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ENHANCING SPILLOVERS FROM FOREIGN DIRECT INVESTMENT

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LIST OF ACRONYMS

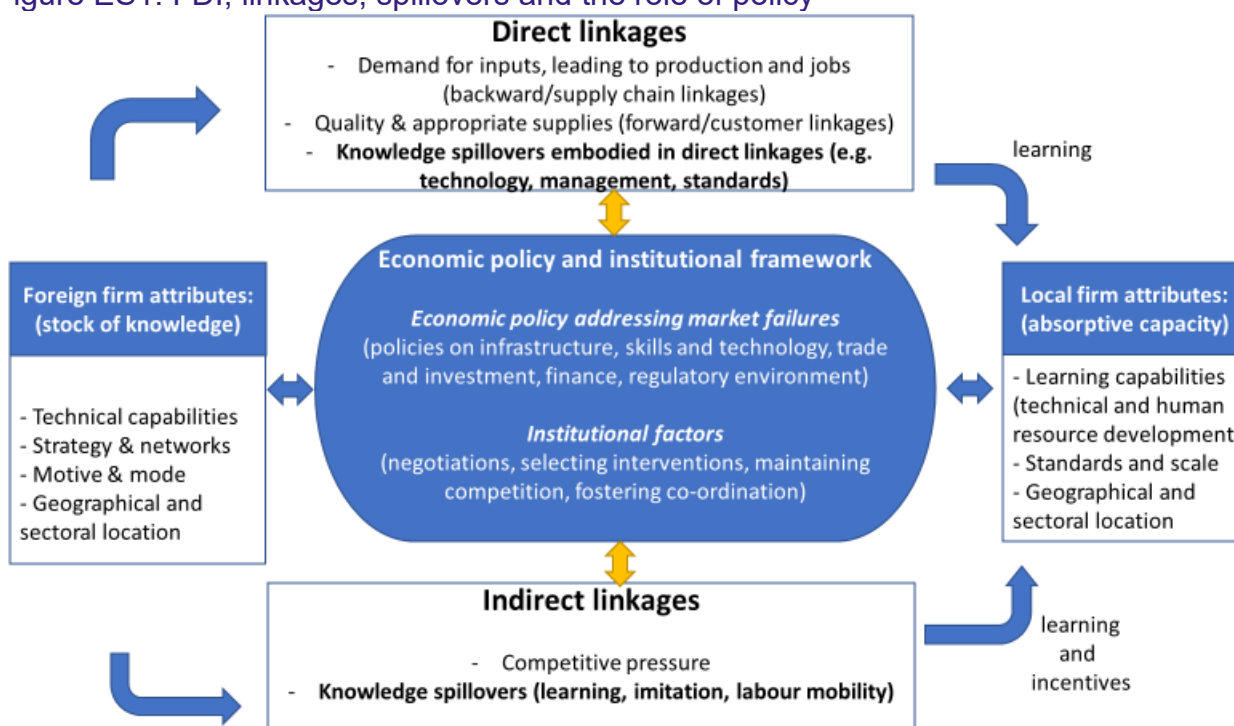
AGOA	Africa Growth and Opportunity Act
BIP	Backward Integration Policy (Nigeria)
CBN	Central Bank of Nigeria
CEO	Chief executive officer
EDB	Economic Development Board (Singapore)
EPZ	Economic processing zone
EU	European Union
FDI	Foreign direct investment
GDP	Gross domestic product
IPA	Investment promotion agency
IT	Information technology
ITC	International Trade Centre
LIUP	Local Industry Upgrading Programme (Singapore)
OECD	Organisation for Economic Co-operation and Development
PPP	Public–private partnership
R&D	Research and development
SET	Supporting Economic Transformation
SEZ	Special economic zone
SMEs	Small and medium enterprises
TNC	Transnational corporation
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organization
US	United States
VAT	Value added tax

EXECUTIVE SUMMARY

Attracting foreign direct investment (FDI) has high priority in development policy, but focusing on the impact of FDI for the local economy is just as important as attracting a large volume of FDI. Many studies suggest a positive correlation between FDI and measures of economic progress, but this is conditioned by many factors such as sector of investment; existence of value chain linkages; level of financial development; extent of employee training; technological and innovation capacity; and firm-level strategies. We argue that policies and institutions play a major role in enhancing the links.

Knowledge or productivity spillover effects are crucial for FDI to have a positive impact on development. We do not observe these knowledge spillovers but they happen when foreign firms buy or sell from local firms or when local firms learn or act as a result of the presence of foreign firms. **A large body of high quality statistical evidence suggests that productivity spillovers are significant and economically relevant through buying from suppliers, and to a more limited extent through selling to firms downstream. However, there is no evidence for an overall positive effect through indirect channels.** Of course, the extent of spillovers varies markedly by context. We argue that policies and institutions can enhance spillovers. This paper examines how public policies (and, by extension, donor programmes) can enhance linkages and improve positive knowledge spillovers.

Figure ES1: FDI, linkages, spillovers and the role of policy



Source: Author

Whilst we cannot observe productivity spillovers from foreign firms, the literature identifies a selected number of pathways that appear crucial behind *how* such spillovers occur:

- The presence of more knowledge inside a foreign firm supports greater spillovers to the local economy, but we hasten to add that these spillovers are not automatic or free.
- One of the clearest ways by which knowledge flows between foreign and local firms is through buying and selling – that is, direct contact through backward and forward linkages.
- The productivity spillovers are greater when local firms have a larger knowledge stock to begin with, for example having human and technological (or absorptive) capabilities, because firms need to learn how to learn and adapt. This can be a short or a long process;

- Local firms acquire and apply knowledge on process and product innovation by imitating practices in foreign firms e.g. through labour mobility. There may also be indirect spillovers on governance through increased interactions between foreign firms and policy makers.
- Enhanced competition provides further incentives for firms to upgrade as long as they have the means to do so (e.g. access to finance).

Public policy shapes these pathways. Based on an understanding of these spillover processes, we discuss policies that support these processes by addressing market and coordination failures in the following areas: infrastructure; financial sector development; human resource development; technological development; investment promotion; and alignment of domestic regulatory frameworks with linkage development.

Political incentives often are deep drivers behind failures to build linkages and promote economic development, including through lack of leadership, lack of coordination or low-quality state–business relations. Political economy factors need to be tackled in areas such as aligning business strategies and national interest; choosing appropriate sectors and locations; coordinating effectively across ministries; enforcing competition policy and developing industrial strategies.

Different country and sector examples provide policy lessons. The successful cases of Ireland, Singapore, Taiwan and China show how a targeted approach contributes to creating productivity spillovers. The governments of these countries built local absorptive capacity through licensing, technology and research and development (R&D) subsidies; put in place local linkage programmes; attracted specific types of foreign firms; and had some degree of labour mobility. The statistical literature has found generally positive (vertical) productivity spillovers in these countries.

The case of FDI in East African manufacturing suggests a patient, labour-intensive approach to support and work with multinational firms. The case of Chinese investment in manufacturing in Myanmar suggests a range of positive spillovers, which can be enhanced through, among other things, skills development programmes in the garment sector. The case of mega deals in Mozambique shows it is important to understand and negotiate better with large multinationals. The case of Nigerian backward linkages shows that a local content policy works only in the right circumstances.

Donors can support governments in their pursuit to maximise the economic benefits of FDI through a range of programme areas aimed at enhancing knowledge spillovers, including:

- supporting targeted coordination around FDI, including on pre-investment, working with suppliers and after-care services post-investment. This work involves investment promotion agencies or organisations such as development finance institutions;
- targeting infrastructure, financial sector development and skills and technological development to promote learning and increase absorptive capacity; and
- engaging pragmatically in local content programmes when it makes sense.

We also discuss the **timing, sequencing, co-ordination and risks of policy actions.** Spillovers can happen almost immediately, for example by spreading knowledge through labour mobility, or they can take several years or decades, for example when engaging in the process of building up human and technological capabilities. Attracting the right type of firms under the right conditions can support efforts to build up linkages and create spillovers to the local economy, but forcing through local procurement prematurely without quality support structures reduces linkages, spillover potential and the likelihood of further investment. More analysis and discussion need to go into appropriate co-ordination, timing and sequencing of different types of interventions in areas such as development finance, investment promotion, business environment and governance reform, building national innovation systems and supporting human and technological capabilities generally. Doing this well requires institutional support.

1 INTRODUCTION

Public policy plays a crucial role in enhancing the spillovers from foreign direct investment (FDI). The role of FDI in driving economic growth and development has been contested at least since the 1960s (te Velde, 2006). There have always been views in favour of FDI and against it. Some have argued that FDI leads to economic growth and productivity increases in the economy as a whole, and hence contributes to differences in economic growth and development performance across countries. Others have stressed the risk that FDI will destroy local capabilities, extract natural resources without adequately compensation, or introduce inappropriate technologies.

A more nuanced view on FDI and development is emerging in the research community but this has yet to be embraced fully by the policy community. The impact of FDI on economic growth is not only positive or only negative, but depends on the type of FDI, firm characteristics, economic conditions, policies and institutions. Moreover, the effect of FDI is not static, but involves a dynamic process that includes knowledge ‘spillovers’ from FDI to the local economy over time (see e.g. Caves, 1974, Rodriguez-Clare, 1996; Javorcik, 2004; Havranek and Irsova, 2011). And, crucially, policies and institutions can affect the impact of FDI, including the extent and impact of spillovers (te Velde, 2002 and 2003; Farole and Winkler, 2013).

This paper aims to provide insights for policy-makers concerned with FDI spillovers by reviewing the empirical literature in a policy relevant way. It is structured as follows.

Section 2 first (Section 2.1) reviews the pathways through which FDI affects economic development, which includes through knowledge spillovers from FDI to the local economy. Section 2.2 discusses policy factors that can enhance spillovers from FDI. It covers both market and coordination failures in building linkages, justifying public policy support, and actions to overcome political barriers. Section 3 examines a number of specific sectoral examples of FDI spillovers, both successful and challenging, and provides lessons learned. Section 4 concludes and suggests implications for programmes that would like to promote FDI spillovers.

2 FDI AND ECONOMIC DEVELOPMENT: PATHWAYS AND POLICIES TO ENHANCE SPILLOVERS

We first discuss the economic impact of FDI and the determinants of knowledge spillovers (Section 2.1), and then policies to enhance spillovers from FDI (Section 2.2).

2.1 Economic impact of FDI: pathways

Much has been written about the relationship between FDI and development over the past decades. The United Nations Conference on Trade and Development (UNCTAD) (1999) reviews several areas through which FDI affects economic development (see Appendix Table 1; for additional reviews see OECD, 2002; Farole and Winkler, 2013):

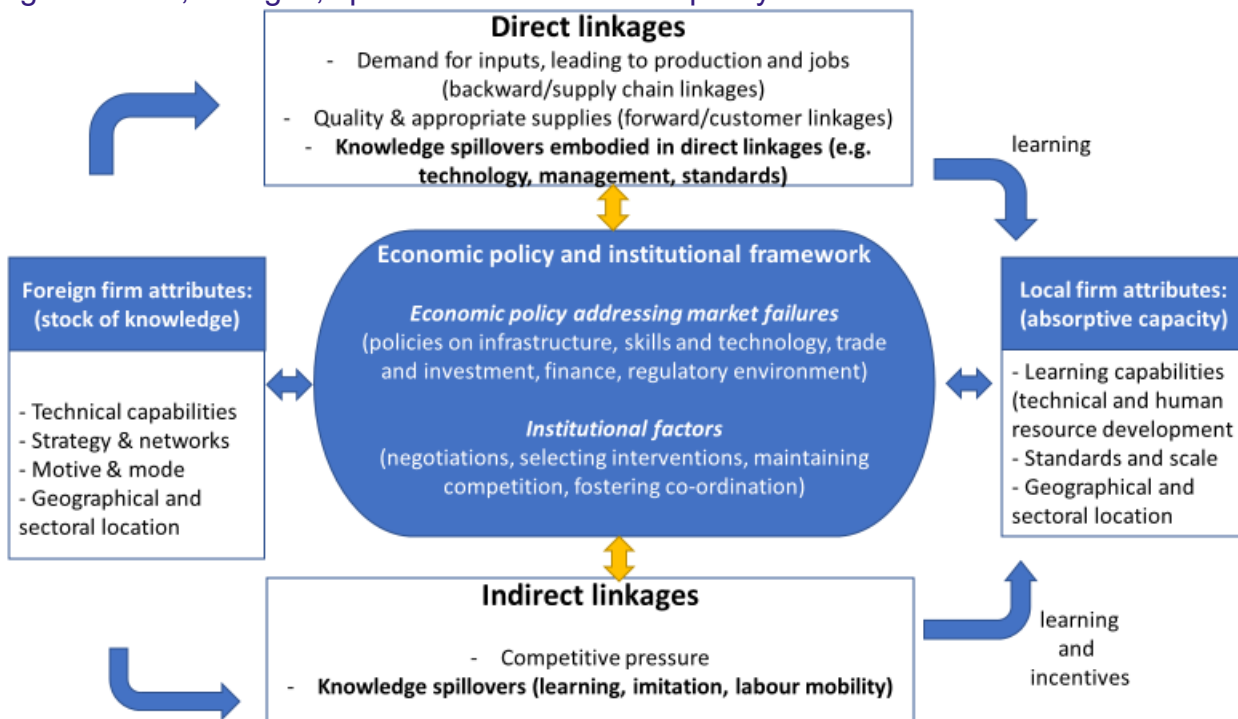
1. employment and incomes
2. capital formation and market access
3. structure of markets
4. technology and skills
5. fiscal revenues and
6. political economy.

FDI increases economic growth by increasing the amounts of factors of production (by increasing capital or employment, directly, or indirectly in local suppliers and competitors), in the growth accounting context, or by increasing the efficiency with which these factors are used (by using superior technology or locating in high-productivity sectors, or through productivity spillovers to local firms), as expressed in the endogenous growth literature, with FDI being the port through which a country can access new ideas. We observe how foreign firms employ people and invest but we do not observe directly productivity effects that occur through knowledge spillovers.

A crucial factor behind whether FDI affects the local economy temporarily or permanently is the extent of productivity spillovers. FDI-induced building-up of factors of production without productivity effects can lead to a one-off shift in productive capabilities, which will lead to a one-off shift in incomes but a temporary shift in economic growth. In the long run, FDI-induced productivity change is important for long-lasting economic growth. This can happen through knowledge spillovers that enhance capabilities in local firms.

Figure 1 conceptualises the impact of FDI through linkages and spillovers, and the role policy plays in this process. Foreign firms bring with them a stock of knowledge and a set of strategies, standards and other attributes. They affect local firms through direct linkages (local firms selling to or buying from foreign firms) and indirect linkages. Spillovers refer to knowledge spillovers in the form of technological knowledge (incl. for example on exporting) or knowledge on new management techniques that is being transferred from foreign to local firms. Such spillovers can occur through direct linkages, for example as part of a supplier relationship, or indirect linkages, such as when local firms imitate what foreign firms are doing (e.g. exporting, or developing and adapting new technology). Direct linkages refer to backward and forward vertical linkages; indirect linkages go beyond horizontal linkages and cover linkages between firms at the same or different levels in the value chain as the foreign firm, as long as they are not directly buying or selling to each other.

Figure 1: FDI, linkages, spillovers and the role of policy



Source: Author

The extent of spillovers depends on a range of factors, such as policies and institutions, depicted by the blue box in Figure 1, which we discuss later in this section. Meta-analysis of the literature (Havranek and Isrova, 2011 and Isrova and Havranek, 2013) suggests that the extent of productivity

spillover depends on context, and hence that policy factors play a major role, but also there is more positive evidence of vertical (through direct linkages) compared with horizontal spillovers (through indirect linkages). They find that a 10 percentage point increase in foreign presence is associated with an 11% increase in productivity of local firms in supplier sectors.

Econometric studies have assessed the effects of FDI on growth and productivity. Macro and meso studies find positive and significant correlations between FDI and gross domestic product (GDP) per capita or productivity. It is not clear whether FDI productivity correlations at the macro level are driven by spillovers to and learning effects in local firms, or only occur because of composition effects when FDI tends to locate in higher value-added industries or segments, or both. From a policy perspective, it is important to understand *whether* and *how* positive spillovers happen. Not only would this provide an opportunity for policy to enhance short-term effects, but also FDI associated with positive knowledge and productivity spillovers has long-lasting effects on development.

Those countries whose local capabilities have been enhanced because of FDI (e.g. in Singapore and Ireland, where local suppliers have become global exporters) have also been able to benefit most from FDI in the long term. However, those countries that have attracted footloose FDI without building up local capabilities or linkages may have derived fewer long-term benefits from FDI. China has derived positive effects through capital accumulation and productivity change (Graham, 2004), but Chinese investments in Cambodia have few linkages to the local economy, for example.

The existing evidence suggests that the impact of FDI at the macro level is not necessarily homogeneously positive or negative. The impact of FDI depends on type of FDI, firm characteristics, economic conditions and policies and institutions. This heterogeneous picture is also borne out by micro-level studies. These studies (e.g. Haddad and Harrison, 1993; Aitken and Harrison, 1999; Djankov and Hoekman, 2000) find that the productivity level of foreign firms is higher than that of domestic firms, but also that productivity growth in domestic firms is lower than it would have been in the absence of foreign firms (in Morocco, Venezuela and the Czech Republic), or in other cases where there are positive spillovers (e.g. Mexico). The negative effects are sometimes associated with market stealing arguments, while positive effects relate to learning effects in local firms with much lower productivity levels than their foreign counterparts in the same sector. The overall effect of FDI on the host economy is perhaps weakly positive, though there are studies where the impact is negative and cases where the impact is positive (Moran, 2003).

Mortimore (2004) criticises spillover studies for assuming that the effect of FDI is automatic and does not depend on factors such as strategies or policies by foreign firms. However, some channels of impact on growth and productivity emerge from spillover studies: technology transfer, human resource training, deepening of production linkages and enterprise development. FDI policies need to focus on maximising the effects of FDI through such channels. In a more recent meta-review of spillover studies, Havranek and Isrova (2011) suggest backward vertical spillovers are greater when foreign investors are from countries nearby, with small technology gaps with local firms; when countries are open to trade but have underdeveloped financial systems; when local firms are in manufacturing rather than services firms; and when foreign firms are in joint ventures rather than fully-owned subsidiaries.

We review a range of empirical studies on FDI spillovers (some of these are listed in Appendix Table 2). The literature confirms there are six major determinants of the effects and spillovers of FDI:

1. sector of investment
2. value chain linkages
3. level of financial development
4. extent of employee training and labour mobility
5. technological and innovation capacity
6. firm-specific characteristics such as management systems, degree of ownership, firm size and parent firm strategies.

It is worth analysing in more detail *how* these spillovers work, as this will inform the discussions in Section 2.2 on which policy actions (including by donors) could enhance them. We first discuss each of the above areas in turn. Strictly speaking, determinants of the impact of FDI, e.g. on the volume of linkages, differ from the determinants of FDI spillovers – that is, the determinants of productivity impacts. In practice, spillovers often occur through direct linkages, so the two are similar.

First, foreign firms in *different sectors* have different characteristics that affect productivity and knowledge spillovers to local firms (see e.g. Giroud et al., 2012), because different sectors have different initial levels of knowledge that could potentially flow to local firms. Firms that have more embodied knowledge in technology-intensive sectors such as pharmaceuticals or electronics have a greater technological stock and hence a greater potential for spillovers compared with garment assembly or agriculture, which embody less knowledge, though differences also exist within sectors. Of course, technology intensity of foreign firms compared with local firms is not a guarantee that knowledge will flow and be absorbed by local firms. However, it should be possible to rank sectors on their potential for spillovers.

Second, one core channel *how* of knowledge spillovers work is through direct interactions among firms. This is because denser *sub-contracting or backward linkages* through buyer–supplier relationships are natural conduits for technology spillovers (e.g. Javorcik, 2014). We cannot observe such spillovers directly but we know that foreign firms communicate or require production against pre-determined standards that embody codified knowledge that could be passed on to suppliers. Once suppliers learn *how* to produce to satisfaction for one multinational, they can also supply others. Or, once local firms understand how foreign firms export, they can also export themselves, and supplying foreign firms turns into becoming global exporters. Giroud et al. (2012) examine 809 subsidiaries in 5 transition countries and find that the technological capability in foreign firms is positively related to knowledge transfer via backward linkages.

Newman et al. (2015) use a panel of 4000 firms in Vietnam and extend spillover measures used in, for example, Javorcik (2014) with more direct measures of linkages. They confirm that spillovers are more likely through vertical than horizontal routes. They also find that domestic firms experience positive productivity spillovers through direct linkages with upstream FDI firms. The density of linkages varies markedly amongst developing countries. Page (2016) describes how Viet Nam has developed more extensive supplier and customer relationships than Kenya. Newman et al. (2015) argue this is a more general difference between Asia and Africa. Such density of networks or clusters will affect productivity spillovers.

Third, the availability of deeper and stronger *financial markets* supports FDI spillovers. Better-functioning capital markets allow suppliers, imitators, learners and competitors to invest in technology and human capital to enhance spillovers. Financial sector development makes local firms less dependent and locked into captive supply/value chain linkages. Linkages can be good in their own right, but the ability to diversify and establish other linkages and upgrade value chains through access to finance may maximise learning. At the same time, foreign firms may have negative spillovers through indirect linkages if foreign firms crowd out availability of cheap credit (Isrova and Havranek,

2013). Thus, foreign firms provide incentives for local firms to act and they can respond to incentives when they have the means to do so; access to finance helps them here.

Fourth, *training and labour mobility* facilitate spillovers in essentially two ways. Enhanced training and experience gained inside foreign firms, or training provided in their suppliers, raises the stock of knowledge and productivity of workers, which diffuses faster through the entire local economy through labour mobility. Knowledge gained can be used for start-ups of other firms.

For example, Gorg and Strobl (2015) present empirical evidence for the importance of labour mobility. They use firm-level data in Ghana and show that domestic firms run by owners that used to work for foreign firms in the same industry immediately prior to starting their own firm have greater productivity growth than other local firms. This suggests that entrepreneurs accumulate certain knowledge that can be used to raise productivity. This knowledge is sector-specific as there are no productivity effects in case the entrepreneur started in a different sector.

The more general the training and the more standard and transferrable the awarded certificates, the easier it is to maximise spillovers (the example above suggested general evidence specific to the sector). If, by contrast, training is entirely specific to the tasks performed in specific firms, the skills gained are less usable and transferrable to other firms (this may have been the case in the example of Ghana above). On-the-job training and learning-by-doing are also important; this includes soft skills such as turning up on time and obeying employee rules. Training in the presence of worker mobility is a powerful transmission mechanism of productivity spillovers.

A complementary way in which training supports (indirect) spillovers is through training in local firms. More skilled workers in local firms are better able to learn, imitate and 'absorb' new products, processes or management techniques pioneered by foreign firms. This is called '*absorptive capacity*' through human resource development.

Fifth, the existence of technological and innovation capacity (a second component of *absorptive capacity*) in the local economy supports spillovers from multinationals. The accumulation of technological knowledge follows dynamic pathways, and linkages with multinationals can support further technological development and learning (Lall and Pietrobelli, 2002). Research and development inside firms helps assimilation of external process and product innovation (Cohen and Levinthal, 1989). Barrios et al. (2014) provide evidence of the positive effect on productivity spillovers of local research and development (R&D) in a number of EU countries.

Absorptive capacity through technical and human resource development builds learning capabilities, which are crucial in assimilating new technology that enhances productivity. This concept drives spillovers through direct and indirect linkages. For example, Marin and Bell (2006) find no evidence of automatic spillovers from FDI for local firms in Argentina, but investment by domestic firms in capital embodied technology and skills training were associated with spillover effects, whilst investment in R&D was not considered important. Paus and Gallagher (2008) argue that scale and technology requirements can prevent foreign firms sourcing from local firms in Mexico and Costa Rica beyond basic services such as packaging.

Sixth, other characteristics of foreign firms matter. Firms with a longer-term planning horizon are more likely to invest in the local economy. A stronger commitment to the local economy usually means more training. There also seems a lot of evidence that productivity spillovers are more prevalent when foreign firms enter into joint ventures with local firms (see e.g. Newman et al, 2015). Strategies of the parent firm and the function of the subsidiary in the supply chain matter. Some multinationals locate parts of the value chains in a certain country simply to perform predetermined low complexity tasks such as assembly rather than production of inputs or complex downstream products. These firms can be termed *efficiency-seeking* firms (Dunning, 1993). This means they would actively try to dissuade

countries from upgrading and diversifying because that would change the business of the whole multinational or value chain.

Paus and Gallagher (2008) point to the example of US electronics FDI in Mexico which began to source from other foreign firms rather than local firms. But there are many other examples. For example, Chinese FDI in Cambodian garments utilises low labour costs and trade preferences with little interest in transferring complex functions to subsidiaries in Cambodia. Yet, in other sectors or countries, FDI can be *strategic-asset* seeking (Dunning, 1993), and seek specific assets in local firms, such as knowledge institutions in Singapore or a dense supplier network in the automobile sector. Natural resource-seeking firms (ibid.) often seek a social licence to operate and engage in local sourcing for that reason.

The mode of entry (greenfield versus mergers and acquisitions) matters for spillovers. Evidence in Farole and Winkler (2013) suggests it takes longer to disperse spillovers when using mergers rather than greenfield investment because greenfield investors are quicker to adopt new technology.

In conclusion, while we cannot observe productivity spillovers themselves, our review of the literature identifies a number of key pathways that appear crucial behind 'the *how* of productivity spillovers':

- The presence of more knowledge inside the foreign firm supports greater spillovers to the local economy, but we hasten to add that these spillovers are not automatic or free.
- One of the clearest ways by which knowledge flows between foreign and local firms is through buying and selling – that is, direct contact through backward and forward linkages.
- The productivity spillovers are greater when local firms have a larger knowledge stock to begin with, for example human and technological (or absorptive) capabilities, because firms need to learn how to learn and this can be a short or a long process;
- When local firms acquire (e.g. through mobility) and apply knowledge on process and product innovation by imitating practices in foreign firms. There may also be spillovers on governance through increased interactions between foreign firms and policy makers.
- Enhanced competition provides further incentives for firms to upgrade as long as they have the means to do so (e.g. access to finance).

These pathways explaining the how spillovers focus on the spillover impact on firms. But there can also be an impact of foreign firms on public policy which can lead to productivity spillovers to other firms (indirect linkages). This applies in different ways. In a static sense, foreign firms in certain natural resource industries (e.g. oil in Nigeria) may weaken policy effectiveness, but in other contexts (such as diamonds in Botswana) foreign firms have helped develop the country's public policies and set up local business services (e.g. accountancy skills) which are an input into the mining sector. Further, showing that foreign firms and public policy makers interact successfully to solve investor problems can have signalling and snowballing effects on other investors, with positive productivity effects in the end. Or foreign firms may interact with policy makers for improved infrastructure which can have productivity enhancing effects.

Each of the above factors could be measured. For example, we can measure technological capabilities in both foreign and local firms, by sector, or labour turnover and mobility, or competitive pressures, and we can map linkages among firms. It would be worthwhile to measure and benchmark across countries.

2.2 Policy factors that influence spillover pathways

A range of policy and institutional factors can help enhance spillovers from FDI. We focus first on policies that can help overcome market and coordination failures that constrain spillovers (Section 2.2.1) and then focus on political incentives that prevent spillovers (Section 2.2.2). Section 2.2.3 summarises the links between policies and spillover pathways.

A range of policy and institutional factors can help enhance spillovers from FDI. We focus first on policies that can help overcome market and coordination failures that constrain spillovers (Section 2.2.1) and then focus on political incentives that prevent spillovers (Section 2.2.2). Section 2.2.3 summarises the links between policies and spillover pathways.

2.2.1 Overcoming market and coordination failures constraining spillovers

Public policies in the form of public investment, setting of standards, convening, persuasion, taxation and subsidies can improve spillovers by building direct linkages, creating a competitive incentive framework, fostering worker mobility, technology demonstration and learning (the pathways identified at the end of Section 2.1). It can do this by addressing market and coordination failures in the following areas:

Physical and digital infrastructure. One reason why spillovers through subcontractor linkages often fail to materialise is lack of physical or digital infrastructure. Better and more targeted road, energy, water distribution and telecommunications infrastructure can enable linkages between local firms and multinationals. Infrastructure has public goods aspects, which means that benefits cannot be appropriated privately only. Infrastructure project can be lumpy and often require upfront investment, while the benefits accrue over a longer period of time and depend on policy actions adding to the uncertainty. This is where public sector guarantees come in. It could involve the public sector building infrastructure or leading engagement through public–private partnerships (PPPs) when this is more efficient for programme execution, in order to address market failures.

In many cases, such as for large natural resource projects, investors and the state have a mutual interest in building infrastructure (both private and public benefits). In such cases, negotiations between state and firms are important. See Coughlin (2018) for the case of Mozambique. To finance special economic zones (SEZs), there is a need to coordinate public infrastructure connecting to the zone (e.g. connecting to roads or grids) with public and private infrastructure in the zone (e.g. roads, housing, waste water disposal, energy) (see Tyson, 2018).

A better digital infrastructure (e.g. access to internet and digital platforms) will attract more digital foreign firms (Banga and te Velde, 2018). Such firms have a lot of knowledge and hence greater potential for spillovers to local firms. Physical and digital infrastructure can also help form clusters, which fosters knowledge spillovers (Porter, 1998) including from FDI. Based on a survey of Hong Kong garments firms in China, Thompson (2002) shows that clustered FDI is significantly better at transferring technology than dispersed FDI, implying that industry cluster and FDI policies should be considered together.

Financial sector development. Trade finance, including working capital, or credit for upfront large-scale investments, is crucial for local firms wanting to supply to multinationals, especially when multinationals do not provide finance themselves. Public policies that help provide or incentivise more and better-targeted finance at lower cost will help. This includes using development banks that can address market failures in the financial sector, which often fails to serve long-term infrastructure, small and medium enterprises (SMEs) or productive capacity, instead favouring lending to the state, real estate and consumers (te Velde and Griffith Jones, 2013; Beck and Tyson, 2018). Finance across entire value chains is also important for building linkages and creating spillovers. A more developed financial market will also enable local firms to respond to greater foreign competition.

Human resource development and labour mobility. Workers that are better-trained or have more on-the-job experience encourage spillovers. The public sector needs to correct market failures, because (i) firms do not appropriate all benefits from training and instead focus on training that is relevant to a firm's production and (ii) spillovers are enhanced through mobility of skilled workers. Effective skills-building, especially related to science and technology, helps build local absorptive capacity. This is influenced by national innovation systems (see below).

There are many different forms in which such action can take place, for example for training centres in Penang, Malaysia (te Velde, 2002) or skills development funds with local industry. In some cases, the private sector may undertake training. Promoting standardised training (as opposed to firm specific training) helps worker mobility and knowledge spillovers. Finally, the availability of skills is also likely to attract strategic asset-seeking investment focused on knowledge generations, which can provide greater spillovers.

Technological development. Better support for innovation can help linkages and productivity spillovers. Greater technological capabilities (or greater absorptive capacity) in local firms or subsidiaries facilitate FDI spillovers (Cohen and Levinthal, 1989). A comprehensive approach towards innovation linking multinationals, local firms, R&D firms, skill centres, financiers and venture capitalists and public policy actors can incentivise innovation and productivity spillovers. National innovation systems are networks of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies (Lundvall, 1992; Freeman, 1995). Non-market institutions play a vital role in building technological capabilities, in addition to addressing market failures more generally, as elaborated in the evolutionary approach to industrial development (Lall and Pietrobelli, 2002).

To illustrate the lack of support for innovation in low-income countries, a survey in Ghana suggested that, while firms are often innovative, and the Ghanaian government is well regarded as an innovation partner, most firms do not benefit from extension services such as loans or training. On the one hand, firms have little knowledge of the policy instruments available to them. On the other, innovation is not always recognised and/or measured by government, which therefore does not sufficiently support innovation efforts within local firms (Fu et al., 2014).

Investment promotion. Firms do not always understand the full range of advantages that a particular location offers them when deciding where to invest or expand. In such cases of information-related market failures, building markets through investment promotion helps attract lead firms or attract firms that complete a full cluster. Some countries actively try to encourage agglomeration or clusters of firms where productivity increased because of linkages. Examples of such investment promotion include IDA Ireland, which attracted firms in three main clusters, including software, electronics and pharmaceuticals; and Singapore's Jurong Island Corporation, which used cluster development funds. More recent examples include trying to attract FDI include textile and garment producers in Athi River economic processing zone (EPZ) in Kenya and Hawassa Industrial Park in Ethiopia. A targeted approach to promotion is important, but it can also be risky (see below).

Aligning domestic regulatory frameworks with linkage-building. Local content regulations or joint ventures are often used to force through linkages and localisation of production. This needs to be approached with caution. On the one hand, multinationals may not locate in a country if they are required to produce inputs locally that may not be available (Moran, 2003). On the other hand, a risk is that some multinationals may not source anything locally (e.g. 90% of inputs used by Kenyan multinational firms are imported). It is therefore important to establish a practical middle way that encourages and signals linkage potential in those areas in which the country has potential for competitive production. Recent contributions suggest that voluntary schemes that name and shame the extent of local linkages may be more effective (Warner, 2016). Havranek and Irsova (2011) find evidence that open trade and investment rules help vertical spillovers (direct linkages) and Irsova and Havranek (2013) for horizontal spillovers (indirect linkages).

Drawing on experiences in the extractives sector in several countries, Ramdoo (2015) highlights a range of factors that determine the success of local content policies. These include: clearly defined policy objectives, effective implementation and monitoring of local content policies, well-focused policies that can be realistically implemented by the extractives sector, flexibility in regulations, enabling them to be adapted to changing circumstances, a balance between mandatory regulatory measures to achieve local content objectives and maintaining competitiveness, strategic collaborative

partnerships with private companies to support the implementation of local content policies, ensuring protectionist policies are temporary, performance-based and phased out when local industries achieve the necessary levels of competitiveness, and promoting innovation, R&D, capability-upgrading and technology transfer as key elements in building a competitive local supplier base.

There is a difference between efficiency-seeking and market or natural resource seeking investors. Forcing backward linkages onto assemblers who locate in a country because of low wages is unlikely to work well when the local capacity is not available. Pursuing that may mean footloose investors will go elsewhere. However, market seeking investors and investors who are in the country because of natural resource availability may have a long term interest in developing local linkages.

2.2.2 Addressing political barriers to promoting FDI spillovers

The biggest barriers to linkage-building and economic development are often linked to political incentives, such as lack of leadership, poor coordination or other political economy factors, including low-quality state–business relations (Ansu et al. 2016; McMillan et al, 2017). The political incentives are often to keep the status quo (e.g. favouring farmers over processors, protected groups of truckers over a more liberal transport system), and coordination (e.g. between state and business, among government departments) is lacking. For these reasons, even though the barriers and solutions are well known, implementation does not happen.

Below, we identify areas in which political economy factors have a major impact on spillovers.

Aligning business strategies and national interest. The strategies of multinational firms can be different from the national interest. For example, a multinational or a lead firm is sometimes interested only in exploiting low wages to minimise costs of assembly operations, rather than investing in complex operations with backward linkages (inputs) or forward linkages (design and sales), even when the country has a (dynamic) comparative advantage in the area. Or the firm is interested in using raw materials while processing these elsewhere (e.g. cocoa in Ghana; alumina in Mozambique). A country's focus, on the other hand, tends to be more firmly on upgrading production and moving up the value chain and building markets in niches of (dynamic) comparative advantage. In some cases, increased alignment can be resolved through a better understanding of business strategies and objectives, but a great deal relates to political power between states and business. More effective bargaining at an early stage has the potential to stimulate more local linkages, including through local content regulations implemented in a market-friendly way.

Choice of sectors and locations. Public policy and local economic development often purposefully affect the choice of sectors and location of economic development. This may be to create dynamic comparative advantages and overcome market failures or it may be for political reasons, to benefit select segments of the population. The latter may not work. For example, SEZs located in remote areas targeting inappropriate industries may not attract many firms. On the other hand, SEZs near easy-to-reach places based on comparative advantages and economic motives, for example in a location with better supplier industries, may fare much better (Kingombe and te Velde, 2016). Targeting is an important part of making spillovers happen but it also involves political risks. Political incentives directly affect the potential for linkages and spillovers too.

Coordination across ministries. FDI strategies are often implemented by investment promotion agencies (IPAs) but the strength of these organisations varies across countries. The IPAs from Singapore (Economic Development Board) and Ireland (IDA Ireland) are examples of strong institutions yielding strong coordinating power. But this is not the case in many other parts of the world. Rwanda aims to model its Rwanda Development Board on the EDB, with a strong CEO. The Ethiopian Investment Committee also has power and is actively trying to resolve problems of investors. But the Tanzanian Investment Centre seems less powerful. The differences often reflect the priority investment promotion receives in the country. Stronger IPAs are also able to provide better after-care services and help link subsidiaries to local firms.

A further action important for raising FDI spillovers is the extent to which countries are able to develop comprehensive strategies around FDI, for example by developing backward (such as agricultural inputs) or forward linkages. This depends on whether a country with diverse ministries can rally around a national vision of economic transformation in which spillovers from FDI happen more naturally. For example, both Ireland and Singapore were able to attract electronics multinationals from the US, while also building up local suppliers, which subsequently became global exporters. This means that transport, industry, trade and agriculture ministries need to work together, coordinated by a lead agency with the power to discipline ministries (Ansu et al., 2016).

Competition policy. FDI spillovers may happen through linkages that have been actively developed, but they may also be stifled through the wrong active policies when they prevent competition. FDI that leads to more competition can have important spillovers, even if they are through indirect linkages. Actual competition or the threat of competition will shift market share towards more efficient producers, while less efficient firms shrink or leave the market. Competition will lead to productivity increases within firms, including through lower-cost inputs. Increased competition can change the incentives for innovation through (i) easing market entry conditions; (ii) increased threat or incidence of foreign competition; and (iii) improved regulatory changes (see Syverson, 2011). Incumbent (foreign) firms often prefer less competition, while, from a country's perspective, competition often incentivise other firms to innovate, leading to indirect spillovers. This a politically sensitive issue. For example, local Nigerian manufacturers may prefer a local content regulation whereas the country may be better served by greater competition through more trade and FDI (McCulloch et al., 2017).

2.2.3 Summarising policy interventions for enhanced spillovers

Table 1 summarises how policy areas in Sections 2.2.1 and 2.2.2 (listed as rows) affect spillovers processes identified in Section 2.1 (listed as columns: attracting foreign firms with spillover potential, backward linkages, competition, imitation and labour mobility, and absorptive capacity). It is an elaboration of Figure 1.

Table 1: Policies interventions to support processes conducive to spillovers: examples

Spillover processes <i>(Link to productivity spillovers)</i> →	Investment promotion <i>Attracting knowledge-intensive FDI</i>	Backward and forward linkages <i>Associated with spillovers</i>	Competition <i>Competition raises incentives to innovate</i>	Imitation, labour mobility <i>Adoption of new technology</i>	Absorptive capacity <i>Helps learning and implement technology</i>
↓ Policy interventions					
Digital and physical infrastructure	Economic fundamentals attract FDI	Enables contact between foreign firm and customers/ suppliers			
Skills development and labour market policy	Economic fundamentals attract FDI			Skills training (especially generally recognised) and flexibility support mobility	Better skills raise ability to learn and implement new technology
Technological development	Attracts strategic asset-seeking FDI	Enables contact between foreign firm and customers/ suppliers			Better technological capabilities raises ability to learn and implement new technology
Finance		External or internal (e.g. letters of credit) finance enables linkages			Access to finance enables firms to make more choices
Regulatory framework	Regulatory facilitation versus regulatory demands	Local content requirement and intellectual property rights affect type and extent of linkages	An effective competition policy improves competition; easier business registration	Regulating for labour market mobility and flexibility	
Provision of information	Better information facilitation relocated of FDI	Supplier information supports linkages	Easily accessible information on products, consumers and producers increases competition	Demo projects facilitate uptake; workers embody knowledge	
Trade and investment policy/ clustering	Open trade and targeted investment policy facilitates FDI	Clustering supports linkages	Open trade and investment rules foster competition	National innovation systems foster learning and interaction	Clusters and innovation systems help local firms acquire knowledge
Political economy	Selecting areas for investment based on economics not vested interests.		Tackling vested interests improves competition	Impact of FDI on governance	

3 FDI SPILLOVERS – SECTOR EXAMPLES

This section discusses sector examples of FDI spillovers and the practical policy issues that emerge from these. Section 3.1 discusses four successful examples (Ireland, Singapore, Taiwan, China and Bangladesh) covering a range of sectors, such as electronics and pharmaceuticals. We then move to discuss partially successful or challenging examples based on previous SET analysis. Section 3.2 discusses FDI in East African manufacturing, based in part on experiences from company visits. Section 3.3 discusses spillovers from Chinese investors in manufacturing in Myanmar based on Gelb et al. (2017). Section 3.4 discusses ways to capture spillovers from mega deals in Mozambique based on Balchin (2018) and Coughlin (2018). Section 3.5 discusses SET work on the promotion of backward linkages in Nigeria, based on McCulloch et al. (2017). Section 3.6 learns selected lessons from these positive and less positive examples.

3.1 FDI spillovers in Ireland, Singapore, Taiwan, China and Bangladesh

Successful case studies of FDI spillovers cover different sectors and countries. Here we discuss Ireland, Singapore, Taiwan, China and Bangladesh.

3.1.1 Ireland

Ireland has pursued an active policy to attract quality FDI and foster linkages between foreign and local firms (see te Velde, 2003). It developed clusters and the world's first EPZ. Shannon Development Corporation developed an area around Shannon Airport because Europe–US long-haul jets no longer needed to land there to refuel. The EPZ offered help with importing and re-exporting without customs duties and formalities from 1958. It targeted US FDI for exports, offering land, grants and factory shells. It was a risky strategy that paid off. The benefits (net exports)/cost (capital and running expenses) was lower than 1 in the early 1960s but greater than 10 in the 1980s, by when foreign firms were responsible for 25% of Irish manufactured exports in 1980s. By then there was also no need for discriminatory fiscal incentives. Ireland focused on building clusters around information and communication technology, electronics and pharmaceuticals. Hence the first aspect of spillover success in Ireland is the active way in which Ireland has attracted high productivity firms with spillover potential.

Commentators lamented the 'lack of linkages' with the local economy in the 1980s and blamed the technological distance between foreign and local firms. As linkages are important conduits for knowledge flows, new policy was set up to increase local linkages. State agencies (for investment promotion, marketing and science and technology) set up a national linkage programme (in the mid-1980s, 30 years after the start of the IDA) to address information related market failures and to support collaborations amongst firms to raise the absorptive capacity. As a result, raw material inputs from local firms increased. This has led to productivity impacts over time. From the 1990s, local suppliers reached sufficient scale to become global exporters, thanks in part to earlier state support.

The narrative that linkages have led to productivity spillovers is also backed up by high quality statistical analysis. Barrios et al. (2004) use sector data and show econometrically that linkages have led to productivity spillovers from foreign firms to local firms. Importantly, the impact is shown to vary by the level of absorptive capacity (measured by R&D expenditure). Barrios et al. (2006) further show productivity spillovers to local firms depend on co-agglomeration of local and foreign firms, when local and foreign firms locate close to each other. This means that Irish policy has supported productivity spillovers by incentivising and spending more funds on R&D and by forming clusters.

3.1.2 Singapore

Active industrial policy in Singapore has attracted FDI and upgraded local firms, and the same pathways occurred. EDB's budget was 4% of GDP in 1961, around 100 times the budget of its predecessor. The Jurong Industrial Estate (a zone) had a slow start (initially only 12 firms) for 5 years

in the 1960s and a breakthrough came after the attraction of Texas Instruments. Jurong Town Corporation leased and rented space from the late 1960s, used a Pioneer Industries Ordinance, put in place a Local Industry Upgrading Programme (LIUP) (supporting foreign firms to enter into long-term supply contracts with local industry), R&D centres and the Skills Development Fund (Lall, 1996). Singapore targeted clusters in electronics, petrochemicals and engineering, using the Cluster Development Fund (1994) to fill gaps.

The local SME sector and interactive transfer of technology and knowledge became an important locational factor for multinationals (Chew and Yeung, 2001). The active policies have also led to positive impacts of FDI on productivity in local firms, especially those local firms that supply foreign firms (see Moran, 1998; Wong, 2003; EDB, 2012). Conversely, the positive interaction between local firms and foreign firms is supporting technology transfer both ways (Chew and Yeung, 2001), or so-called 'reverse spillovers'.

There have been several channels of impact and productivity spillovers. Policies actively tried to attract ever more productive foreign firms that fitted with the rest of the economic structure, including the use of pioneer incentives. Singapore also set up linkage programmes between foreign and local firms which enables spillover. Programmes also developed the absorptive capacity of suppliers by incentivising good quality and appropriate training of workers.

3.1.3 Taiwan

Taiwan used a policy of building industrial clusters in machine tools, bicycles, integrated circuits, personal computers, etc. to promote linkages between local and foreign firms. Amsden and Chu (2003) discuss partnerships between foreign and domestic firms in electronics. There has been a push to increase the numbers of R&D centres for both foreign and local firms (Fuller, 2017). Working with a dense cluster of IT firms has attracted foreign firms to Taiwan. Taiwan developed technical capabilities in local SMEs, by building strategic suppliers to foreign firms through R&D (licencing, subsidies), creating channels to access foreign technology, accepting foreign firms and combining government R&D centres with technology of foreign firms, and providing finance. Local contract manufacturers increased scale and have become lead global firms, with some becoming original equipment manufacturers (OEM) and original design manufacturers (ODMs).

3.1.4 China

Much has been written about China's development model. One core element since 1978 has been the use of SEZs to attract investment and technology, which was used to develop the rest of the economy through linkages (see Zhihua Zeng, 2012; te Velde and Kingombe, 2015). The Chinese experience suggests that clustering and impetus for further reform are co-benefits from SEZs (Graham, 2004). There is a great deal of interaction between SEZs and the local economy in successful zones, for example encouraging mobility through transport links and labour mobility (placements) in the case of Shenzhen SEZ (World Bank, 2008).

3.1.5 Bangladesh

The emergence of the garment sector in Bangladesh since the early 1980s has been phenomenal. It owes primarily to knowledge spillovers through labour mobility, coupled with complementary factors such as preferential market access and availability of trade credit (letters of credit from banks).

Korea's Daewoo was looking for locations from where to export duty free quota free in the late 1970s and early 1980s, and it tied up with Deshi in Bangladesh. Daewoo trained 130 Deshi employees in Korea in 1979. This transferred garment assembly skills from Korea to a Bangladesh firm called Deshi. One year in it led to several start-ups in the rest of the economy (World Bank, 2012).

Other complementary policies were also important. For example, Daewoo was looking for DFQF access which Bangladesh as an LDC had, but not Korea. Bangladesh also followed an industrial policy, started export processing zones and introduced letters of credit. But the speed in the way new

garment firms were set up owed much to the spillovers that occurred when workers trained in foreign firms set up their own start-up. The garment industry has since grown from 130 employees in 1980 to 4 million workers and is now the second largest garment exporter in the world after China.

The main channel of knowledge spillovers is training and labour mobility, and hence indirect linkages rather than through direct linkages. Linkages between garment assemblers and local textile suppliers are not well developed, and most textiles are imported.

3.2 FDI spillovers from East African garment manufacturers

The garment sector is usually organised through global value chains, with lead firms or buyers operating in the US, Europe or Asia and manufacturing companies located in lower-wage countries such as Cambodia, Myanmar, Bangladesh and, increasingly, Ethiopia. In some cases, firms also invest abroad instead of engaging in the more normal arms-length contracting relationships in value chains. Spillovers can happen through both modalities, and we discuss FDI spillovers below.

FDI in the garment sector FDI is often associated with a lack of spillovers to domestic firms because of the strategies of the foreign firms (Morris et al., 2011). The technology-intensive operations are often not performed in low income countries, and sourcing is done from the parent's subsidiaries in parent or third countries. Our own in-depth discussion shed further light on this (te Velde, 2018). Garment assembly firms such as Hela Clothing (UK-owned, headquartered in Sri Lanka) and New Wide Garments (owned and headquartered in Taiwan) both have a subsidiary in the Athi River EPZ in Kenya. They employ several thousand people who benefit. However, there are few spillovers to the local economy through backward linkages. In both cases, nearly all inputs are imported (from China or from subsidiaries of the parent firm) and products are exported to the US using Africa Growth and Opportunity Act (AGOA) preferences. But, while Hela Clothing at least tries to enhance local sourcing, the situation in Cambodia is even more worrying. Chinese firms relocating to Cambodia for low labour costs and trade access had very few incentives to upgrade local subsidiaries. For example, an increase in Cambodian wages would be met by an increase in production in a subsidiary in Myanmar.

There are two interesting directions in which spillovers may occur in the future. First, Hela Clothing is actively trying to promote local leaders and reduce reliance on expatriates (which is discouraged through a tax). A better-skilled local workforce is good for horizontal spillovers through indirect linkages. Second, the EPZ Authority and Hela are actively trying to encourage supplier firms to relocate into the zone, which could lead to vertical spillovers. Hela's value addition is 40% of its export value through cutting, stitching, embroidery, washing, putting on buttons, labelling and packaging. Some of its imported products (e.g. belts for Speedo swimming trunks) and services (e.g. business services) could be generated in factories or service providers that could set up in the same zone as Hela, fostering clustering and agglomeration effects. There is a parallel in Ethiopia, where Hawassa Industrial Park is actively trying to build linkages between a (Chinese) textile company and garment manufacturers in the same zone.

One conclusion could be that, having attracted garments assembly operations, a country may not be able to develop on this basis. But this is also not true, as the cases of, for example, Mauritius or Bangladesh illustrate. A further example is Vietnam, which has been able to develop much stronger linkages throughout the economy. Reviewing various country case studies to inform garment policies in Tanzania, Balchin and Calabrese (2019) argue that the following factors can help develop the garment sector:

- continue to promote an export-oriented textile and garment production model, focusing on high value markets
- support business environment improvements along with better investment promotion, attraction and aftercare

- target the right type of investors, focusing on those willing to make long-term investment commitments, help build local capabilities and develop backward linkages (and often these are regional investors, not footloose investors from countries such as China)
- actively support backward linkages into yarn, fabric and other intermediate inputs; these may not simply follow from growth in garment exports
- support efforts to speed up progress in developing industrial parks and SEZs
- promote trust and mutually beneficial dialogue between the government and the Tanzanian private sector.

3.3 FDI spillovers from Chinese FDI in manufacturing in Myanmar

Gelb et al. (2017) review the impact of Chinese FDI in four manufacturing sectors using firm-level surveys. Table 2 provides a summary of impacts. These are divided into three areas: (i) direct and short-run effects in terms of increases in employment and exports; (ii) indirect effects relating to transfer within the foreign affiliate of knowledge embodied in skills and technology; and (iii) spillover effects through direct backward linkages contributing to local enterprise development or via direct forward linkages in the form of lowered user input costs.

Table 2: Impact of Chinese firms on economic transformation (n=31)

		Garments	Tourism	Construction	Agriculture	Other
Direct short-run macroeconomic impact	Employment	++	N	+	(N)	++
	Exports	++	+	-	++	N
Cross-border knowledge flows within firm	Skills transfer	+	N/+	+	++	+
	Technology transfer	N	-	++	++	+
Spillovers: within the value chain, or via product or labour markets	Upstream linkages: enterprise development	N	N	+	N	DK
	Downstream linkages: lowered user costs	-	-	++	+	DK
	Enhanced competition in product markets	-	+	+	++	+
	Enhanced competition in labour markets	++	-	+	N	N
	Number of firms	7	3	12	4	5

Note: + = moderate positive effect; ++ = stronger positive effect; N = no effect; - = no effect likely; DK = don't know.

Source: Gelb et al. (2017)

There may also be spillover effects through indirect linkages, through the markets in which Chinese firms buys and sells, either via more intense competition in domestic product markets resulting from entry, with potential positive effects on productivity as firms respond, or via more intense competition in domestic labour markets resulting from increased labour demand, which by raising wages could lead to further efforts by firms to raise productivity.

Based on 40 firm level surveys, the paper suggests there have been significant positive effects in the area of employment and exports in garments, local enterprise development and downstream user costs in construction (and infrastructure), and exports, technology transfer and product market competition in agriculture and agro-processing, where indirect Chinese investment (via a large EXIM Bank loan) is supporting farmer liquidity and mechanisation.

In complementary work, Khandelwal et al. (2018) suggest one of the main benefits of SEZs in Myanmar is that they facilitate knowledge transfers, or spillovers, between foreign companies in the SEZ and local companies. Workers in SEZs learn more than in other firms and training is higher. This could facilitate indirect spillovers. Reducing the commuting times would attract more skilled managers, who would in turn facilitate knowledge spillovers. Local sourcing remains low, hampering spillover benefits from backward linkages.

3.4 FDI spillovers from megaprojects in natural resources in Mozambique

Mozambique has relied heavily on large and mega investments by multinational corporations to promote economic transformation ever since the Peace Accords of 1992. Balchin (2018) argues that clustering around megaprojects has led to spillovers and has helped build manufacturing in Mozambique. Midal Cables International Limited is a local subsidiary of Midal Cables Limited, a multinational headquartered in Bahrain. After signing a deal with Mozal in 2013, Midal commenced production in Mozambique in December 2014 and began exporting in January 2015.

Midal produces aluminium rods, wire and conductors primarily for export to Europe (Spain and Italy) and Africa (including Kenya, Namibia, Nigeria, South Africa and Tanzania). Midal's presence is important for economic transformation in Mozambique. It is the first firm operating in the country to add value to the aluminium produced by the Mozal smelter and represents an important step towards higher value-added industrial production. More of this is needed to help spur diversification into higher-productivity industrial activity and manufacturing. Midal has managed to grow a manufacturing base and create jobs. The firm currently employs around 140 people directly in Mozambique, and it is estimated to generate employment indirectly for more than 1,000 people as service contractors. This is a good example of spillovers through direct linkages. Of course there are also linkages between Mozal and Midal. Mozal has also had positive spillovers on the quality of Maputo port which has indirect productivity spillovers.

Three factors encouraged Midal to establish operations in Mozambique: (i) geographical proximity to Mozal's aluminium smelter, which offered good quality molten aluminium; (ii) access to strong regional markets in Africa and preferential market access to the US and the EU; and (iii) electricity and gas supply. However, the most important location factor was that Mozal did initially not allow selling molten aluminium to local firms because its parent firm owned a processor in another country nearby. If the Government of Mozambique had been able to negotiate better terms of local customers from the start, firms such as Midal could have started operating before.

Coughlin (2018) examined the case of Midal and six other large and mega investments. He argues that negotiations have often been from an ill-prepared and professionally and competitively disadvantaged position. He finds that the government has no overarching authority to evaluate commitments and concessions; negotiating authorities and teams have received little systematic training on how to prepare for and manage and conduct negotiations; the Mozambican negotiators did not conduct a thorough due diligence analysis to verify the financial and technical capabilities of the potential investors; Mozambique has no legislation defining and outlawing monopolistic practices that reduce fiscal revenues; and the import tax structure grants excessive effective rates of protection that encourage investments in projects that will create little if any value-added (in international terms) and that will, instead, merely transfer income from Mozambicans to mainly foreign investors.

Faced with these difficulties, the study suggests (i) the creation of a central negotiations authority with a well-trained, well-paid and stable staff to supervise, analyse and ultimately approve major investment authorisation; (ii) regulation of monopoly practices impeding development; (iii) proactive design and promotion of interlinked projects by the Agency for Promotion of Investment and Exports; (iv) more rigorous assessment of the technical and financial necessity of vast land and mineral right grants that the proposed projects have no explicit plan to even utilise; (v) central oversight of the monitoring of megaprojects by disparate governmental organs; (vi) stability clauses that are restricted to fiscal issues, and then limited to 15 years at most; (vii) quick reimbursement by the fiscal authorities of VAT refunds due to companies; (viii) elimination of tax exemptions for dividends for foreign shareholders; and (ix) a re-evaluation and reduction of the effective rates of protection implied by the tariff structure for assembly projects using semi- and completely knocked-down kits of imported inputs.

3.5 FDI spillovers by boosting local content in Nigeria

Spillovers from FDI can be enhanced through the promotion of local content and backward linkages. McCulloch et al. (2017) discuss local content and backward linkages in a number of sectors in Nigeria. Adewuyi and Oyejide (2012) note that the share of local content in the oil and gas grew from around 3–5% in the 1970s to 20% in 2004 and 39% in 2009, including through use of manufacturing and knowledge-intensive service sectors – including fabrication and construction, well construction and completion, control systems and information and communication technology. Ovadia (2013) documents growth in the number and size of Nigerian companies providing services to the oil and gas industry, ranging from engineering design to specialised tools and equipment, and welding, fabrication and drilling services.

There are a number of constraints to developing local linkages. Poor backward linkages relate to problems in the investment climate that dis-incentivise companies from sourcing local inputs from Nigeria and localising value adding activities within the country. These include poor infrastructure (especially energy infrastructure), high costs of finance (owing to high interest rates), low standards for intermediate and finished goods, security concerns and pervasive corruption and bureaucracy, which raises the cost of doing business (Heum et al., 2003; Government of Nigeria, 2014).

In addition, supply issues affect the quality, quantity and availability of local inputs, thereby further dis-incentivising downstream processors from procuring local inputs and establishing backward linkages in Nigeria. These include low productivity in manufacturing, lack of local capacity, limited options for sourcing locally, limited access to technology and a lack of technological know-how, poor infrastructure, fragmented local supplier bases and poor coordination between suppliers and downstream purchasers, financial constraints, inconsistent policies and poor implementation of existing policies.

Local content policies have played a positive role in carefully selected areas. The World Bank (2015) estimates local content policies in the sector have been responsible for attracting \$5 billion into the local economy and created 38,000 jobs. Bakare (2011) argues local capacity utilisation in the sector grew by 400% in the six years following the introduction of the Nigerian Local Content Policy. Adedeji et al. (2016) suggest the local content policy has had positive impacts on local value creation in Nigeria's oil and gas industry through greater participation of local firms and the development of backward linkages, although the overall effects have been below targeted levels.

The production of cement is a further sector in which Nigeria has already achieved a significant level of backward integration. More than 95% of the materials used for cement production in Nigeria are sourced locally (Government of Nigeria, 2014). This owes much to implementation of the industry's Backward Integration Policy (BIP) in 2002. The BIP was introduced to regulate imports of cement into Nigeria and stipulated that cement import licences would be granted (for a limited time period) only to importers that committed to building factories to manufacture cement locally using domestic inputs (primarily limestone and gypsum) (Ohimain, 2014; Ramdoo, 2015). The policy also provided

incentives to local cement companies in the form of waivers of VAT and customs duties on imported cement production equipment. According to Ohimain (2014), these policies were instrumental in facilitating the emergence of local and regional players in Nigeria's cement manufacturing industry. The most successful among these is Dangote Cement Company, which is currently the largest cement producer in Nigeria and across Africa with a fully integrated cement value chain, from quarry to depot (Ogunleye, 2014). Ohimain (2014) argues that Nigeria's production of cement expanded from 2 to 28 million tonnes in the decade following implementation of the BIP, accompanied by the creation of around 2 million direct and indirect jobs.

Agro-industrial processing initiatives devised by the government with the intention of improving linkages between farms and processing facilities are yet to be implemented (Dalberg, 2016). These include the federal government's plan to acquire 10 integrated rice mills and six cassava mills, and the mechanisation projects devised by the Federal Ministry of Agriculture and Rural Development. The United Nations Industrial Development Organization (UNIDO) and Central Bank of Nigeria (CBN) (2010) cite some examples of large multinationals contracting local suppliers to source inputs such as breweries (Guinness Nigeria, JIB) sourcing sorghum and barley from Nigerian farmers through contracting arrangements; a British American Tobacco out-grower scheme involving tobacco farmers in Oyo state; and a Nescafé strategy to source cocoa, sorghum and soya beans locally from contracted farmers.

Chigozie and Chinasa (2016) describe examples of De United Foods Industries Limited sourcing up to 45% of materials locally and looking to eventually produce its noodles using exclusively local content, and Flourmills of Nigeria Plc cultivating a sugar plantation to supply mills. Ogunleye (2014) explains how Dangote Sugar has developed an integrated sugar cane plantation, spanning the whole supply chain from milling right through to sales and distribution. However, despite Dangote's efforts at developing backward linkages, the overall level of backward integration in the sugar industry still appears to be low, with the government suggesting this is a result of a shortage of capital investments in processing sugarcane to raw sugar (Government of Nigeria, 2014).

Backward integration in light manufacturing remains limited. Usman (2015) notes there is currently limited scope for backward integration in light manufacturing, given Nigeria's reliance on imported inputs. Heum et al. (2011) argue that, whereas other countries have succeeded in developing local content on the back of a solid manufacturing sector, this is limited by the small scope and extent of the manufacturing sector in Nigeria.

Policies to overcome these constraints include (i) improving access to infrastructure to support linkages and the development of large-scale indigenous firms (Adewuyi and Oyejide, 2012; Adedeji et al., 2016); (ii) improving vocational training and standard education to enhance local skills and raise the absorptive capacity of local entrepreneurs (Adedeji et al., 2016); and (iii) a variety of interventions such as situating them in closer proximity, improving transport and logistics costs, enhancing storage and warehousing infrastructure, introducing out-grower and bulk buyer schemes.

A major reason why backward linkages in Nigeria's cement sector were developed successfully relates to effective implementation of the Backward Integration Policy with strong provisions for local content – e.g. cement import licences were only granted to importers that committed to building factories to manufacture cement locally using domestic inputs; incentives for local cement companies (waivers for VAT and customs duties on imported cement production equipment). In addition there was heavy protection for domestic producers. Local content policy seems to have been implemented less effectively in other sectors, with perhaps less pressure from vested interests. Backward linkages worked better in cement compared to other light manufacturing because at least some of the domestic inputs required for cement production (e.g. limestone, gypsum) were already readily available. This is a key point more generally: the pre-existence of local capacity (rather than having to develop it from scratch) obviously makes it easier to develop linkages.

3.6 Implications of examples

We can draw several lessons from these negative and positive sector examples which are summarised in Table 3.

The cases of Ireland, Singapore, Taiwan and China clearly show how a targeted approach contributes to creating productivity spillovers. The governments built local absorptive capacity through licensing, technology and R&D subsidies, put in place local linkage programmes, attracted specific types of foreign firms, and experienced labour mobility. The statistical literature has found generally positive (vertical) productivity spillovers for these countries) in electronics and pharmaceuticals.

Several examples of the impact of FDI emerging from SET analysis have been less successful – but this also provides valuable lessons. The case of FDI in East African manufacturing suggests the need for a patient approach to support and work with multinational firms, but there are major challenges in creating large-scale local linkages and spillovers, in part because of the sourcing strategies of foreign firms. The case of mega deals in Mozambique also suggests it is important to understand and negotiate better for large multinationals.

The case of Chinese investment in manufacturing in Myanmar suggests a range of positive spillovers, and some of these can be enhanced through general and specific policies including skills development programmes in the garment sector. The case of Nigerian backward linkages suggests that a local content policy works only in the right circumstances, and that infrastructure and finance issues hamper linkages.

A further point is about time of impacts. Certain impacts take decades to achieve. Both Ireland and Singapore took 10-20 years to properly develop backward linkages which could support spillovers. In some other contexts, spillovers are immediate or short term, e.g. in the case of labour mobility and start-ups in Bangladesh. But in yet other context, such as garments in East Africa or Cambodia, it is likely to take a long time before linkages are being developed. It could be efficient to develop linkages between garments, textiles and cotton in Kenya, Tanzania, etc but this is taking a very long time. Many garment assemblers locate in certain countries to use cheap labour and not to procure locally, and forcing local procurement would mean investment will never come (as we have also seen in the case of Mexico and Costa Rica). Tanzania has never been able to properly link textiles and cotton producers and Kenya is struggling to revive its textile producers at scale. Perhaps some more promising examples in linkages in East Africa relate to some breweries who increased local sourcing from 25% to 75% within a decade (McKechnie, et al, 2018) although there is little evidence document on the productivity impacts that these linkages bring. Of course, in other countries such as Taiwan, local contract manufacturers increased scale and have become lead global firms, with some becoming OEM or ODMs, but it is not clear whether poorer countries can implement the same clustering and SME support policies as Taiwan. Spillovers also tend to take a long time in the natural resource sector.

The final point is about timing, sequencing and co-ordination of interventions. Creating local linkages and fostering spillovers more generally is a time intensive process which requires co-ordination of well-timed interventions that are designed to overcome specific market failures. For example, forcing local linkages through procurement legislation will not be effective if there is no local capacity or no supportive framework for local industry upgrading. On the other hand, implementing linkage programmes and programmes to increase the absorptive capacity of local firms together will both increase the linkages and enhance the productivity spillovers. Combining development finance that support specific lead firms (deals) in clusters, with support for absorptive capacity in local firms through (national) innovation systems around sectors, and support for the business environment to foster competition, labour mobility and streamlined exporting conditions could be transformative because it may attract the right type of firms, with high technology content and appropriate linkages, which can lead to significant spillovers.

Doing this well involves heavy demands on the institutional structure. It is no surprise that countries that sequence and co-ordinate activities effectively also have excellent institutional support structure led from the top (eg Ireland and Singapore). However, this is not a case of necessary initial conditions as several countries have improved institutional structures alongside improvements in economic development.

Table 3: Enhancing spillovers – summary of practical examples

Spillover processes <i>(Link to productivity spillovers)</i>	Investment promotion <i>Attracting knowledge intensive FDI</i>	Backward and forward linkages <i>Associated with spillovers</i>	Imitation, labour mobility <i>Adoption of new technology</i>	Absorptive capacity <i>Helps learning and implement technology</i>
→				
Policy interventions ↓				
Digital and physical infrastructure		+China, Shenzhen <i>- Nigeria's oil and gas</i>	<i>-Commuting times for SEZ Myanmar, managers and transfer of knowledge in Myanmar</i>	
Skills development and labour market policy			+Bangladesh Deshi +Taiwan machine tools +China, Shenzhen	+Singapore skills development fund
Technological development	+R&D centres in Singapore and Taiwan	+Local industry upgrading programme Singapore		Ireland electronics Taiwan machine tools
Finance	+Cluster Development Fund Singapore	+Local industry upgrading programme Singapore <i>-Nigeria's oil and gas</i>		<i>-Nigeria's oil and gas</i>
Provision of information	+Active FDI promotion Ireland and Singapore	+Linkage programmes Ireland and Singapore		
Trade and investment policy/clustering	+Investment incentives Singapore	+Clusters in Ireland, Singapore and Taiwan	+SEZ in Myanmar	
Political economy		<i>-Local content and negotiations in Mozambique</i> <i>Firm-level strategies in East Africa</i>		

Note: Green (+) implies a positive relationship, yellow (in italics and -) a negative relationship.

Source: Text in this paper

4 CONCLUSIONS AND POLICY IMPLICATIONS

Foreign firms bring with them a stock of knowledge and a set of strategies, standards and other attributes. They affect local firms through direct linkages (local firms selling to or buying from foreign firms) and indirect linkages. Spillovers refer to knowledge spillovers in the form of technological knowledge or knowledge on new management techniques that is being transferred from foreign to local firms. Such spillovers can occur through direct linkages, for example as part of a supplier relationship, or indirect linkages, for example when local firms imitate what foreign firms are doing (e.g. exporting, or developing technology).

A review of empirical studies of FDI spillovers suggests there are six major determinants of FDI spillovers:

1. sector of investment
2. value chain linkages
3. level of financial development
4. extent of employee training and labour mobility
5. technological and innovation capacity
6. firm-specific characteristics such as management systems, degree of ownership, firm size and parent firm strategies.

Public policies in the form of public investment, setting of standards, convening, persuasion, tax and subsidies can help build linkages and improve positive spillovers by addressing market and coordination failures in the following areas:

- physical and digital infrastructure
- financial sector development
- human resource development
- technological development
- investment promotion
- alignment of domestic regulatory frameworks with linkage development.

The biggest barriers to linkage building and economic development are often linked to political incentives, such as lack of leadership, poor coordination or other political economy factors such as low quality state–business relations. Political economy factors play a key role in addressing spillovers through:

- aligning business strategies and national interest
- choosing of sectors and locations
- coordinating across ministries
- enforcing competition policy.

Donors can support governments in order to maximise the economic benefits of foreign investment through a range of programme areas.

- *Support for targeted coordination around FDI promotion* including pre-investment activity, working with suppliers and after-care services post-investment. This work involves IPAs or similar organisations. The type of work that will be relevant here centres around support envisaged by programmes such as Invest Africa or the Ghana transformation and employment programme. This support should not be limited to traditional technical assistance but should also involve targeted coordination. This area is also suitable for targeted development finance institutions such as CDC, which can learn from cluster development funds such as those

implemented in Singapore, in combination with agencies that can promote a better investment climate.

- *Targeted support for infrastructure, skills and technological capability development and financial sector development.* The emphasis here is on targeting. General investment climate programmes alone will not be sufficient. Of course, a competitive environment can be helpful, especially around indirect spillovers, but countries should not wait passively until spillovers might happen. Infrastructure in urban areas around zones needs support; this includes low-cost housing for low-skilled workers. Skills programmes will be important but here the emphasis should be on being demand-led and targeted around investors, taking into account the skills that will be developed through firms and the skills that are best developed through public support. Building of skills and technological capabilities in local firms also remains a key task, as this may enhance the absorptive capacity and spillovers, so it should be co-ordinated well with efforts to attract investment.
- *Support for local content and supplier programmes when it makes economic sense.* Blunt local content programmes applied to all sectors are unlikely to yield good results and in many cases may lead to inefficient results. By contrast, designing supplier development programmes for promising economic activities will be helpful (as was the case in Ireland and Singapore). But this requires country-specific analysis. It also involves support to improve the bargaining of countries *vis-à-vis* investors as applied to mega deals in Mozambique or AGOA firms in Kenya. Donors could also work more with firms to understand their barriers.

There are also important lessons for the timing, sequencing, co-ordination and risks of actions. Attracting the right type of firms links well to efforts to build linkages, but forcing through local procurement prematurely without support structure reduces linkages and spillover potential. More analysis and discussion needs to go into co-ordination, timing and sequencing of different types of interventions in areas such as development finance, investment promotion, business environment and governance reform, building national innovation systems and supporting human and technological capabilities generally.

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Appendix table 1: Inward foreign direct investment and economic development

Impact area	Static effects		Dynamic effects	
	Indicators	Differences between foreign and local firms	Impact processes	Indicators
Employment and income	Employment generation inside foreign firms Wage levels for staff with given characteristics	Foreign firms are larger and pay higher wages (especially for skilled employees) than local firms.	Provides employment and incomes directly. Also indirectly through procuring from local firms which can grow as a result. Wage labour may induce spending and further effects. May also indirectly crowd-out other employment by replacing existing employment or pushing up factor prices; may lead to increased wage inequality by raising relative demand for skills	Long-run employment generation in firm and in suppliers and buyers Long-run wage development in foreign firms and spillover effects on wage levels in other firms
Physical capital	fixed capital formation financial transfers	Foreign firms tend to be more capital-intensive.	Stable source of external finance, improving the balance of payments, and potentially raising fixed capital formation. May crowd-out and compete with investment and opportunities of domestic firms. Financial sector deepening raises availability and lowers cost of finance	Long-run relationship between FDI and domestic capital formation.
Market access and exports	share of inputs imported share of output exported	Foreign firms tend to be more trade-intensive.	Firms can gain access to export markets by using global networks of foreign firms. Foreign firms can maintain tight controls of export channels.	Long-run relationship between exports and FDI, and between imports and FDI.
Structure of factor and product markets	concentration in product and factor markets profit margins	Foreign firms can often be found in sectors with 'barriers to entry'.	Entry by foreign firm may lead to more competition. This may reduce product prices by offering consumers more choice The entry of foreign firms may also lead to further concentration and market power. This may raise prices of own and other products.	Long-run relationship between FDI and profitability.
Technology, skills and management techniques	skill level of employees training budgets output per employee R&D budgets types of technologies used	Foreign firms are more skills-intensive, and tend to use more up-to-date technologies and train more.	Provides up-to-date techniques, skilled personnel and advanced management techniques, raising the return to skills offering additional incentives for education. Positive spillover effects on domestic firms through backward and forward linkages, learning, demonstration effects and human resource development. Spillovers are not automatic or free. Reliance on foreign technology and skills may inhibit development of local capabilities. Increased linkages raise dependency of domestic firms on foreign firms.	Vertical (intra-sectoral) and horizontal (extra-sectoral) spillover effects on local productivity ; share of inputs sourced locally supplier development upgrading and long-run development of technology, training and skill levels in foreign and local firms
Fiscal revenues	fiscal payments grants to foreign firms	Tax holidays or outright grants are sometimes offered to foreign firms.	Foreign firms can raise fiscal revenues for domestic government through payment of taxes in case of new economic activities with more value-added. If foreign firms crowd out domestic firms, fiscal revenues may be lower through use of special tax concessions, leading to an erosion of the tax base. Special tax concessions are an implicit subsidy which may lead to rent-seeking behaviour.	Long-run fiscal payments through foreign firms and through a change in economic activity more generally.
Political economy	Agreed deals between state and business	More competition for foreign firms State-business relations	Foreign firms can expose host country to other norms and values, e.g. environmental management, corporate governance, ethics, but foreign firms may lead to political, social and cultural problems, by imposing unacceptable values interfering with political regime, and are said to exacerbate existing problems of corruption. Deals between firms and government may have governance benefits.	

Source: Te Velde (2006) based on UNCTAD (1999)

Appendix table 2: Determinants of FDI spillovers: review of the evidence

Spillover area	Findings	Detailed findings in studies
Sector of investment	FDI in more capital- and technology-intensive sectors and secondary and tertiary sectors associated with greater spillovers than FDI in primary sectors.	<p>FDI in primary sectors may have a negative effect on aggregate growth, whereas FDI in the manufacturing sector can have a positive impact on growth (Alfaro, 2003).</p> <p>Aykut and Sayek (2007) using cross-country data over 1990–2003 show that, as the share of manufacturing sector in FDI flows increases, the positive effect on economic growth increases; conversely, as the share of primary or services sector investments increases, the effect on growth is negative.</p> <p>Evidence from Brazil (Bruhn and Calegario, 2014) points to negative FDI spillover productivity effects in labour-intensive sectors but positive impacts in technology-/capital-intensive sectors.</p> <p>Giroud et al. (2012) examine 809 subsidiaries in 5 transition countries and find that the technological capability in foreign firms is positively related to knowledge transfer via backward linkages.</p>
Value chain linkages	Greater links (vertical and horizontal) between firms helps promote FDI spillovers. Stronger impacts between vertically linked firms, but horizontal links can also matter.	<p>A review of FDI spillovers on productivity changes – using what is more robust firm-level data aggregated at the sectoral level – in developing countries finds negative intra-industry but positive inter-industry spillover effects (Gerschewski, 2013). This means that FDI causes negative productivity affects firms within the same sector as the multinational entrant that crowds out local competitors but, when linked to local suppliers, helps them increase their productivity levels through knowledge-sharing and technological transfer.</p> <p>Wang (2010), looking at Canadian manufacturing firms from 1970 to the 1990s, argues that the effect of FDI on productivity is strongest in industries that have significant inter-industry linkages and in those industries that have the greatest capacity to absorb technology.</p> <p>FDI spillover effects on productivity within the same sector and within related industries in Central and Eastern European economies were found to be, in the main, positive, and effects were found to be significantly stronger through vertical links (i.e. from foreign firms to their local suppliers) rather than through horizontal effects (i.e. between firms in the same segment of a value chain), potentially attributed to brain drain or market stealing effects (Gersl et al., 2007).</p> <p>Kokko (1996) showed that positive productive spillovers occurred between local firms and their foreign affiliates of Mexican manufacturing firms when foreign and domestic firms interacted, rather than competed.</p>

Spillover area	Findings	Detailed findings in studies
Financial development	Availability of deeper and stronger financial markets support FDI spillovers	<p>Alfaro et al. (2009) assess the impacts of financial market development on the growth impact of FDI. They find that the main channel through which FDI affects growth is total factor productivity improvements (rather than factor accumulation), facilitated by well-functioning financial markets. They therefore highlight that the environment (i.e. ‘local conditions’) within which FDI occurs matters.</p> <p>Alfaro and Chauvin (2016) discuss the impact of FDI on host economies, including an analysis of macroeconomic benefits such as changes in aggregate productivity, providing evidence that the level of financial development is a determinant of FDI spillovers.</p> <p>Complementarity conditions are also found to be an important factor explaining FDI impacts in Middle East and North Africa countries between 1996 and 2012. Sophistication of financial markets, human capital development, good governance, etc. are seen to determine the impacts of FDI, accounting for differences in FDI growth effects between countries (Saidi et al., 2014).</p>
Employee training	Employee training increases firm-level absorptive capacity (i.e. technology adoption) and overall labour quality, helping spillovers through worker mobility.	<p>Fosfuri et al. (2001) argue that spillover effects occur when multinational-trained domestic workers are hired by host country firms and thus encourage knowledge transfer.</p> <p>Dasgupta (2012) argues that local workers, through multinational firm management knowledge transfer – that is, local people working and learning from foreign management – help increase local income levels as well as the potential size of firms established by local workers.</p>
Technological and innovation capacity	Firms closer to the technological frontier have greater FDI spillover absorptive capacity and tend to have greater productivity outcomes. Similarly, firms better able to carry out R&D activities are more capable of adapting FDI technology to local markets.	<p>The capacity to absorb innovation explains why FDI-induced growth diverged in China, with more ‘absorptive’ regions on the coastline showing greater benefits from FDI than inner regions with lower levels of development and capacity to absorb technology (Fu, 2008).</p> <p>Bijsterbosch and Kolasa (2009) find that FDI has a strong role in productivity growth and productivity convergence in Central and Eastern Europe and the effect is determined by the absorptive capacity of host countries and industries.</p> <p>Innovation capacity is shown to be an important driver determining absorptive capacity of FDI spillovers, as highlighted in Spain (Sanchez-Sellero et al., 2013), where firms that undertake R&D activities and process innovation activities are better able to absorb productivity spillovers from FDI.</p> <p>FDI motivated by maintaining a technological advantage for the investor firm show spillover domestic productivity gains; FDI geared towards using local technical resources shows no such gains (Driffield and Love, 2007).</p>

Spillover area	Findings	Detailed findings in studies
Management systems, degree of ownership and firm size	Firms with management systems geared towards longer-term outcomes tend to have better FDI productivity spillovers as they are better prepared to invest in training required to facilitate knowledge/ technology adoption.	<p>Liu (2008) shows there may be a time component in terms of FDI technology spillover impacts – that is, in the short term for Chinese manufacturing firms, FDI lowered productivity levels – given the costly learning process associated with technological and technical skills diffusion. Technical skills helped increase the long-term rate of productivity growth through increased opportunities to research new products. These long-term gains are firm-specific – that is, they are dependent on the management incentive structure in place. Management structures that are more geared towards longer-term outcomes are more capable of achieving longer-term productivity gains.</p> <p>Greater degrees of foreign ownership can also increase short- and long-term productivity gains, as shown in China (Liu, 2008) and further investigated by Girma et al. (2014), who found that, for Chinese manufacturing firms, when foreign ownership was less than 40% (but greater than 0%), FDI spillover effects on firm-level productivity were negative but became positive over 40% ownership.</p> <p>Romanian manufacturing firms in a 10-year period (1996–2005) show that larger firms are more likely to have productive spillovers than smaller firms; however, the evidence on the size of domestic firms and FDI spillovers is not conclusive (Lenaerts and Merlevede, 2015).</p>
Firm strategies	The strategies of the parent firms matter a lot.	<p>Coughlin (2018) argues that ownership structures of Mozal were responsible for the delay in forcing through linkages to local aluminium processors because other affiliates in other countries.</p> <p>The International Trade Centre (ITC) finds that garments manufacturers enter into Kenya only for assembly and that some 90% of inputs are imported, which is dictated by headquarter policies as they who own producers of such inputs (textiles, buttons, etc.) in other countries.</p>

Source: Own additions, adapted from Lemma (2018)