

## Chapter 3

# The Internationalization of Domestic Firms

## Key findings

- Participation in global value chains (GVCs) can bring considerable benefits to domestic firms because they can learn from multinational corporations through investment, partnerships, or trade. The knowledge they gain can raise their productivity and help them obtain the necessary production capabilities and foreign market knowledge to directly compete in international markets and to upgrade their roles in GVCs.
- By assimilating offshore supply chain links, firms can specialize in specific tasks and functions to support niches or segments of GVCs led and organized by firms in other countries. Local firms no longer have to wait for the emergence of an in-country industrial base or the upstream capabilities formerly required to compete internationally.
- The acceleration effect from GVC participation provides a powerful case for looking into internationalization and upgrading among domestic firms. Stimulating firms to begin participating in GVCs or to upgrade their participation in them can ultimately have considerable macroeconomic effects by helping developing countries industrialize more rapidly.
- Domestic firms can internationalize and participate in GVCs through four main pathways: supplier linkages with international firms, strategic alliances with international firms, direct exporting, and outward foreign direct investment. The most powerful engine of capacity building lies in firm-to-firm interactions.
- Opportunities for GVC participation do not present themselves equally to all firms. It can be a difficult and risky experience, at least initially, for firms to shift their production focus or sales from domestic to international markets. There are a number of firm-level prerequisites for GVC participation. There is also a relationship between a given GVC's characteristics and the likely pathways by which firms will enter it.
- Although foreign firms can stimulate productivity spillovers to domestic firms, it is important to remember that, where technological development and upgrading do occur, domestic firms are often their main instigators, responding to opportunities that they identify in the GVCs in which they participate. Thus, domestic firms need to constantly adapt their operations (strategy, structure, and resources) and strengthen their capabilities to better suit global production networks.

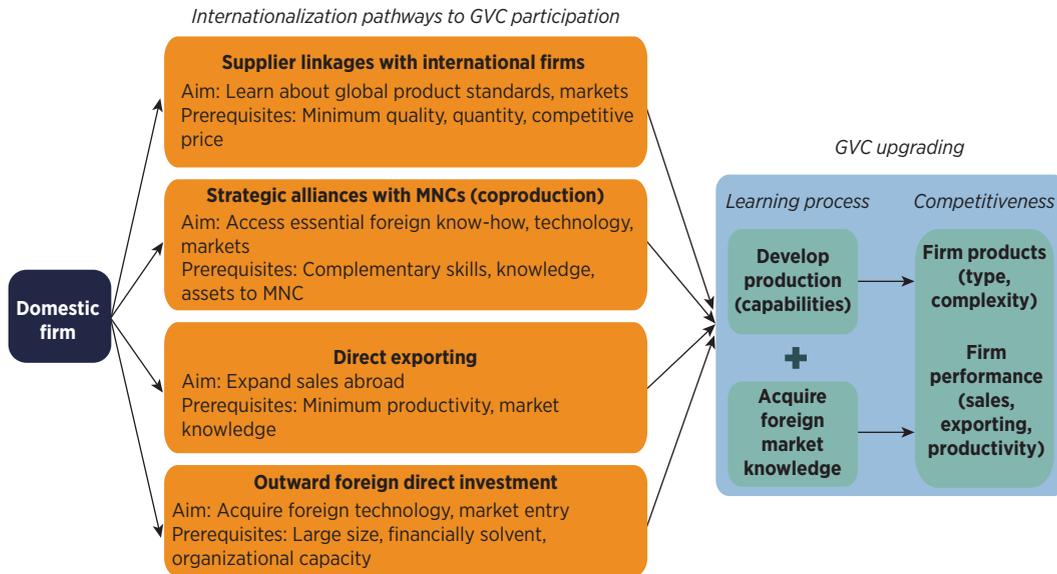
## Domestic firm participation in global value chains: Pathways

A firm is a participant in a global value chain (GVC) if it produces at least one stage in the value chain (Antràs 2020). Although GVCs are dominated by multinational corporations (MNCs) (see chapter 2), studies often underestimate the importance of smaller firms in GVCs and the extent to which they participate in them.<sup>1</sup> Part of this misconception derives from how GVC participation is often defined at the country-industry level using world input-output tables (see chapter 1). This perspective ignores the roles of individual firms in global production networks. Even studies that consider firm-level GVC participation often limit their definition of participation to only firms that both import and export (Antràs 2020; Johnson 2018; and the Activities of MNEs [multinational enterprises] database referenced in chapter 2). However, GVC participation does not always require that a firm directly exports goods or services. Instead, firms may be integrated into GVCs indirectly by producing and supplying intermediate elements to exporting firms or by offshoring part of their production facilities (Cusolito, Safadi, and Taglioni 2016). Therefore, to get the most accurate representation of GVC participation, it is important to use a broader definition of the term and to consider the wide variety of firms engaged in global production networks.

Firms internationalize and participate in GVCs through different pathways. To begin participating in GVCs, firms need to gradually shift their production or sales focus from domestic to international markets. This process is known as “internationalization” (Welch and Luostarinen 1988). This chapter identifies four main ways, or “internationalization pathways,” by which firms can participate in GVCs (figure 3.1), each with its own prerequisites (see the following section on prerequisites to internationalization):

1. *Supplier linkages with international firms.* Firms can domestically produce and supply goods or services to international firms (such as MNCs or domestic exporters), which will in turn export those products on the international market.
2. *Strategic alliances with MNCs (coproduction).* Firms can coproduce goods or services together with MNCs, which will then use those inputs in their global production networks.
3. *Direct exporting.*<sup>2</sup> Firms can domestically produce goods or services and sell them directly on the international market.
4. *Outward foreign direct investment (OFDI).* Firms can use OFDI to move part of their production facilities abroad or to establish an overseas sales affiliate, thereby internationalizing their production and most likely their sales.

In practice, many firms participate in GVCs in more than one way. As shown in the rest of this chapter, the various types of GVC participation complement each other in important ways. Firms that are successful along one pathway (for example, supplier linkages) become increasingly likely to extend their involvement in global production networks along others (for example, by coproducing with MNCs [strategic alliances], starting to sell on the international market [direct exporting], or shifting production processes or sales affiliates abroad [OFDI]) (Alcacer and Oxley 2014).

**FIGURE 3.1** Global value chain participation and internationalization

Source: World Bank elaboration of the literature.

Note: GVC = global value chain; MNC = multinational corporation.

Companies generally internationalize in a cautious, stepwise process involving strategic planning and risk minimization. In general, companies will choose the pathways that appear more familiar and less risky and will gradually move into deeper levels of participation as they gain experience and confidence in their production capabilities and foreign market knowledge (de Caldas Lima 2008).

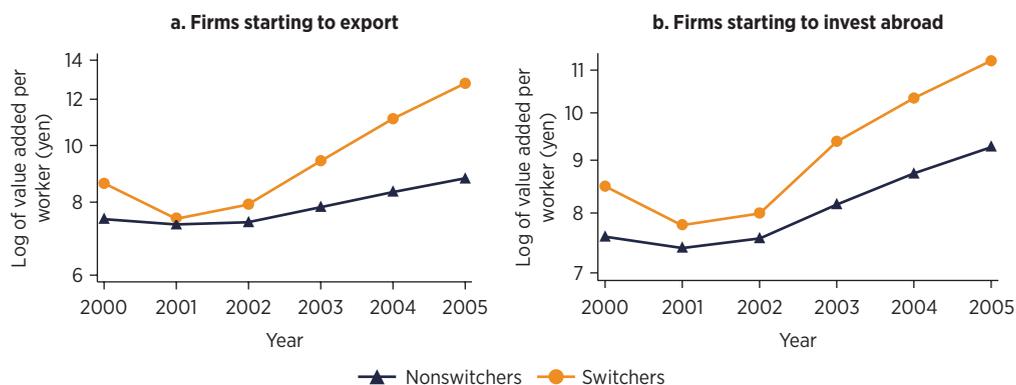
Participation in a GVC can offer important learning opportunities to domestic firms. A wide set of literature, ranging from international economics to business to development, has emphasized the benefits that participation in GVCs can have on the performance of firms in emerging market economies (Alcacer and Oxley 2014; Gereffi et al. 2001; Gereffi, Humphrey, and Sturgeon 2005; Meyer and Sinani 2009). A key reason for these benefits is that GVC participation opens up firms to new levels of competition. International buyers typically have stronger preferences for product quality than domestic ones, which forces GVC firms to upgrade their production and managerial practices to satisfy client demands (Atkin et al. 2017; Khandelwal and Teachout 2016; Newman et al. 2016). To remain competitive, firms need to learn two types of skills and knowledge. The first is *essential production capabilities*. Firms need to prepare themselves to compete technologically, to meet the necessary quality standards for the products they produce, and to be productive enough to compete internationally (Pedersen and Petersen 1998). The second is *foreign market knowledge*. Firms need to learn the specific details of the overseas markets they enter, such as their business climates, cultural patterns, market structures, and consumer characteristics (Johanson and Vahlne 1977).

Firms that manage to enter GVCs tend to become more productive and improve their competitiveness. The firms that successfully compete internationally often use their new skills and knowledge to further strengthen their performance. GVC participation provides firms with opportunities to obtain managerial expertise, technical knowledge, the fruits of innovation, and access to new markets, thereby allowing these firms to more efficiently allocate their resources and to enhance their productivity (Montalbano, Nenci, and Pietrobelli 2018; see also Agostino et al. 2015; Gereffi 1999; Giovannetti, Marvasi, and Sanfilippo 2015; Morrison, Pietrobelli, and Rabellotti 2008; Theyel 2013; Woldesenbet, Ram, and Jones 2012; Wynarczyk and Watson 2005). Entering GVCs is also found to improve export diversification by enabling firms to enter new product lines (Goldberg et al. 2010). Internationalized firms exploit their productivity gains to outcompete their domestic rivals on price or to distinguish themselves through higher-quality products. This success, in turn, can increase their firm-level market power and allow them to increase their profit margins.

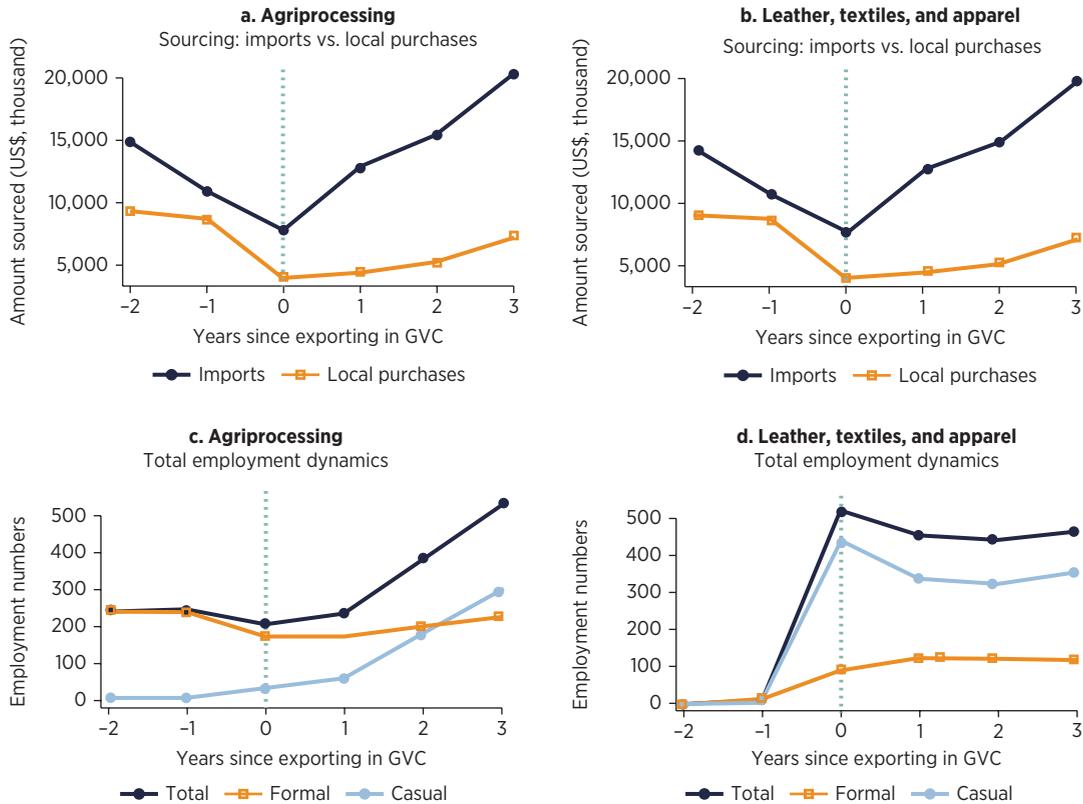
GVC participation can thus help transform firms from being “opportunity and cost oriented” to being “strategy and value oriented,” allowing them to shape their competitive advantage (Xiao and Liu 2015). Evidence for the productivity gains caused by GVC participation is presented in figure 3.2, which shows the productivity of Japanese firms that started exporting (panel a) and those that started to invest abroad (panel b). In both cases, the initial labor productivity of these firms was higher than that of firms that remained domestic. However, once these firms internationalized in 2001, the gap in labor productivity between the “switchers” and the “nonswitchers” expanded (Wakasugi 2014). This continuous improvement helped the switching firms compete internationally and deepen their GVC participation.

This report’s quantitative case study finds similar evidence for firms’ improvements in competitiveness after starting to participate in GVCs. In both Rwanda (figure 3.3) and West Bengal, firms that began exporting for international markets often became larger and more productive. They also became more dependent on higher-complexity imports either directly preceding or following their internationalization, suggesting that they were sourcing capital equipment rather than raw inputs. GVC participation also has a significant effect on firms’ employment dynamics, often leading to a steep

**FIGURE 3.2** The effect of global value chain participation on firm productivity in Japan, 2000–05



Source: Wakasugi 2014.

**FIGURE 3.3** The effect of global value chain participation (direct exporting) on firm imports and employment in Rwanda, 2008–17

Source: World Bank calculations; see chapter 11 of this report.

Note: GVC = global value chain.

rise in employment.<sup>3</sup> Overall, these dynamics suggest that recently internationalized firms tend to upgrade their essential production capabilities (for example, their capital, skill, and research and development [R&D] intensity) to meet more demanding global product requirements.

Stimulating firms to begin participating in GVCs or to upgrade their participation in them can ultimately have considerable macroeconomic effects by helping developing countries to industrialize more rapidly (Balié et al. 2017; Greenville, Kawasaki, and Beaujeu 2017; Kowalski et al. 2015; Taglioni and Winkler 2016). Although firm-level improvements to competitiveness from GVC participation and upgrading may be small in scale, these changes can quickly add up to significant sectoral and ultimately macroeconomic productivity gains and growth. Moreover, by assimilating offshore supply chain linkages, firms can specialize in specific tasks and functions to support specific niches or segments of GVCs led and organized by firms in other countries. Local firms no longer have to wait for the emergence of an in-country industrial base or the upstream capabilities formerly required to compete internationally (IMF 2015). This acceleration effect provides a powerful case for looking into internationalization, GVC participation, and upgrading among domestic firms.

## Prerequisites to firm internationalization and global value chain participation

Opportunities for GVC participation do not present themselves equally to all firms. Shifting production focus or sales from domestic to international markets can be a difficult and risky experience, at least initially, for firms. These challenges lead to a number of firm-level prerequisites for GVC participation. A given GVC's characteristics are also related to the likely pathways by which firms will participate in it.

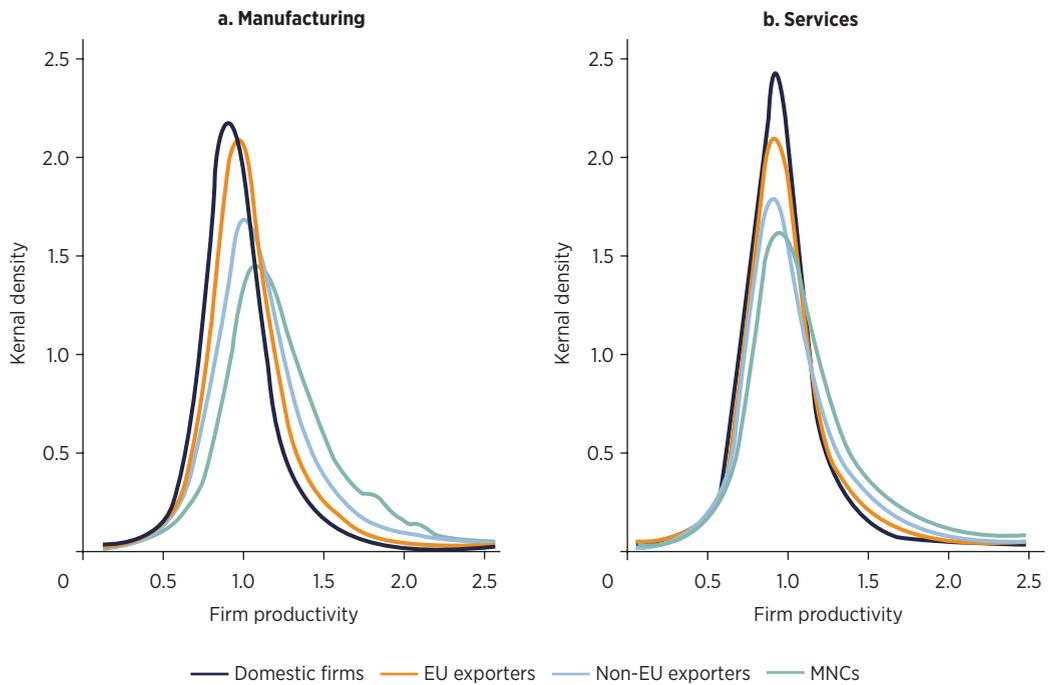
### Firm-level prerequisites

Only the most productive firms manage to internationalize, and their pathways to doing so are influenced by their productivity levels. A consistent finding in the literature is that high-productivity firms self-select into producing for international markets, whereas less productive firms keep producing for their domestic market or are forced to close (Melitz 2003). Only the most productive firms are able to overcome the costs, both tangible (such as production requirements, tariffs, and transportation) and intangible (such as host-country market information), necessary to compete abroad (for exports) or to locate and produce abroad (for OFDI) (Helpman, Melitz, and Yeaple 2004). Firms that choose to invest abroad need to overcome even larger fixed costs than exporters, and therefore they tend to be the most productive (Melitz 2003). Evidence for this ordering is found in studies of both high-income countries (figure 3.4, featuring the Netherlands) and developing countries (figure 3.5, featuring Rwanda). In both cases, average productivity increases as firms internationalize. Domestic firms tend to be the least productive, followed by firms that supply exporters and then by the exporting firms themselves. Multinational firms that both export and engage in FDI are, on average, the most productive.<sup>4</sup>

In addition to productivity thresholds, there are also specific firm-level prerequisites for each of the pathways to internationalization. These requirements depend largely on a firm's initial production capabilities, market knowledge, and size, as summarized in table 3.1; and they are important determinants of firms' entry into GVCs.

Supplier linkages depend on the presence of both an international partner (possibly an MNC or a domestic exporter) that is willing and able to source local inputs and domestic firms that are capable of producing those inputs to the appropriate production specifications. Domestic firms need to be able to produce goods according to the standards required by the international firm and to offer a reliable and timely supply at a competitive price (Farole and Winkler 2014). Affiliates of MNCs, in particular, often use screening, testing programs, or, where relevant, international certifications to ensure that they select domestic firms that are able to provide high-quality and cost-effective inputs, possibly with the aid of the affiliates (Jordaan, Douw, and Qiang 2020). Domestic firms that succeed as suppliers to MNCs therefore tend to have relatively high skills and technological capabilities (Jordaan, Douw, and Qiang 2020). For example, evidence in Turkey's manufacturing industry found that MNC suppliers were considerably more likely to be exporters themselves, to have higher R&D

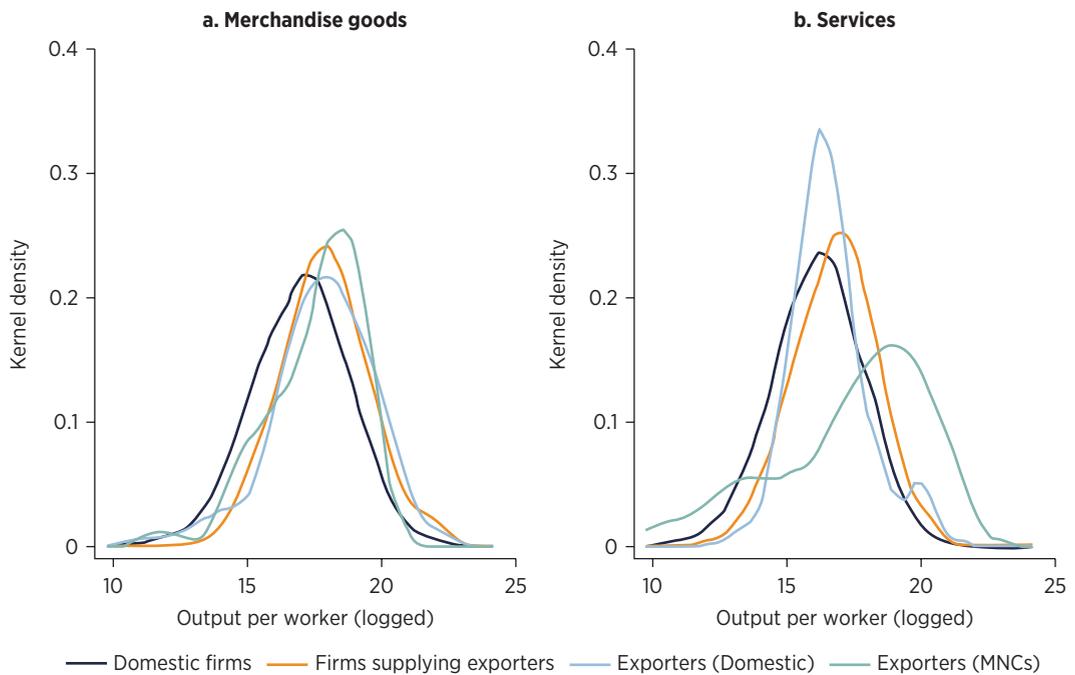
**FIGURE 3.4** Productivity distribution of Dutch manufacturers and services, 2010–16



Source: Brakman et al. 2020.

Note: EU = European Union; MNC = multinational corporation

**FIGURE 3.5** Productivity distribution of Rwandan goods and services, 2008–17



Source: World Bank calculations; see chapter 11 of this report.

Note: MNC = multinational corporation.

capability (as measured by the number of patent applications), to be larger in size, and to be foreign owned (Heher, Steenbergen, and Thoma 2019).

Strategic alliances rely on the complementary capacities and market knowledge possessed by a domestic firm and an MNC. Alliances are built around general complementarities in firms' interests and capabilities. An MNC may wish to partner with local firms in its target country because those firms have greater knowledge of the domestic market and are better placed to handle the local regulatory environment (de Caldas Lima 2008). An alliance may also lower the MNC's entry risk and capital requirements by allowing it to use the local partners' assets. In certain sectors, full ownership by foreign nationals is prohibited, and thus joint ventures are the only legal way to gain market access. MNCs tend to look for local partners that are generally more profitable, more productive, and larger than the average domestic firm, with high initial export participation and many patents (Jiang et al. 2018).

Direct exporting requires that domestic firms have both the minimum production capabilities and sufficient overseas market knowledge to compete internationally. Pedersen and Petersen (1998) suggest that firms move into the export market by first learning how to confront the international competition in local markets and then gradually expanding their sales overseas. This learning process includes two main components. It first requires that firms acquire the minimum production capabilities to be technologically competitive, meet the necessary quality standards of the sector, and be sufficiently productive to compete internationally (Pedersen and

**TABLE 3.1 Firm-level prerequisites across internationalization pathways**

Internationalization pathways	Prerequisites
Supplier linkages with international firms	<ul style="list-style-type: none"> <li>• An international partner (possibly an MNC or domestic exporter) to source local inputs for export-oriented production.</li> <li>• A domestic firm with the ability to produce goods or services that meet the standards required by the partner (possibly verified through international certification) with a reliable and timely supply available at a competitive price (Farole and Winkler 2014; Jordaan, Douw, and Qiang 2020).</li> </ul>
Strategic alliances with MNCs	<ul style="list-style-type: none"> <li>• An MNC that is willing to establish a new affiliation with a local partner and to share part of its technological knowledge.</li> <li>• A domestic firm with proven experience in production for the domestic market, knowledge of local institutional and regulatory mechanisms, and the capacity and willingness to engage with a foreign partner to upgrade and expand its business (de Caldas Lima 2008; Jiang et al. 2018).</li> </ul>
Direct exporting	A domestic firm that has the minimum production capabilities (productivity and quality) to compete internationally and sufficient overseas market knowledge (of factors such as consumer characteristics) to tailor products for and supply them to foreign markets (Johanson and Vahlne 1977; Pedersen and Petersen 1998).
Outward foreign direct investment	A domestic firm that meets the minimum scale, productivity, market experience, and financial solvency requirements to afford internationalization via OFDI. Such firms also need the capacity to develop and manage outward expansion and to establish a foreign subsidiary (Brakman et al. 2020; El-Sahli, Gullstrand, and Olofsdotter 2018; Thomas and Narayanan 2017).

Source: World Bank summary of the literature.

Note: MNC = multinational corporation; OFDI = outward foreign direct investment.

Petersen 1998). Second, these firms must learn the details of the overseas markets they wish to enter, such as the business climate, cultural patterns, market structures, and consumer characteristics (Johanson and Vahlne 1977).

OFDI is a pathway to internationalization for only the small number of domestic firms that are sufficiently large and financially solvent to afford to invest abroad. Firms that engage in OFDI are consistently larger, more productive, and more R&D-intensive than firms that do not invest abroad. Larger firm sizes may be necessary to attain the minimum financial solvency to afford this internationalization strategy. Other major requirements include having the capacity to develop and manage outward expansion and to establish a foreign subsidiary (Brakman et al. 2020; El-Sahli, Gullstrand, and Olofsdotter 2018; Thomas and Narayanan 2017).

These internationalization pathways build on each other to enable firms to enter and participate in GVCs. In other words, different internationalization pathways can be important complements. For example, a domestic firm may start as a supplier to a particular MNC, thereby establishing an interfirm relationship in which trust and confidence can develop. This relationship, in turn, may evolve to the point at which the local firm licenses the MNC's technology or the two firms decide to engage in a joint venture (both of which are forms of strategic alliances) (de Caldas Lima 2008). Similarly, a strategic alliance can build up a domestic firm's size, profitability, and organizational capacity, which can help prepare it to engage in OFDI. Finally, the increased exposure to international markets that firms gain through all these pathways makes the firms more likely to export directly.

### Global value chain–specific factors

There is also a relationship between a GVC's characteristics and the likely pathways by which firms will enter it. As illustrated in chapter 2, GVCs' characteristics and MNCs' outsourcing or offshoring decisions are interdependent. MNCs balance their level of control, the commitment of proprietary resources, the type and level of risks involved, and the costs and returns of various transaction modes when organizing their global production networks. As a result, various GVC inputs (parts, components, and services) differ in whether they are sourced via arms length trade (direct exports) or contract manufacturing (supplier linkages), coproduced by firms under the MNCs' direct oversight (strategic alliances), or produced in house by the MNCs (OFDI).

These characteristics also shape the likelihood that domestic firms will engage in a certain type of GVC participation. Whereas direct exporting is common across all GVCs, the other three pathways to participation differ significantly in their prevalence. In particular, three main elements help shape which type of participation is dominant in a given GVC: (a) the importance of intangible assets (such as technology, brands, and managerial techniques) in production; (b) the degree to which production inputs are standardized, specialized, or unique; and (c) the ease with which any embodied intellectual property can be effectively codified or protected (such as through licensing, franchising, or patents).

Supplier linkages are more likely to occur in simpler GVCs that rely more on standardized, physical inputs and involve few intangible assets. The inputs sourced by international firms (such as MNCs) in these GVCs are highly standardized and bear little proprietary information. As a result, codifying or protecting any embodied

intellectual property within the supply chain is likely unnecessary. MNCs can specify their requirements and receive their inputs through arm's length procurement. A good example of this type of GVC is horticulture (see box 3.1). The GVC's lead firms (large supermarket chains) stipulate the standards for each type of produce (including its expected size and the appropriate use of fertilizers and pesticides in growing it), but this information is nonproprietary. As a result, the lead firms can have many individual suppliers that each deliver some of the produce.

Strategic alliances are more frequent in medium-complexity GVCs in which some intangible assets (such as technologies or brands) influence production. The inputs used by MNCs in these GVCs are often specialized and embody some proprietary information (such as purpose-built machinery or a special way to manage operations). However, MNCs do not mind sharing this intellectual property with their suppliers because they can effectively codify and protect it (such as through licensing agreements, franchising, or patents). One such GVC is tourism (see box 3.2), in which large hotel chains share their brand and management techniques with local partners in return for management contracts.

OFDI takes place most often in high-complexity GVCs in which intangible assets make up a large share of the production process.<sup>5</sup> In these GVCs, all inputs tend to be unique and to embody a high level of proprietary information, and firms may have weak ability to codify or protect this intellectual property. This type of GVC is exemplified by the software industry, in which the source code essentially is the product. This input tends to be unique to each application and very difficult to protect from abuse by suppliers (because they could simply cut and paste lines of code from a program and use them for other applications). In such cases, outsourcing production (to either a supplier or a joint venture) tends to be too risky, and internal expansion through a foreign subsidiary is often the best way to scale up production.

These patterns are largely in line with the internalization theory, the imperfect contracting theory, and the property rights theory (Benito, Petersen, and Welch 2019; Gereffi, Humphrey, and Sturgeon 2005; UNCTAD 2020), as well as with global sectoral data. Table 3.2 considers the relative shares of different internationalization

**TABLE 3.2 The importance of internationalization pathways across global value chain archetypes**

GVC archetype	Supplier links	Strategic alliances	OFDI
	(Share of contract farming or manufacturing in total sales)	(Share of joint ventures, franchises, or management contracts in total sales)	(Ratio of total FDI to total trade per sector)
Commodities	Low	Low	High
Regional processing	Medium	Low	Low
Labor-intensive goods	High	Low	Low
Knowledge-intensive goods	High	High	Medium
Labor-intensive services	Low	High	High
Knowledge-intensive services	Low	Medium	High

Source: World Bank estimates using UNCTAD 2011 for supplier linkages, Kang and Sakai 2000 and UNCTAD 2011 for strategic alliances, and UNCTAD 2020 for OFDI.

Note: Sectoral performance is aggregated into the six GVC archetypes and then ranked into the bottom third ("low"), the middle third ("medium"), and the top third ("high"). FDI = foreign direct investment; GVC = global value chain; OFDI = outward foreign direct investment.

**FIGURE 3.6** Internationalization pathways followed by domestic firms in case studies included in this report

Country	Kenya	Honduras	Malaysia	Mauritius	Republic of Korea, India, and China
Sector	Horticulture	Textile and apparel	Electrical and electronics	Tourism	Digital economy
GVC archetype	Regional Processing	Labor-intensive Goods	Knowledge-Intensive goods	Labor-intensive Services	Knowledge-intensive services
Dominant type of GVC participation	Supplier linkages and direct exporting			Strategic alliances and direct exporting	
				OFDI and direct exporting	

Source: World Bank elaborations based on chapters 6 to 11 of this report.

Note: GVC = global value chain; OFDI = outward foreign direct investment.

pathways across GVC archetypes using global sectoral data from the United Nations Conference on Trade and Development (UNCTAD 2011, 2020) and Kang and Sakai (2000). These data show that opportunities for internationalization differ across GVC archetypes and that each archetype tends to source its inputs in one or two dominant ways.

Supplier linkages appear most important for labor- and knowledge-intensive goods GVCs, followed by those in regional processing. Strategic alliances are most prevalent in knowledge-intensive goods and labor-intensive services and are also used to a lesser extent in knowledge-intensive services. OFDI is most important for labor- and knowledge-intensive services as well as for commodities.

This report's case studies further illustrate the comparative potential of developing countries' firm internationalization across GVCs. Five qualitative case studies were conducted, each reflecting a different GVC archetype. Each case study finds examples of firms internationalizing through one or more of the three indirect pathways, all combined with direct exporting (figure 3.6). The patterns observed are in line with those described in table 3.2.

- In regional processing GVCs (Kenya, horticulture) and labor-intensive goods GVCs (Honduras, textiles and apparel), firms depend most strongly on supply linkages to internationalize. These GVCs' products have the lowest share of intangible assets and standardized inputs, and thus they are the best suited to arm's length transactions.
- In knowledge-intensive goods GVCs (Malaysia, electronics), firms use both supply linkages and strategic alliances to internationalize. This variety is explained by how electronics supplies range from standardized, low-complexity inputs (such as assembly of consumer goods) to more complicated inputs that use proprietary machinery (such as the production of microchips).

- In labor-intensive services GVCs (Mauritius, tourism), firms have used both strategic alliances and OFDI to internationalize. Export-oriented services tend to be high quality and to rely in large part on specialized management techniques and brand recognition. Such high degrees of intangible assets can be partially supported through strategic alliances (such as management contracts). However, as firms develop their own brands, they increasingly rely on direct outward investment to internationalize.
- In knowledge-intensive services GVCs (Republic of Korea, India, and China; digital economy), firms frequently internationalize using OFDI because their inputs are dominated by intangible assets. In such cases, outsourcing production (to either a supplier or a joint venture) tends to be too risky, and internal expansion through a fully owned foreign subsidiary is often the most feasible way to scale up production.

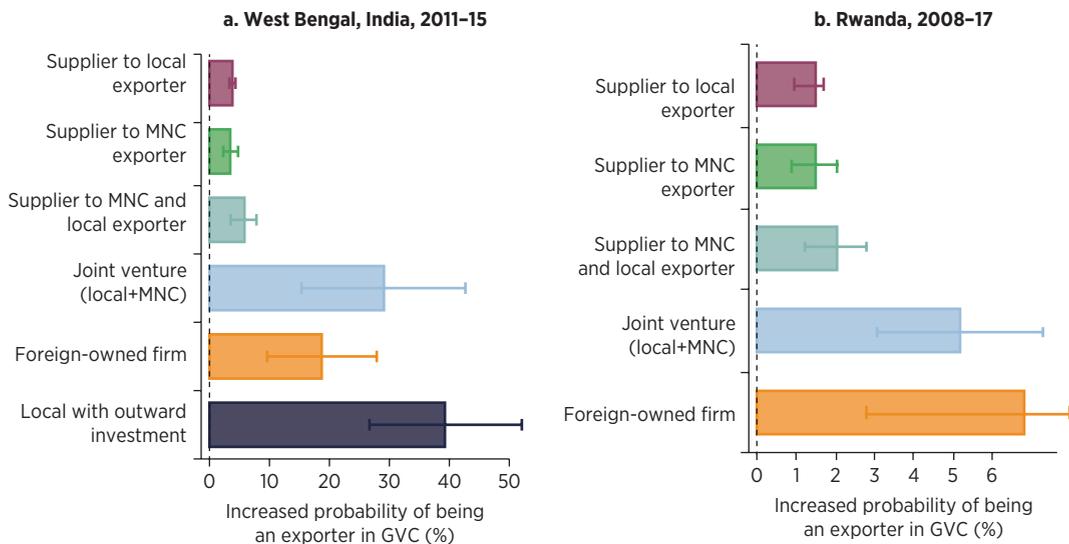
## **Global value chain upgrading: A learning process to improve competitiveness**

This report's quantitative case study from West Bengal, India, and from Rwanda finds that firms' competitiveness increases as they interact more closely with international firms. The case study combined firm- and transaction-level data sets to obtain information on firms' sectors and ownership, firm-to-firm linkages, and trade.<sup>6</sup> From these data, three types of suppliers to exporters were identified: those that supply local exporters, those that supply MNC exporters, and those that supply both. In addition, the study identified firms that are engaged in joint ventures with MNCs, that are fully foreign owned, or (in the case of West Bengal) that are engaged in OFDI. This information was used in a firm-level regression analysis to see how such types of GVC participation relate to the firms' likelihood of becoming direct exporters (as a proxy for international competitiveness).

Results from both countries (figure 3.7) suggest that all pathways of entry into GVCs raise the probability that a firm will become a direct exporter. The more closely domestic firms interact with international firms, the more likely they will start exporting. Thus, investment-based GVC participation (joint ventures and OFDI) is a stronger predictor of becoming an exporter than supplier linkages. In many cases, domestic firms were also found to engage in more than one pathway to GVC entry (for example, supplying some MNCs while engaged in a joint venture with another MNC). All these observations further illustrate that the most powerful engine of capacity building lies in firm-to-firm interactions (Sutton 2014) and that firms move along the pathways to GVC entry when they are ready in the learning process.

Domestic firms can achieve GVC upgrading by increasing their interactions with MNCs and by learning from them. The pathways to GVC participation described above often rely on domestic firms learning from MNCs through either supplier relationships, partnerships, or investment. However, although foreign firms can stimulate productivity spillovers to domestic firms (Havránek and Irsova 2010), it is important to remember that MNCs are not actively trying to foster technological development among their suppliers or partners. Where technological development and upgrading do occur, domestic firms are often the main instigators, responding to opportunities

**FIGURE 3.7** The comparative impact of different types of global value chain participation on the probability of a firm becoming a direct exporter in select value chains



Source: World Bank calculations; see chapter 11 of this report.

Note: West Bengal's foreign firms were identified using Orbis data only, and therefore they represent only a small number of large, publicly listed firms in the region. The ownership of Rwandan firms was determined using data from the national investment promotion agency (the Rwanda Development Board). All regressions include sector and year fixed effects and robust standard errors. Joint ventures are defined as any firms in which a foreign partner has an equity stake between 10 and 50 percent. Foreign-owned firms are firms in which a foreign partner has an equity stake of 51 percent or more. Local firms with outward investment are defined as firms that are headquartered in the country and have one or more foreign subsidiaries. GVC = global value chain; MNC = multinational corporation.

that they identify in the GVCs in which they participate (Jordaan, Douw, and Qiang 2020). Thus, domestic firms need to actively adapt their operations (strategy, structure, and resources) to better suit the production networks set out by MNCs (Calof and Beamish 1995). The rest of this section summarizes the empirical evidence on the impact of GVC participation on firm competitiveness and behavior and presents ways in which firms can achieve GVC upgrading along specific internationalization pathways.

### Supplier linkages with international firms: Learning by supplying

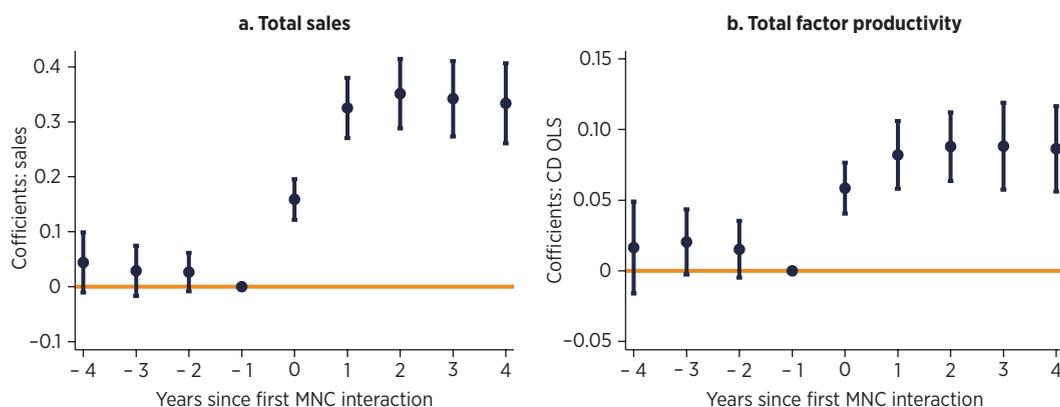
Firms can learn about global product standards and foreign markets through supplier linkages. Domestic firms may know how to produce specific goods for their domestic markets, but, if they seek to expand their sales abroad, they might struggle at first for lack of exposure to global markets or product standards. As an interim step, a firm may choose to first supply foreign firms with inputs. MNCs tend to have demanding product requirements for their customers in international markets, so a domestic supplier will need to learn to produce higher-quality goods in line with global product standards (Bastos and Verhoogen 2018; Kugler and Verhoogen 2012). The domestic firm could learn even more about the overseas market by engaging with the initial MNC's network of suppliers and traders. Eventually, the firm could follow the

MNC to other production locations, build on its new knowledge and experience to expand its clients beyond the MNC, or even start exporting directly (Conconi, Sapir, and Zanardi 2010; Dunning 1993; Xiao and Liu 2015).

Empirical evidence supports the positive impact of learning through supplier linkages on overall firm performance. Alfaro-Ureña, Manelici, and Vasquez (2019) use firm-to-firm transaction data to conduct an event study of MNC suppliers in Costa Rica. They find that becoming a supplier to an MNC resulted in strong and persistent improvement in performance, including a 20 percent expansion of sales to non-MNC buyers, a 26 percent expansion in firms' workforces, and a 6–9 percent increase in total factor productivity four years after becoming a supplier (figure 3.8). In a follow-up survey, suppliers noted that their interactions with MNCs helped them learn about new technologies and management practices, expand their production capacity, use more high-skilled workers, and produce higher-quality and more cost-effective products. This improvement, in turn, had a statistically significant impact on the firms' probability of exporting. The survey results confirmed that many firms saw supplying to MNCs as a stepping-stone to direct exporting. Similar evidence comes from a study in the Czech Republic (Javorcik and Spatareanu 2009) as well as surveys of MNCs in which multinationals reported that between 35 and 50 percent of their suppliers had increased their technological competence because of continued engagement through supplier linkages (Ivarsson and Alvstam 2005, 2011).

MNC linkages can also expand the types and complexity of products made by local suppliers. Javorcik, Lo Turco, and Maggioni (2018), for example, find that Turkish firms in sectors and regions more likely to supply foreign affiliates gradually began

**FIGURE 3.8 Domestic firms in Costa Rica increase their scale and productivity after starting to supply multinational corporations**



Source: Alfaro-Ureña, Manelici, and Vasquez 2019.

Note: This figure presents the results of an event study in Costa Rica that compared suppliers to MNCs with other domestic firms. Panel a shows normalized firm-level sales on the y axis; panel b shows normalized firm TFP on the y axis estimated using a Cobb-Douglas ordinary least squares (CD OLS) production function. In both cases, MNC suppliers initially had sales and productivity comparable with other domestic firms. However, once these firms started interacting with MNCs, both their sales and their TFP increased significantly compared with the domestic firms. MNC = multinational corporation; TFP = total factor productivity.

producing more complex products (as defined by Hidalgo and Hausmann's [2009] product complexity index). An increase in the presence of MNCs in the Polish automotive sector also resulted in domestic suppliers developing new products (Gentile-Lüdecke and Giroud 2012).

However, not all firms manage to enhance their productivity or internationalize via MNC supply linkages. For example, firm-level studies in China, India, and Vietnam find a clear, positive connection between MNC supplier linkages and domestic firm performance in China, but that the connection was much weaker for Indian and Vietnamese firms (UNIDO 2018). Another study finds that supplier linkages led to firm upgrading in fewer than 20 percent of the cases examined (Pipkin and Fuentes 2017).

The absorptive capacity of local suppliers is key to their learning and upgrading process. To realize spillovers, domestic firms must possess sufficient capacity to absorb technologies and other knowledge from their foreign-owned client firms. A study of domestic firms in 122 developing countries finds that only the more economically dynamic domestic firms—as measured by relative employment growth—experienced positive backward spillovers (World Bank 2018). Other domestic firm characteristics that are found to have a positive effect on knowledge spillovers to suppliers include the firms' size, their level of human capital, whether they have experience producing for international markets, and whether they are involved in R&D activities (Jordaan, Douw, and Qiang 2020).

The intensity of the MNC-supplier relationship is also critical to whether linkages stimulate spillovers and upgrading. Alcacer and Oxley (2014) find that who a firm supplies to and what kind of involvement the firm has also matter. Learning by supplying is positively related to both the duration and the extent of supply activities. This finding is supported by Gentile-Lüdecke and Giroud (2012), who note that only firms that were actively facilitating knowledge exchanges with their MNC clients experienced production improvements and created new products, services, or technologies. Cajal Grossi, Macchiavello, and Noguera (2019) set out this effect more explicitly for the Bangladeshi garment industry. They compare *spot procurement*, in which MNCs pay for each order without any explicit or implicit agreement regarding future trade, with *relational sourcing*, in which MNCs use an ongoing relationship to provide incentives to suppliers to undertake noncontractible actions such as guaranteeing reliable and on-time delivery. They find that, on average, relational suppliers receive approximately 10 percent greater markups than do spot suppliers. Relational suppliers use these higher markups to invest more in their products and production processes, which helps them upgrade their firms.

This report's quantitative case study (see chapter 11) finds similar evidence for the importance of relational MNC-supplier linkages. In Rwanda, MNC-supplier linkages had the highest probability of helping firms begin producing for international markets and exporting directly in GVCs with higher complexity. In these GVCs, including textiles and chemicals, MNCs are more likely to pursue relational ties with their suppliers, providing the suppliers with opportunities to produce to higher product standards. In contrast, firms that supplied MNCs with inputs that did not require close supplier relationships (such as coffee and tea or agriprocessing) were less likely to internationalize as a result of their supplier linkages. And, in West Bengal, the effect of MNC-supplier linkages on firms' probability of internationalizing was smallest in

sectors in which many small firms sell individual inputs to MNCs (such as leather, textiles, and apparel). In contrast, in the food product sector, in which a small number of firms supply a range of inputs to specific MNCs, firms had a higher probability of starting to produce for international markets and export directly.

To foster technological development, firms may want to underscore the three L's: labeling, linking, and learning (UNIDO 2002):

1. *Labeling* refers to the process of exposing domestic firms to the product standards and certifications that MNCs and governments use to ensure compliance with global product requirements. These codified market criteria support the upgrading of local suppliers and are a key tool for improving productivity.
2. *Linking* relates to the longevity and strength of the relational tie between a domestic firm and an MNC's supply network, which affects the intensity of the spillover between them (Manyati 2014). Domestic firms should aim to use the client MNC's production network to connect with outsiders to acquire needed technologies and skills. It is important for domestic firms to go beyond arm's length transactions (such as spot procurement) and develop lasting relationships that build trust and interbusiness commitment so as to facilitate steady knowledge transfers between the firms.
3. *Learning* captures the process by which firms are able to master newly required processes and technologies. The acquisition, accumulation, and appropriation of tacit and explicit knowledge are an integral part of firm upgrading through supply linkages (Abrol and Gupta 2014; Manyati 2014).

Box 3.1 provides an example from this report's qualitative case study of Kenya's horticulture firms of how these firms applied the three L's to help themselves internationalize and upgrade.

### **Strategic alliances with multinational corporations**

Domestic firms can access essential foreign knowledge, technology, and markets through strategic alliances with MNCs. Some domestic firms lack access to specific types of technology or intellectual property (such as production methods, international brands, or managerial techniques) that they would need to competitively produce for an international market. In such cases, establishing a strategic alliance with an MNC will allow the domestic firm to quickly obtain the knowledge and expertise it lacks. Strategic alliances can take various forms; they include any interbusiness arrangement in which there is some sharing of intangible assets (such as intellectual property or management practices) or equity participation (investment) (UNCTAD 2002). The new alliance may start exporting immediately, or the domestic firm's parent company may use the newly acquired technology to gradually expand its export processes (de Caldas Lima 2008).

Strategic alliances can improve domestic firms' productivity and technology upgrading. Jiang et al. (2018) use administrative data to analyze the firm-level effects of all joint ventures taking place in China from 1998 to 2007—roughly a quarter of all international joint ventures in the world. They find that joint ventures lead

### **BOX 3.1 How the three L's (labeling, linking, and learning) helped Kenya's horticulture firms internationalize**

About 50 percent of Kenyan horticulture firms indicate that they became exporters after first supplying a multinational corporation (MNC) in-country (Kaiser Associates Economic Development Partners 2014). One important reason for this trend is that both MNCs and these domestic firms managed to stimulate spillovers by fostering the three L's: labeling, linking, and learning (Krishnan and Foster 2017).

*Labeling.* Pietrobelli and Rabelotti (2011) find that, in general, supplying to MNCs is an important impetus for domestic firms to innovate and enter global value chains because doing so forces them to adhere to more complex standards and requirements to access international markets. This dynamic was also important in Kenya (Kaiser Associates Economic Development Partners 2014).

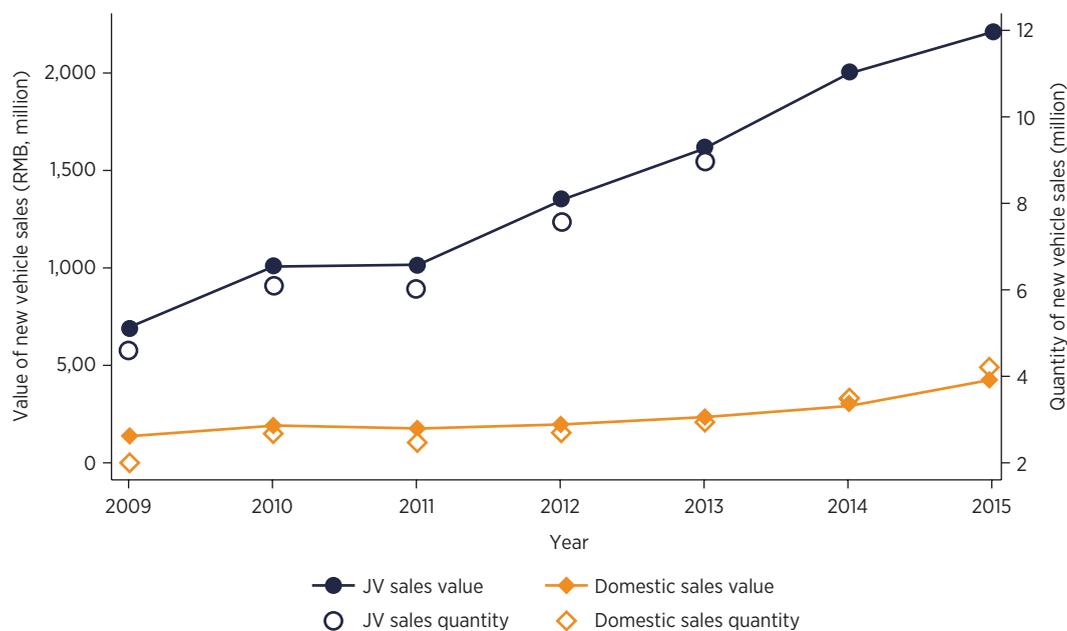
*Linking.* In Kenya, local suppliers were able to leverage their foreign direct investment relationships to access new customers (often through referrals) or new export markets. Labor market linkages further helped diffuse new skills, expertise, and business networks across the sector. Individual employees who have worked for foreign companies in-country have started new operations or switched to working with local firms. Kenya's survey results highlight that, on average, more than 80 percent of skilled staff at MNC affiliates (such as managers, supervisors, and those in technical positions) are locals, reflecting the long tradition and international exposure of the country's horticulture sector. Furthermore, about 10 percent of all employees at Kenyan horticulture firms have previous experience in foreign operations. An interviewee further observed that "product or process improvements trickle down as farmers observe what their neighbors are doing."

*Learning.* Survey results have shown that 100 percent of Kenya's foreign-owned agricultural investors and 88 percent of the country's foreign-owned suppliers provided some level of assistance to local firms. Such assistance includes agricultural inputs and materials, advance payments and access to finance, worker training, and support for quality assurance and health, safety, and environmental standards. This assistance led to improved production techniques, the use of higher-quality inputs, and improved operational processes (such as postharvest handling, transportation, and storage) (Kaiser Associates Economic Development Partners 2014).

*Source:* Chapter 6 of this report.

to substantial technology transfers, which increase total factor productivity, patent applications, and the introduction of new products. Firms that participated in these ventures also tended to become larger than other local firms and to have higher export shares. These positive externalities appear to be about twice as large as any demonstration-based productivity spillovers domestic firms experience by learning from foreign-owned firms operating in the same industry (Jiang et al. 2018). Bai et al. (2019) focus on the Chinese auto industry and find that firms that engage in joint ventures see sharper increases in both sales value and sales quantity than domestic firms and that the gaps widen over time (figure 3.9).

Domestic firms that are acquired by foreign investors become more competitive and are more likely to internationalize. Ragoussis (2020) compares the performance of firms that were acquired by MNCs with that of domestically owned firms

**FIGURE 3.9** The performance of joint ventures and domestic firms in the Chinese auto industry

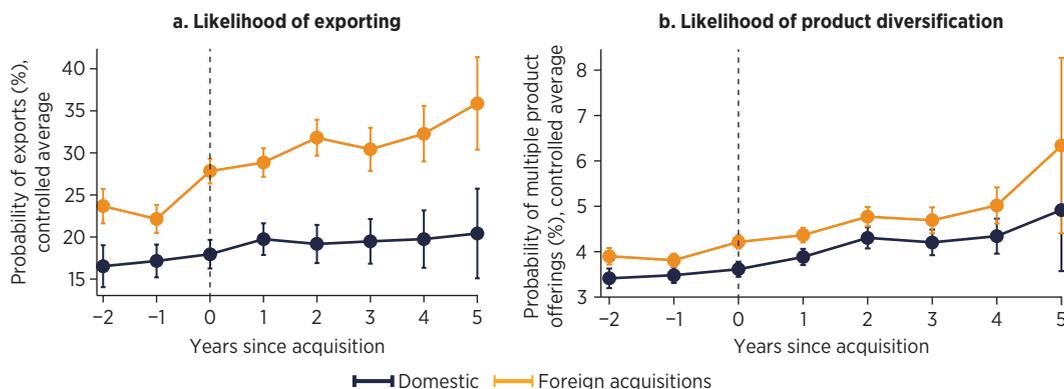
Source: Bai et al. 2019.

Note: JV = joint venture; RMB = renminbi.

in six developing countries—China, Côte d’Ivoire, Indonesia, Moldova, Serbia, and Vietnam. He finds that firms acquired by MNCs not only performed better than the average domestic firm at the time of the acquisition but also improved their performance after acquisition faster than did local firms. Employment also tended to grow faster in newly acquired firms than in domestic firms with similar characteristics, at approximately 4.0 percent versus 1.5 percent after two years, and acquired firms paid wages 40–50 percent higher than did other domestic firms. In addition, foreign acquisition may help domestic firms internationalize because such firms are 70–100 percent more likely to begin exporting over their first five years of operation than are other domestic firms (figure 3.10, panel a). Such firms were also considerably more likely to innovate and to diversify their products (figure 3.10, panel b).

Equity-type alliances, such as joint ventures and mergers and acquisitions, can be transformational, but their effects depend strongly on the firms in question possessing complementary capabilities. Such an alliance results in a new enterprise in which each party contributes assets, participates in equity, and shares risk. Because both parties are willing to share their intangible assets, this type of strategic alliance is often the most transformational. For example, Havránek and Irsova (2012) conduct a large meta-analysis of FDI spillovers, finding that the largest firm-level productivity gains came from joint ventures between MNCs and domestic firms. However, these alliances are difficult to establish because the two firms must first have useful complementarities in their interests and capabilities. Local firms often provide local market intelligence, production facilities, and possibly favorable relationships with the government, especially in highly regulated sectors (Balsvik and Haller 2010; Curran, Lv,

**FIGURE 3.10** Firms are more likely to export and to diversify their products after acquisition by foreign investors



Source: Ragoussis 2020.

and Spigarelli 2017; Davies, Desbordes, and Ray 2018). To leverage such qualities, foreign investors tend to cherry-pick the more successful, productive, and profitable domestic firms that suit their plans (Almeida 2007; Balsvik and Haller 2010; Bertrand et al. 2012; Guadalupe, Kuzmina, and Thomas 2012). These requirements mean that domestic firms must clear a high bar of entry to engage in such structural alliances.

Evidence from this report's Rwanda case study also suggests that equity-type alliances benefit foreign investors through their local partners' knowledge of local languages and the domestic regulatory environment. Two sectors stood out in Rwanda for their high shares of joint ventures: agriprocessing and professional services. In both sectors, Rwandan firms offer key complementarities to foreign firms—either the ability to engage with suppliers who speak only the local language (agriprocessing) or the ability to manage a complex regulatory environment (professional services). In both cases, engagement in FDI-type alliances was found to be an important predictor of becoming a producer and exporter for international markets (see chapter 11 of this report).

Nonequity mode (NEM) alliances (licensing, franchising, and management contracts)<sup>7</sup> provide another way for domestic firms to obtain new technologies, but they are often more restricted in scope or more highly regulated than other strategic alliances. NEM arrangements foster knowledge and technology transfers to domestic companies through contractual relationships with foreign firms in return for fees or profit sharing. Although NEMs can be both financially rewarding and educational for both parties, they are not without risk or effort. In many cases, domestic firms are required to invest their own funds in acquiring new machinery, redesigning their production processes, and modifying their working conditions as part of the contractual arrangement, alongside any up-front fees or training costs and ongoing royalties (UNCTAD 2011). Domestic firms would only consider such contracts if they saw them as opportunities for learning, in the hope that eventually local capacity could be built up and the use of MNC-specific technology, branding, or standards could be partially or totally phased out (de Caldas Lima 2008). However, firms often face strict contracts

meant to prevent them from using such information outside the NEM framework, whether by shifting away from the brand or by applying the concepts to the parent company's other affiliate firms.

MNCs, though not risking capital in NEM relationships, still take a risk when establishing them because the knowledge and proprietary rights the MNCs transfer to their partners are the very foundation of their competitive advantage. An untrustworthy partner could cause business or reputational damage to the MNC or become a competitor in the future. As a result, NEMs have been restricted in scope, especially for newly established alliances. This characteristic can limit their usefulness for teaching the domestic firm (de Caldas Lima 2008).

To maintain a strategic alliance, domestic firms should focus on increasing their relevance and power within it. In many cases, domestic firms are more dependent on the alliance than the MNCs they work with, which can erode the benefits of the alliance over time. For that reason, domestic firms must develop strengths that can be used to keep and, over time, increase their relevance within a strategic alliance. This effort requires a deliberate strategy to build power, a continuing assessment of their strengths and weaknesses in the alliance's balance of power (including over such determinants as technology, brand ownership, or local relationships), and proactively sustaining and increasing their strength. De Caldas Lima (2008) notes four examples of sources of power that domestic firms can nurture and that may not easily be challenged by the foreign partner, at least in the short term:

1. Overall knowledge of the domestic business environment and relationships with government
2. Ownership of local brands that can command recognition and consumer preference (see box 3.2)
3. Control over distribution and technical and marketing assistance to dealers and customers
4. Proprietary assets that allow the domestic firm to control inputs that are needed by the strategic alliance

### Outward foreign direct investment

Firms with sufficient capital may choose to invest abroad directly to upgrade their products or expand their market access. They often seek to directly acquire cutting-edge foreign technology or R&D facilities to help the firm's outward expansion (Amann and Virmani 2015; Child and Rodrigues 2005; Pedersen and Petersen 1998). Alternatively, they may choose to establish a subsidiary in a foreign country to obtain direct knowledge of foreign markets and thus to facilitate or accelerate the firm's ability to access and compete in the new markets (Ahmad, Draz, and Yang 2016; Amann and Virmani 2015; Pedersen and Petersen 1998).

Among India's manufacturing firms, for example, OFDI is one of the strongest predictors that a firm will become an exporter (Thomas and Narayanan 2017). Similarly, Ahmad, Draz, and Yang (2016) find that firms in Southeast Asia used OFDI to leapfrog into exports. From 1981 to 2013, a 1 percent increase in OFDI led to a US\$750 million

### **BOX 3.2 Brand development helped domestic tourism firms in Mauritius reach new export markets**

To reach new export markets (foreign tourists), tourism firms in Mauritius have increasingly focused on branding. A strong global brand and marketing strategy are seen as essential to competing for customers who have a variety of options because many of them tend to decide on the basis of brand recognition.

A large domestic hotel group in Mauritius engaged in a strategic alliance with multinational corporations (MNCs) to leverage their brands. The group acknowledged the increased importance of branding but concluded that it did not possess the necessary capital, human resources, and expertise to build its own brand and manage it successfully. Instead, it chose to partner and learn from existing brands under varying arrangements depending on each MNC's preferences. In some cases, the MNC acquired a minority interest in the hotel; in others, a pure management contract was used. The domestic group preferred the acquisition option because it better aligned with the firms' interests. Under a pure management contract, the MNC might focus more on developing its own brand than on acting in the firms' joint interests.

Partnering with MNCs has helped the hotel group learn about brand management and increase its reach among new foreign tourists. With the help of the MNCs, the domestic hotel group is developing an online travel agency strategy and extending its digital marketing. According to an executive, working with the MNCs has brought multiple benefits. The domestic firms have learned about the MNCs' brands, how the MNCs organize themselves, and their sales and marketing strategies. They also learned about the MNCs' guest-centric culture and were provided with useful technology, including a customer-response app.

Working with the MNCs also enabled the domestic hotel group to attract different types of customers and to learn about distribution channels other than tour operators. For example, one of the partner brands was particularly savvy at attracting high-net worth Chinese customers, whereas the hotel group had previously attracted mainly middle-class customers. Ultimately, this hotel group aims to create its own brand—partnering with MNCs is just one step along the way.

*Source:* Chapter 9 of this report.

rise in exports for the Philippines, a US\$72 million rise for Singapore, a US\$41 million rise for Thailand, and a US\$31 million rise for Malaysia.

OFDI serves as a learning mechanism, either as a springboard or as a stepping-stone depending on the type of country it targets (Perea and Stephenson 2018). In high-income markets, firms from developing countries use OFDI as a springboard to acquire new capabilities (Luo and Tung 2007), in contrast to developed-country firms, which generally exploit existing capabilities when investing in foreign countries. For example, Chen, Li, and Shapiro (2012) examine OFDI from 20 developing countries from 2000 to 2008 and find that OFDI from developing countries into high-income countries is particularly R&D-oriented given that these ventures increase both R&D employment and R&D expenditure in host economies.

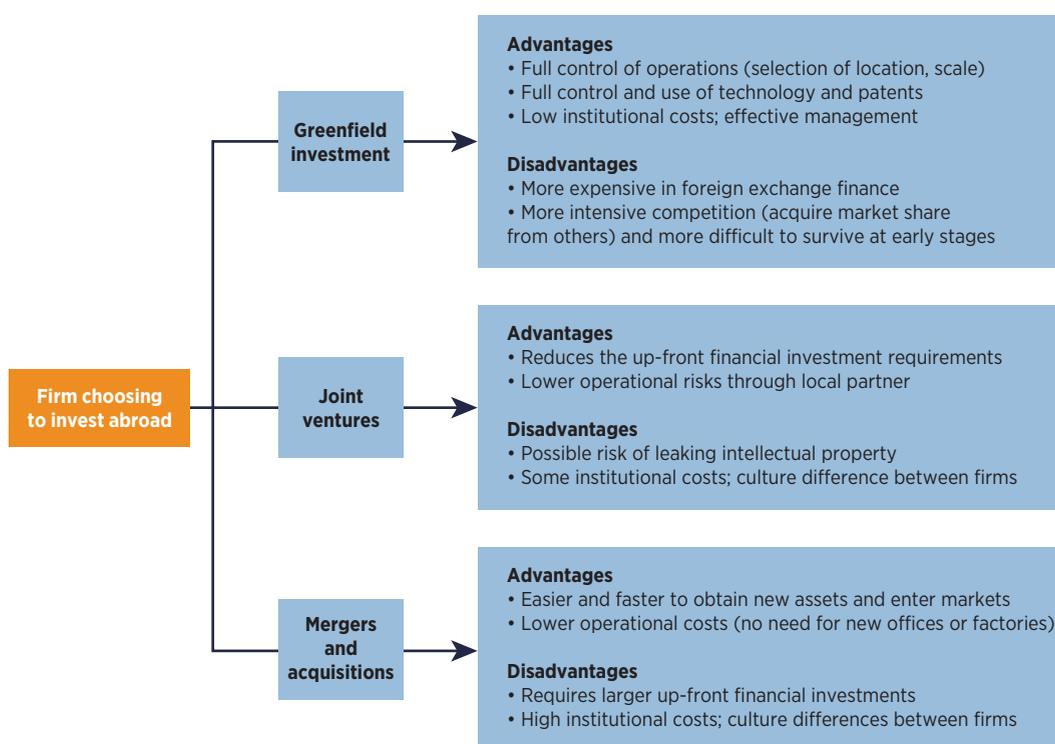
However, when firms from developing countries target other *developing* markets, OFDI can be used in a stepping-stone internationalization strategy in which firms first enter smaller, closer, and more similar economies (Arita 2013). This strategy works in

part because developing-country firms may have an institutional advantage in other developing countries, given their experience operating in uncertain and untrustworthy investment climates (Cuervo-Cazurra and Genc 2008).

Firms that engage in OFDI can do so via various modalities, each with its own advantages and disadvantages. In general, firms choose among three main modalities: they can establish a fully new operation in the host country (greenfield investment), engage in a new partnership with an existing company (a joint venture), or acquire an existing firm (through a merger or acquisition) in the host country (figure 3.11).

Greenfield investment has the advantage that parent firms retain full control of the investment process, including over the subsidiary's location and operational scale. It also allows firms to maintain tight oversight of their management techniques, technology, and patents (that is, it minimizes the risk of proprietary information leaking to competitors). However, there is significant cost and risk to setting up operations in a foreign country without knowing the host country's culture, business environment, and institutional setting (Buckley and Ghauri 2004; Cooke 2013; de Caldas Lima 2008). This type of investment also exposes the parent firm to the most intense competition because it will have to acquire market share from other companies; such projects are thus the least likely to survive the early stage. The experience of firms

**FIGURE 3.11** Advantages and disadvantages of different outward foreign direct investment modalities



Source: World Bank elaborations on de Caldas Lima 2008 and Xiao and Liu 2015.

### **BOX 3.3 Republic of Korea: Internationalization through greenfield outward foreign direct investment**

The Republic of Korea provides an appealing example of how emerging market economies can use outward foreign direct investment (OFDI) to upgrade—in Korea’s case, from a clothing exporter to a leading player in high-tech products such as electronics and semiconductors. Prompted by rising labor costs, a small domestic market, and aspirations to move up the value chain, Korean firms began to expand their operations overseas in the 1970s. They proactively engaged in strategic, asset-seeking OFDI by setting up research centers in advanced economies to acquire cutting-edge technology.

With strong encouragement from the Korean government through incentives and investment promotion, Korean firms started investing heavily abroad. From 1980 to 2016, the country’s large domestic champions invested more than US\$78 billion in foreign projects, and by 2016 the number of companies in the United States affiliated with Korean firms grew to exceed 13,000. These companies accounted for more than 20 percent of Korea’s worldwide OFDI. Samsung Electronics, one of the most recognized Korean electronics brands, initially invested in the United States to take advantage of the development of dynamic random-access memory, a type of digital memory used in many electronic devices. Once Samsung acquired this technology, it established production plants in low-cost countries to exploit their cost advantage (Kim, Driffield, and Love 2018). OFDI thus played an increasingly important role in driving Korea’s industry upgrading (Bhaumik, Driffield, and Zhou 2016; Driffield and Love 2003).

*Note:* See chapter 10 of this report for more details on how outward investment, human capital, and research and development helped the development of the digital economy in Korea, India, and China.

from Korea provides a good example of how firms in emerging market economies can use greenfield OFDI to internationalize (box 3.3).

A joint venture allows a firm to partner with a local company in the host country, reducing the firm’s up-front cash input and overall operational risk. However, this arrangement does involve additional risks, including unauthorized use or theft of intellectual property by the host-country firm’s parent company (Xiao and Liu 2015). Joint ventures also may result in management friction because firms may struggle to bring together two distinct office cultures (Barkema and Vermeulen 1998; de Caldas Lima 2008; Larimo 2003).

Mergers and acquisitions have the advantage of allowing firms to quickly obtain new assets and enter new markets. They also have lower operational costs than greenfield investment because there is less need to construct new offices or factories (which the foreign company will already have). However, mergers and acquisitions come with their own particular cost: the large up-front financial investment to acquire a foreign firm. They also come with increased risk of management friction if the two firms have different office cultures (Barkema and Vermeulen 1998; Larimo 2003). This modality was the least commonly used among Chinese firms engaged in OFDI; only 16 percent of firms used it (Xiao and Liu 2015).

The case of Lenovo shows how firms can develop using joint ventures or acquisitions. Lenovo relied on acquiring foreign firms and entering into joint ventures with foreign firms to gain access to strategic assets such as proprietary technology, globally recognized brand names, and established customer networks and sales channels (see box 3.4).

**BOX 3.4 Lenovo: Internationalization through joint ventures and acquisition**

Since its inception in 1984, Lenovo has grown into one of the world's major information and communication technology manufacturing players. It started producing personal computers (PCs) in 1991, and, through collaborations with well-established software and hardware firms such as Microsoft and Intel, it grew into China's leading PC maker (as measured by number of PCs shipped) in 1996 and attained 17.9 percent of China's PC market. In 1999, it became the largest PC seller in the Asia-Pacific region (excluding Japan); however, it was still focused exclusively on the domestic market.

In 2004, Lenovo began its first successful internationalization effort when it acquired IBM's PC division. Lenovo had been feeling pressure to internationalize because of potential threats in its home market, particularly since China's accession to the World Trade Organization in 2001, and it had tried to sell its PCs outside of China without success. In late 2004, the company decided to acquire IBM's PC division, which tripled its worldwide share in the PC market and made it the third-largest PC maker in the world. Importantly, Lenovo acquired IBM's successful "Think" brand and gained access to a huge distribution network spanning 150 countries. As part of the transaction, IBM and Lenovo entered a strategic alliance that specified IBM as the preferred provider of leasing, financing, and after-sales services for Lenovo products. In return, IBM granted Lenovo exclusive access to its distribution network; in other words, it agreed to supply Lenovo PCs exclusively throughout its boundary-crossing network of 150 countries and 30,000 employees. Acquiring IBM's PC division gave Lenovo a head start at positioning itself globally, both in establishing a global distribution network and in gaining rapid brand awareness.

From 2005 to 2015, Lenovo chose repeatedly to grow via acquisitions, joint ventures, and alliances. This growth enabled it to become the largest PC maker in the world and to achieve a global market share of nearly 17 percent. In 2011, it formed a strategic alliance and joint venture with the Japanese electronics giant NEC. Through the partnership, NEC intended to benefit from Lenovo's considerable buying power and efficient global supply chain and to greatly expand its product lines and market access. Lenovo, for its part, gained extended access to Japan's highly isolated PC market. As part of the strategic alliance, NEC and Lenovo founded a joint venture called NEC Lenovo Japan Group in which Lenovo holds a majority stake of 51 percent. In the same year, Lenovo acquired the German PC maker Medion with the aim of rebalancing its business and reducing its overreliance on its home market. The acquisition united Medion's expertise in marketing, sales, service, and retail activities with Lenovo's manufacturing and supply chain capabilities.

After a successful internationalization process, Lenovo now designs, develops, manufactures, and sells PCs, tablet computers, smartphones, workstations, servers, electronic storage devices, information technology management software, and smart televisions; and it remains the world's largest PC vendor by unit sales.

*Source:* Adapted from Schmid and Polat 2018.

*Note:* See chapter 10 of this report for more details on how outward investment and research and development helped the development of the digital economy in the Republic of Korea, India, and China.

This chapter illustrates the various ways in which firms participate in GVCs, explores which firms manage to internationalize, and discusses the effect GVC participation has on firm learning and competitiveness. It finds that MNCs are critical to helping firms in developing countries access GVCs, exposing these firms to more advanced technologies and production processes (which may foster technological upgrading),

and ultimately helping encourage them to produce and sell internationally. Four pathways to internationalization stand out: supply linkages with international firms, strategic alliances between domestic firms and MNCs, direct exporting, and OFDI. However, these paths do not present themselves equally to all firms. Firms' capability to produce according to MNCs' production specifications, to provide complementary capabilities and market knowledge to MNCs, and to amass enough capital to afford investing abroad all vary considerably. In addition, firms' internationalization pathways are related to the type of GVC inputs they produce: the importance of intangible assets in their GVC's production, the degree to which these production inputs are standardized, and the ability of the GVC's parent firms to effectively codify or protect intellectual property all affect the likelihood of a firm engaging in a particular pathway.

Finally, this chapter illustrates the impact that GVC participation can have on upgrading. Participating in a GVC is a learning process by which firms can develop production capabilities and acquire foreign market knowledge. This knowledge, in turn, can help improve firms' ability to produce more, or more complex, products. In addition, it may help firms raise their total sales, exports, and productivity. To make the most of GVC-related opportunities, domestic firms must constantly adapt their operations (their strategy, structure, and resources) to better suit global production networks. For supplier linkages, firms should focus on the three L's: labeling, linking, and learning. For strategic alliances, they should absorb the technical knowledge within the alliance and use it to their own competitive advantage. In OFDI, the firms themselves become MNCs and must develop their own GVC strategies (as described in chapter 2). In many cases, these pathways to internationalization are complementary, and firms often use multiple strategies to increase their competitiveness in the international market. A powerful example of this last point comes from Zhongxing Telecom Equipment, a Chinese firm that started as a supplier, increasingly engaged in strategic alliances with MNCs, and finally used OFDI to acquire cutting-edge technology. Through this process, it grew from a medium-size domestic Chinese firm into one of the largest telecommunications equipment providers in the world (see box 3.5).

### **BOX 3.5 Zhongxing Telecom Equipment's internationalization and upgrading journey**

Zhongxing Telecom Equipment (ZTE) Corporation is a telecommunications equipment and network solutions provider. Established in 1985, ZTE's product range has expanded over time to include virtually every sector of the wireline, wireless, terminal, and service markets.

From 1995 to 2004, ZTE served other developing countries as a telecommunications equipment supplier, and it used those experiences to learn and grow. A relative latecomer to the telecommunications market, it faced fierce competition from established multinational vendors in China. As a result, ZTE found that overseas markets (especially developing countries) were more lucrative places to sell its products and services. By successfully exploiting its relatively low costs, the company could

**Continued on next page >**

### **BOX 3.5 Zhongxing Telecom Equipment's internationalization and upgrading journey (continued)**

quickly meet the demand for telecommunications equipment in several developing countries and replicate its business model in others. ZTE's share of overseas revenue in its total revenue rose from 4 percent in 2001 to 22 percent in 2004. The firm's market share in Africa expanded especially rapidly: after winning a contract to build a mobile phone network in Algeria in 2004, ZTE struck similar deals in Angola, Ethiopia, Ghana, Lesotho, and Tunisia.

In the following years, ZTE began to target high-income markets and set up research and development (R&D) centers and strategic alliances as springboards to obtain cutting-edge technological knowledge. Having officially declared 2005 its "internationalization year," ZTE set up 15 branches offering marketing, technological support, service, and maintenance in Europe that year. It also began to dedicate more than a third of its workforce and at least 10 percent of its resources to R&D, and it created 18 overseas R&D centers, including 5 in the United States and 2 in Europe. ZTE also invested significantly in training local staff and forging links with local academic and research institutions in the countries where it operated. In 2013, it also established cross-licensing agreements with various other telecommunications firms, which allowed ZTE to use other companies' technologies and bandwidth in return for sharing some of its licensed technology.

Along its internationalization path from being a supplier to engaging in strategic alliances and outward foreign direct investment, ZTE managed to become a global leader in the telecommunications equipment manufacturing industry. In 2011 and 2012, ZTE was ranked first in international patent applications by the World Intellectual Property Organization. ZTE managed to both grow its overseas market (which accounted for 55.7 percent of its income in 2011) and, at the same time, gain significant market share in the Chinese market. In 2011, ZTE replaced Apple as the world's fourth-largest handset vendor, and, in 2013, it became the fifth-largest smartphone company in the world, a position it maintains to this day. In addition, ZTE is currently the largest provider of optical networks (such as 5G) in the world.

*Source:* Adapted from Baskaran 2017 and OECD 2008.

*Note:* See chapter 10 of this report for more details on how outward investment, human capital, and R&D helped the development of the digital economy in the Republic of Korea, India, and China.

## **Notes**

1. For example, Slaughter (2013) finds that the typical US MNC buys more than US\$3 billion in inputs from more than 6,000 US small and medium enterprises—about 25 percent of all inputs each MNC purchases.
2. Although direct exporting is an important way for domestic firms to internationalize, not all types of direct exporting constitute GVC participation (for example, cross-border trade of simple crafts is not GVC-based trade).
3. Whether this employment is formal or informal depends on the skill intensity of the firms' specific sectors.
4. The literature agrees that internationalized firms are generally more productive in both the manufacturing and service sectors. Manufacturing firms that engage in FDI are also more productive than those that merely export (Helpman, Melitz, and Yeaple 2004). However, there is ongoing discussion over whether this distribution also holds for the service sector. Services exhibit relatively high intangible requirements for entry (such as social capital, information, and trust). The most productive firms are able to absorb these intangible costs remotely and may thus directly export (Bhattacharya, Patnaik, and Shah 2012; Foster-McGregor, Isaksson, and Kaulich 2015; Wagner 2014).

5. This analysis of OFDI focuses on internationalizing firms from developing countries because MNCs from developed countries have different strategies (described in chapter 2).
6. For the Rwanda case study, this classification was based on national data sets only (taxpayer registration, corporate tax data, value added tax data, and customs declarations, together with the national investment promotion agency's information on firm ownership). For the case study on West Bengal, India, national data sets (taxpayer registration and value added tax declarations) were combined with firm ownership data from the data collection company Bureau van Dijk's global Orbis firm database.
7. Licensing is a contractual relationship in which an international firm grants a host-country firm the right to use intellectual property (such as copyrights, trademarks, patents, branding, industrial design rights, or trade secrets) in exchange for payment (royalties). Franchising permits a franchisee to run a business modeled on the systems developed by the franchisor in exchange for an initial fee or a markup on goods (that is, a training fee or royalties). Management contracts provide operational control of an asset to an international firm, which manages the asset in return for a fee. The management provided often entails the technical operation of a production facility, the management of personnel, accounting, marketing services, or training (de Caldas Lima 2008; UNCTAD 2011).

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