

# Foreign Direct Investment, Backward Linkages, and Productivity Spillovers

IN FOCUS

# LINK BUILDING



## What Governments Can Do to Strengthen Linkages and Their Impact

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FINANCE,  
COMPETITIVENESS &  
INNOVATION

INVESTMENT CLIMATE

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## Introduction

This note provides an up-to-date summary of the academic evidence around the drivers and channels for technology transfer and productivity spillovers by multinational corporations (MNC) operating in host economies. Foreign direct investment (FDI) is a major contributor to development. Besides the direct benefits FDI brings in terms of increased capital, employment and exports, the presence and operations of MNCs can also help improve the productivity of local firms through backward linkages and offer an important channel for the integration of local firms into global value chains (GVC). However, several market failures exist that get in the way of these linkages and spillovers fully materializing. This note highlights the main challenges as well as some policy recommendations for host economy Governments to consider.

Despite the growing popularity of attracting FDI as a development strategy, the large body of empirical evidence shows that productivity spillovers do not occur automatically and are context specific. Two main factors influence the degree of spillovers from MNC affiliates. The first factor is variations in the characteristics of both foreign and domestic firms (firm-level heterogeneity), which influence the extent of use of local suppliers, the nature and level of technology dissemination, and the performance improvements that domestic firms may make. The second factor consists of host economy conditions and government policies. The attraction of a sufficient level of MNC investments is necessary but not sufficient to ensure that domestic firms benefit from productivity spillovers. Host economy governments need to provide an economic environment in which MNC affiliates and domestic firms can operate efficiently and where the extent and effects of inter-firm linkages between these two types of firms are facilitated.

This note presents and discusses the main findings from an extensive survey of the recent literature on productivity spillovers from FDI through supplier linkages (Jordaan, Douw, and Qiang forthcoming). It then uses these findings to construct a framework that shows the various phases that underlie the attraction, sourcing behavior, and spillover impact of MNC affiliates to identify key areas where host economy governments can implement “soft” industrial policies to foster the extent and impact of linkages between FDI and local suppliers. The final sections present several guiding principles for effective policy making and provide some conclusions.

## MNC Affiliates and Productivity Spillovers

**MNCs play an important role in growth processes of most developing and emerging economies.** MNC affiliates can generate

<sup>1</sup> In this document, a multinational company (MNC) refers to a company with one or more affiliates located in countries (host economies) other than where the company’s headquarters are located (home economy). MNC affiliates refer to the affiliates located in host economies. Local and domestic firms refer to companies that are indigenous to the host economies.

a number of direct positive effects in host economies by fostering higher levels of capital investment, introducing new industrial activities, creating direct and indirect employment effects, and stimulating international trade. Furthermore, indirect effects occur when domestic firms improve their performance as a result of the presence and operations of MNC affiliates. These indirect effects, which arise in the form of productivity spillovers, are a central feature of the economic benefits provided by MNC affiliates.

**Technology dissemination creates productivity spillovers.** MNC affiliates incorporate modern and advanced knowledge, technologies, and management practices. Productivity spillovers occur when domestic firms absorb and implement these technologies and new skills and improve their performance. Productivity spillovers can be transmitted via several channels (Görg and Greenaway 2004). One channel is the demonstration effect, whereby domestic firms learn about, observe, and copy technologies that are used by MNC affiliates. Another channel is *inter-firm labor mobility*, whereby domestic firms benefit from employing workers that previously worked for MNC affiliates, bringing with them new knowledge, skills, and experience that they gained while working for foreign-owned firms. The third channel is *inter-firm linkages*, through which domestic firms obtain new knowledge and technologies from MNC affiliates that purchase inputs from them or MNC affiliates that supply inputs to them.

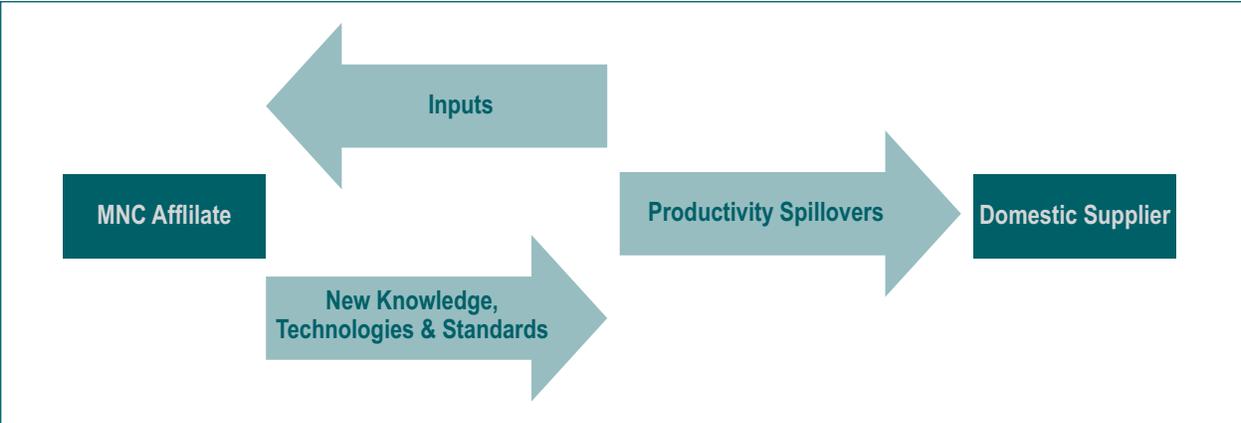
**Backward spillovers are the most important type.** The original interest in FDI spillovers focused on *horizontal spillovers*, referring to cases whereby domestic firms absorb and implement knowledge and technologies from MNC affiliates operating in the same industries. The vast body of evidence indicates that horizontal spillovers are economically not important (Havranek and Irsova 2012). In contrast, there is substantial evidence of positive vertical FDI *spillovers*. One type consists of forward *spillovers*, caused by technology dissemination by means of MNC affiliates that

supply inputs to domestic firms. The other type consists of backward *spillovers*, created by technology dissemination between MNC affiliates and domestic suppliers. The evidence shows that backward *spillovers* occur most frequently, indicating that input-output linkages between MNC affiliates and domestic suppliers constitute the main channel of productivity *spillovers*.

**Input-output linkages between FDI and local suppliers create productivity spillovers for various reasons.** First, MNC affiliates exercise stronger demands on local suppliers regarding the quality of inputs, cost-effectiveness, and so on. Even in the absence of technology dissemination, this can lead to productivity spillovers, when domestic firms respond to these stringent demands by improving their performance. Second, markets for intermediate inputs can facilitate the unintentional dissemination of knowledge and technologies, as firms frequently share information on product specifications and production processes. Also, MNC affiliates screen and evaluate (potential) suppliers, providing information, feedback, and suggestions for improvement to these suppliers. Third, MNC affiliates are often actively involved in the provision of support and the dissemination of new technologies to their suppliers in return for higher-quality and more cost-effective inputs.

**The process underlying backward spillovers can be decomposed into three related parts.** Figure 1 depicts the process and its main components. The first component relates to the level of sourcing by MNC affiliates in host economies. The second component concerns the degree and types of technology transfer that MNC affiliates provide to their local suppliers, fostering the dissemination of new knowledge and technologies. The third component is the degree to which technology dissemination leads to productivity improvements among domestic firms. Table 1 lists a number of factors that are important for these components. All three components are influenced by characteristics of MNC affiliates and domestic firms, and by a set of additional factors related to host economy conditions.

**Figure 1. Local Inputs, Technology Dissemination, and Productivity Spillovers**



**Table 1. Factors Influencing Backward Linkages, Technology Dissemination, and Productivity Spillovers**

	Use of Local Suppliers	Technology Transfers	Productivity Spillovers
MNC Affiliates	<p><b>MNC-related factors</b></p> <ul style="list-style-type: none"> <li>• Market-seeking</li> <li>• Percent of foreign ownership</li> <li>• Level of autonomy</li> <li>• Nationality</li> <li>• Cultural and institutional proximity to host economy</li> </ul> <p><b>Other firm characteristics</b></p> <ul style="list-style-type: none"> <li>• Size, age, and production processes</li> </ul>	<p><b>MNC-related factors</b></p> <ul style="list-style-type: none"> <li>• Efficiency-seeking</li> <li>• Percent of foreign ownership</li> <li>• Level of local sourcing</li> <li>• Level of autonomy</li> <li>• Company policy</li> </ul> <p><b>Other firm characteristics</b></p> <ul style="list-style-type: none"> <li>• Size</li> </ul>	<p><b>MNC-related factorsMarket seeking</b></p> <ul style="list-style-type: none"> <li>• Percent of foreign ownership</li> <li>• Nationality</li> <li>• Distance to home country</li> <li>• Cultural proximity to host economy</li> <li>• Level of development home economy</li> </ul>
Domestic Suppliers	<ul style="list-style-type: none"> <li>• Lack of availability of inputs</li> <li>• Quality of inputs</li> <li>• Cost competitiveness</li> <li>• Reliability of supply</li> <li>• Limited scale of production processes</li> </ul>	<ul style="list-style-type: none"> <li>• Firm size</li> <li>• Experience with supplying MNC affiliates</li> <li>• Experience with international markets</li> <li>• Commitment to develop linkages with foreign-owned clients</li> <li>• Participation in global value chains</li> </ul>	<p><b>Absorptive capacity</b></p> <ul style="list-style-type: none"> <li>• Firm size</li> <li>• Export status</li> <li>• R&amp;D involvement</li> <li>• Technology gap with client firms</li> </ul>
Additional Factors	<ul style="list-style-type: none"> <li>• Level of economic development of the host economy</li> <li>• Geographical proximity between MNC affiliates and domestic firms</li> <li>• Sector</li> <li>• Infrastructure</li> <li>• Quality of institutions (such as contract enforcement, and red tape)</li> </ul>	<ul style="list-style-type: none"> <li>• Nature of input-output market</li> <li>• Selection process to identify suitable domestic suppliers</li> <li>• Access to finance for suppliers to make investments that support technology transfers</li> </ul>	<ul style="list-style-type: none"> <li>• Agglomeration of economic activity</li> <li>• Geographical proximity between MNC affiliates and domestic firms</li> <li>• Human capital</li> <li>• Trade openness</li> <li>• Level of economic development host economy</li> <li>• Access to finance</li> </ul>

Source: Based on the survey of empirical findings in Jordaan, Douw, and Qiang, Fortchoming.

## Backward Linkages

**Several characteristics of MNC affiliates influence their use of local suppliers.** *Market-seeking FDI* (MNC affiliates that operate in host economy markets to serve host economy markets) tend to use more local suppliers than *efficiency-seeking FDI* (MNC affiliates that operate in host economies to produce intermediate inputs and products more efficiently). An important reason why market-seeking FDI uses more local suppliers is that these suppliers can adjust products to local conditions. However, there are indications that the investment motive is becoming less important as a factor influencing local sourcing. One reason for this is that growing levels of trade openness of host economies increase the pool of international suppliers accessible to MNC affiliates. Another reason is that a growing number of MNC affiliates in international production networks are characterized by both market-seeking and efficiency-seeking motives to varying degrees, valuing both access to host economy markets and the efficient use of host economy resources (Baldwin and Okubo 2014).

*Familiarity with domestic firms facilitates local sourcing.* MNCs can enter a host economy in various ways: by creating a new production facility, acquiring an existing domestic firm, or establishing a new production facility together with a domestic firm in the form of a joint venture. The available evidence indicates that MNC affiliates with some level of local participation use more local suppliers. One reason may be that participating domestic firms are more familiar with the host economy, facilitating the identification and use of local suppliers.

*MNC affiliates that have a high level of sourcing autonomy within the MNC organizations to which they belong generally have higher levels of local sourcing.* In contrast, affiliates of MNCs that operate centralized sourcing policies have much less scope and flexibility to change their use of local suppliers. Other business functions where the level of autonomy has been found to increase local sourcing include supply, logistics, production development, and marketing activities.

*Nationality or country of origin can influence the use of local suppliers in several ways.* MNC affiliates use more local suppliers when the affiliates' home and host economies are culturally and institutionally more similar. Another reason why country of origin can affect the use of local suppliers is that high transportation costs can prevent MNC affiliates from using suppliers from their home economies. Finally, the nationality of MNCs can also play a more indirect role by influencing other affiliate characteristics such as investment motive, mode of investment, and an affiliate's level of autonomy.

*Several other characteristics of MNC affiliates that do not relate to their affiliation with MNCs influence the level of use of local suppliers.* Large MNC affiliates tend to source a lower percentage of their inputs in host economies, as they demand inputs at volumes that usually exceed the capacity of most local suppliers. Firm age or experience also matters; it takes time to identify suitable suppliers and create local linkages. The literature survey confirms that MNC affiliates that have been operating in host economies for a number of years have higher levels of local sourcing. The nature of production processes is also important. MNC affiliates with production processes characterised by assembly-style operations tend to source fewer inputs in their host economies. In contrast, MNC affiliates with production processes that rely more on the processing and use of intermediate parts and components source more inputs locally. Several studies also report substantial differences between industries regarding the degree that MNC affiliates use local suppliers.

**Characteristics of domestic firms also help determine whether MNC affiliates will use them as local suppliers.** Evidence points to the important concept of 'absorption capacity' of local firms in predicting productivity spillover outcomes from engagement with MNC affiliates. World Bank Group research also shows that high growth status, exporter status, R&D expenditure and geographic proximity to MNC affiliates are among the important indicators that increase the likelihood of a local firm becoming a supplier to MNC affiliates. However, the primary factor that limits the level of local

sourcing is the unavailability of inputs. Regarding inputs that are (or could be potentially) sourced in host economies, MNC affiliates often indicate that problems related with the quality of inputs, their cost-competitiveness, the reliability of supply and the limited scale of suppliers' production volumes all limit their use of local suppliers. Ongoing processes of economic liberalization and decreasing trade costs increase the importance of these barriers because they make it easier for MNC affiliates to use international suppliers instead of local suppliers.

## Inter-firm Linkages and Technology Transfers

**Characteristics of MNC affiliates influence technology transfers.** MNC affiliates that produce for international markets tend to have a stronger commercial motivation to support their local suppliers. Because product specifications and requirements are often more stringent for products destined for international markets, MNC affiliates are more inclined to offer support to local suppliers to ensure the quality of their inputs.

*MNCs may have company policies to promote economic development.* Case study research shows that there can be marked differences between MNC affiliates in terms of their overall level of supportiveness and their underlying intentions to help local suppliers improve their structural performance. The cause of such differences can be traced back to explicit company policies of some MNCs to create positive impacts in the host economies in which their affiliates operate.

*Fully foreign-owned MNC affiliates are less likely to provide technology transfers.* MNC affiliates that have some level of host economy participation tend to provide support more often than MNC affiliates that are fully foreign owned. As with the level of use of local suppliers, increased familiarity with domestic suppliers facilitates the provision of support.

*The relation between the level of use of local suppliers and technology transfers is not uniform.* In general terms, it is assumed that MNC affiliates with

a high level of local sourcing also provide a high level of supportiveness. However, the relationship between local sourcing and the provision of technology transfers is more complex. One reason why high local sourcing can occur with low levels of support is that high levels of local sourcing are the result of technology transfers that MNC affiliates provided in earlier phases when they were helping local suppliers improve their production processes. Another reason is that MNC affiliates may be sourcing mainly low value-added commodities and routine inputs from local suppliers, which does not provide any incentives to the foreign firms to create supportive linkages (Amendolagine et al. 2019).

*The level of autonomy of MNC affiliates enhances technology transfers.* Similar to the level of use of local suppliers, the evidence also indicates that affiliates that operate with a certain amount of autonomy within their MNC organization are more engaged in providing technology transfers to their local suppliers.

*Large MNC affiliates tend to be more involved in providing support to their local suppliers.* Larger firms have more resources to provide technology transfers and help their local suppliers improve their performance.

**Technology transfer is greater among domestic firms the actively try (self-select) to become domestic suppliers to MNC affiliates.** Just as MNC affiliates screen and select their local suppliers, domestic firms also undergo a process of self-selection, whereby domestic firms with more capabilities (try to) become suppliers to MNC affiliates (Javorcik and Spatareanu 2009). The effectiveness of technology transfers that MNC affiliates provide is enhanced by this selection effect because these domestic firms are more committed to creating successful linkages and are better able to benefit from technology dissemination and support.

**Global value chains (GVCs) are not automatically conducive to the dissemination of technologies and the creation of productivity spillovers.** The growing importance of GVCs in world trade is offering firms in developing countries a new

mode of export-based development. By joining international production networks, they obtain access to international markets and become exposed to new knowledge and technologies that can foster learning and technological development (Taglioni and Winkler 2016). However, firms in most developing economies that participate in GVCs provide commodities and simple material inputs and services, limiting the scope for such effects. Furthermore, GVCs where domestic suppliers provide commodities and routine inputs are usually characterized by pure market transactions (buying and selling) between MNCs and domestic firms—transactions that are not conducive to technology dissemination. MNCs also have little incentive to provide support to such suppliers when they experience difficulties in meeting product standards and specifications. This challenge seems especially prevalent in so-called “buyer-driven” GVCs, such as e.g. the global Apparel industry and value chain.

## MNC Affiliates and Productivity Spillovers among Local Suppliers

**Productivity spillovers occur most frequently.** Most of the quantitative evidence on backward spillovers consists of positive associations between the scale of the presence of MNC affiliates and productivity of domestic firms in industries that supply inputs. Although less plentiful, there is also evidence that local suppliers are more likely to start exporting or intensify existing exporting activities. Similar evidence exists indicating that MNC affiliates can also exercise positive effects on innovation and on the levels of complexity of the products of local suppliers (Javorcik, Lo Turco, and Maggioni 2018).

**Characteristics of MNC affiliates are associated with productivity spillovers.** MNC affiliates that produce for host economy markets are usually found to create larger spillovers among local suppliers. An explanation for this may be that MNC affiliates that produce for host economy markets use more local suppliers, increasing the exposure of domestic firms to modern technologies and technological support. Also, it may be that the technologies that

these affiliates use are more suitable to production processes of local suppliers, facilitating their dissemination and absorption.

*MNC affiliates with some level of host economy participation generate larger productivity spillovers,* much of the evidence on the effect of the degree of foreign ownership of MNC affiliates on productivity spillovers suggests. MNC affiliates that are not fully foreign owned tend to purchase more local inputs and provide more support, increasing the exposure of domestic firms to new knowledge and technologies.

Evidence on the effect of nationality or country of origin is largely similar to the findings on drivers of the level of use of local suppliers. Some studies find that *cultural proximity* between MNC affiliates and host economies results in larger productivity spillovers. Other evidence indicates that a *large distance between the home and host economy of MNC affiliates* leads to larger productivity spillovers, as it fosters the use of local suppliers. Also, there is some evidence indicating that *the level of development of the home economy of MNC affiliates* has a positive effect on productivity spillovers, suggesting that MNC affiliates from more developed home economies incorporate technologies that have more potential to create spillovers.

**The absorptive capacity of local suppliers is important for productivity spillovers.** It is increasingly recognized that productivity spillovers are facilitated or even conditional on domestic firms possessing a sufficient level of absorptive capacity, allowing them to absorb technologies and benefit from support from their foreign-owned client firms. As absorptive capacity is not directly observed, evidence that indicates its importance consists of positive effects of several firm-level characteristics related to absorptive capacity on productivity spillovers. An example is a recent study by the World Bank that finds for a large sample of domestic firms in 122 developing and emerging economies that only the more economically dynamic domestic firms—measured by relative employment growth—experience positive backward spillovers (World

Bank 2018). Other domestic firm characteristics that are found to exercise a positive effect include firm size, whether suppliers have experience producing for international markets, their level of human capital, and whether they are involved in research and development (R&D) activities.

**A large technology gap increases the scope for productivity spillovers.** In most cases, MNC affiliates are technologically more advanced than domestic firms. The size of technological differences between FDI and domestic firms—the *technology gap*—influences the type and extent of productivity spillovers. Very large technological differences between FDI and local suppliers make it difficult for any productivity spillovers to occur. However, a small technology gap between foreign and domestic firms implies that there is only a limited scope for suppliers to learn, reducing any productivity spillovers that may arise. In contrast, a somewhat larger technology gap may result in more substantial productivity spillovers because there is much more scope for domestic suppliers to learn and improve (Jordaan 2017). Of course, a large technology gap also implies that it can be more difficult for productivity spillovers to occur, underlining the importance that local suppliers possess a sufficient level of absorptive capacity.

**Agglomeration and geographical proximity foster productivity spillovers.** Agglomerations of economic activity result in productivity premiums because they facilitate inter-firm linkages and knowledge spillovers (Duranton 2015). MNC affiliates that locate in a geographic area or sector characterized by an agglomeration of economic activity within a host economy will find it easier to identify local suppliers and create linkages with them, resulting in a higher level of local sourcing. Geographical proximity between domestic and foreign-owned firms also facilitates communication and technology dissemination, thereby nurturing and enhancing productivity spillovers (Jordaan and Monastiriotis 2018). In contrast, domestic firms that are not located close to MNC affiliates will find it much more difficult to operate as suppliers and benefit from knowledge spillovers.

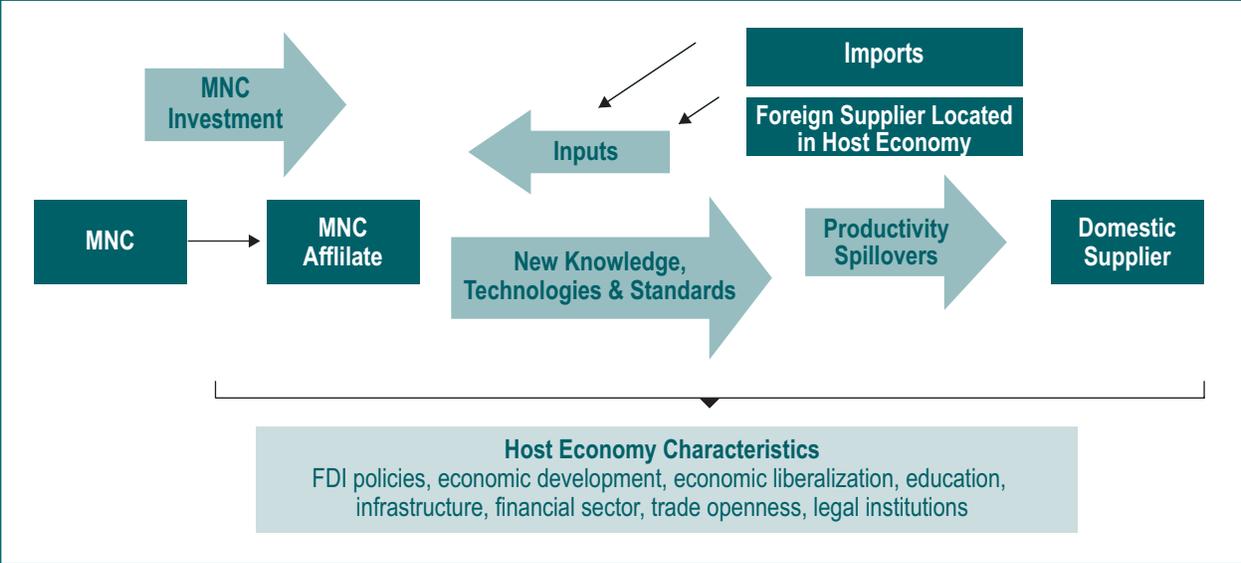
## FDI Linkages and Productivity Spillovers: Market Failures, Constraints, and the Scope for Policymaking

**There is ample scope for host economy governments to implement policies that foster inter-firm linkages and their effects,** given that characteristics of MNC affiliates, domestic firms, and host economies all affect the extent and impact of backward linkages. Successful policy making must address a number of market failures, constraints, and conditions that influence the various components of the processes underlying linkages and productivity spillovers. Figure 2 depicts the processes underlying the creation of linkages and productivity spillovers, distinguishing between four areas: attracting and facilitating MNC investments; backward linkages between MNC affiliates and domestic suppliers; technology dissemination, absorption, and performance improvements among local suppliers; and host economy characteristics that affect the operations and performance of FDI and domestic firms (Jordaan, Douw, and Qiang forthcoming).

**Host economy governments need to target suitable MNC investments.** The attraction of a sufficient level of MNC investments is a prerequisite for meaningful productivity spillovers. However, host economy governments also need to target those MNC investments that are likely to create inter-firm linkages and productivity spillovers. They need to learn about MNCs to understand their attitude about local sourcing and supporting local suppliers. Furthermore, a number of firm-level characteristics of MNC affiliates and domestic firms influence the use of local suppliers and the creation of technology transfers. Host economy governments need to examine these characteristics in order to identify MNC investments that are prone to creating linkages and have the potential to generate performance improvements among domestic suppliers.

**Efforts by government to attract MNC investments and by MNCs to increase FDI are limited by information asymmetries.** MNCs often

**Figure 2. Attracting and facilitating MNC investments: Backward linkages between MNC affiliates and domestic suppliers**



have incomplete and imperfect information about possible locations for new investments. Similarly, host economy governments that want to attract new MNC investments have imperfect information about all the location factors that are important for MNCs. Such imperfect information will lower levels of MNC investments into host economies (Harding and Javorcik 2011), reducing opportunities for local sourcing and productivity spillovers. By engaging with MNCs, providing them with more information, and learning about their specific investment needs, host economy governments can address this market failure and attract higher levels of MNC investments (Heilbron and Aranda Larrey 2020; Heilbron and Whyte 2019).

**Imperfect information and information asymmetry also hamper efforts by MNC affiliates to use local suppliers, and for local firms to work with MNC affiliates.** Especially when MNC affiliates are new to a host economy, input markets provide incomplete information about the availability and quality of domestic suppliers. Similarly, domestic firms often do not know what types of inputs the affiliates may want to source locally, what their product standards and requirements are, and so on. This lack of information

becomes even more constraining when domestic firms need to improve their performance before they are able to meet any (potential) demand by MNC affiliates for local inputs. Because it is costly and time-consuming to solve these informational market failures, they often result in fewer linkages between MNC affiliates and domestic firms.

**The liberalized international economic environment increases the importance of solving market failures in local input markets.** MNC affiliates can obtain economic benefits from solving market failures in input markets, as local sourcing facilitates communication and coordination and lowers transport costs. However, due to decreasing trade costs and the growing liberalization of the international economic environment, the use of foreign suppliers that are either located in host economies or in other countries is increasingly seen as viable alternative sourcing strategies. This is the case especially for more sophisticated inputs—precisely the types of inputs that are more likely to be associated with technology dissemination and productivity spillovers. The liberalized international economic environment increasingly places domestic suppliers in direct

competition with foreign suppliers, making it more important that market failures and constraints in local input markets are addressed to increase the competitiveness of local suppliers.

**Governments can implement a variety of policies to address market failures in local input markets.** To lower the costs associated with identifying (potential) demand and supply of inputs, governments can create databases containing sector-specific information about local firms that want to become suppliers to MNC affiliates. This can be done in combination with the provision of qualification and certification programs for domestic firms that make it easier for MNC affiliates to identify suitable local suppliers. Match-making and networking events also facilitate the creation of backward linkages. They bring MNC affiliates and domestic firms into direct contact, allowing them to share information about potential input demand and supply and explore the possibilities for business relationships.

**Governments can support the extent of backward linkages by improving the local supplier base.** The use of local suppliers can create important cost savings for MNC affiliates. Therefore, policies that improve the capabilities and competitiveness of local suppliers of available inputs can increase the extent of backward linkages. The lack of availability of inputs is the primary factor limiting local sourcing by MNC affiliates. Thus, it is important that policies to improve the supplier base are based on a thorough understanding of the industry-specific needs and possibilities of MNC affiliates and domestic firms and have well-grounded goals. A solid understanding of economic sectors and consultations with MNC affiliates will help in determining the feasibility of promoting the local provision of new types of inputs, especially in the context of competition from international suppliers. As alternative, host economy governments may consider attracting foreign firms that are able to provide these inputs, thereby improving the local supplier base and increasing the attractiveness of the host economy for further MNC investments.

**Governments can play an important role as facilitators of technology dissemination.** The provision of technology transfers by MNC affiliates is motivated by clear cost-benefit considerations, comparing the costs of providing technological support with the benefits of obtaining higher quality and more cost-effective local inputs in return. Host economy governments can work together with MNC affiliates and local firms to identify the types of technological support that are most important and assist in devising ways to deliver this support efficiently, thereby lowering costs for the foreign firms. Various incentive instruments have been tried and tested by governments to support MNC affiliates in this process (Sabha et al.). Also, host economy governments can create systematic supplier development programs in which MNC affiliates and domestic firms jointly participate, ensuring that the support provided by the foreign firms is used by participating domestic firms to produce higher quality and more cost-effective inputs.

**Governments can help domestic firms benefit from technology dissemination.** The strong evidence that the absorptive capacity of domestic firms plays a central role in achieving productivity spillovers indicates that policies that help domestic firms absorb new technologies will be particularly beneficial. Improving the absorptive capacity of domestic firms is important—especially because the scope for productivity spillovers is most favorable when there are substantial technological differences between MNC affiliates and domestic firms. Governments can disseminate information about new technologies and provide training programs to enable domestic firms to benefit from technology transfers. Moreover, MNC affiliates that provide technology transfers expect domestic firms to make investment themselves to benefit from these transfers and become better suppliers. Governments can implement policies to help domestic firms access necessary funding or financing to target investments so that the effects of technology dissemination are strengthened.

**Host economy governments need to provide an economic environment that allows MNC affiliates and domestic firms to operate efficiently and that is conducive to inter-firm linkages and technological development.** Three dimensions of the host economy are particularly important for linkages and productivity spillovers.

*First*, there has to be a clear FDI policy in place that creates a business environment that is conducive to the entry, start up, and long-term operations of MNC affiliates. Host economy governments need to pursue transparent and long-term policies that support new and existing MNC affiliates and provide a variety of services that address the specific conditions and needs of these foreign firms.

*Second*, the economic environment needs to enable foreign and domestic firms to operate efficiently. This direction is in line with contemporary development strategies that are based on creating open and liberalized economies that allow for the most efficient and productive firms to grow and thrive. It is also important that economic institutions are in place that support such an economic environment, including the pursuit of investment and trade policies that promote nondiscriminatory access to international markets and a reliable legal and regulatory framework that facilitates the integration of global value chains through FDI or the integration of local firms in supply chains.

*Third*, host economy governments need to invest in elements of the economic environment that provide public goods and/or are characterized by indivisibilities. A good example is education. Although individual MNC affiliates can contribute to improving the level of human capital by providing educational and training programs to their workers, the scale of these investments is necessarily limited compared to the overall returns to a country or region in investing in quality education. Therefore, host economy governments need to invest in providing education programs that allow entire sectors and industries to benefit from a well-trained workforce. Other areas where such aggregate investments can be made that improve the functioning of individual firms as well as entire industries and

economies include infrastructure, labor markets, financial institutions, and research and development activities. In designing and implementing policies to invest in these areas, it is important for governments to work with MNC affiliates and domestic firms to find the right balance between ensuring that the effects of these investments are generally available (nonexcludable), while addressing the specific needs of MNC affiliates and local suppliers.

## **Inter-firm Linkages and Policy-making: Some Guiding Principles**

The varied evidence on the occurrence and the drivers of productivity spillovers through backward linkages indicates that there is ample scope for host economy governments to enhance these linkages and their effects. It is increasingly recognized that host economy governments should not aim to do this through the implementation of restrictive and interventionist measures. Instead, host economy governments need to focus on designing a range of “soft” industrial policies (Harrison and Rodriguez-Clare 2010), fostering backward linkages, and helping domestic firms compete and benefit from productivity spillovers. Some guiding principles follow.

**Pursue policies that will enhance the competitiveness of MNC affiliates.** The use of local suppliers is directly linked to the competitiveness of MNC affiliates. MNC affiliates use cost-benefit considerations to decide on the level and nature of local sourcing. They will increase their use of local suppliers when doing so improves their competitiveness. Policies to increase the extent of backward linkages between MNC affiliates and domestic firms need to aim at lowering the costs and increasing the benefits that foreign firms can obtain from using more local suppliers.

**Target appropriate MNC affiliates.** Host economy governments need to focus on attracting and facilitating the operations of MNC affiliates that have an interest in increasing local sourcing and improving local suppliers. Attracting MNC affiliates that are technologically substantially more advanced than domestic firms ensures that there is

sufficient scope for local suppliers to benefit from productivity spillovers.

**Target appropriate domestic firms.** Host economy governments need to target policy making at those domestic firms that are (potentially) the best suited to act as long-term suppliers to MNC affiliates and improve their capabilities to maximize productivity spillovers. Policies should be targeting those local firms that (potentially) have high levels of absorptive capacity, show a clear commitment to want to work with MNC affiliates, and are willing to take ownership of the performance improvements that are required to create successful sourcing linkages and productivity spillovers.

**Ensure that technology dissemination benefits both MNC affiliates and domestic firms.** Policies that aim to enhance technology dissemination are most effective when they ensure that MNC affiliates benefit from providing support. Supplier development programs in which domestic firms commit themselves to using technology transfers to create better-quality and more cost-effective inputs for MNC affiliates will increase the magnitude and quality of technological support that affiliates are willing to provide.

*Address market failures at the micro (firm) level.* The extent and effects of backward linkages are affected by a number of market failures in the areas of information and coordination. Government policies that aim to solve market failures that obstruct linkages and limit technology dissemination and productivity growth need to be targeted at the firm level where possible.

**Recognize that location matters and support localized development policies.** Agglomeration of economic activity enhances the creation of linkages, technology dissemination, and productivity spillovers. Policy making aimed at attracting MNC investments and creating linkages with domestic firms needs to incorporate regional development policies that promote and facilitate efforts to locate foreign and domestic firms in the same cities and regions within host economies to maximize the extent and impact of backward linkages.

**Establish and maintain long-term goals and commitment.** Host economy governments must recognize that it takes time for MNC investments to be targeted, inter-firm linkages with domestic firms to be established, and productivity spillovers to occur. This is especially important in cases where governments need to invest in developing the capabilities and absorptive capacity of domestic firms—often before any meaningful economic effects from backward linkages have occurred. Governments need to devise and openly commit to long-term goals in their policy making aimed at supporting backward linkages between MNC affiliates and domestic suppliers.

## Conclusion

Productivity spillovers do not happen automatically and are context specific. Variations among firms (firm heterogeneity) is very important, as characteristics of both MNC affiliates and domestic firms influence the level of use of local suppliers, the nature and degree of technology dissemination, and the extent to which domestic firms are able to benefit from productivity spillovers. Furthermore, host economy conditions also influence productivity spillovers, affecting efficiency levels of both types of firm as well as the extent and impact of backward linkages.

The variability of evidence across firms, industries, and host economies on the extent of backward linkages and productivity spillovers indicates that there is substantial scope for host economy governments to implement policies that foster backward linkages and their effects. Suitable policies include attracting the right type of MNC investments; assisting MNC affiliates in identifying and establishing linkages with suitable domestic suppliers and providing support to them; and helping domestic suppliers benefit from technology dissemination and create performance improvements. In doing so, it is important that host economy governments design and implement soft industrial policies that—within an open and liberalized economic environment that promotes competition and efficiency—help MNC affiliates and local suppliers create business relationships and generate productivity spillovers that are beneficial to both types of firm.

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