestic and international). To achieve progress here, the record of United Nations TNC analysis – like analysis from other sources – demonstrates clearly that left on their own, international markets do not necessarily produce optimal outcomes for broad-based improvement in living standards. To be sure, poor countries should improve their business climate – undertake micro, macro and institutional reform – but while the mantra of “reform, reform”, in the words of Ricardo Hausmann and Dani Rodrik, may be a necessary condition for success, it is not a sufficient condition.¹⁵

The contribution of TNCs to sustainable development, in particular, is beset with multiple market failures that require public sector institutional action to correct. There are *information asymmetries* – TNCs are not all-knowing; the search for investment opportunities is costly; and would-be hosts have to capture the attention and interest of potential investors. There are *coordination externalities* – infrastructure services, vocational training, healthy workers have to be meshed with the needs of investors in catalytic fashion. There are problems with making *credible commitments* – contract enforcement and regulatory stability have to be strengthened. There are *appropriability problems and first-mover disadvantages* – pioneer investors in novel or chaotic situations may need special incentives or guarantees. There are *international standards* that have to be set, and enforced, as a worldwide public good.

Here United Nations TNC activities – like the World Bank Group (International Finance Corporation, Investment Climate

¹⁵ Hausmann and Rodrik (2003).

Advisory Service, Multilateral Investment Guarantee Agency), regional development banks, OECD, bilateral aid donors – can be crucial. My hope, therefore, is that the work the United Nations has done in offering host country policy diagnostics regarding TNC investment, and providing on-the-ground capacity-building, will not be lost in the pursuit of more soaring CSR-related aspirations.

The question as to how the United Nations can position its TNC-related undertakings will require some creative thinking, parallel to alternative approaches being debated within the World Bank Group, within regional development banks, and within leading aid donor institutions (public and private).

There is a growing appreciation, for example, that even the most insightful analytic studies of policy toward TNCs – by IFC, OECD, or the United Nations – that are conducted in drive-by fashion, and then handed over with an impressive-looking cover to host authorities have very limited usefulness.

The emerging alternative view is that what is needed is more sustained external help with creating a mesh – a web, an arrangement – of policy recommendations and advocacy structures. Once host authorities set their goals and request assistance, the international community needs to provide not just customized policy prescriptions, but also a sustained on-the-ground external presence, surrounded by carefully identified indigenous policy champions, with external supporting financial assistance on call. Under imprimatur of the highest levels of host leadership, this places external supporters in the tricky position of not simply offering policy advice but helping shape the political economy of the reform process. In most cases, UNCTAD or other United Nations agencies would probably not be the leader – that role would more likely fall to the World Bank and regional lending agencies – but United Nations participants could be integral players and legitimators. UNCTAD's current initiative to investigate best practices in a given FDI arena, combine the results with ongoing Investment Policy Reviews, and join forces with OECD and other institutions to serve developing-country needs might be a step in the right direction.¹⁶

Along one dimension, UNCTAD TNC operatives as organized in the Division on Investment and Enterprise (DIAE) could help in developing a rapid-reaction capacity, to respond to opportunities and crises:

¹⁶ G8 Summit, Helligendamm, Germany, 6-8 June 2008.

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- A promising new government comes to power in a country (think Liberia in 2005) that needs a prompt overhaul of mining legislation, expert assistance in renegotiating treatment of transfer pricing in FDI contracts, capacity-building of civil servants, parliamentarians, and civil society on monitoring tax and environmental issues.
 - A country just opening up to trade and investment practically for the first time (think Mongolia in 2004) needs a multilateral on-the-ground presence to help with TNC policy design and advocacy.
 - A country (think Morocco in 2006) completes preferential trade arrangements with Europe and the United States, needs customized advice and assistance to improve investment promotion and vocational training programmes to upgrade its export processing zones and industrial parks from low-skilled to higher-skilled TNC activities with expanding linkages into the local economy.¹⁷
 - States and provinces are undergoing rapid economic growth linked to TNC-led globalization (think China, India), necessitating external advice and assistance to deal with concomitant negative externalities in the form of internal migration and environmental pollution.¹⁸
 - Post-conflict economies need special packages of capital, guarantees and insurance to attract investment (and reverse flight capital), to restore services, and to rebuild basic economic activities.¹⁹

The examples could go on.

Along another dimension, UNCTAD's DIAE could help in pursuing ongoing vital multilateral initiatives:

- UNCTAD has played the role of midwife in the creation of the World Association of Investment Promotion Agencies (WAIPA), whose membership reached a total of 220 members by early 2009 (some countries have multiple subnational member agencies). Yet a large majority of these IPAs do not have adequate professional staffing, or up-to-date websites with current information about appropriate ministries and officials, or active links to existing foreign

¹⁷ In fact, UNCTAD's IPRs have looked at the issue of EPZs' upgrading and linkages for a number of countries. The IPR of Kenya has an entire section on the diversification of FDI in EPZs (UNCTAD, 2005). The IPR of the Dominican Republic also looks at the issue, focusing on the institutional structure of investment promotion (UNCTAD, 2007b). The forthcoming IPR of El Salvador looks at the issue of EPZs from a regulatory and tax perspective (including compliance with WTO rules).

¹⁸ Environmental regulations is an issue that we analyse in all IPRs.

¹⁹ IPRs have looked at the potential contribution of FDI in several post-conflict countries, including Burundi and Sierra Leone (forthcoming).

and indigenous businesses. Working with the World Bank's Doing Business Reform Unit, and other donors and NGOs, UNCTAD could help assist on-the-ground efforts to upgrade these agencies and spread best practices in investment promotion.²⁰

- There is broad recognition that the competition in offering incentives, tax giveaways and subsidies to TNC investors among alternative sites in developed and developing countries needs to be capped and brought under regional or international control. Surely there is a role for UNCTAD's DIAE, as well as other United Nations agencies, in helping to launch a multilateral initiative here.
- The discovery of loopholes in the OECD Anti-Bribery Convention (and in corresponding national legislation, including the United States Foreign Corrupt Practices Act) requires new interpretative statements that exclude gifts and beneficial partnerships awarded to family members and associates of host country leaders.²¹ While the prime actor here must be the OECD, there is a legitimating and implementing role for UNCTAD's DIAE and for other United Nations agencies (along with a revised Global Compact).²²
- UNCTAD TNC publications have led the way in recognizing the growing importance of TNC investors that originate in developing countries. UNCTAD's DIAE could help lead multilateral efforts to ensure these new TNCs adopt best practices in corporate governance and on-the-ground performance.
- United Nations agencies have played a key role in helping developing countries with the design of environmental policies and adoption of green technologies. UNCTAD's DIAE office would be a central player in helping with capacity-building for enforcement vis-à-vis TNC operations.
- United Nations agencies could also play a role with regard to the renewed interest in finding multilateral solutions to investment regulations. (See the G20 "Leaders' Statement: The Pittsburgh Summit", as well as the outcomes of the 2009 L'Aquila G8 Summit, the "G8 Leaders Declaration: Responsible Leadership for a

²⁰ This effort would be a follow-on to UNCTAD's publications, *Investment Advisory Series A and B*.

²¹ Center for Global Development (2007).

²² The well-publicized anti-bribery cases brought against Siemens in 2008–2009 illustrate that old-fashioned corrupt techniques are also still alive in securing international business contracts.

Sustainable Future” and the “Concluding Report of the Heiligendamm Process”.)

The list could easily be expanded.

Across the broad realm of issues relating to TNC operations around the world, it is clear that there is much critical, essential, and exciting work still to be done. Herein the UN will continue to be (as it has been in the past) a valuable – in many ways, indispensable – player in helping to analyze, advise and support the potential for TNCs to contribute to broad-based sustainable development.

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- World Investment Report 1996: Investment, Trade and International Policy Arrangements*.
- World Investment Report 1998: Trends and Determinants*.
- World Investment Report 2001: Promoting Linkages*.
- World Investment Report 2004: The Shift Toward Services*.
- World Development Report 2006: Foreign Direct Investment from Developing and Transition Economies*.
- World Investment Report 2007: Transnational Corporations, Extractive Industries and Development*.
- World Investment Report 2008: Transnational Corporations and the Infrastructure Challenge*.

RESEARCH NOTE

WORLD INVESTMENT REPORT 2009: TRANSNATIONAL CORPORATIONS, AGRICULTURAL PRODUCTION AND DEVELOPMENT

KEY MESSAGES

FDI Trends, Policies and Prospects

Global FDI flows have been severely affected worldwide by the economic and financial crisis. Inflows are expected to fall from \$1.7 trillion in 2008 to below \$1.2 trillion in 2009, with a slow recovery in 2010 (to a level up to \$1.4 trillion), and then gaining momentum in 2011 (approaching \$1.8 trillion).

The crisis has changed the FDI landscape: investments to developing and transition economies have surged, increasing their share in global FDI flows to 43 per cent in 2008. This was partly due to a concurrent large decline in FDI flows to developed countries (29 per cent). In Africa, inflows rose to a record level, with the fastest increase in West Africa (a 63 per cent rise over 2007); inflows to South, East and South-East Asia witnessed a 17 per cent expansion to hit a new high; FDI to West Asia continued to rise for the sixth consecutive year; inflows to Latin America and the Caribbean rose by 13 per cent; and the expansion of FDI inflows to South-East Europe and the CIS rose for the eighth year running. However, in 2009, FDI flows to *all* regions will suffer a decline.

The agriculture and extractive industries have weathered the crisis relatively well, compared with business-cycle-sensitive industries such as metal manufacturing. In addition, there is a better outlook for FDI in industries such as agribusiness, many services and pharmaceuticals.

With regard to the mode of investment, greenfield investments were initially more resilient to the crisis in 2008, but were hit badly in 2009. On the other hand, cross-border mergers and acquisitions (M&As) have been on a continuous decline, but are likely to lead the future recovery. Divestments were particularly significant during the crisis.

There was a marked downturn in FDI by private equity funds as access to easy financing dried up. Endowed with sizeable assets, sovereign wealth funds attained a record FDI high in 2008, though they too faced challenges caused by falling export earnings in their home countries.

Overall policy trends during the crisis have so far been mostly favourable to FDI, both nationally and internationally. However, in some countries a

more restrictive FDI approach has emerged. There is also growing evidence of “covert” protectionism.

TNCs in Agricultural Production and Development

Foreign participation can play a significant role in agricultural production in developing countries, which are in dire need of private and public investment, thereby boosting productivity and supporting economic development and modernization.

FDI flows in agricultural production tripled to \$3 billion annually between 1990 and 2007, driven by the food import needs of populous emerging markets, growing demand for biofuel production, and land and water shortages in some developing home countries. These flows remain small compared to the overall size of world FDI, but in many low-income countries agriculture accounts for a relatively large share of FDI inflows; and the latter are therefore significant in capital formation in the industry. Moreover, FDI in the entire agricultural value chain is much higher, with food and beverages alone representing more than \$40 billion of annual flows.

Contract farming activities by TNCs are spread worldwide, covering over 110 developing and transition economies, spanning a wide range of commodities, and in some cases accounting for a high share of output.

Developed-country TNCs are dominant in the upstream (suppliers) and downstream (processors, retailers, traders) ends of the agribusiness value chain. In agricultural production, FDI from the South (including South–South flows) is equally significant as FDI from the North.

TNC participation in agriculture in the form of FDI and contract farming may result in the transfer of technology, standards and skills, as well as better access to credit and markets. All of these could improve the productivity of the industry – including the farming of staple foods – and the economy as a whole. Moreover, TNCs’ contribution to food security is not just about food supply; it also includes enhanced food safety and affordability. These depend on the right policies for host countries to maximize the benefits and minimize the costs of TNC participation.

Governments should formulate an integrated strategic policy and regulatory framework for TNC activities in agricultural production. This

should include vital policy areas such as infrastructure development, competition, trade and trade facilitation, and R&D. It is equally important to address social and environmental concerns regarding TNC involvement.

Governments could also promote contract farming between TNCs and local farmers in the direction of enhancing farmers' predictable income, productive capacities and benefits from global value chains. To protect the interests of farmers, governments could develop model contracts for them to use or consider when negotiating with TNCs.

To ensure food security in host countries as a result of export-oriented FDI in staple food production by "new investors", home and host countries could consider output-sharing arrangements.

In order to address the concern about "land grab", the international community should devise a set of core principles that deal with the need for transparency in large-scale land acquisitions, respect for existing land rights, the right to food, protection of indigenous peoples, and social and environmental sustainability.

Public-private partnerships can be an effective tool for bringing a "new green revolution" to Africa. One initiative in this regard is seed and technology centres that adapt seeds and related farming technologies to local needs and conditions, distribute them to local farmers, and build long-term indigenous capacities.

OVERVIEW

FDI TRENDS, POLICIES AND PROSPECTS

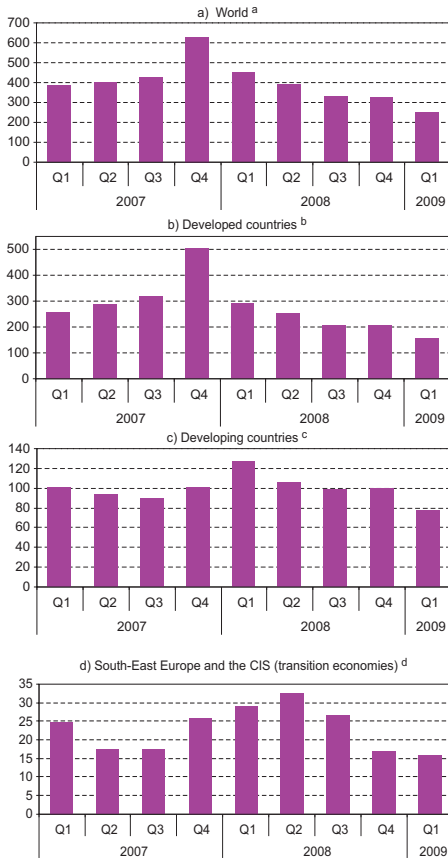
Amid a sharpening financial and economic crisis, global FDI inflows fell from a historic high of \$1,979 billion in 2007 to \$1,697 billion in 2008, a decline of 14 per cent. The slide continued into 2009, with added momentum: preliminary data for 96 countries suggest that in the first quarter of 2009, inflows fell a further 44 per cent compared with their level in the same period in 2008. A slow recovery is expected in 2010, but should speed up in 2011. The crisis has also changed the investment landscape, with developing and transition economies' share in global FDI flows surging to 43 per cent in 2008.

The decline posted globally in 2008 differed among the three major economic groupings – developed countries, developing countries, and the transition economies of South-East Europe and the Commonwealth of Independent States (CIS) – reflecting an initial differential impact from the current crisis. In developed countries, where the financial crisis originated, FDI inflows fell in 2008, whereas in developing countries and the transition economies they continued to increase. This geographical difference appears to have ended by late 2008 or early 2009, as initial data point to a general decline across all economic groups (figure 1).

The 29 per cent decline in FDI inflows to developed countries in 2008 was mostly due to cross-border M&A sales that fell by 39 per cent in value after a five-year boom ended in 2007. In Europe, cross-border M&A deals plummeted by 56 per cent, and in Japan by 43 per cent. Worldwide mega deals – those with a transaction value of more than \$1 billion – have been particularly strongly affected by the crisis.

In the first half of 2008, developing countries weathered the global financial crisis better than developed countries, as their financial systems were less closely interlinked with the hard-hit banking systems of the United States and Europe. Their economic growth remained robust, supported by rising commodity prices. Their FDI inflows continued to grow, but at a much slower pace than in previous years, posting a 17 per cent to \$621 billion. By region, FDI inflows increased considerably in Africa (27 per cent) and in Latin America and the Caribbean (13 per cent), in 2008, continuing the upward trend of the preceding years for both regions. However, in the second half of the year and into 2009, the global economic downturn caught up with these countries as well, adversely affecting FDI inflows. Inflows to South, East and South-

Figure 1. FDI inflows, by quarter, 2007–2009
(Billions of dollars)



Source: UNCTAD, *World Investment Report 2009: Transnational Corporations, Agricultural Production and Development*, figure 1.12.

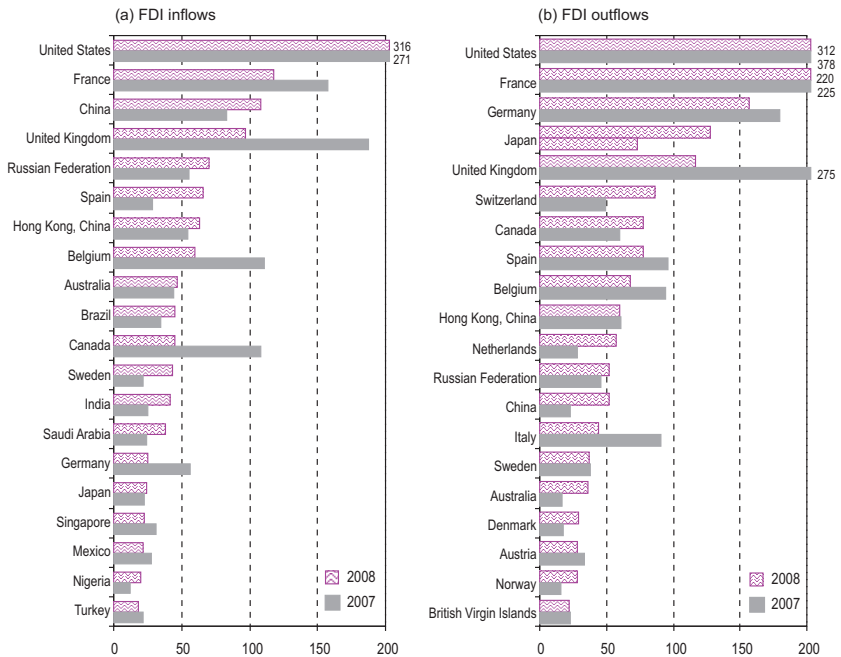
- a Total for 96 countries accounting for 91 per cent of world inflows in 2007–2008.
- b Total for 35 countries accounting for almost all of developed countries' inflows in 2007–2008.
- c Total for 49 countries accounting for 74 per cent of developing countries' inflows in 2007–2008.
- d Total for 12 countries accounting for 95 per cent of South-East Europe and the CIS (transition economies) inflows in 2007–2008.

East Asia witnessed a 17 per cent expansion to hit a high of \$298 billion in 2008, followed by a significant decline in the first quarter of 2009. A similar pattern prevailed in the transition economies of South-East Europe and the CIS, with inflows rising by 26 per cent to \$114 billion in 2008 (a record high), but then plunging by 47 per cent year-on-year in the first quarter of 2009.

Dramatic changes in FDI patterns over the past year have caused changes in the overall rankings of the largest host and home countries for FDI flows. While the United States maintained its position as the largest host and home country in 2008, many developing and transition economies emerged as large recipients and investors: they accounted for 43 per cent and 19 per cent of global FDI inflows and outflows, respectively, in 2008. A number of European countries saw their rankings slide in terms of both FDI inflows and outflows. The United Kingdom lost its position as the largest source and recipient country of FDI among European countries. Japan improved its outward position (figure 2).

FDI flows increased to structurally weak economies in 2008, including least developed countries (LDCs), landlocked developing countries (LLDCs) and small island developing States (SIDS), by 29 per cent, 54 per cent and 32 per cent respectively. However, due to the distinctive characteristics of these three groups of economies, including

Figure 2. Global FDI flows, top 20 economies, 2007–2008^a
(Billions of dollars)



Source: UNCTAD, *World Investment Report 2009: Transnational Corporations, Agricultural Production and Development*, annex table B.1 and FDI/TNC database (www.unctad.org/fdistatistics).

^a Ranked on the basis of the magnitude of 2008 FDI inflows.

their dependence on a narrower range of export commodities that were hard hit by falling demand from developed countries, the current crisis has exposed their vulnerabilities in attracting inward FDI. These economies may, therefore, wish to consider promoting FDI in industries which are less prone to cyclical fluctuations, such as agriculture-related industries, particularly food and beverages, as part of a diversification strategy.

Structural features of the decline in FDI

In late 2008 and the first few months of 2009, significant declines were recorded in all three components of FDI inflows: equity investments, other capital (mainly intra-company loans) and reinvested earnings. Equity investments fell, along with cross-border M&As. Lower profits by foreign affiliates drove down reinvested earnings, contributing to the 46 per cent drop in FDI outflows from developed countries in the first

quarter of 2009. In some cases, the restructuring of parent companies and their headquarters led to repayments of outstanding loans by foreign affiliates and a reduction in net intra-company capital flows from TNCs to their foreign affiliates. Critically, the proportionate decline in equity investments today is larger than that registered during the previous downturn.

Since mid-2008, divestments, including repatriated investments, reverse intra-company loans, and repayments of debt to parent firms, have exceeded gross FDI flows in a number of countries. For instance, divestments amounted to \$110 billion in the case of FDI outflows from Germany, accounting for 40 per cent of its gross FDI flows in 2008. In the first half of 2009, nearly one third of all cross-border M&A deals involved the disposal of foreign firms to other firms (whether based in a host, home or third country). This depressed FDI flows further. While divestments are not uncommon (affecting between one quarter and four fifths of all FDI projects), they became especially noticeable during the crisis. Indeed, the motivations for divestment have been heightened during this crisis as TNCs seek to cut operating costs, shed non-core activities, and, in some cases, take part in industry-wide restructuring. Greenfield investments (new investments and expansion of existing facilities) were resilient overall in 2008, but have also succumbed to the crisis since late 2008.

Available cross-border M&A data by sector indicate that companies in a limited number of industries increased their FDI activities in 2008. Industries exhibiting rising cross-border M&A sales (by value) during the year included food, beverages and tobacco, buoyed by the \$52 billion purchase of Anheuser Busch (United States) by Stichting Interbrew (Belgium); precision instruments; mining, quarrying and petroleum; motor vehicles and other transportation equipment; business services; other services; agriculture, hunting, forestry and fisheries; coke, petroleum and nuclear fuel; and public administration and defence. In general, the primary sector witnessed a growth of 17 per cent in the value of M&A sales in 2008; whereas manufacturing and services – which account for the largest proportion of world inward FDI stocks – reported declines of 10 per cent and 54 per cent respectively.

The financial and economic crisis had varying impacts on the FDI carried out by special funds, such as sovereign wealth funds (SWFs) or private equity funds. Private equity funds were hit especially hard, as the financial crisis struck at their lifeblood: easy capital, which shrank as lenders became more risk-conscious. Cross-border M&As by these funds fell to \$291 billion in 2008, or by 38 per cent, from a peak of

\$470 billion in 2007. The main reason for the sharp decline was that the financing of leveraged buyouts – which had contributed most to the dynamic growth of cross-border M&As by these funds in previous years – nearly dried up in the second half of 2008.

SWFs, on the other hand, recorded a rise in FDI in 2008, despite a fall in commodity prices, the export earnings of which often provide them with finance. Compared with 2007, the value of their cross-border M&As – the predominant form of FDI by SWFs – was up by 16 per cent in 2008 to \$20 billion, a small amount in proportion to the size of FDI and other assets under their management. This increase bucked the downward trend in global FDI as a whole. However, during the course of 2008, the sharp economic downturn in developed countries and the worldwide slump in stock prices led to large losses in SWFs' investments (partly because of a high concentration of investments in financial and business services industries), which depressed the pace of growth of their cross-border M&A deals. Moreover, the large size of SWFs and their perceived non-economic intentions have aroused concerns in a number of countries. To counter this concern, in October 2008 a number of SWFs agreed on a set of Generally Accepted Principles and Practices (GAPP) – the so-called Santiago Principles. Prospects for further increases in cross-border M&As by SWFs have deteriorated dramatically, judging by data on M&As for the first half of 2009.

TNCs in international production

Today, there are some 82,000 TNCs worldwide, with 810,000 foreign affiliates. These companies play a major and growing role in the world economy. For example, exports by foreign affiliates of TNCs are estimated to account for about a third of total world exports of goods and services, and the number of people employed by them worldwide totalled about 77 million in 2008 – more than double the total labour force of Germany. However, their international stature has not insulated them from the worst global recession in a generation. The 4.8% reduction in inward FDI stock worldwide was reflected in the decline in value of gross product, sales and assets, as well as employment of TNCs' foreign affiliates in 2008, a marked contrast to huge double-digit growth rates in 2006 and 2007 (table 1).

UNCTAD's *World Investment Prospects Survey (WIPS) 2009–2011* shows that TNCs' FDI plans have been affected by the global economic and financial crisis in the short term. In contrast to the previous survey, when only 40 per cent of companies reported being affected by

the crisis, in 2009 as many as 85 per cent of TNCs worldwide blamed the global economic downturn for influencing cutbacks in their investment plans; and 79 per cent blamed the financial crisis directly. Both of these aspects, separately and combined, have diminished the propensity and ability of TNCs to engage in FDI.

The economic and financial crisis has had a strong impact both industry-wide and at the individual company level. This is reflected in declining profits, increasing divestments and layoffs, and forced restructuring. According to UNCTAD's preliminary estimates, the rate of internationalization of the largest TNCs slowed down markedly in 2008, while their overall profits fell by 27 per cent.

Even so, the 100 largest TNCs worldwide continue to represent a sizable proportion of total international production by the universe of TNCs. Over the three years from 2006 to 2008, these 100 companies accounted for, on average, 9 per cent, 16 per cent and 11 per cent respectively, of the estimated foreign assets, sales and employment of all TNCs. And their combined value added accounted for roughly 4 per cent of world GDP, a share that has remained relatively stable since 2000.

Table 1. Selected indicators of FDI and international production, 1982–2008

Item	Value at current prices (billions of dollars)				Annual growth rate (percentage)							
	1982	1990	2007	2008	1986–	1991–	1996–		2006	2007	2008	
					1990	1995	2000	2005				
FDI inflows	58	207	1 979	1 697	23.6	22.1	39.4	32.4	50.1	35.4	-14.2	
FDI outflows	27	239	2 147	1 858	25.9	16.5	35.6	-5.4	58.9	53.7	-13.5	
FDI inward stock	790	1 942	15 660	14 909	15.1	8.6	16.0	4.6	23.4	26.2	-4.8	
FDI outward stock	579	1 786	16 227	16 206	18.1	10.6	16.9	5.1	22.2	25.3	-0.1	
Income on inward FDI	44	74	1 182	1 171	10.2	35.3	13.3	32.8	23.3	21.9	-0.9	
Income on outward FDI	46	120	1 252	1 273	18.7	20.2	10.3	28.4	18.4	18.5	1.7	
Cross-border M&As	..	112	1 031	673	32.0	15.7	62.9	91.1	38.1	62.1	-34.7	
Sales of foreign affiliates	2 530	6 026	31 764	30 311	19.7	8.8	8.1	5.4	18.9	23.6	-4.6	
Gross product of foreign affiliates	623	1 477	6 295	6 020	17.4	6.8	6.9	12.9	21.6	20.1	-4.4	
Total assets of foreign affiliates	2 036	5 938	73 457	69 771	18.1	13.7	18.9	20.5	23.9	20.8	-5.0	
Exports of foreign affiliates	635	1 498	5 775	6 664	22.2	8.6	3.6	13.8	15.0	16.3	15.4	
Employment of foreign affiliates (thousands)	19 864	24 476	80 396	77 386	5.5	5.5	9.7	8.5	11.4	25.4	-3.7	
<i>Memorandum</i>												
GDP (in current prices)	11 963	22 121	55 114	60 780	9.5	5.9	1.3	8.4	8.2	12.5	10.3	
Gross fixed capital formation	2 795	5 099	12 399	13 824	10.0	5.4	1.1	11.8	10.9	13.8	11.5	
Royalties and licence fee receipts	9	29	163	177	21.1	14.6	8.1	10.6	9.1	16.1	8.6	
Exports of goods and non-factor services	2 395	4 414	17 321	19 990	11.6	7.9	3.7	13.8	15.0	16.3	15.4	

Source: UNCTAD, *World Investment Report 2009: Transnational Corporations, Agricultural Production and Development*, table 1.6.

In terms of the sectoral composition of the top 100 list for 2007, the majority of the largest TNCs continued to be in manufacturing. General Electric, Toyota Motor Corporation and Ford Motor Company were among the biggest manufacturers. TNCs from the services sector, however, have been steadily increasing their share among the top 100. There were 26 companies on the 2008 list, as opposed to 14 in 1993, with Vodafone Group and Electricité de France among the biggest. Primary sector TNCs — such as Royal Dutch/Shell Group, British Petroleum Company, and ExxonMobil Corporation — ranked high in the list, buoyed by swelling foreign assets. As for TNCs from developing countries, 7 featured in the list, among them large diversified companies such as Hutchison Whampoa and CITIC Group, as well as important electronics manufacturers such as LG Corporation and Samsung Electronics.

The operations of the 50 largest financial TNCs were more geographically spread in 2008 than ever before; however it is not clear what the ultimate consequences of the hiatus of late 2008 and early 2009 will be. With massive government interventions in banking and financial services, some developed-country governments have become the largest or sole shareholders in several of the biggest financial TNCs. This dramatic change, together with the downfall of some of the largest financial TNCs, will strongly reshape FDI in financial services in the coming years.

FDI Prospects

Global FDI prospects are set to remain gloomy in 2009, with inflows expected to fall below \$1.2 trillion. However, recovery of these flows is expected to begin slowly in 2010 to reach up to \$1.4 trillion, and will gather momentum in 2011 when the level could approach an estimated \$1.8 trillion – almost the same as in 2008.

In the short run, with the global recession extending into 2009 and slow growth projected for 2010, as well as the drastic fall of corporate profits, FDI is expected to be low. TNCs appear hesitant and bearish about expanding their international operations.

This is confirmed by the results of the *WIPS*: a majority (58 per cent) of large TNCs reported their intentions to reduce their FDI expenditures in 2009 from their 2008 levels, with nearly one third of them (more than 30 per cent) even anticipating a large decrease. Considering the 44 per cent fall in actual FDI inflows worldwide in the first quarter of 2009, compared to the same period last year, 2009 could end with much lower flows than in 2008.

The medium-term prospects for FDI are more optimistic. TNCs responding to *WIPS* expect a gradual recovery in their FDI expenditures in 2010, gaining momentum in 2011; half of them even foresee their FDI in 2011 exceeding the 2008 level.

The United States and Brazil, the Russian Federation, India and China (the so-called BRIC countries) are likely to lead the future FDI recovery, as indicated by the responses of large TNCs to *WIPS*. Industries that are less sensitive to business cycles and operate in markets with stable demand (such as agribusiness and many services), and those with longer-term growth prospects (such as pharmaceuticals) are likely to be the engine for the next FDI boom. Furthermore, in the immediate aftermath of the crisis, when the global economy is on its way to recovery, the exit of public/government funds from ailing industries will possibly trigger a new wave of cross-border M&As.

Recent developments in investment policies at national and international levels

In 2008 and the first half of 2009, despite concerns about a possible rise in investment protectionism, the general trend in FDI policies remained one of greater openness, including lowering barriers to FDI and lowering corporate income taxes. UNCTAD's annual Survey of Changes to National Laws and Regulations related to FDI indicates that during 2008, 110 new FDI-related measures were introduced, of which 85 were more favourable to FDI (table 2). Compared to 2007, the percentage of less favourable measures for FDI remained unchanged.

The trend of scrutinizing foreign investments for national security reasons continued. Regulations to this end were adopted in some OECD countries. They expanded the scope of compulsory notification rules or enabled governments to block acquisitions of stakes in domestic companies. There was also a continuing trend towards nationalization of foreign-owned entities in extractive industries, particularly in parts of Latin America.

The most recent survey of investment policy developments in the 42 countries of the G-20 conducted by the UNCTAD secretariat shows that the overwhelming majority of policy measures specific and/or related to investment taken by these countries in the period November 2008 to June 2009 were non-restrictive towards foreign inward and domestic outward investment. In fact, a substantial number of the policy changes surveyed were in the direction of facilitating investment, including outward investment. There were, however, also a few policy measures

Table 2. National regulatory changes, 1992–2008

Item	Annual average									
	1992–1994	1995–1999	2002	2003	2004	2005	2006	2007	2008	
Number of countries that introduced changes	49	66	72	82	103	92	91	58	55	
Number of regulatory changes	95	132	246	242	270	203	177	98	110	
More favourable	94	121	234	218	234	162	142	74	85	
Less favourable	1	11	12	24	36	41	35	24	25	

Source: UNCTAD, *World Investment Report 2009: Transnational Corporations, Agricultural Production and Development*, table I.14.

that restricted private (including foreign) investment in certain highly sensitive sectors, or introduced new criteria and tests for investments that caused national security concerns.

During 2008, the network of international investment agreements (IIAs) continued to expand: 59 new bilateral investment treaties (BITs) were concluded, bringing the total number to 2,676. Also, the number of double taxation treaties (DTT) increased by 75 to a cumulative total of 2,805, and the number of other international agreements with investment provisions (mostly free trade agreements containing binding obligations on the contracting parties with regard to investment liberalization and protection) reached 273 by the end of 2008. In contrast, up to the end of 2008, six BITs were terminated. In parallel with the expansion of the IIA universe, the number of investor–state disputes has also continued to increase, totalling 317 at the end of 2008.

Impact of the crisis on FDI-related policies

So far, the current financial and economic crisis has had no major impact on FDI policies per se, since FDI is not the cause of this crisis. However, some national policy measures of a more general scope (national bailout programmes, economic stimulus packages) introduced in response to the crisis are likely to have an impact on FDI flows and TNC operations in an indirect manner. They may have a positive effect on inward FDI, as they could help stabilize, if not improve, the key economic determinants of FDI. On the other hand, concerns have been expressed that country policy measures could result in investment protectionism by favouring domestic over foreign investors, or by introducing obstacles to outward investment in order to keep capital at home.

There are also signs that some countries have begun to discriminate against foreign investors and/or their products in a “hidden” way, using gaps in international regulations. Examples of “covert” protectionism

include favouring products with high “domestic” content in government procurement (particularly huge public infrastructure projects), de facto preventing banks from lending for foreign operations, invoking “national security” exceptions that stretch the definition of national security, or moving protectionist barriers to subnational levels that are outside the scope of the application of international obligations (e.g. in matters of procurement).

Looking to the future, a crucial question is which FDI policies host countries will apply once the global economy begins to recover. The expected exit of public funds from flagship industries is likely to provide a boost to private investment, including FDI. This could possibly trigger a new wave of economic nationalism to protect “national champions” from foreign takeovers. IIAs have a role to play in ensuring the predictability, stability and transparency of national investment regimes. Policymakers should also consider strengthening the investment promotion dimension of IIAs through effective and operational provisions. Investment insurance and other home-country measures that encourage outward investment are cases in point where continued international cooperation can be useful.

All of these developments, as well as the impacts of the crisis on FDI flows and TNC activities, have had different effects on the pattern of FDI by region (table 3).

Regional trends

FDI inflows into **Africa** rose to \$88 billion in 2008 – another record level, despite the global financial and economic crisis. This increased the FDI stock in the region to \$511 billion. Cross-border M&As, the value of which more than doubled in 2008, contributed to a large part of the increased inflows, in spite of global liquidity constraints. The booming global commodities market the previous year was a major factor in attracting FDI to the region. The main FDI recipients included many natural-resource producers that have been attracting large shares of the region’s inflows in the past few years, but also some additional commodity-rich countries.

In 2008, FDI inflows increased in all subregions of Africa, except North Africa. While Southern Africa attracted almost one third of the inflows, West African countries recorded the largest percentage increase (63 per cent). Developed countries were the leading sources of FDI in Africa, although their share in the region’s FDI stock has fallen over time.

Table 3. FDI flows, by region and selected countries, 1995–2008

Region/economy	FDI inflows					FDI outflows								
	1995–2000 (Annual average)	2003	2004	2005	2006	2007	2008	1995–2000 (Annual average)	2003	2004	2005	2006	2007	2008
Developed economies	534.9	361.3	414.2	613.1	972.8	1 358.6	962.3	626.3	507.2	795.1	742.0	1 157.9	1 809.5	1 506.5
Europe	323.3	279.8	227.7	506.1	631.7	899.6	518.3	446.2	306.9	411.5	689.9	799.6	1 270.5	944.5
European Union	310.0	259.4	223.3	498.4	590.3	842.3	503.5	416.9	285.0	377.3	609.7	697.2	1 192.1	837.0
Japan	4.6	6.3	7.8	2.8	- 6.5	22.5	24.4	25.1	28.8	31.0	45.8	50.3	73.5	128.0
United States	169.7	53.1	135.8	104.8	237.1	271.2	316.1	125.9	129.4	294.9	15.4	224.2	378.4	311.8
Other developed countries	37.2	22.0	42.8	- 0.6	110.4	165.3	103.4	29.2	42.1	57.7	- 9.1	83.8	87.1	122.3
Developing economies	188.3	184.0	290.4	329.3	433.8	529.3	620.7	74.5	45.5	120.4	122.7	215.3	285.5	292.7
Africa	9.0	20.9	22.1	38.2	57.1	69.2	87.6	2.4	1.3	2.1	2.3	7.2	10.6	9.3
Latin America and the Caribbean	72.9	45.8	95.1	77.1	93.3	127.5	144.4	21.1	21.3	28.0	36.0	63.6	51.7	63.2
Asia and Oceania	106.4	117.3	173.2	214.0	283.4	332.7	388.7	51.0	23.0	90.4	84.4	144.5	223.1	220.2
Asia	105.9	116.9	172.9	213.8	282.1	331.4	387.8	51.0	22.9	90.3	84.3	144.4	223.1	220.1
West Asia	3.3	11.3	20.5	43.6	67.6	77.6	90.3	0.9	- 1.4	8.1	12.9	24.0	48.3	33.7
East Asia	70.7	72.7	106.3	116.2	131.8	150.4	187.0	39.6	17.4	62.9	49.8	82.3	111.2	136.2
China	41.8	53.5	60.6	72.4	72.7	83.5	108.3	2.0	2.9	5.5	12.3	21.2	22.5	52.2
South Asia	3.9	8.2	10.7	14.4	27.8	34.0	50.7	0.3	1.6	2.3	3.5	14.9	17.8	18.2
South-East Asia	28.0	24.7	35.5	39.6	55.0	69.5	59.9	10.2	5.3	17.0	18.1	23.3	45.8	32.1
Oceania	0.5	0.4	0.3	0.2	1.3	1.3	0.9	0.0	0.0	0.1	0.1	0.0	0.0	0.1
South-East Europe and CIS (Transition economies)	7.3	19.9	30.3	30.9	54.5	90.9	114.4	2.0	10.7	14.1	14.3	23.7	51.5	58.5
South-East Europe	1.2	4.1	3.5	4.8	9.9	12.8	10.9	0.1	0.1	0.4	0.3	0.4	1.4	0.6
CIS	6.1	15.8	26.8	26.1	44.7	78.1	103.5	1.9	10.6	13.8	14.0	23.3	50.1	57.9
World	730.5	585.2	734.9	973.3	1 461.1	1 978.8	1 697.4	702.8	563.4	929.6	879.0	1 396.9	2 146.5	1 857.7
Memorandum: percentage share in world FDI flows														
Developed economies	73.2	63.9	56.4	63.0	66.6	68.7	56.7	89.1	90.0	85.5	84.4	82.9	84.3	81.1
Developing economies	25.8	32.6	39.5	33.8	29.7	26.8	36.6	10.6	8.1	13.0	14.0	15.4	13.3	15.8
South-East Europe and CIS (Transition economies)	1.0	3.5	4.1	3.2	3.7	4.6	6.7	0.3	1.9	1.5	1.6	1.7	2.4	3.1

Source: UNCTAD, *World Investment Report 2009: Transnational Corporations, Agricultural Production and Development*, annex table B.1 and FDI database (www.unctad.org/fdistatistics).

A number of African countries adopted policy measures to make the business environment in the region more conducive to FDI, although the region's overall investment climate still offers a mixed picture. For example, some African governments established free economic zones and new investment codes to attract FDI, and privatized utilities. However, some countries also adopted less favourable regulations, such as tax increases.

At the bilateral level, African countries have continued to adopt investment-related measures. In 2008, 12 countries signed 13 BITs, and 6 signed 9 DTTs, raising the total number to 718 and 467 respectively. As in the past, most of the BITs (8) and DTTs (4) concluded in 2008 were with developed countries. At the subregional and regional levels, the Economic Community of West African States (ECOWAS) adopted three acts relating to investment rules and the modalities for their implementation, and the Southern African Customs Union (SACU) and the East African Community (EAC) concluded agreements with the United States.

In 2009, there is likely to be a decline in FDI inflows into Africa following five years of uninterrupted growth. The main reasons for this are the slowdown in the global economy, lower global commodity prices and a worsening of the financial crisis in many developed and fast-growing developing economies. However, the optimistic prospects for global commodity prices might have a positive effect on inflows in the medium term. This prognosis is supported by the results of the *WIPS*.

South, East and South-East Asia continued to register strong growth in FDI inflows in 2008 (17 per cent), reaching a new high of \$300 billion. But the available data in early 2009 pointed to a significant downturn, and cast doubts about FDI prospects in the short term.

At the subregional level, year-on-year FDI growth varied: 49 per cent in South Asia, 24 per cent in East Asia, and -14 per cent in South-East Asia, with inflows amounting to \$51 billion, \$187 billion and \$60 billion respectively. Inflows into the major economies in the region varied significantly as well: they surged in China, India and the Republic of Korea; continued to grow in Hong Kong (China); dropped slightly in Malaysia and Thailand; and fell sharply in Singapore and Taiwan Province of China. China, with inflows reaching a historic high (\$108 billion), became the third-largest FDI recipient in the world. India, with inflows of \$42 billion, ranked the thirteenth largest FDI recipient. Against the backdrop of the global financial crisis, the ability of these

two largest emerging economies to attract FDI has reshaped the landscape of global FDI flows. Inflows to the two are inevitably affected by the crisis, but their medium- to long-term prospects remain promising. This is confirmed by the *WIPS*: respondents to the survey ranked China and India as first and third, respectively, among the most attractive locations for FDI.

FDI inflows in services continued to gain momentum in South, East and South-East Asia in 2008. This is reflected in the rising value of cross-border M&A sales in the region's services sector. This sector accounted for the major share of FDI in some economies, although investments in banking dropped as a result of the global financial crisis. FDI to the services sector in China and India rose, particularly in such services as infrastructure and the retail industries. In India, Wal-Mart (United States) opened its first store in 2008, and plans to open 15 more over the next few years.

Outward FDI from South, East and South-East Asia rose by 7 per cent, to \$186 billion in 2008, due mainly to large outflows from China. India is becoming an important investor, though FDI outflows remained almost at the same level as in 2007. China gained ground as an important source of FDI: it ranked thirteenth in the world and third among all developing and transition economies in 2008. FDI from China reached \$52 billion in 2008, up 132 per cent from 2007. In early 2009, outflows from the country continued to rise. Indeed, significant exchange-rate fluctuations and falling asset prices abroad as a result of the crisis have created M&A opportunities for Chinese companies. In contrast, FDI outflows from other major economies in the region generally slowed down in early 2009, as the crisis has largely reduced the ability and motivation of many TNCs from these economies to invest abroad.

Cross-border M&As undertaken by firms from South, East and South-East Asia in developed countries continued to increase. In the primary sector, in addition to oil companies, large mining and metal companies from China and India have become increasingly aggressive in acquiring overseas assets. For example, in cooperation with Alcoa (United States), Chinalco (China) acquired a 12 per cent stake in Rio Tinto plc (United Kingdom) for \$14 billion in 2008. In manufacturing, a recent case was the \$2.3 billion acquisition of Jaguar Cars (United Kingdom) by Tata Motors (India). In services, large deals included, for example, investment by Temasek Holdings (Singapore) in Merrill Lynch (United States).

Changes in national policies and legislation favourable to FDI took place in some countries, for instance by raising or abolishing FDI ceilings or streamlining approved procedures. This has led to the further opening up of markets in the region and a more enabling business environment for foreign investors. A few other countries introduced new policies and laws to protect sensitive industries. The region concluded 19 BITs and 13 DTTs in 2008, and continued to be the most active developing region, with 10 new agreements other than BITs and DTTs signed. Singapore concluded FTAs with the the Gulf Cooperation Council (GCC), China and Peru, while China concluded agreements with New Zealand and Peru. ASEAN countries concluded an FTA with Australia, Japan and New Zealand; and Viet Nam concluded an FTA with Japan.

FDI inflows into **West Asia** increased in 2008 for the sixth consecutive year. They rose by 16 per cent to reach \$90 billion, largely due to a significant growth of inflows to Saudi Arabia (57%, to \$38 billion), especially to real estate, petrochemicals and oil refining. This consolidated the country's position as the region's leading recipient. FDI growth was uneven among the other countries of the region. For example, it was negative in the second and third recipient countries: Turkey and the United Arab Emirates. In Turkey, inflows fell to \$18 billion, down by 17 per cent, after the exceptional level reached in 2007, when a number of mega-cross border M&A deals took place in the financial industry. In the United Arab Emirates, they decreased by 3 per cent, to \$14 billion, as Dubai's tourism, real estate and banking industries were particularly badly affected by the global economic and financial crisis.

Since the third quarter of 2008, the sharp fall in oil prices and the steadily worsening outlook for the world economy have dampened the optimism that had pervaded the region over the previous six years. Development projects across the region are being hit hard by the tightening global credit markets. The number of international banks willing to lend to projects in GCC countries has shrunk sharply. As a consequence, key oil and gas, industrial and infrastructure projects, which had substantial FDI, have been delayed. This is likely to reduce the level of FDI inflows in 2009.

Real estate, petrochemicals, refining, construction and trade were the main drivers of FDI inflows in the two leading recipient countries of the region: Saudi Arabia and Turkey. Together, they attracted 63 per cent of total FDI inflows to the region in 2008. Inflows increased in real estate by 120 per cent to \$10.9 billion, in oil refining and petrochemicals by 37 per cent to \$12 billion, in construction by 104 per cent to \$3.7 billion and in trade by 154 per cent to \$2.9 billion.

FDI outflows from West Asia declined by 30% in 2008, to \$34 billion, largely due to the significant fall (of 45%) in the value of net cross-border M&A purchases by West Asian TNCs. The sharpest decreases occurred in Saudi Arabia (from \$13 billion to \$1 billion) and in Qatar (from \$5.3 billion to \$2.4 billion). As a consequence of the large losses suffered from the global crisis, outward investors have become more risk-averse, and some have turned their spending to their own crisis-hit economies. On the other hand, the fall in global equity markets has offered new investment opportunities for government-controlled entities. Some, such as SWFs of the Emirate of Abu Dhabi, have already begun to make small acquisitions that support their national economic development objectives. This portends an increase in FDI outflows in 2009.

The trend towards a more liberal FDI-related policy continued in 2008 in a number of countries. Examples include reductions in the rate of tax levied on foreign companies, privatization of state-owned enterprises, liberalization of the exchange rate regime, improved access to financing by investors and investment facilitation. The region concluded 15 new BITs, and 12 new DTTs in 2008. Furthermore, FTAs with investment provisions were concluded between Turkey and Chile, as well as between the GCC and Singapore.

In **Latin America and the Caribbean**, FDI inflows increased in 2008 by 13 per cent to \$144 billion, despite the global economic and financial crisis. The growth was uneven among the subregions: it was up by 29 per cent in South America – where 49 per cent of the \$92 billion worth of inflows targeted Brazil – and down by 6 per cent in Central America and the Caribbean. This divergence was due to the differing impact of the crisis on the economies of the two subregions: Central America and the Caribbean were directly affected by the slowdown of the United States economy, while South America – which relies more on commodity export earnings – was affected later via the drop in commodity prices.

Natural resource-related activities continued to be the main attraction for FDI in South America, and they are increasingly becoming a significant FDI target in Central America and the Caribbean. In particular, FDI in the metal mining industry boomed in 2008: cross-border M&As targeting this industry reached \$9 billion in net value – an eightfold increase from the previous year. In contrast, the value of cross-border M&A sales in the oil and gas industry turned negative, indicating divestments by foreign firms as well as nationalizations in this industry. FDI to the manufacturing sector declined due to a sharp drop in flows

to Central America and the Caribbean, where foreign-owned export-oriented manufacturing activities are closely tied to the United States economic cycle. In South America, FDI inflows in manufacturing, which are highly concentrated in natural resource-related activities and more oriented to the internal market and to export destinations other than the United States, were more or less stable.

FDI outflows from Latin America and the Caribbean increased in 2008 by 22 per cent to \$63 billion, due to soaring outflows from South America (up by 131 per cent), which offset the 22 per cent decline in outflows from Central America and the Caribbean. The strongest increase was registered in Brazil (189 per cent), where outflows reached \$20 billion, while outflows from Mexico plummeted to \$686 million from the previous \$8 billion. The value of net cross-border acquisitions by Mexican firms was negative in 2008 (-\$358 million), indicating that sales of existing foreign affiliates of Mexican-based TNCs were higher than the purchases of foreign firms by Mexican-based TNCs.

The shift towards a bigger role for the state in the economy continued in a number of countries and extended to new activities. This resulted in more nationalizations in the oil and gas industry. Some countries took measures to strengthen national champions. Latin America and the Caribbean concluded only 6 BITs and 8 DTTs in 2008. The CARIFORUM States concluded the Economic Partnership Agreement with the European Union (EU), thereby agreeing to the progressive, reciprocal and asymmetric liberalization of investment.

In Latin America and the Caribbean, FDI inflows and outflows are expected to decline in 2009, as the impacts of the economic and financial crisis spread across the region.

FDI inflows to **South-East Europe and the CIS** increased for the eighth consecutive year, reaching \$114 billion – a record level – in spite of financial turmoil and conflicts in certain parts of the region. FDI inflows grew rapidly in both subregions, especially in the first half of 2008. Whereas in South-East Europe most of the FDI inflows were still driven by the privatization of remaining state-owned assets, in the CIS investment by TNCs was motivated by a desire to gain access to growing local consumer markets and to benefit from business opportunities arising from the liberalization of selected industries. FDI inflows continued to be unevenly distributed, with three countries (the Russian Federation, Kazakhstan and Ukraine, in that order) accounting for 84 per cent of the region's total. Large investments in the liberalized power-generation industry, as well as in automotives and real estate,

contributed to large FDI inflows into the Russian Federation, although the bulk of FDI in the country continued to be in natural resource–related projects. FDI in oil and natural gas projects in Kazakhstan and large investments in the banking and steel industries in Ukraine drove 2008 flows upwards in both countries.

Outward FDI flows in 2008, again dominated by Russian TNCs but also by some investment from Kazakhstan, maintained their upward trend, despite some divestments in the Russian Federation that took place in the second part of 2008. With the slowdown in foreign demand for their products, TNCs from the region shifted their strategies from expanding markets for their products abroad to gaining access to technological innovations and advanced marketing and management know-how.

Good market opportunities resulted in an increase in cross-border M&A sales of firms in the region’s manufacturing industries that are not deemed “strategic” (mainly in the automotive and metallurgical industries). Cross-border investment projects in the primary and services sectors marked a pause following exceptionally high values in 2007. However strategic investors continue to invest in the exploitation of vast and complex oil and gas fields.

In 2008, countries in South-East Europe and the CIS continued to liberalize their FDI regulations in certain industries such as electricity generation, banking, retail and telecommunications. Conversely, some natural resource–rich countries introduced certain policy changes less favourable to foreign investors, such as strengthening their control over natural resources through legislation. Countries in the region concluded 25 DTTs and 19 BITs in 2008.

The slowdown of economic growth in all the countries of South-East Europe and the CIS, and the fall in commodity prices, coupled with the near-exhaustion of major privatization opportunities, is likely to lead to a large decline in FDI in the region. Preliminary data for FDI and cross-border M&As in the first quarter of 2009 and investors’ sentiments – as reflected in the results of UNCTAD’s *WIPS* – support this forecast.

As the economic and financial crisis and the accelerating economic downturn seriously affected all the major economies of the world, FDI flows to and from **developed countries** fell sharply in 2008, after reaching historic peaks in 2007. Inward FDI flows fell by 29 per cent to \$962 billion, and these declines occurred in all major host countries except the United States. FDI flows into the EU-27 countries fell by 40 per cent in 2008, to \$503 billion, as the financial crisis and the economic

downturn contributed to a decline in inward FDI in the majority of them. In contrast, FDI inflows into the United States, mainly from European investors, rose by 17 per cent, to reach an all-time high of \$316 billion.

The fall in FDI inflows into developed countries was more pronounced in the manufacturing and services sectors, judging from data on cross-border M&As, while the consolidation process in the mining and quarrying industries and the increasing participation of large companies from developing countries (notably from China) contributed to the rise of FDI in the primary sector in 2008.

The decline of reinvested earnings, due to falling profits and the re-channelling of loans from foreign affiliates to the headquarters of TNCs, depressed FDI outflows from developed countries in 2008 by 17 per cent, to \$1.5 trillion. However, as in the past, developed countries as a group retained their position as the largest net outward investors. Among the biggest FDI source countries, only Japan, Switzerland, Canada and the Netherlands, in that order, saw a rise in their FDI outflows in 2008, while the United States maintained its position as the largest outward investor.

In 2008, FDI policy environments in developed countries were influenced by the continuing public debate about the cross-border investments of SWFs, and fears of new investment protectionism in reaction to the financial and economic crisis. Concerns about possible discriminatory measures vis-à-vis SWFs led to the establishment of the International Working Group of Sovereign Wealth Funds and to agreement on the Santiago Principles. In addition, some developed countries have adopted or amended rules concerning the review of foreign investment on national security grounds, while others have adopted measures aimed at further liberalization of their investment regimes, or have changed tax policies and other incentives to promote foreign investment. In 2008, developed countries concluded 38 BITs (most of them with developing countries), 16 DTTs and 15 other IIAs.

FDI to and from developed countries is expected to fall in 2009 because of the continuing effects of the financial crisis and weaker economic growth in these economies. TNCs are expected to reduce their investment programmes because of declining corporate profits, limited access to financial resources and the higher cost of finance. Indeed, FDI inflows in the first quarter of 2009 were 24 per cent lower than in the last quarter of 2008, while cross-border M&As in the first half of 2009 declined by more than 40 per cent compared to their level in the second half of 2008. This is confirmed by the *WIPS*.

TRANSNATIONAL CORPORATIONS, AGRICULTURAL PRODUCTION AND DEVELOPMENT

Agriculture is central to the provision of food and the eradication of poverty and hunger. Not only does it provide significant mass and rural employment, it is also a major contributor to national economic growth and a considerable foreign exchange earner for many developing countries. Given the fundamental importance of agriculture to most developing economies, its chronic neglect by many of them has been of utmost concern for some time. However, several factors, which are not mutually exclusive, have resulted in a recent upswing in domestic private and foreign participation in agricultural industries in a significant number of developing countries. Most of these factors are of a structural nature, and are expected to drive agricultural investment in the foreseeable future. In this context, foreign participation, as well as domestic investment, can play a critical part in agricultural production in developing countries, boosting productivity and supporting economic development.

The main drivers of agricultural investment include the availability of land and water in target locations, combined with fast-growing demand and rising imports of food crops in various countries, including both the more populous emerging countries such as Brazil, China, India and the Republic of Korea, and land- and water-scarce developing regions such as member States of the Gulf Cooperation Council (GCC). International demand for agricultural commodities has been further spurred by other factors, such as biofuel initiatives around the world, resulting in a spate of investments in developing countries in the cultivation of sugarcane, grains (such as maize) and oilseeds (such as soya beans), as well as non-food crops such as jatropha. These trends are intertwined with a rapid rise in food prices over the past few years and subsequent shortages in commodities such as rice, which has spawned a number of “new investors” and was also triggered a number of speculative direct investments in agriculture and land.

Significance of FDI, by country, commodity and region

FDI in agriculture is on the rise, although its total size remains limited (inward FDI stock in 2007 was \$32 billion) and is small relative to other industries (table 4). At the turn of the new century, world FDI flows in agriculture remained at less than \$1 billion per year, but by

2005–2007 they had tripled to \$3 billion annually (table 4). Moreover, TNCs established in downstream segments of host-country value chains (e.g. food processing and supermarkets) also invest in agricultural production and contract farming, thereby multiplying the actual size of their participation in the industry. In fact, after a rapid rate of growth in the early 2000s, FDI flows in the food and beverages industry alone (i.e. not including other downstream activities) exceeded \$40 billion in 2005–2007 (table 4).

Although the share of FDI in agriculture remains small as a share of total FDI in developed, developing and transition economies as a whole, in some LDCs, including Cambodia, the Lao People's Democratic Republic, Malawi, Mozambique and the United Republic of Tanzania, the share of FDI in agriculture in total FDI flows or stocks is relatively large (figure 3). This is also true for some non-LDCs, such as Ecuador, Honduras, Indonesia, Malaysia, Papua New Guinea and Viet Nam. The high share in these countries is due to factors such as the structure of the domestic economy, the availability of agricultural land (mostly for long-term lease), and national policies (including promotion of investment in agriculture).

FDI is relatively large in certain cash crops such as sugarcane, cut flowers and vegetables. The bulk of inward FDI in developing regions is aimed at food and cash crops. There is also a growing interest in crops for biofuel production through projects related to oilseed crops in Africa and sugarcane in South America, for instance. In terms of the main produce targeted by foreign investors in developing and transition economies, some regional specialization is apparent. For example, South American countries have attracted FDI in a wide range of products, such as wheat, rice, sugarcane, fruits, flowers, soya beans, meat and poultry; while in Central American countries, TNCs have focused mostly on fruits and sugarcane. In Africa, foreign investors have shown a particular interest in staple crops such as rice, wheat and oil crops; but there is also TNC involvement in sugarcane and cotton in Southern Africa, and in floriculture in East Africa. In South Asia, foreign investors have targeted the large-scale production of rice and wheat, while their activities in other Asian regions are concentrated more in cash crops, meat and poultry. Finally, TNCs in the transition economies are largely involved in dairy products, although more recently they have also been seeking to invest in wheat and grains.

Significance of contract farming in developing countries

Contract farming is a significant component of TNCs' participation in agricultural production, in terms of its geographical distribution, intensity of activity at the country level, coverage by commodities and types of TNCs involved. In this context, contract farming can be defined as non-equity contractual arrangements entered into by farmers with TNC affiliates (or agents on behalf of TNCs), whereby the former agree to deliver to the latter a quantity of farm outputs at an agreed price, quality standard, delivery date and other specifications. It is an attractive option for TNCs, because it allows better control over product specifications and supply than spot markets. At the same time, it is less capital-intensive, less risky and more flexible than land lease or ownership. From the perspective of farmers, contract farming can

Table 4. Estimated FDI in agriculture, forestry and fishing,^a and food and beverages,^b various years
(Billions of dollars and percentages)

Region	FDI flows				FDI stock			
	Inflows		Outflows		Inward stock		Outward stock	
	1989–1991	2005–2007	1989–1991	2005–2007	1990	2007	1990	2007
(a) Agriculture, forestry and fishing^a								
World	0.6 (0.3%)	3.3 (0.2%)	0.5 (0.2%)	1.1 (0.1%)	8.0 (0.4%)	32.0 (0.2%)	3.7 (0.2%)	10.2 (0.1%)
Developed economies	- 0.0 ..	0.0 ..	0.5 (0.2%)	0.6 ..	3.5 (0.2%)	11.8 (0.1%)	3.4 (0.2%)	7.5 (0.1%)
Developing economies	0.6 (1.8%)	3.0 (0.8%)	0.0 (0.7%)	0.5 (0.4%)	4.6 (1.3%)	18.0 (0.5%)	0.3 (1.5%)	2.4 (0.1%)
South-East Europe and the CIS	0.3 (0.7%)	0.0 (18.2%)	2.2 (0.7%)	0.3 (1.3%)
(b) Food and beverages^b								
World	7.2 (3.8%)	40.5 (2.8%)	12.5 (5.6%)	48.3 (3.3%)	80.3 (4.1%)	450.0 (2.9%)	73.4 (4.1%)	461.9 (2.8%)
Developed economies	4.8 (3.2%)	34.1 (3.2%)	12.2 (5.6%)	45.7 (3.4%)	69.9 (4.4%)	390.7 (3.4%)	73.1 (4.1%)	458.1 (3.2%)
Developing economies	2.4 (6.8%)	5.1 (1.4%)	0.3 (4.1%)	2.6 (1.9%)	10.4 (2.9%)	46.9 (1.2%)	0.3 (1.4%)	3.5 (0.2%)
South-East Europe and the CIS	1.4 (3.2%)	- 0.0 (-4.5%)	12.4 (4.2%)	0.3 (1.7%)

Source: UNCTAD, *World Investment Report 2009: Transnational Corporations, Agricultural Production and Development*, table III.7.

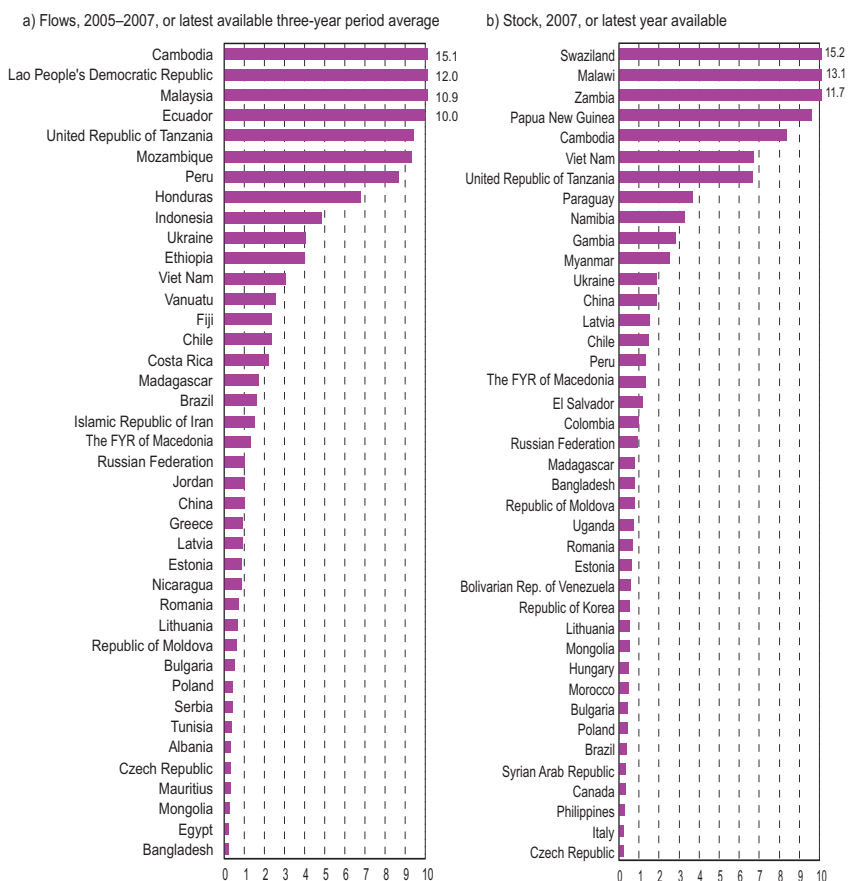
^a Includes hunting.

^b Includes tobacco.

provide predictable incomes, access to markets, and TNC support in areas such as credit and know-how.

TNCs engaged in contract farming activities and other non-equity forms are spread worldwide in over 110 countries across Africa, Asia and Latin America. For example, in 2008, the food processor Nestlé (Switzerland) had contracts with more than 600,000 farms in over 80 developing and transition economies as direct suppliers of various agricultural commodities. Similarly, Olam (Singapore) has a globally

Figure 3. Share of agriculture in inward FDI of selected economies, various years
(Per cent)



Source: UNCTAD, *World Investment Report 2009: Transnational Corporations, Agricultural Production and Development*, figure III.6.

spread contract farming network, with approximately 200,000 suppliers in 60 countries (most of them developing countries).

Contract farming is not only widespread, but also intensive in many emerging and poorer countries. For instance, in Brazil, 75 per cent of poultry production and 35 per cent of soya bean production are sourced through contract farming, including by TNCs. In Viet Nam the story is similar, with 90 per cent of cotton and fresh milk, 50 per cent of tea, and 40 per cent of rice being purchased through farming contracts. In Kenya, about 60 per cent of tea and sugar is produced through this mode.

Moreover, contract farming arrangements cover a broad variety of commodities, from livestock through staple food produce to cash crops. For example, Olam sources globally for 17 agricultural commodities (including cashew nuts, cotton, spices, coffee, cocoa and sugar). Similarly, agricultural crops make up two thirds of Unilever's (United Kingdom/Netherlands) raw materials, and include palm and other edible oils, tea and other infusions, tomatoes, peas and a wide range of other vegetables. These are sourced from 100,000 smallholder farmers and larger farms in developing countries, and also from third-party suppliers.

Contractual farming arrangements enable different types of TNCs in the downstream stages of agribusiness value chains, including food manufacturers, biofuel producers, retailers and many others, to secure agricultural inputs from local farmers in different host countries.

The universe of TNCs participating in agricultural production

The 25 largest agriculture-based TNCs (i.e. companies that are primarily located in the *agricultural production* segment of agribusiness, such as farms and plantations) differ from the top agriculture-related TNCs (i.e. those primarily in *upstream* or *downstream* stages of these value chains): the former have a significant number of developing-country firms among their ranks, while the latter do not (table 5). In terms of foreign assets, the number of agriculture-based TNCs is split almost evenly between developed- and developing-country firms, indicating that firms from developing countries are also emerging as important players in global food and non-food agricultural production. However, developed-country firms still dominate among agriculture-related TNCs. Twelve out of the top 25 agriculture-based TNCs are headquartered in developing countries, and thirteen in developed countries. Indeed, the

top position in the list is occupied by a developing-country TNC, Sime Darby Berhad (Malaysia), while United States firms (Dole Food and Del Monte) occupy the second and third positions (table 5).

The universe of agriculture-related TNCs includes food processors/manufacturers, retailers, traders and suppliers of inputs. These TNCs are usually larger than agricultural TNCs. For example, the world's largest food and beverages TNC, Nestlé (Switzerland), controls \$66 billion in foreign assets, and the largest food retailer, Wal-Mart (United States), controls \$63 billion. In contrast, the largest agricultural TNC, Sime Darby (Malaysia), has only \$5 billion of foreign assets. The list of the largest TNC input suppliers to agriculture comprises only developed-country firms. In food processing, 39 of the top 50 firms are headquartered in developed countries. Compared to other TNCs in agribusiness, those in food and beverages are very large: the nine largest, all headquartered in developed countries, control about \$20 billion of foreign assets each; together, they represent more than two thirds of the foreign assets of the top 50 firms. Retailing and supermarket TNCs also play a major role in international agricultural supply chains. The majority of the 25 largest TNCs in this industry (22) are again from developed countries (table 5).

Apart from traditional TNCs involved in agriculture, newcomers such as state-owned enterprises, sovereign wealth funds and international institutions are increasingly active in agriculture. The main drivers of (or motives for) the new investors are the intertwined twins of threat and opportunity. For example, Agricapital (a state-owned fund based in Bahrain) is investing in food crops overseas to support its government's food security policies. At the same time, supplying food to the world's burgeoning markets is seen as a lucrative opportunity by other actors, thereby spurring international investment in agriculture by companies and funds such as Vision 3 (United Arab Emirates) and Goldman Sachs (United States).

The rise of South–South FDI

There are indications that South–South investment in agricultural production is on the rise, and that this trend is set to continue in the long term. Investors from developing countries became major sources of cross-border takeovers in 2008. Their net cross-border M&A purchases, amounting to \$1,577 million, accounted for over 40 per cent of the world total (\$3,563 million). Examples of South-South investment projects include Sime Darby's (Malaysia) \$800 million investment in a plantation in Liberia in 2009; Chinese investments

and contract farming in commodities such as maize, sugar and rubber in the Mekong region, especially in Cambodia and the Lao People's Democratic Republic; the regional expansion of Zambeef (Zambia) into Ghana and Nigeria; and the expansion by Grupo Bimbo (Mexico) across Latin America and the Caribbean.

In addition to commercial investment in agriculture – a common feature of developed- and developing-country TNCs in the wake of the food crisis – food security has also become a major driver of new investors. These include companies and funds (some state-owned or backed) from a variety of countries, especially the Republic of Korea and GCC countries. To varying degrees, the governments of these source countries have decided that investment in target host countries, giving them control over crop production and export of the output back to their home economy, is the most effective way of ensuring food security for their populations. For many of these countries, the most crucial factor or driver behind outward FDI in agriculture is not land per se, but rather the availability of water resources to irrigate the land. Most of their investment is in other developing countries.

The scale of South–South FDI driven by food security concerns is not easy to determine because many relevant deals have only recently been signed, although others are being considered or in negotiation. Of the definite larger-scale investments involving land acquisitions (i.e. outright ownership and long-term leases) undertaken thus far, the largest investing countries from the South include Bahrain, China, Qatar, Kuwait, the Libyan Arab Jamahiriya, Saudi Arabia, the Republic of Korea and the United Arab Emirates. The most important developing host countries are in Africa, with Ethiopia, Sudan and the United Republic of Tanzania among the foremost FDI recipients (figure 4).

The impact of TNCs in agricultural production on developing countries

A precisely quantified evaluation of the impact of TNC involvement in agriculture on important development aspects, such as contribution to capital formation, technology transfer and foreign market access, is impeded by the limited availability of relevant hard data collected by national authorities or available from international sources. The actual impacts and implications vary enormously across countries and by types of agricultural produce. In addition, they are influenced by a range of factors, including the type of TNC involvement, the institutional environment and the level of development of the host

Table 5. Top 25 TNCs in agribusiness industries, ranked by foreign assets, 2007
(Companies in bold are based in a developing or transition economy)

Rank	Agriculture-based	Suppliers	Food and beverages	Retail	Privately owned (ranked by agri-food sales)
1	Sime Darby Bhd.^a (Malaysia)	BASF AG ^b	Nestlé SA	Wal-Mart Stores	Cargill Inc.
2	Dole Food Company, Inc.	Bayer AG ^b	Inbev SA	Metro AG	Mars Inc.
3	Fresh Del Monte Produce ^c	Dow Chemical Company ^b	Kraft Foods Inc	Carrefour SA	Lactalis
4	Socfinal SA	Deere & Company	Unilever	Tesco PLC	Suntory Ltd.
5	Charoen Pokphand Foods Public Company Ltd.^d (Thailand)	El Du Pont De Nemours	Coca-Cola Company	McDonalds Corp.	Dr August Oetker KG
6	Chiquita Brands International, Inc.	Syngenta AG	SAB Miller	Delhaize Group	Louis Dreyfus Group
7	Kuala Lumpur Kepong Bhd. (Malaysia)	Yara International ASA	Diageo Plc	Koninklijke Ahold NV	Barilla
8	KWS Saat AG	Potash Corp. of Saskatchewan	Pernod Ricard SA	Sodexo	Ferrero
9	Kulim (Malaysia) Bhd. (Malaysia)	Kubota Corp.	Cadbury PLC	Compass Group PLC	Keystone Foods LLC
10	Camellia PLC	Monsanto Company	Bunge Limited	Seven & I Holdings Company Ltd.	McCain Foods Ltd
11	Seaboard Corp.	Agco Corporation	Heineken NV	China Resources Enterprise Ltd. (Hong Kong, China)	OSI Group Companies
12	Sipef SA	The Mosaic Company	Pepsico Inc	Yum! Brands, Inc.	Perdue Farms Inc.
13	Anglo-Eastern Plantations PLC	ICL-Israel Chemicals Ltd	Molson Coors Brewing Company	Autogrill	Bacardi Ltd.
14	Tyson Foods Inc	Provimi SA	Kirin Holdings Company Limited	Alimentation Couche Tard Inc	Groupe Soufflet
15	PPB Group Bhd. (Malaysia)	Bucher Industries AG	Archer-Daniels-Midland Company	Safeway Incorporated	Golden State Foods
16	Carsons Cumberbatch PLC (Sri Lanka)	Nufarm Limited	Associated British Foods PLC	Sonae Sgsp	Groupe Castel
17	TSH Resources Bhd. (Malaysia)	CLAAS KGaA	Carlsberg A/S	George Weston Limited	J.R. Simplot
18	Multi Vest Resources Bhd. (Malaysia)	Sapec SA	HJ Heinz Company	Dairy Farm International Holdings Ltd. (Hong Kong, China)	Schreiber Foods
19	Bakrie & Brothers Terbuka* (Indonesia)	Terra Industries Inc	Danone	Jeronimo Martins SA	Muller Gruppe
20	PGI Group PLC	Aktieselskabet Schouw & Co.A/S	Anheuser-Busch Companies Inc	Kuwait Food Company (Americana) (Kuwait)	Bel
21	Firstfarms A/S	Genus PLC	Wilmar International Ltd. (Singapore)	Kesko OYJ	Perfetti Van Melle
22	New Britain Palm Oil Ltd. (Papua New Guinea)	Scotts Miracle-Gro Company	Sara Lee Corp.	Starbucks Corp.	Rich Products
23	Karuturi Global Ltd. (India)	Kverneland ASA	Constellation Brands Inc	Burger King Holdings, Inc.	J. M. Smucker
24	Nirefs SA	Sakata Seed Corp.	Fraser & Neave Ltd. (Singapore)	Maruha Nichiro Holdings, Inc.	Haribo
25	Country Bird Holdings Ltd. (South Africa)	Auriga Industries A/S	Danisco A/S	Familymart Company Limited	Eckes-Granini

Source: UNCTAD, *World Investment Report 2009: Transnational Corporations, Agricultural Production and Development*, table III.12.

^a A conglomerate with its core business in agriculture and plantations.

^b General chemical/pharmaceutical companies with significant activities in agricultural supply, especially crop protection, seeds, plant science, animal health and pest management.

^c Legally unrelated to Del Monte Foods.

^d Members of the Charoen Pokphand (CP) Group report their activities by company.

^e Diversified company with an important presence in agriculture.

Note: Some companies are present in more than one agribusiness industry. In those cases, they have been classified according to their main core business.

country. A number of salient observations of TNCs' involvement in agriculture for developing countries nevertheless emerge.

Overall, TNC involvement in developing countries has promoted the commercialization and modernization of agriculture. TNCs are by no means the only—and seldom the main—agent driving this process, but they have played an important role in a significant number of countries. They have done so not only by investing directly in agricultural production, but also through non-equity forms of involvement in agriculture, mostly contract farming. Indeed, non-equity forms of participation have been on the rise in recent years. In many cases, they have led to significant transfers of skills, know-how and methods of production, facilitated access to credit and various inputs, and given access to markets to a very large number of small-scale farmers previously involved mostly in subsistence farming.

Although TNC involvement in agriculture has contributed to enhanced productivity and increased output in a number of developing countries, there is lack of evidence on the extent to which their involvement has allowed the developing world to increase its production of staple foods and improve food security. Available evidence points to TNCs being mostly involved in cash crops (except for the recent rise of South–South FDI in this area). Such a finding reveals the development challenges for developing countries in promoting TNC participation in their agricultural industry to improve food security. However, food security is not just about food supply. TNCs can also have an impact on food access, stability of supply and food utilization, and, in the longer run, their impacts on these aspects of food security are likely to prove more important for host economies.

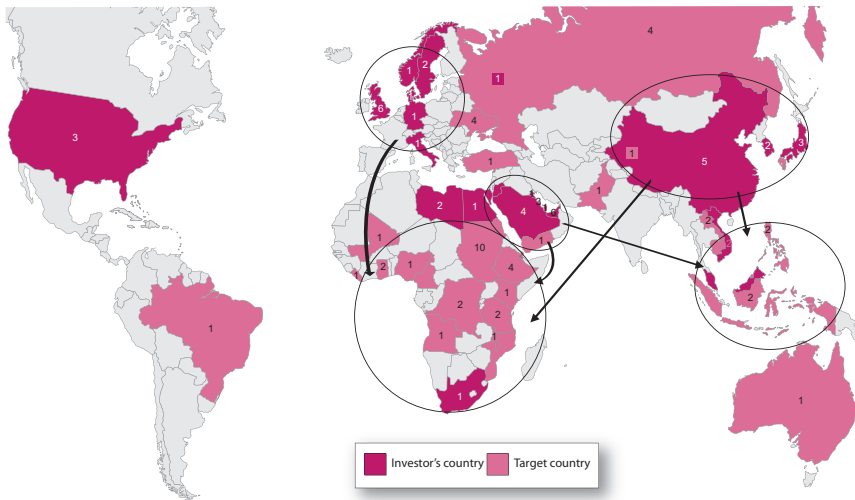
Positive impacts of TNC involvement in agriculture are not gained automatically by developing countries. While TNCs have at times generated employment and improved earnings in rural communities, no clear trend is discernible. To the extent that TNCs promote modernization of agriculture and a shift from subsistence to commercial farming, their long-term impact is likely to accelerate the long-term reduction in farm employment while raising earnings. Only a limited number of developing countries have also been able to benefit from transfers of technologies. In particular, the R&D and technological innovations of the large TNCs are typically not geared towards the staple foods produced in many developing countries.

Apart from the potentially large benefits that developing countries can derive from TNC participation in their agriculture, past

experiences and evidence indicate that governments need to be sensitive to the negative impacts that can arise. A particular concern is that of the asymmetry in the relationship between small farmers and a restricted number of large buyers, which raises serious competition issues.

Recent experiences also underscore that developing-country governments need to be aware of the environmental and social consequences of TNCs involvement in agriculture, even though there is no clear and definite pattern of impact. Case studies show that TNCs' have the potential to bring environmentally sound production technologies, but their implication in extensive farming has also raised concerns, together with their impact on biodiversity and water usage. Similarly, TNCs' involvement raises significant social and political issues whenever they own or control large tracts of agricultural land.

Figure 4. Investor and target regions and countries in overseas land investment for agricultural production, 2006–May 2009
(Number of signed or implemented deals)



Source: UNCTAD, *World Investment Report 2009: Transnational Corporations, Agricultural Production and Development*, figure III.14.

Notes: This figure includes only confirmed deals that have been signed, of which some have been implemented. However, not all signed deals were eventually implemented, and signed deals that were rescinded by one or both parties before the end of May 2009 have been excluded from the map. Prospective deals which have been reported in the press, but have not progressed to the stage of agreements have been excluded. China and the Russian Federation are both investors and targets for "land deals"; China is primarily an investor, and the Russian Federation is primarily a target for such deals. The total number of deals is 48, shown by both source and destination countries.

Developing countries' strategies towards TNC participation in their agriculture industries

The expansion of agricultural production is vital for developing countries, both to meet rising food needs and to revitalize the sector. Therefore, policymakers need to promote more investment in this sector, both private and public, and domestic and foreign. Given the financial and technological constraints in many developing countries, policymakers should devise strategies for agricultural development and consider what role TNCs could play in implementing them. The challenge is considerable, as agriculture is a sensitive industry. There is a need to reflect the interests of all stakeholders, especially local farmers, and include them, as far as possible, in the policy deliberation and formulation process.

The key challenge for policymakers in developing countries is to ensure that TNC involvement in agricultural production generates development benefits. Both FDI and contractual arrangements between TNCs and local farmers can bring specific benefits to the host country, such as transfer of technology, employment creation and upgrading the capacities of local farmers, together with higher productivity and competitiveness. Therefore, policies need to be designed with a view to maximizing these benefits.

It is equally important for policymakers to address social and environmental concerns with regard to TNC involvement. Social and environmental impacts need to be assessed carefully, and particular attention needs to be paid to possible implications for domestic agricultural development and food security in the long run. Negotiations with foreign investors should be transparent with regard to the land involved and the purpose of production, and local landholders should be encouraged to participate in the process. Policies should be designed to protect the traditional land tenure rights of local farmers in order to avoid abuses of what might be considered underutilized or underdeveloped land, and to make possible local farmers' access to courts in case of dispossession. Care needs to be taken to secure the right to food for the domestic population and to protect the rights of indigenous peoples.

Promoting FDI and contractual arrangements between TNCs and farmers in agricultural production

Numerous developing countries have started to actively encourage FDI in agricultural production. A survey jointly undertaken

by UNCTAD and the World Association of Investment Promotion Agencies (WAIPA) on the role of investment promotion agencies (IPAs) in attracting FDI in agricultural production revealed that the majority of respondents, in particular those in developing countries, promote FDI in this sector. Moreover, these respondents anticipate a still greater role for FDI in this area in the future. TNCs are mainly expected to make new technologies, finance and inputs available to the sector and to improve access to foreign markets for cash crops.

Overall, developing countries are relatively open to TNC involvement in agricultural production, although there are considerable differences between individual countries based on cultural, socio-economic and security-related considerations. The most frequently found restriction for foreign investment in agricultural production relates to land ownership, but in many cases foreign investors are allowed to lease land.

Aside from promoting FDI in agricultural production, host countries should pay particular attention to promoting contractual arrangements between TNCs and local farmers, such as contract farming, which would enable the latter to enhance their capacities and become part of national or international food value chains. However, in pursuing such strategies, host countries should be aware that, in general, TNCs are more interested in contractual arrangements concerning the production of cash crops. This means that promoting contract farming for alleviating the food crisis remains a big challenge.

In this context, governments should address the specific obstacles to efficient cooperation between TNCs and local farmers, such as (1) lack of capacity of smallholders to supply products in a consistent and standardized manner; (2) lack of availability of adequate technology; (3) lack of capital; (4) remoteness of production and capacity for timely delivery; (5) the limited role of farmer organizations; and (6) lack of adequate legal instruments for dispute settlement. Various policy options exist for tackling these bottlenecks. Among them are education and training programmes for local farmers, the provision of government-led extension services, the establishment of standards and certification procedures, the granting of financial aid, matchmaking services to connect local farmers to TNCs, support for the establishment of farmer organizations, and improving the domestic court systems to increase legal security. Governments could also consider the development of model contracts to protect the interests of farmers in negotiating with TNCs.

Leveraging TNC participation for long-term agricultural development: an integrated policy approach

Notwithstanding some reservations about FDI in agricultural production, host countries should not underestimate the potential of this form of TNC involvement for enhancing development objectives. In particular, in light of the recent interest in outward FDI to secure domestic food supply, there is potential for host countries to benefit from such investment for their own staple food needs, provided that the amount of production is shared between home and host countries. The challenge for host countries is to match inward FDI with existing domestic resources, such as abundant labour and available land, and to create positive synergies to promote long-term agricultural development and increase food security.

Key instruments for maximizing the contribution of FDI to sustainable agricultural and rural development are the domestic legislative framework and, especially as far as major land acquisitions are involved, investment contracts between the host government and foreign investors. These contracts should be designed in such a way as to ensure that benefits for host countries and smallholders are maximized. Critical issues to be considered include, in particular, (1) entry regulations for TNCs; (2) the creation of employment opportunities; (3) transfer of technology and R&D; (4) the welfare of local farmers and communities; (5) production sharing; (6) distribution of revenues; (7) local procurement of inputs; (8) requirements of target markets; (9) development of agriculture-related infrastructure; and (10) environmental protection. To ensure food security in host countries as a result of FDI in staple food production by “new” investors, home and host countries could consider output-sharing arrangements. Before concluding an investment contract with foreign investors, governments should conduct an environmental and social impact assessment of the specific project. After the investment has been made, monitoring and evaluating its impact on the host country’s overall development process is critical.

IIAs can be an additional means to promote TNC participation in agricultural production, but careful formulation is crucial with a view to striking a proper balance between the obligations to protect and promote foreign investment on the one hand, and policy space for the right to regulate on the other hand. This is particularly important in the case of agriculture, as the sector is highly regulated and sensitive, and

government agricultural policies may be controversial and subject to change.

There are several other policy areas relating to a broader economic agenda that are determinants for TNC participation in agricultural production and their development impact in the host country. These should therefore be integrated into host-country strategies aimed at attracting TNCs to agricultural production. Among them are those related to infrastructure development, competition, trade and R&D.

Infrastructure development is critical as a means of trade facilitation for agricultural goods. This includes improving existing transportation systems, investing in trade facilitation, providing sufficient post-harvest storage facilities and renovating outdated water irrigation infrastructure. Given the high costs involved and the limited ODA available, policymakers may wish to require TNCs to contribute to infrastructure development when permitting large-scale projects.

Since farmers are generally the weakest link in the supply chain, competition policy can play a vital role in protecting them against potential abuses arising from the dominant position enjoyed by TNCs.

Tariffs and non-tariff barriers, as well as subsidies, may substantially influence TNC involvement in agricultural production. These kinds of policy measures in developed countries could discourage investment and contract farming in developing countries where the subsidizing country and the potential developing host country produce identical agricultural products or close substitutes. Reducing subsidies in developed countries could encourage FDI to poor countries.

Economies of scale is another challenge, particularly for small developing countries. In their case, regional integration can be an important instrument in making them more attractive for TNCs involved in agricultural production and exports.

Host countries should also consider the role of R&D activities and intellectual property rights for increasing agricultural production and adapting the development of seeds and agricultural products to local and regional conditions. Policies should aim at domestic capacity-building to develop strong counterparts to TNCs in the host country – private or public. In this regard, public–private partnerships (PPPs) for R&D can serve as models for fostering innovation, for adapting the development of seeds and products to local and regional conditions, for making agricultural R&D more responsive to the needs of smallholders and to

the challenges of sustainability, for reducing costs, and for mitigating the commercial and financial risks of the venture through risk-sharing between the partners.

Developing home countries' FDI strategies to secure food supplies

In the wake of recent food price hikes and export restrictions by agricultural exporter countries, some food-importing countries have established policies aimed at the development of overseas food sources for their domestic food security. Despite some concerns that these policies may aggravate food shortage in host countries, they have the potential for increasing global food production and mitigating food shortages in both home and host developing countries. Past attempts by some governments to invest in overseas agriculture have not always met their expectations. Indeed, there are lessons to be learnt. In addition to outward FDI, home countries could consider whether overseas food production in the form of contract farming may be a viable and less controversial alternative to FDI. Besides focusing on agricultural production itself, another option is to invest in trading houses and in logistical infrastructure such as ports.

Developing an internationally agreed set of core principles for large-scale land acquisitions by foreign investors in agricultural production

Agriculture and food security have gained considerable importance on the international policy agenda, both at the multilateral and regional level. A major development was the establishment by the United Nations of the High-Level Task Force on the Global Food Security Crisis (HLTF) in April 2008. The aim of the HLTF was to create a prioritized plan of action to address the global food crisis and coordinate its implementation. The HLTF thus developed the Comprehensive Framework for Action (CFA) – a framework for setting out the joint position of HLTF members on proposed actions to address the current threats and opportunities resulting from food price rises; to create policy changes to avoid future food crises, and to contribute to country, regional and global food and nutritional security. A number of initiatives to boost agricultural productivity have also been taken at the regional level, including the Comprehensive Africa Agriculture Development Programme (CAADP) under the New Partnership for

Africa's Development (NEPAD). The G-8 Summit in L'Aquila, Italy, in July 2009 made a commitment to mobilizing \$20 billion over the next three years for a comprehensive strategy for sustainable global food security and for advancing by the end of 2009 the implementation of a Global Partnership for Agriculture and Food Security. When deciding how to make best use of these new ODA funds, consideration could be given to agricultural development strategies that combine public investments with maximizing benefits from TNC involvement. With regard to possible future international initiatives, consideration should be given to developing a set of core principles concerning major land acquisitions, including rules on transparency, respect for existing land rights, the right to food, protection of indigenous peoples, and social and environmental sustainability.

Investing in a new green revolution

TNC participation in agriculture in developing countries through FDI, contract farming and other forms has helped a number of pioneering countries, including Brazil, China, Kenya and Viet Nam, to meet the challenge of boosting investment in their agriculture, thereby making the industry a lynchpin for economic development and modernization. The route has not been easy, with costs and benefits arising from TNC involvement. For most developing countries, many development challenges still remain in the quest for agricultural development, food security and modernization. Among these challenges – in which TNCs can play a role – is how to build and reinforce domestic, regional and international value chains, and how to harness technology in agriculture. It is clear that for LDCs and other poor countries, in Africa and elsewhere, a “new green revolution” is urgent, and an essential question to ask is whether TNCs can play a role in its fulfilment.

The *World Investment Report 2009* reveals a real and rising interest by TNCs – from the South as well as the North – for investment in developing countries' agricultural industries. Moreover, a large proportion of this interest is in poorer regions, such as Africa. TNCs vary along the value chain, but overall they have the technological and other assets available to support developing countries' strategies towards intensifying take-up of the green revolution. The *World Investment Report 2009* also demonstrates examples of this occurring through partnerships and alliances with farmers, public research entities and others. More needs to be done, but the building blocks are in place for striking a new “grand bargain” to harness the green revolution in

the service of Africa's poor and hungry, and of the wider objectives of development. Central to this programme are, firstly, investing in trade and investment facilitation, and secondly, creating institutional arrangements such as PPPs to advance the green revolution in the region by encouraging and boosting critical flows of capital, information, knowledge and skills from partners to the countryside. An important initiative in this regard would be the establishment of seed and technology centres in the form of PPPs, mandated with the task of fostering channels to adapt relevant seed and farming technologies to make them suitable for local conditions, distributing seeds to farmers, and in the longer term, building and deepening indigenous capacity.

Geneva, July 2009

Supachai Panitchpakdi
Secretary-General of UNCTAD

BOOK REVIEWS

Indian Multinationals in the World Economy: Implications for Development

Jaya Prakash Pradhan

(Bookwell, New Delhi: Bookwell, 2008), xv+207 pages

Outward foreign direct investment (OFDI) from the developing countries, though not a new phenomenon, has grown in volume since the late eighties. And with it, so have the predictable debates on whether or not the phenomenon jells with the received theory of FDI and statistical tests of its impact on the host and home countries. Pradhan's book departs from the beaten track in many ways. Much of the book is based on information and data painstakingly collected by the author from a variety of sources including the financial press in India. The book includes extensive case studies of firms investing abroad, it charts the birth, growth and overseas investments of India's software industry in some detail, and the econometric tests are carefully designed with their limitations acknowledged.

What accounts for the sizeable growth in OFDI from India since the late eighties, with the total stock at the beginning of the year 2006 amounting to \$8 billion compared with a stock of \$75 million in the year 1986? The obvious answer is that the Indian firms were muzzled in by various sorts of bureaucratic regulations on their operations, including those governing outward FDI. The relatively low levels of investment were mostly in low-technology industries in neighbouring developing countries. The economic liberalization measures, especially the post-1991 measures, that swept away a whole lot of cumbersome rules and regulations, unleashed the pent-up dynamism of Indian entrepreneurs, resulting in the growth of both exports and OFDI. OFDI prior to 1991, the first wave, as Pradhan refers to it, was meagre compared to the post-1990 investments, hardly amounting to 1 per cent of the total stock of \$8 billion of overseas investments in the year 2006. The pre-1991 investments were more a flutter than a wave, and there is not much evidence to say that the investments, which were mostly in neighbouring developing countries, were appropriate to the factor endowments of the host countries. A large part of Indian manufacturing industry has always been relatively physical and human-capital-intensive by design and intent of the policymakers. It is the human-capital intensity of industries such as pharmaceuticals, chemicals and machinery and equipment that endowed Indian firms with the so-called ownership advantages, including product differentiation managerial skills and relatively high labour productivity. As Pradhan notes, the emphasis placed on

science, engineering and management education for a long time by India's policymakers has paid off in the post liberalization years. The growth in productivity, product differentiation, and increased R&D by Indian firms mostly devoted to restructuring and adapting imported technology and know-how are all fruits of investments in tertiary education in the past dating back to the Nehruvian era.

No doubt Indian firms are equipped to invest abroad, but do they possess advantages far superior to those possessed by firms in the host countries? It is likely that domestic R&D has endowed the producers of science-based products with unique advantages. In engineering skills-based industries, it is the high labour productivity, or to be specific, the low efficiency wage that may have endowed Indian firms with a competitive advantage. Most firms may enjoy a low efficiency wage, not only because of relatively low wage rates in India, but much more so on account of increased labour productivity. The latter is mostly a consequence of both the physical and human-capital intensity of the production process and the growth in organizational efficiency induced by increased competition in the post-liberalization era. The pronounced tendency to acquire existing firms abroad – what Pradhan refers to as the brownfield investments – rather than invest in greenfield ventures may also stem from the organizational and managerial abilities of Indian firms reflected in their high labour productivity. Acquisitions may be motivated by the desire to acquire technology and know-how possessed by the firms that are acquired, but the acquired know-how and technology have to be organized and managed. That which is acquired may be technology embodied in equipment and knowledge embodied in blueprints and designs. This sort of technology and know-how has to be translated into products and processes. It is here that the Indian firms may possess an advantage over others. The fortunes of the acquired firms in the developed countries, principally in the United States and the United Kingdom, may be on the wane mostly because of an inelastic supply of human capital including engineering and science-based skills. Indian firms are able to acquire these firms mostly because of their access to an elastic supply of such skills both in India and in the host countries from India's diaspora.

These advantages the Indian firms possess may be much more pronounced in the software industry than in manufacturing. India appears to possess a comparative advantage in the sort of mathematical skills that software requires. Here again, it is the investment in tertiary education, specifically in science and engineering, that has enabled Indian software firms to operate with a relatively low wage. Pradhan's detailed analysis

of the birth and growth of India's software industry identifies not only the contribution of investment in tertiary education, but also state support for the growth of the sector. There are, though, those who argue that the software industry has flourished in India because of the benign neglect of the sector by the state – neglect not by intent but because the bureaucrats had no knowledge of the totally new industry. This may be a harsh judgement of the bureaucrats; they should be credited with providing infrastructure facilities for the sector including technology parks and satellites. The state should be congratulated for facilitating the growth of the sector rather than interfering with meddlesome rules and regulations in the operations of the software firms. Pradhan is right to emphasize the role of various institutions including the state and the firms in the birth and impressive growth of the software sector, but it may be an exaggeration to say that the sector owes its growth to a national innovation system and a theory of innovation and internationalization can be built around it.

The study recognizes one of the vital elements missing in much of the discussion on India's outward investment, namely the role of entrepreneurs. Pradhan's case studies of software firms refer to the role of entrepreneurs in the growth of the sector. The role of entrepreneurs is not confined to software; it is also present in pharmaceuticals, steel and automobiles. This is an aspect of OFDI that cannot be captured in regression equations; it requires detailed case studies of entrepreneurs, analysing the factors that have motivated them and the manner in which they have coped with risks and uncertainty and seized opportunities others have overlooked. These sorts of interdisciplinary studies on Indian entrepreneurship are unfortunately rare.

Apart from the determinants of OFDI, the book also discusses its impact on employment and India's exports, and the implications for future policy. As the study notes, there are a number of statistical studies that detect complementarity between exports and OFDI. Intuition suggests that OFDI would displace exports from the home country of the firms investing abroad. Pradhan, on the basis of a sophisticated econometric model, suggests that "the empirical findings corroborate the hypothesis that OFDI by Indian multinational firms has played an instrumental role in their export performance. The complementary relationship between OFDI by Indian multinationals and home country exports appears to have dominated their substitution relationships" (p. 157). The statistical tests also suggest that relatively young firms are prone to being much more export-oriented than older firms; that the size of firms has a positive impact on exports up to a threshold level; and that indigenous R&D has

a positive impact on exports. These results, based on a sophisticated econometric exercise with an extensive database that would be the envy of most researchers, are not all that surprising. The explanation for the complementarity between OFDI and exports is twofold. First, OFDI promotes exports by providing market intelligence to exporters, and after-sales service to customers. Second, OFDI generates demand for components and raw materials from the home country. Whilst both explanations seem plausible, they are yet to be verified. It is also likely that the markets for the sort of goods that Indian firms export are segmented from the sort of markets that firms investing abroad serve. The latter may be for highly differentiated products with a relatively high income elasticity of demand, and exploitation of these markets requires the presence of the producers in the locale of the customers. Here, market intelligence and an ability to respond to differing tastes of customers with differentiated products may be crucial for the success of the firms. The market for relatively cheap homogenized goods, however, may be served by exports. There could, though, be synergies for the exporters from the FDI operations of the firm. Thus, one and the same firm may be engaged in both exporting and production abroad.

Employment creation by firms investing abroad is another aspect of India's OFDI examined in the book. Here again, Pradhan puts his econometric expertise and access to data to good use and arrives at the conclusion that OFDI promotes employment in the home country. It does this by generating demand for raw materials and other inputs from the home country. The explanation for the benign impact of OFDI on employment is much the same as the explanation for its impact on exports. Here again, there is room for much more detailed analysis.

In sum, Pradhan's book caters to varied tastes: to researchers interested in the relevance of received theory for an explanation of the recent growth in India's OFDI; to readers interested in details on the scale, composition and regional distribution of India's OFDI; to those who relish case studies and detailed review of policy; and, of course, to those who savour sophisticated econometric techniques. Pradhan deserves to be congratulated on producing a book which caters to a diverse readership on an important development in India's recent economic history.

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Multinational Companies from Emerging Economies: Composition, Conceptualization and Direction in the Global Economy

Andrea Goldstein

(Basingstoke: Palgrave Macmillan, 2009),
205 pages

There are a number of important questions about transnational corporations (TNCs) from emerging countries. Practically, the questions revolve around the extent and growth of their activity, and whether their impact on host countries is better or worse than “traditional” TNCs from advanced “Western” countries. For theorists, the big issue is how far existing theories of TNCs can explain their operations. In terms of management, are new skills necessary, or can western management techniques be adopted?

Andrea Goldstein’s book promises to confront these three questions. Its subtitle is “Composition, Conceptualization and Direction in the Global Economy”. The first four chapters after the introduction provide the factual basis – examining Southern outward foreign direct investment (OFDI), industry categorization, “New Asian Multinationals” and “Multilatinas” (TNCs operating regionally across Latin America). Chapter 6 examines existing theories and their relevance to emerging country TNCs (ETNCs). The remaining chapters examine the external impact of ETNCs – the role of governments, impact on financial markets and host economies and companies for OECD governments, firms and workers. Issue of management are dealt with in part of chapter 8 (diaspora entrepreneurship and “the challenge of multinational management”). The preponderance of the book is thus on extent and impact, less on theory and management.

The factual chapters rely on UNCTAD data, although the author has assembled data on, for instance, employment in ETNCs. The

chapter on Translatinas is short and sketchy and has been superseded by CEPAL's 2007 Study, *La Inversión Extranjera*.

The chapter on New Asian Multinationals is the most interesting, mixing macro data and case studies to good effect, although it is marred by casual assumption of a “flying geese” model. This chapter and the one on industry structure would have been better placed following a hard look at theory, because an industry categorization would fall out of a theoretical overview. Inevitably, a modified eclectic (OLI paradigm) model is suggested as a theoretical overview. Goldstein categorizes OLI as Why?(O), Where?(L) and How?(I). However a deeper analysis, undertaken in more recent works on ETNCs (Buckley et al. (2007) suggests that a deeper examination of context is necessary. ETNCs respond to market imperfections in the source country, and this reflects their internationalization path, industry structure and choice of location.

Institutions, too, are important determinants of the activities of ETNCs. Goldstein examines source country policies in chapter 7. His analysis is perceptive and illustrates the importance of government policies. The impact on host OECD countries is the subject of chapter 9. The impact is clearly linked to the motivation and entry modes of ETNCs, but this is not a fully worked-out analysis. As we have “far too few data points” on performance (p. 139), it is inconclusive with warnings of the risks of protectionism and the need for proactive strategies leading to a diffuse conclusion.

Issues of management are considered in chapter 8. Expatriate communities are found to be important in the strategies of ETNCs, and the discussion of the challenge of multinational management is promising and could, with profit, have become a full chapter. The same may be said of the short but intriguing section on financial issues – centred on the important question of whether ETNCs overpay for foreign assets. The final section of this chapter on host country effects suffers from a lack of hard evidence.

The conclusion, inevitably, is a plea for more research on this key global phenomenon. Goldstein suggests that there are many missing elements in a so-far incomplete future research agenda. This book is a genuine attempt to pull together extant information in a concise way, and it largely succeeds. It is, however, important that a tighter theoretical perspective be brought to bear. Increasingly, eclectic agendas need to be

simplified by the application of simple, powerful analytical approaches that prevent the unnecessary multiplication of concepts.

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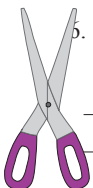
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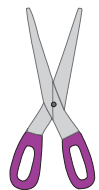


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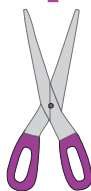
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