Firm capabilities are shorthand for the knowledge and practices used by firms in the course of production and in developing new products. They are the basic building blocks of productivity and quality. The term is relatively new, but management experts and businessmen have known for a long time that firms differ markedly in the knowledge and working practices of both managers and workers. Globally, firms are competing in capabilities. At some price-quality combinations they can succeed in entering a market; at others they will be kept out by higher capability competitors. Part of the answer to whether African can industrialize hinges on whether its firms can acquire the capabilities needed to match other producers in the global market for industrial goods.

This chapter describes what firm capabilities are and management’s role in determining productivity and quality. We then discuss how capabilities shape and are shaped by firms’ responses to competition before shifting focus to several ways in which higher capabilities can be brought to low-income countries, including through foreign direct investment, learning by exporting, and management training. We finish by describing how capabilities have diffused from...
higher capability firms to other firms in Africa and emerging Asia, based on our country case studies and surveys of firm-to-firm knowledge transfers.

**What Are Firm Capabilities?**

John Sutton—who, as we noted in the preface, has been “mapping” firm capabilities in Africa—writes that “at one level ‘capability’ is no more than an extension of the traditional notion of productivity to a world in which quality matters.”¹ To use his elegant simplification, quality is a “demand shifter.” Hence, it is a shorthand expression for anything that moves the demand schedule outward at every price, including such things as technical characteristics, after-sales service or brand image. Used in this way “quality” embraces a much wider range of characteristics than the intrinsic technical excellence of the product itself.² For example, for an Ethiopian flower exporter, knowing which varieties of roses will be fashionable at different times of the year may be as important as the appearance of the rose itself. Productivity is a “cost shifter.” Modifications in such things as the organization of production, reductions in wastage, or better supervision of the workforce can lower unit production costs at every quantity level.

Productivity and quality in turn rest on the knowledge possessed by the individuals who make up the firm, both managers and workers. In this respect capabilities are fundamentally different from technology. Technology can be written down in a blueprint and purchased, but the skills needed to use it effectively tend to be tied up in firms and the people who work in them. Capabilities are mainly embodied in complex and interrelated working practices, so they are difficult to codify. They reflect the capacity of individuals to work effectively together within some framework of rules, routines,

². See Sutton (2012). This is a broad definition of quality, and not surprisingly it is difficult to measure.
and tacit understandings that have been put in place or have evolved over time.\textsuperscript{3} Such tacit knowledge and working practices are used in production and to develop new products, including, as we shall see, the capacity to shift from one type of product into the production of an entirely different one.

**Revealed Capabilities**

Because capabilities are hard to codify they are difficult to measure. What we can measure are differences in productivity and to some extent quality—revealed capabilities. As we noted in chapter 4, there are large differences in productivity across firms in the same industry, and these differences grow larger as we move from high- to low-income countries. We saw very large differences in productivity across firms in our African country studies; in particular between small and large firms. Large firms were significantly and persistently more productive than smaller enterprises. In Vietnam, the range of productivity levels within narrowly defined product groups was also very large. This is one dimension of the revealed capabilities of firms.

Similar, although less well studied, differences exist in product quality, again even in very narrowly defined product groups. Much of the current literature on quality and trade attempts to measure export quality using unit values. Other things being equal, higher unit values are associated with higher product quality. Globally, higher income per capita is correlated with higher export quality. There are, however, wide variations in average quality among developing countries, even when controlling for income.\textsuperscript{4} Vietnam is an example of a country that has achieved considerable quality upgrading, particularly in the miscellaneous manufactures sector, which includes apparel and footwear.\textsuperscript{5}


\textsuperscript{5} Henn, Papageorgiou, and Spatafora (2013).
Quality differences are important in domestic markets as well. In one of the econometric studies we undertook for Learning to Compete (L2C), we were able to match the physical characteristics of some standard manufactured products in Ethiopia, such as cement blocks, with their prices in the same market. The variation in prices for the same product was striking and reflected customers’ perceptions of quality differences. The “household” manufacturing sector in African economies produces products that are quite different in terms of quality from those produced in the formal sector. They sell at lower prices and serve a distinct, lower quality market.

**Capabilities and Competitiveness in Africa**

The differences in the contributions of quality and productivity to international competitiveness are subtle yet crucially important. To some extent, shortfalls in productivity can be made up by low wages. Shortfalls in quality, on the other hand, may make it impossible for firms to break into global markets. Recent studies of product quality and trade have made an important discovery. In many sectors higher export volumes go hand in hand with higher export prices. If firms all produced products of the same quality this would not be so. Higher productivity firms would have higher output and exports, not higher prices. The coexistence of high prices and high volumes is what happens when firms compete on quality.

Sutton’s Enterprise Maps offer some insight into how current capabilities affect Africa’s ability to compete globally. The surveys of five countries—Ethiopia, Ghana, Mozambique, Tanzania, and Zambia—reveal some important common themes. Such industries

---

7. The low-wage advantage is limited because virtually all manufactured exports require some minimum amount of intermediate inputs sold at fixed international prices. When—as in the case of trade in tasks—intermediate inputs comprise a significant share of total production costs, the low-wage advantage can be significantly eroded.
as food and beverages and cement and building materials are fairly highly developed in each country. Metal and mechanical industries, engineering and assembly, and plastics are not. The crucial difference between these types of industries is that food, cement, and building materials all serve the local market and are subject to substantial “natural protection” due to weight, perishability, or bulk. They are also products sold to consumers directly. In each economy firms have evolved that have achieved standards of quality and productivity that allow them to compete with imports successfully.\(^9\)

Metals, engineering and assembly, and plastics are different. While all five countries have some activity in each industry, it is generally limited to the least demanding segments of the market in terms of both quality and productivity. Local steel production from scrap is common, but the range of steel products produced is quite limited. Plastics are mainly confined to injection-molded containers and domestic utensils and a range of plastic pipes and cables. The major internationally traded products in these sectors are not produced in Africa. That is because these are intermediate goods for which the international quality standards are high and the demand on African capabilities is too great.\(^{10}\)

Management Matters

Intuitively, managers must to a large extent be responsible for productivity and quality differences, either as a consequence of innate differences in their abilities or as a result of differences in management practices. Managers are the “conductors of an input orchestra. They coordinate the application of labor, capital, and intermediate inputs.”\(^{11}\) They must be able to identify and develop new products,

---

organize production activity, motivate workers, and adapt to changing circumstances. Just as a poor conductor can ruin an orchestra, a poor manager can ruin an enterprise.

Managerial inputs are hard to define and measure. While it is important to know how managers allocate their time, it is equally important to know what managers do with the time allocated; for example, how they motivate workers or deal with suppliers. Some quite recent work at the intersection of management studies and economics helps to take us part way toward understanding the importance of management practices to productivity at the firm level.

**Management Practices and Productivity**

Nicholas Bloom and John Van Reenen use interviews to score managerial practices from best to worst practice across a wide range of day-to-day operational management activities.\(^\text{12}\) They have by now undertaken surveys of nearly 6,000 firms in seventeen countries, including China, India, and Brazil.\(^\text{13}\) They find that higher quality management practices (measured by higher scores) are strongly correlated with several measures of productivity and firm performance, including survival.\(^\text{14}\) A particularly interesting finding is that China, India, and Brazil all have much lower average management scores than the higher income countries in their sample.\(^\text{15}\) This is due mainly to a very large left hand tail of poorly managed (low

\(^{12}\) Bloom and Van Reenen (2007).

\(^{13}\) See Bloom and Van Reenen (2010) and Bloom and others (2010).

\(^{14}\) This approach is not without its problems, which Bloom and Van Reenen acknowledge. Much of what was scored as “best practice” management was based on the recommendations of the management consulting industry. It is possible that these “best practices” are in fact just the latest managerial fads. It is also possible that more productive and profitable firms are better able to hire management consultants, raising the possibility of reverse causation.

\(^{15}\) Bloom and Van Reenen (2010).
Firm Capabilities

scoring) firms in the distribution, a pattern that parallels closely the productivity distributions in these countries relative to higher income countries discussed in chapter 4.

Two factors emerge as important predictors of the quality of management. Greater competition in the firm’s market, measured in several ways, is positively correlated with better managerial practice. Family ownership, on the other hand, is associated with poorer managerial practice.\textsuperscript{16} Surprisingly, the family tie to poor management is not the result of ownership itself. Controlling for other factors, family ownership is positively associated with good management practice in their surveys. Rather, it is the combination of family ownership with a rigid rule about how the chief executive is selected—usually based on sex and birth order—that is the flaw. This result may be of particular relevance to African industry, where many firms are family owned and the eldest son often succeeds his father.

One problem with the survey approach is that it is difficult to establish the causal direction of the relationship running from better management to higher productivity. This is an area where randomized experiments have something to contribute. Bloom and his associates have provided the first experimental evidence on the importance of management practices in developing country firms.\textsuperscript{17}

In a novel experiment they randomly assigned a sample of large, multiplant Indian textile firms to treatment and control groups. The treated firms received a month-long analysis of thirty-eight aspects of operational management followed by four months of intensive follow-up in the plant from a large international consulting firm. The control plants received only one month of diagnostic consulting. Within the first year, productivity increased on average by 17 percent in treated firms. The better-managed firms also grew faster and

\textsuperscript{16} Not surprisingly, this is a somewhat controversial result. It is consistent with evidence from Denmark; see Bennedsen and others (2007). But it is not supported by French stock market data; see Sraer and Thesmar (2007).

\textsuperscript{17} See Bloom and others (2013).
voluntarily spread the management improvements from their treated plants to other plants they owned.

One of the central questions raised by management training programs is why managerial good practices are not taken up more rapidly if they are a source of sustained productivity improvements. There are at least three answers to this question. First, incumbent managers may have problems of perception—they do not know they are ineffective. Second, managers may have problems of inspiration—they know they are ineffective and don’t know what to do about it. Third, managers may have problems of motivation—they know they are not effective; they know what to do; but they fail to act because of lack of competition or lack of incentives.18

Interestingly, Bloom and his collaborators observed all three of these problems in the India case. Their evidence, while incomplete, suggests that information constraints were the greatest impediment to better managerial practice. Firms apparently did not believe that such basic practices as measuring quality defects or machine downtime and keeping track of inventory would improve profits. Owners claimed their quality was as good as that of other local firms, and because they were profitable, they felt they did not need to introduce a quality control process. Managers were often simply unaware of such common practices as daily factory meetings, standardized operating procedures, or inventory control norms.

Management and Capabilities in Africa

One of the most important empirical regularities of the Enterprise Maps is that Africa lacks capable medium-size firms. Among registered firms in Africa, large firms (those with more than 100 workers) employ about 50 percent of the labor force. Medium-scale enterprises (those employing from 20 to 99 workers) represent about 27 percent of workers, and small firms a further 23 percent. In the World Bank Enterprise Survey data firms with 30 employees have, on average, twice as much value added per worker as firms with 5 employees.

Value added per worker in African firms with 100 employees is more than 50 percent higher than that in firms with 30 employees.\textsuperscript{19}

Lack of two major capabilities in smaller firms may drive these numbers. The first is the inability to manage a growing labor force. This is a critical attribute of more capable firms in low-wage economies. The second is the ability to see market opportunities and manage the supply chain. The scarcity of capable medium-scale firms may also help to explain why firms in the formal sector face limited competition. Conventional wisdom has tended to ascribe the limited entry and growth of small and medium firms in manufacturing to lack of access to finance or regulatory barriers to entry. Rather, it may be that the pool of capable entrepreneur-managers is the binding constraint.

Our country study for Tanzania carried out a survey of fifty emerging “sunrise” industrial enterprises. Between 2010 and 2012, the output of these firms grew by an average of 49 percent. About 80 percent of the firms interviewed hired professional managers and cited “quality management” as an important element in the firm’s success. Over 90 percent indicated that they had significantly adapted their sales and marketing strategies to changing circumstances in the last three years, and about a third had introduced new products. Half of the firms surveyed reported that they undertook in-house research and development activities.\textsuperscript{20}

What about management and quality? Here again, the Enterprise Maps of Ethiopia, Ghana, Mozambique, Tanzania, and Zambia are a useful point of departure. All of these countries have a similar breakdown of the fifty leading industrial companies by origin.\textsuperscript{21} About half of the firms originated in the domestic private sector, about a quarter are foreign firms, and about a quarter began as public-sector firms. Of the domestic firms, it turns out that by far

\textsuperscript{19} Page and Söderbom (2015).
\textsuperscript{20} Wangwe and others (2014).
\textsuperscript{21} Sutton’s Enterprise Maps are deliberately not representative of the industrial sector as a whole. He identifies and interviews the best-performing firms in the leading industrial sectors of each economy.
the largest group—about half in most countries—had owners and managers who began in trading companies. Many development practitioners, and an even larger number of policymakers, find this result surprising. Seen through a capabilities lens it is less remarkable.

As we pointed out, most successful domestic manufacturing firms in Africa today are found in sectors that use standard technology to meet final demand. The required technical know-how can be obtained from equipment suppliers and by hiring a number of experienced engineers and technical experts. The relevant dimension of “quality” is a detailed understanding of both local and the international markets in order to identify a viable business opportunity and to set up a successful manufacturing enterprise. The trading sector is often where the deepest knowledge of local and international market conditions is found.\(^{22}\)

### Capabilities and Competition

In chapter 4, we described how market pressure can improve firm-level productivity by forcing the exit of inefficient firms and rewarding the entry or expansion of more productive enterprises. Competitive pressure is a major incentive for firms to acquire new capabilities, often revealed in higher productivity. One of the key factors that limited the introduction of new management practices in the training experiments in India was lack of competitive pressure. Competition was heavily restricted by high tariffs in the case of imports and, in the case of new entry, by lack of finance. A surprising result, and one that offers a cautionary tale for Africa, was that competition and reallocation of market shares to better-managed firms were also limited by the number of male family members. Nonfamily members were not trusted by firm owners with any decision-making power, and the inability to delegate decisions outside the family limited the growth of more efficient firms.

\(^{22}\) Sutton (2012).
This raises a red flag. As we pointed out in chapter 4, formal manufacturing firms in the African economies we studied do not feel strongly pressured by competitors. Barriers to entry and the family structure of many African enterprises may act as a disincentive for firms to adopt better management practice. Surveys in Tanzania, for example, found that firms facing less competition were less active in introducing new products and new processes in their industrial activities.\textsuperscript{23} In Kenya and Mozambique as well, our country studies found that perceived lack of competitive pressure discouraged firms from introducing new technologies or process innovations.

One of our Learning to Compete studies investigated the different channels through which intermediate imports impact productivity in Vietnam. We found that the most important channel was through competition with domestic suppliers. Domestic firms that supplied inputs to downstream users were forced to match newly liberalized imports in price and quality or lose market share. In short, they improved their capabilities through matching those embodied in the new imports. These competition-induced gains in upstream sectors spilled over to downstream sectors through the supply chain.\textsuperscript{24}

Capabilities—in this case mainly those of managers—also partly determine how firms adapt to changes in the competitive environment. Rather than simply close down in the face of increased competition and declining profits, higher capability firms may switch into entirely new lines of activity. In high-income countries the number of firms that switch sectors is impressive. A famous example is Nokia, which began as a gumboot manufacturer. Approximately 8 percent of U.S. manufacturing firms switched sectors (defined at the four-digit level) during five-year periods between 1977 and 1997.\textsuperscript{25} It turns out that this capacity for change is also important in

\textsuperscript{23} Yoshino and others (2013).
\textsuperscript{24} Newman, Rand, and Tarp (2015).
\textsuperscript{25} Bernard, Jensen, and Schott (2006).
low-income countries. In Vietnam, our research found that between 1 and 19 percent of firms exited one sector and entered another at the two-digit sector level, and from 12 to 50 percent changed sectors at the four-digit level.26

Although we were not able to measure capabilities directly, we found that firms changing sectors ranked higher in terms of productivity than firms entering or exiting the same sector. This suggests they are a separate, more capable group. Switching firms moved into more labor-intensive sectors and were more likely to switch between sectors with a high share of firms that had larger numbers of employees. This is consistent with the idea that a major aspect of capability in low-wage economies is the ability to organize and supervise the firm’s labor force. We also found that Vietnamese firms tended to move from sectors with lower levels of foreign ownership into sectors with higher levels of foreign ownership. These were also sectors with higher levels of exports.

Building Capabilities

The first phase of capability building involves the introduction of a higher level of capability into an economy, either as a consequence of the entry of new, more capable firms or as a result of learning by existing firms. Learning involves two closely related elements. The first is the acquisition of technical know-how or engineering expertise. This “mastery of technology” is the element that has been most studied by economists interested in economic development.27 The second is the improvement of “working practices,” which has traditionally been the domain of management studies. While working practices are always critical to achieving high quality, the relative importance of technological know-how shifts as countries move up the technological ladder. Engineering good practice is far more

27. UNIDO in particular has had a long tradition of studying the role of technological knowledge in development. See UNIDO (2003) for an example.
important in manufacturing pharmaceuticals or machine tools than in making T-shirts. Foreign direct investment, learning through exporting, and management information and training are all ways in which capabilities have been built in low-income countries.

**Foreign Direct Investment**

Foreign direct investment (FDI) is one way of introducing higher capability firms into a lower capability environment—and some would argue that for countries at low levels of industrial development, it is the most important means. The foreign investor brings the technology, managerial knowledge, and working practices it has developed elsewhere. A majority of researchers find that firms with foreign equity participation in developing countries typically have higher output per worker or higher levels of total factor productivity (TFP) than similar domestically owned firms. Most of the literature on FDI has focused on its role as a source of technology transfer, but because of the way in which productivity is measured, these econometric results may equally be capturing the transfer of working practices or managerial good practice.

FDI has played an important role in the industrialization and export performance of Cambodia, Mauritius, Tunisia, and Vietnam. Asian-based FDI has largely driven Cambodia’s manufactured exports. Forty-seven percent of foreign-owned establishments are owned by Chinese investors and another 12.5 percent by Koreans and other Asian nationalities. During the period 1990–2013, FDI represented 34.4 percent of total investment. FDI inflows to Mauritius have increased rapidly in the past several years, mainly into tourism, property and real estate, banking and finance, information technology, and health and education services, reflecting the economy’s stage

28. For a survey of the relevant literature, see Harrison and Rodriguez-Clare (2010). When we launched Learning to Compete we hoped to be able to replicate the kind of econometric work referred to previously for some of our sub-Saharan Africa countries. What we found was that there were too few foreign and joint venture firms in the data—and more importantly in the countries—to give accurate statistical results.
of structural transformation. In Tunisia, the “offshore” policy regime was specifically designed to attract foreign investors to a task-based export platform near Europe. Tunisia’s offshore sector was an early magnet for European investors, particularly in textiles and garments. Vietnam has been a target for relocation of labor-intensive industries from other countries in Asia. Foreign direct investment as a share of total investment in Vietnam averaged 23.2 percent between 1990 and 2013. Manufacturing has been the largest and fastest-growing FDI sector, taking up over 60 percent of all FDI.

Our country case studies highlighted some of the ways in which the introduction of new capabilities takes place through FDI. A number of large multinationals, including Nike and Adidas, have strengthened their contract manufacturing activities in Vietnam. As a result, the Vietnamese-made share of Nike’s footwear production increased from 25 percent in 2005 to 41 percent in 2012. In the software industry IBM has developed a program called PartnerWorld to integrate its Vietnamese suppliers into its global value chain. There have been some signs that regional investors in Vietnam are moving into more sophisticated products. In the steel industry, Formosa Plastics Corporation has started to invest in a US$8 billion plant. In the electronics industry, leading companies such as Foxconn and Samsung are also investing in several multibillion-dollar projects.

Foreign investors, including from countries such as Brazil, China, India, and Turkey, are starting to make inroads into African manufacturing and services. Ghana and Mozambique, for example, have received some market-seeking FDI fueled by the relatively strong growth of their economies in recent years. Vodafone Group (United Kingdom) acquired a 70 percent stake in Ghana Telecommunications Company Ltd. for US$900 million. Privatization attracted considerable FDI into Mozambique and Ghana, drawing international firms such as Coca-Cola and SABMiller. Uganda has also attracted substantial foreign direct investment. Between 1991 and 2009, one-third of Uganda’s FDI, close to US$2.9 billion, went into manu-

facturing. More than half of the firms in Uganda’s manufacturing sector are foreign owned. There are a growing number of success stories of export-oriented FDI in manufacturing not directly related to extractive industries—for example, shoe manufacturing in Ethiopia, bicycles and motor bikes in Tanzania, and pharmaceuticals in East Africa.

Our surveys of foreign and domestic firms revealed an important way in which multinationals help introduce new capabilities related to working practices and managerial good practices into Africa. The surveys show that transfers of capabilities are often manifested in terms of spin-offs by former employees of FDI firms and in labor movements from foreign to domestic companies. One-third of multinationals interviewed for the L2C project reported employees leaving their company to set up local enterprises directly connected to the multinational. These linked domestic entrepreneurs often became either customers of or suppliers to the multinational. Moreover, over one-fourth of these linked domestic firms reported that they hired employees initially trained by multinational companies.\(^{30}\)

**Learning Capabilities by Exporting**

As we saw in chapter 4, manufactured exports are an important driver of productivity change in Africa and emerging Asia. Here, as in the case of FDI, the focus of most economists interested in these issues has been on the role of exports in the acquisition of technology.\(^{31}\) The more recent empirical literature on learning by exporting, including the result of the new studies done under the Learning to Compete project, provides a different perspective. It strongly suggests that “learning by exporting” helps to strengthen firm capabilities through improvements in working practices and management. Two of the key mechanisms by which higher capabilities are introduced to firms are:

\(^{30}\) Newman and others (2015).

\(^{31}\) See, for example, Pack and Page (1993).
—Demanding Buyers. In some industries—apparel and agro-based industry, for example—exchanges of information between suppliers and buyers with a reputation for high quality are well developed and add to the capabilities of supplying firms.

—Repeated Relationships. In many industries there is a close and continuing contractual relationship between buyer and supplier that often involves a two-way movement of technical and engineering personnel between their respective plants.\(^{32}\)

Demanding buyers and repeated relationships are characteristic of global markets, spanning the range of industries from traditional manufacturing to tradable services and agro-industry. These inter-firm relationships are often the means by which tacit knowledge is exchanged between supplier and purchaser.

Ethiopia’s cut flower industry illustrates how demanding buyers help to develop capabilities. Floriculture is the newest of Ethiopia’s export industries, having grown very rapidly over the past five years to become the country’s fourth largest export industry. The industry began in 2005 when a number of foreign firms (mostly flower producers from Kenya) and local businesses started production. There are today about a hundred flower producers and exporters, and the industry directly employs more than 50,000 workers.

The main market for Ethiopian flowers is the Netherlands (which accounts for 80 percent of revenue). The main product is roses. The international wholesale market is characterized by demanding buyers with respect to quality, timeliness, and fashion. Flower retailers in high-income markets are increasingly entering into direct marketing agreements with producers to control product selection, quality, and delivery. Different types of roses are demanded at different times of year, and selection of particular varieties to plant is a critical element of quality.

The most successful Ethiopian firms—mainly foreign or expatriate owned—are linked to direct sales channels, allowing them to produce and export more varieties and benefit from the expert

\(^{32}\) Sutton (2005).
advice of buyers. One of Ethiopia’s largest exporters has its own sales and distribution company in the Netherlands. Another has distribution networks in the international market, and an international production quality expert visits the firm at least once a month to oversee production and ensure that quality is maintained. A third leading exporter has become a “Fair Trade Certified” company, based on its environmental and social track record. The firm believes that this certification will enable it to win niche markets with the potential to earn premium prices.33

Our econometric results on learning by exporting also suggest that much of the productivity enhancement observed in exporting firms, especially domestically owned exporters, comes as a result of increases in capabilities. In Vietnam, for example, we found that the sources of productivity improvements differed between foreign and domestic firms. Foreign firms experienced an early surge of productivity growth upon entering export markets, but it was short-lived and attributable to increases in scale. Domestic firms, on the other hand, had longer durations of productivity improvements, mainly from introducing process innovations. This pattern of learning by exporting is consistent with the initial presence of higher capabilities in foreign firms and the greater opportunities for learning by domestic enterprises.

In Mozambique we found that exporting firms were largely foreign owned and “born global,” established to serve the export market primarily. The foreign firms presumably began with higher levels of capabilities than local firms, developed on the basis of their operations elsewhere. Nevertheless, we found that these firms further increased their productivity in the process of exporting, largely through supplier-purchaser relationships.

In Ethiopia, fewer than 5 percent of industrial firms export, but those that do reap significant benefits in terms of productivity gains. These firms are concentrated in a small number of sectors, and a prior history of exporting is a good predictor of whether an Ethiopian firm will export again. For Ethiopia, a relatively isolated and

landlocked country, key elements of the fixed costs of entering new export markets are the ability to identify a viable market opportunity and mastery of the logistics of getting to distant markets. These capabilities are learned in the process of exporting.

Management Information and Training

The association between better management and higher firm capabilities suggests that organized efforts to acquire and spread good management practices can play a role in capability building. These efforts could take the form of collective actions by firms or a public-private partnership to seek out and make available information on managerial good practices. In India, for example, the Confederation of Indian Industries, which is almost wholly funded by the private sector, provides services of this kind at fees that are within the reach of India’s smaller manufacturing companies. The Fundación Chile is another example of a public-private partnership for building capabilities. Its success in helping to establish Chile’s world-class wine and salmon export industries has been widely documented.

Management training of the type offered to large firms in India by Bloom and his associates is another means of improving capabilities. The expertise of the international consultants certainly proved highly valuable to the firms trained. In addition to increasing productivity, the intensive training led to significant improvements in quality and inventory control. Management training is not a panacea for capability building, however. Business training is one of the most common forms of support to micro, small, and medium enterprises (MSMEs) in Africa and around the world. There are a large number of programs offered by governments, aid donors, microfinance organizations, and nongovernmental organizations (NGOs). This is a very different target group for training than medium- to large-scale Indian textile plants, and the results of most training programs have been disappointing.

A recent review of what we are learning from evaluations of the impact of MSME training programs makes for unhappy reading. Although almost all of the impact evaluations found that partici-
pating firms started implementing some of the business practices taught, the extent of change in behavior was in most cases small. Because virtually all of the evaluations suffered from a combination of small changes in business practices and low statistical power, few studies found training to have any significant impact on sales, profitability, or growth. Ironically and disturbingly, training was found to have no or a slightly negative impact on the survival of female-owned businesses. These results suggest that major rethinking of the design of MSME training programs is needed.\textsuperscript{34}

\textbf{Diffusion of Capabilities}

Once a higher level of capability has been introduced—say, through a new foreign direct investment or through a newly successful export activity—its potential benefit to the host economy at large will depend in part on the extent to which the technical knowledge and working practices held by the firm are transmitted to other firms. Most of what we know about how capabilities are transferred comes from case studies or from econometric analyses of “spillovers” from FDI. Both types of evidence point in the same direction: buyer-seller relationships along the value chain are effective ways to transfer both technological knowledge and better working practices.

\textbf{Productivity Spillovers}

A cottage industry in the analysis of FDI spillovers has developed in the economics literature in the last ten years. Once again the attention of most economists has been on technological spillovers, and the empirical indicator used has been some measure of firm-level productivity. It broadly points to a consistent set of findings. There is evidence of positive productivity spillovers from foreign firms to domestic suppliers (backward linkages) and from foreign suppliers to domestic firms (forward linkages), although in the case of forward

\textsuperscript{34} McKenzie and Woodruff (2012).
linkages the evidence is much sparser. These are “vertical” spillovers. The same studies generally find insignificant “horizontal” spillovers to firms within the same industry.\textsuperscript{35} This is not altogether surprising. Firms have little incentive to transfer capabilities to competing enterprises while they may benefit from improvements in the capabilities of suppliers or customers.

Our work in Vietnam finds that a large part of vertical spillovers from FDI, particularly forward spillovers, accrues to firms that are directly linked to foreign-owned firms, highlighting the importance of firm-to-firm interactions in the knowledge transfer process.\textsuperscript{36} Case study evidence supports the view that these productivity spillovers may have very little or nothing to do with technological or engineering knowledge. They often reflect the impact of better management practice or production routines. In industries where business practices or production routines have become standardized—such as clothing or horticultural exports—the transfer of knowledge of business practices through firm-to-firm interactions has become highly efficient.

Equipment and input suppliers can also play a key role in capability transfer. Recently some empirical evidence of the links between increased imported intermediates and firm-level productivity has emerged, mainly drawn from middle-income countries. In Indonesia one study found that the productivity gains from tariff reductions that allowed cheaper intermediate inputs were at least as high as the gains associated with lower output tariffs.\textsuperscript{37} Similar evidence for imported inputs as a channel of productivity growth has been found for Columbia and for Chile.\textsuperscript{38}

These productivity gains reflect both within-firm changes and competition. Firms that directly import intermediates gain productivity from new, more advanced input technologies.\textsuperscript{39} Domestic

\textsuperscript{35} Harrison and Rodriguez-Clare (2010).
\textsuperscript{36} Newman and others (2015).
\textsuperscript{37} Amiti and Konings (2007).
\textsuperscript{38} Fernandes (2007) and Kasahara and Rodrigue (2008).
producers of intermediates that compete with new imports may also learn from the imported goods, in particular if they are more technologically advanced, are of higher quality, or are a new variety. In Indonesia, for example, opening the economy to imports of intermediates appears to have pushed domestic suppliers along the supply chain to innovate, improve quality, and reduce costs and prices.\footnote{Blalock and Veloso (2007).}

**Firm-to-Firm Interactions in Practice**

What can we say about the transmission of capabilities in the African and the emerging Asian countries we have been studying? As we noted earlier, there are so few foreign-owned manufacturing firms in sub-Saharan Africa that the statistical power of any attempt to test for the presence of inter-firm productivity spillovers would be minimal. Instead of taking that route we have spoken directly with firms. Drawing on information from investment promotion agencies, we conducted interviews with over 100 multinational enterprises (MNEs) and over 200 domestic firms linked to these MNEs as suppliers, customers, or competitors in seven countries (Cambodia, Ethiopia, Ghana, Kenya, Mozambique, Uganda, and Vietnam).

We studied whether and how direct relations between MNEs and domestic firms led to recognized transfers of knowledge (capabilities) and technology. As noted previously, we generally observed fewer direct linkages between MNEs and domestic firms in sub-Saharan Africa than in Asia. But, where these business-related linkages existed, upstream and downstream connections in Africa were more likely to involve explicit transfers of capabilities from MNEs to domestic firms.

Our interviews suggest that multinational enterprises are an important source of capabilities for domestic firms in Africa, and that the transfer of capabilities takes place mainly through structured firm-to-firm transmission of good practices.\footnote{Newman and others (2015).} Most of these transfers were directly stipulated in contracts between the foreign-owned

40. Blalock and Veloso (2007).
firms and their domestic customers and suppliers. These contractual exchanges of knowledge were a “repeated relationship,” and the knowledge transferred appeared to have more to do with working practices than technological know-how. Most domestic firms acquired their technology (equipment and machinery) through direct imports. While equipment suppliers were one source of production knowledge, the contractual knowledge transfers occurred more frequently through FDI.

**Summing Up**

Firm capabilities are the knowledge and working practices possessed by the people who make up a firm. They are the basic determinants of productivity and quality. In chapter 3 we focused on productivity’s role in breaking into world markets. The new empirical literature on international trade tells us that quality matters a great deal in global markets for industrial goods as well. Thus, firms are actually competing in capabilities. One of the reasons Africa has so little industry is that it lacks a range of capabilities needed to be internationally competitive. This makes the questions of how higher capabilities are acquired and how they are diffused of central interest.

Intuitively, firm capabilities must be closely related to management. Historically, economists have neglected management, preferring instead to focus, as we did in chapter 4, on factors external to the firm, such as exporting or competition. Recent work at the intersection of economics and management studies very strongly points to the conclusion that management matters a great deal. Differences in management practice between firms and countries are responsible for much of the difference in measured productivity. Management also matters for the ability of firms to adapt to competitive pressure.

42. This is consistent with the findings of other case studies. See Moran (2001).

Building firm capabilities is a complex process, driven mainly through firm-to-firm interactions. The capability transfer itself consists of both “hardware”—technological knowledge and engineering practice—and “software”—the working practices that are crucial to master the technology and achieve higher quality. The relative importance of these two factors changes as countries move toward more complex, technologically sophisticated products. Our interviews of foreign and domestic firms suggest that in low-income countries, such as those in Africa and emerging Asia, for the time being working practices are likely to be more important.

Foreign direct investment and learning by exporting are two well-known ways in which higher capabilities are acquired. Management information and training is another. Capability spillovers can take place when firms interact along the value chain. Our empirical work indicates that these firm-to-firm interactions are important, especially in Africa. Geography can also play a role. It is often easier to serve customers or monitor competitors and learn from these interactions if they are located close by. This is one of the reasons that firms tend to cluster, which is the subject of chapter 6.