

Foreign Direct Investment and Productivity

IN FOCUS



A Literature Review on the Effects of FDI on Local Firm Productivity

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FINANCE,
COMPETITIVENESS &
INNOVATION

INVESTMENT CLIMATE

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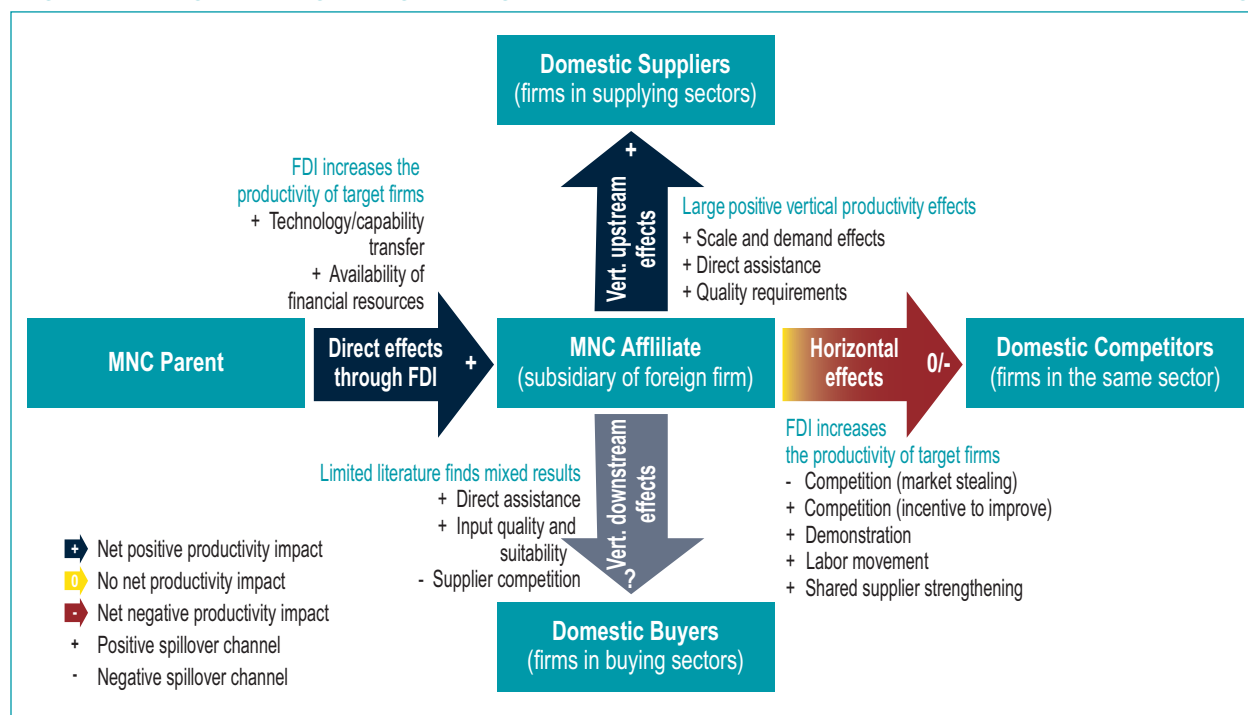


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The impact of foreign direct investment (FDI) on the productivity of domestic firms is significant, but the economic gains from FDI are not guaranteed to be large or positive for individual firms. The impacts depend on the characteristics of foreign and domestic firms. This survey of literature explores the heterogeneous effect of FDI on three types of domestic firms: foreign-owned local firms that are affiliates of multinational corporations (MNCs), local firms that are suppliers to or customers of MNC affiliates, and local firms that compete with MNC affiliates (figure 1). We find consistent evidence that foreign ownership increases the productivity of MNC affiliates in developing countries. For firms in upstream sectors (that is, suppliers of MNCs), evidence suggests significant productivity benefits, whereas the evidence is mixed for downstream sectors (that is, buyers and distributors). Competitors of MNCs generally experience insignificant and sometimes negative spillovers. While researchers postulate that multiple potential transmission channels could be at work, future research should more robustly attribute impacts to specific productivity channels.

Figure 1. Key Findings Regarding the Effect of FDI on Domestic Firm Productivity



Source: Authors' representation based on review of literature.

Note: FDI = foreign direct investment; vert. = vertical.

Introduction

For developing countries, foreign direct investment (FDI) can be a key driver of economic growth and participation in global value chains.

FDI is the largest source of external financing to developing countries, totaling US\$700 billion in 2018, greater than the combined volume of remittances and official development assistance (UNCTAD 2019). At the macroeconomic level, empirical work points to a positive relationship between FDI and gross output levels (Borensztein, De Gregorio, and Lee 1998; Choe 2003; Chowdhury and Mavrotas 2006; Hansen and Rand 2006; Li and Liu 2005). FDI can also deepen trade linkages (Freund and Pierola 2012; Moran 2014; Swenson 2008): Inter- and intrafirm trade conducted by MNCs accounts for about three-fourths of global exports (UNCTAD 2013). These benefits typically accrue from MNCs' ability to bring improved technology, management practices, firm linkages, and scale to host economies. Thus the presence of foreign firms and FDI presents an opportunity for developing countries to boost productivity growth through market mechanisms.

Nevertheless, maximizing positive impacts from FDI depends on understanding the firm-level heterogeneity of FDI impacts because these impacts are not guaranteed to be large or positive for individual firms. How FDI impacts local firms depends on the firms' relationships with MNCs. For example, recipients of FDI are partly managed by MNCs, while firms that sell to or buy from MNC affiliates may change their businesses to adapt to MNCs' needs and offerings, with implications for the firms' productivity and global competitiveness. Similarly, firms operating in the same sector as MNC affiliates may change their business practices after observing MNC affiliates' operations. They may also experience business impacts from competing

against affiliates. Relatedly, domestic firms' characteristics such as size, industry, target markets, and technological sophistication may influence the degree to which firms are impacted by FDI. Understanding which companies stand to benefit or not from FDI and the circumstances governing such relationships is thus critical to inform policy making to maximize gains from FDI.

Despite a voluminous body of research, few studies provide policy makers in developing countries with an integrated view of productivity impacts accruing to domestic firms. Existing literature reviews and meta-analyses on developing countries investigate either (a) direct impacts on investees or (b) horizontal or vertical spillovers, but not all at once. This note synthesizes empirical evidence with the aim of summarizing the observed effects and postulated transmission channels that explain those effects. It is thus a step toward identifying policy levers to maximize productivity gains from FDI.¹ The rest of the paper examines direct effects, upstream and downstream vertical spillovers, and horizontal spillovers accruing to domestic firms as a result of FDI in the economy.

Productivity of MNC Affiliates

The evidence consistently finds that foreign ownership increases the productivity of affiliate firms in developing countries.² The level of ownership control exercised by the foreign parent firm is an important factor for productivity gains as it allows business practices, managerial know-how, and technologies to flow from MNCs to affiliates (Liu, Lu, and Qiu 2017; Perez-Gonzalez 2005). It would thus seem that the higher the MNC's ownership share, the more the affiliate firm stands to benefit from a foreign firm's intangible assets. However, evidence suggests that the relationship is not necessarily linear and that there may be a

¹ Such policy levers include enhancing the technology-absorption capacity of domestic firms, concentrating efforts on more efficiency-seeking FDI, and developing and deepening linkages with local suppliers.

² For South Asia and East Asia and Pacific, see Aitken and Harrison (1999); Arnold and Javorcik (2009); Girma et al. (2015); and Liu, Lu, and Qiu (2017). For Europe and Central Asia, see Damijan et al. (2003); Djankov and Hoekman (2000); and Yudaeva et al. (2003). For Latin America and the Caribbean, see Perez-Gonzalez (2005). For the Middle East and North Africa, see Haddad and Harrison (1993).

trade-off between global best practices and local contextualization. High levels of foreign ownership may limit local partners' ability to exercise control and to adapt affiliate operations to local needs (Liu, Lu, and Qiu 2017).³

Emerging evidence shows that the level of foreign ownership across the sector and the technology gap between MNCs and their affiliates may be important mediating factors. Girma et al. (2015) find that productivity gains in affiliates are larger when the level of foreign ownership is higher across the overall sector. The authors argue that MNC affiliates interact more effectively among themselves than with local firms. Other authors find that higher productivity gains occur when the technology gap between MNCs and affiliates is wide, which allows for greater space for FDI-driven improvements (Liu, Lu, and Qiu 2017).

Transmission Channels for FDI Investees

Transfer of Technologies and Business Capabilities: Parent MNCs possess sophisticated production technologies and business practices. Researchers argue that after investments are made, MNCs are likely to transfer specialized know-how to affiliates (Arnold and Javorcik 2009; Djankov and Hoekman 2000). Although such transfers could theoretically be made through arm's length arrangements, direct transfers are more efficient. For the parent firm, the ownership stake and implied control over the affiliate lower the risk of technology leakage (Djankov and Hoekman 2000).

Availability of Financial Resources: In many developing countries, financial markets are not fully developed, which prevents domestic firms from making investments in technology and capacity upgrades. FDI can help affiliate firms alleviate such financial constraints, thereby leading to increased production efficiency (Arnold and Javorcik 2009).

Vertical Productivity Effects

FDI also affects the productivity of firms that are linked to MNCs through supplier and buyer relationships (that is, vertically linked firms). Such productivity spillovers can impact upstream firms that supply to MNC affiliates as well as downstream firms that procure from MNC affiliates.

Upstream Sectors

FDI has large, positive vertical productivity effects on domestic firms that supply inputs to MNC affiliates in developing countries. A large meta-analysis by Havranek and Irsova (2011) covering 47 countries and 57 studies finds robust evidence that upstream vertical effects are positive on average, even after adjusting for publication bias toward positive and significant results.⁴ The literature that finds evidence of positive effects covers developing countries across regions, including East Asia and Pacific and South Asia (Blalock and Gertler 2008; Liu, Wang, and Wei 2009; Nguyen et al. 2008; Thang, Pham, and Barnes 2016), Europe and Central Asia (Gorodnichenko, Svejnar, and Terrell 2007; Javorcik 2004, 2008), Latin America and the Caribbean (Blyde, Kugler, and Stein 2005; Jordaan 2008), and Sub-Saharan Africa (Bwalya 2006).

Some evidence suggests that upstream effects are conditioned by characteristics of domestic suppliers (for example, the sectors in which they operate), firms' absorptive capacities, and geographical distance from foreign-owned firms. Though few studies cover spillovers in services, some studies that cover both manufacturing and services find that productivity gains are lower for local services firms (Havranek and Irsova 2011; Reyes 2017) and sometimes even negative (Nguyen et al. 2008). Some evidence also suggests that firms with better capabilities, such as those with larger scale or more qualified managers, are better able to

³ The authors do not explore whether this trade-off stems from only wholly foreign-owned firms (which lack local partners to help them adapt), nor do they explore the extent to which hiring local managers could address this issue.

⁴ Havranek and Irsova's (2011) meta-analysis covers studies from all FDI recipient countries, including high-income countries, but the majority of the studies concern middle-income countries.

absorb positive spillovers (Blyde, Kugler, and Stein 2005; Liu, Wang, and Wei 2009; Reyes 2017).⁵ Finally, Thang, Pham, and Barnes (2016) assert that, because sourcing relationships are local, suppliers located far from where FDI takes place are less likely to benefit, even after controlling for general economic agglomeration effects.

FDI's source country, motivation, level of foreign ownership, and local sourcing intensity can be important factors affecting the magnitude of upstream vertical productivity effects. Gorodnichenko, Svejnar, and Terrell (2007) argue that FDI originating in countries outside the Organisation for Economic Co-operation and Development (OECD) results in greater upstream spillovers because firms from non-OECD countries—that is, less advanced economies—are better able to select the most appropriate technologies to be deployed in developing countries. However, Lin, Liu, and Zhang (2009) come to the opposite conclusion. Reyes (2017) finds heterogeneity in upstream productivity effects depending on FDI motivation. Investments aimed at leveraging greater efficiency and lower costs lead to the greatest upstream effects, compared with low to moderate effects from market-seeking FDI and none from natural resource-seeking FDI. In addition, partial foreign ownership is consistently shown to result in greater upstream vertical productivity effects compared with fully foreign-owned firms (Gorodnichenko, Svejnar, and Terrell 2007; Javorcik and Spatareanu 2008). Authors speculate that wholly owned MNC affiliates may require more advanced inputs that are beyond the capabilities of domestic suppliers, thereby limiting the potential for supplier linkages. Finally, Giroud, Jindra, and Marek (2012) find that the intensity of knowledge transfer between MNC affiliates and suppliers follows a nonlinear pattern with respect to the proportion of inputs sourced locally, increasing at first but eventually leveling off. This pattern suggests that the degree of integration in global value chains affects upstream productivity.

Transmission Channels for Upstream Sectors

Direct Assistance: MNCs can affect the productivity of their domestic suppliers through direct transfer of technologies and production techniques (Javorcik 2004; Paus and Gallagher 2008). Direct assistance may include management and worker training, improved production inputs, and additional financing (Crespo and Fontoura 2007; Javorcik 2004, 2008; Lall 1980). While MNCs are known to maintain tight control over technological know-how to prevent leakage to competitors, they are more likely to share technology and knowledge with their domestic suppliers given the incentive to improve supplier performance and quality (Blalock and Gertler 2008; Pack and Saggi 2001).

Quality Requirements: Some authors posit that MNCs indirectly induce productivity improvements in suppliers by imposing higher product and service quality requirements (Gorodnichenko, Svejnar, and Terrell 2007; Javorcik 2004; Javorcik, Keller, and Tybout 2006). Under these authors' logic, suppliers are incentivized to upgrade their production and management practices to meet such requirements. Over the long run, suppliers who are able to successfully adapt to serve MNCs' demand may in turn gain market share in the form of competitors who fail to improve allocative efficiency (Javorcik, Keller, and Tybout 2006).

Scale Effects: If FDI increases demand for locally produced intermediate goods, that may help domestic producers achieve economies of scale by spreading out fixed costs and moving down the average cost curve (Javorcik 2004). Lin and Saggi (2005) developed a theoretical model outlining potential scale effects from MNC entry, arguing that the net effect on supplier productivity can run in both directions. The net effect depends on whether the increased demand from MNCs outweighs decreased demand from domestic competitors who may experience drops in market share attributable to MNC entry.

⁵ Liu, Wang, and Wei (2009) address potential concerns related to reverse causality by also using state and foreign ownership among suppliers as instruments for firm absorptive capacity.

Downstream Sectors

The limited literature on downstream productivity effects points to mixed results. Compared to the literature that explores upstream vertical productivity effects, relatively few studies examine the impact on downstream firms. Some researchers find positive and typically small effects on average (Arnold et al. 2016; Fernandes and Paunov 2012; Havranek and Irsova 2011; Liu, Wang, and Wei 2009). In contrast, other widely cited studies (Gorodnichenko, Svejnar, and Terrell 2007; Javorcik 2004; Thang, Pham, and Barnes 2016) find negative or no effects. Finally, Newman et al. (2015) find mixed effects depending on downstream firms' relationships with MNC affiliates: Those with direct linkages benefit from technology transfer, but all downstream firms experience negative impacts from dominance of MNC affiliates among their supplier base.

Some researchers examine how different factors may condition downstream vertical effects, but it is not possible to draw definitive conclusions. From a sectoral perspective, Gorodnichenko, Svejnar, and Terrell (2007) find that downstream productivity effects are more likely to be positive for local services firms relative to manufacturing firms, but Nguyen et al. (2008) come to the opposite conclusion. Within services, a relatively large amount of research has been conducted on so-called backbone services (that is, telecommunications, finance, and transportation): Scholars such as Arnold et al. (2016) consistently find that reforms that open up such services to FDI positively impact downstream manufacturing firms' productivity, although researchers are typically unable to disentangle the effects of FDI per se from those of increased competition in general.⁶ From a geographic perspective, Thang, Pham, and Barnes (2016) find that negative productivity effects are likely to be more pronounced for firms closer to the location of FDI. This may be because sourcing relationships are local in nature, meaning that MNC entry primarily affects those downstream firms located near the area of FDI. Nevertheless, sources of heterogeneity in productivity effects remain a key

area for further research in light of mixed findings in the empirical literature.

Transmission Channels for Downstream Sectors

Direct Assistance: MNC affiliates may provide their domestic buyers with training and technical support to improve local sales and distribution networks (Blomstrom and Kokko, 1998; Nguyen et al. 2008; Wei, Liu, and Wang 2008). This is not a commonly observed phenomenon, but rather is practiced in rare instances.

Input Availability and Quality: MNC affiliates have greater technological capabilities and thus produce higher-quality products that are more widely available. Domestic firms that can access such intermediate goods and services from MNC affiliates can in turn benefit by incorporating improved inputs (Blomstrom 1991; Javorcik 2004). However, higher quality can have the opposite effect on other domestic firms. Some researchers argue that products of MNC affiliates may be too technologically advanced or more expensive. Such intermediate inputs may not be suitable for domestic producers, which can result in declines in firm productivity (Schoors and van der Tol 2002; Thang, Pham, and Barnes 2016).

Supplier Competition: MNC affiliates compete with domestic firms in the same sector and may gain significant market share to the point of pushing local competitors out of the market. With fewer local competitors, MNCs may charge higher markups for their products. Increased input prices may in turn adversely affect the productivity of local downstream firms (Thang, Pham, and Barnes 2016).

Horizontal Productivity Effects

Evidence suggests that horizontal productivity effects accruing to domestic firms in the same sector as MNC affiliates (i.e., competitors of MNC affiliates) are generally insignificant and can even be negative. A large meta-analysis of effects across

⁶ Also see Eschenbach and Hoekman (2005) and Fernandes and Paunov (2012).

all country income groups by Irsova and Havranek (2013) finds that the effects are not statistically significant on average. An earlier meta-analysis by Meyer and Sinani (2009)—also across all country income groups—finds mixed results depending on the host country’s level of development. The authors find more positive (or insignificant) impacts at the highest and lowest income levels and negative (or insignificant) impacts at intervening levels. Similarly, Wooster and Diebel’s (2010) meta-analysis, which focuses on developing countries, fails to find significant net horizontal spillovers. Null and even negative results have been observed across world regions.⁷

Domestic firms with greater absorptive capacity and more sophisticated technologies benefit from positive horizontal effects. Local competitors with higher levels of foreign ownership (Girma et al. 2015; Liu, Wang, and Wei 2009), older firms (Gorodnichenko, Svejnar, and Terrell 2007), and high-growth firms (Reyes 2017) often experience positive horizontal spillovers. Similarly, domestic firms with lower technology gaps relative to foreign firms are also more likely to experience positive spillovers (Irsova and Havranek 2013; Meyer and Sinani 2009).

Some researchers argue that domestic firms in the services sector are better positioned to benefit from positive horizontal spillovers (Gorodnichenko, Svejnar, and Terrell 2007; Nguyen et al. 2008; Reyes 2017). Such authors argue that business practices and technologies in services are more readily observable and are less likely to be subject to intellectual property protections than is the case in manufacturing, making it easier for competitors of MNC affiliates to emulate affiliates’ advanced practices.

The level of ownership of MNCs and the type of FDI affect horizontal spillovers. Javorcik

and Spatareanu (2008) find that partially foreign-owned affiliates create fewer negative spillovers. They reason that, if affiliates are only partially foreign-owned, MNCs transfer less sophisticated technologies that are more easily imitated by competitors. Affiliates with partial foreign ownership are also likely to have deeper pre-existing in-country networks through which technology may diffuse to competitors. Estimates from Irsova and Havranek’s (2013) meta-analysis further corroborate this assertion. In addition, efficiency-seeking FDI from export-oriented MNCs results in positive horizontal spillovers because it is less likely to compete with domestic firms. In contrast, market-seeking FDI is more likely to compete with domestic firms, translating to greater incentives for MNCs to prevent positive spillovers (Blyde, Kugler, and Stein 2005).

Finally, the direction and magnitude of horizontal spillovers may depend on characteristics of the host market. Irsova and Havranek (2013) find that horizontal spillovers are more positive (or less negative) when intellectual property protections are weaker, making diffusion easier. Paradoxically, they also find larger positive spillovers in countries with lower trade openness; they speculate that countries with higher trade openness may have already absorbed technological advances through trading relationships, thereby decreasing the marginal benefit of FDI (Irsova and Havranek 2013).

Transmission Channels for Domestic Competitors

Competition: The entry of MNCs through investments in affiliates increases competitive pressures on domestic firms in the same sector (Alfaro 2017). With higher capital stocks and more sophisticated technologies, MNC affiliates are often well-positioned to gain market share at the expense of domestic competitors. Competition can affect

⁷ Studies that find null or negative results cover Europe and Central Asia (Gorodnichenko, Svejnar, and Terrell 2007; Javorcik 2004; Javorcik and Spatareanu 2008), South Asia and East Asia and Pacific (Blalock and Gertler 2008; Girma et al. 2015; Kathuria 2000; Thang, Pham, and Barnes 2016), Latin America and the Caribbean (Aitken and Harrison 1999; Blyde, Kugler, and Stein 2005; Jordaan 2008), the Middle East and North Africa (Haddad and Harrison 1993), and Sub-Saharan Africa (Bwalya 2006). Older studies are more likely to find positive effects, but such studies often use cross-sectional data rather than panel data (Görg and Greenaway 2004).

domestic firms both positively and negatively. On the one hand, domestic firms are likely to invest in improved production techniques to compete and maintain market share (Blyde, Kugler, and Stein 2005; Glass and Saggi 2002; Görg and Greenaway 2004; Wang and Blomstrom 1992). On the other hand, MNC affiliates can deplete the market share of domestic firms and diminish their production scale. This causes domestic competitors' average costs to increase as they spread their fixed costs over a smaller production base (Aitken and Harrison 1999).

Demonstration: MNCs from developed countries possess a differentiated set of management practices and production technologies. Several authors posit that domestic firms are likely to engage in imitation by observing MNC affiliates (Das 1987; Wang and Blomstrom 1992; Wei, Liu, and Wang 2008). By reverse engineering technologies and emulating management and other business practices, domestic firms may become more efficient over time.

Movement of Labor: Even if new technologies and know-how are not immediately observable by domestic competitors, they may eventually diffuse to domestic firms when employees of MNC affiliates leave to join competitors. Such spillovers may occur from the migration of both managers with in-depth knowledge of best practices (Glass and Saggi 2002; Görg and Strobl 2005) and workers who have undergone skills training to improve their productivity (Fosfuri, Motta, and Ronde 2001; Glass and Saggi 2002). However, to preserve their competitive advantage, MNCs may try to prevent labor movement by offering higher wages, offering superior working conditions, and withholding technologies from deployment in affiliate firms (Blalock and Gertler 2008).

Supplier Improvements: MNC affiliates and their local competitors in the same sector may rely on a shared set of suppliers for intermediate inputs. As covered earlier in this paper, FDI generates positive productivity spillovers to upstream industries as MNC affiliates invest in local suppliers or induce the

entry of new suppliers. MNC investments in suppliers enhance the quality of products and services, and the entry of new suppliers lowers prices for all buyers—not just MNCs—so domestic competitors of MNC affiliates may stand to benefit (Gorodnichenko, Svejnar, and Terrell 2007; Kee 2014).

Limitations of Extant Literature and Future Directions

The primary limitation of the literature is that little is known about specific transmission channels and their relative importance in improving domestic firms' productivity. Existing empirical studies of vertical spillovers largely follow Javorcik's (2004) design, regressing supplier firms' total factor productivity on measures of exposure to downstream FDI while applying various controls. Similarly, recent studies on horizontal spillovers regress productivity estimates on measures of FDI presence in the sector. The research designs deployed by such investigations are thus unable to attribute effects to specific transmission channels, instead uncovering net effects across all channels. Some studies have tried to disaggregate horizontal spillover effects for specific channels by deploying different measures of FDI exposure. For example, some use employment share of FDI to capture labor movement effects (Liu, Wang, and Wei 2009). Such approaches suffer from two weaknesses: (a) they deploy imperfect measures of the mechanisms at work, and (b) their measures are potentially subject to collinearity issues (for example, between employment and capital investment).

Another limitation of the literature is the relatively light coverage of heterogeneities in FDI's effect on productivity. Few studies that estimate FDI's effects on the productivity of domestic firms account for heterogeneity across types of FDI, ownership modalities (joint ventures versus foreign control), source country or region, industry, and characteristics of domestic firms.⁸ More research to test for heterogeneities would thus be valuable

⁸ Many studies analyze heterogeneity along at least one dimension, but few individual dimensions are covered by multiple papers across the literature.

to enhance policy makers' understanding of when FDI does or does not lead to positive productivity outcomes. Furthermore, the bulk of existing studies examine spillovers in manufacturing in middle-income countries. Thus services and low-income countries, particularly in Africa, are key areas for closer future research. Finally, downstream spillover effects have received relatively limited attention.

The lack of suitable data limits the ability to attribute effects (or at least intermediate outcomes) to specific transmission channels using regression-based studies. More work should thus focus on collecting and analyzing detailed microdata that allow modeling of mechanisms (see Winkler 2013).⁹ Concurrently, the use of in-depth case studies (see Larrain, Lopez-Calva, and Rodriguez-Clare 2000) to validate postulated channels and to develop a fuller understanding of sectoral heterogeneities can be insightful.

Conclusion

This note synthesizes evidence on productivity spillovers accruing to domestic firms from the presence of FDI in developing countries. For firms in upstream sectors, evidence suggests the presence of large, positive productivity effects, whereas evidence in downstream sectors is mixed. Domestic firms that compete with MNC affiliates in the same sector generally experience insignificant or negative horizontal productivity effects. While various transmission channels are postulated to be at work, their presence has not been sufficiently validated qualitatively or quantitatively.

FDI and domestic firm characteristics affect productivity gains. Larger productivity gains accrue to domestic suppliers of MNCs that operate in the manufacturing sector, have larger production scale and superior management capacity, and are located closest to MNCs. Greater productivity gains to local suppliers are also observed from efficiency-seeking FDI, partially owned MNC affiliates (such as in joint ventures), and MNCs that deploy technologies that are not too advanced for developing countries. Among domestic competitors of MNCs, productivity gains are more positive if local firms already possess somewhat sophisticated technologies and have higher absorptive capacity. The easier transmission of know-how in services industries may also benefit domestic competitors of MNC affiliates in services. Finally, economies that are only just starting to liberalize and offer lower barriers to knowledge diffusion (for example, weaker intellectual property protections) exhibit greater potential for positive horizontal spillovers.

Future research should address gaps in the existing literature. The literature's coverage of the channels through which productivity impacts occur and the mediating factors that influence impacts is modest. Future research could focus on illustrative case studies to assess the presence and relative significance of channels through which MNC affiliates affect domestic firms' productivity. These insights could then be leveraged to guide the generation of microdata to support empirical estimation.

⁹ Relatedly, some debate exists in the literature as to the best way to measure productivity using available data (for example, revenue versus volume as a dependent variable, or appropriate control functions) in light of endogeneity issues in estimating production functions. Appendix A of Cusolito and Maloney (2018) contains a detailed discussion of such issues. Nevertheless, the most widely cited meta-analyses account for different studies' estimation methods, and the vast majority of studies reviewed here apply the widely used Levinsohn-Petrin or Olley-Pakes methods to account for commonly cited simultaneity and selection issues.



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