

CHAPTER 2

Industrial Policy, Firm Capabilities, and Kaizen

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1 Introduction

Industrial policy is finally moving away from the longstanding but sterile debate between "picking winners" and "levelling the playing field." There is increasing recognition that the market imperfections on which theoretical arguments for industrial policies rest are widespread in low-income countries and that many markets are incomplete and suffer from coordination failures. As Rodrik (2008) points out, today a strong case can be made for "normalizing" industrial policy in developing economies. Information failures, learning, and geography combine to underpin the case for policies to support industrial development and structural change.

As the consensus that well-designed industrial policies can contribute to improving economic outcomes has strengthened, new insights have also challenged the top-down model of economic policy-making. Traditionally, economists have viewed the firm as a black box, responding to changes in its external environment, as prices and other incentives change. Recent work at the juncture of management studies and economics is beginning to pry open the black box and give greater insight into how workers and managers impact such critical outcomes as productivity

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and quality. Using these insights, new initiatives in industrial policy have begun to focus on the role of management in industrial development.

This chapter considers how firm-level management training fits into industrial policy in low-income countries. Section 2 briefly summarizes the growing consensus that the debate over industrial policy has moved on from decades past toward recognizing that well-designed public policies can improve economic performance in low-income countries. Section 3 introduces the concept of "firm capabilities"—the knowledge and working practices used by firms in the course of production and in developing new products—and discusses how they are acquired and transmitted. Section 4 makes the case that *Kaizen* is a uniquely Japanese approach to capability building, based on the continuous interaction of workers and managers within the firm. Section 5 explores some arguments for capability building as a part of industrial policy, and Sect. 6 concludes.

2 The Case for Industrial Policy

The dominant view among Anglo-American economists during the past thirty years has been that industrial policy is a bad idea. Two lines of reasoning underpin this argument. The first is that the allocation of resources in an economy is too complex and too information intensive to be handled effectively by the public sector.² Where market failures are present, the mainstream view has been that policymakers should identify the distortions and then design taxes or subsidies to reduce the gaps between market prices and social costs or benefits. The second line of argument is that, even if governments could solve the information problem, rent-seeking behavior by private agents would undermine their well-meaning efforts. Governments should keep the private sector at arm's length, because it will lobby for actions that serve its own interests (Krueger 1974).

There has been pushback against both of these arguments. Rodrik (2009), among others, has argued for closer links between policymakers and the private sector. Industrial policy must, in practice, identify and respond to the need for public actions across a very broad front of industries and interventions. Because firms hold much of the information relevant to policy-making, he argues some form of structured engagement between the public and private sectors is essential. Stiglitz (2017) responds to the rent-seeking argument by noting that the incentives embodied in the price system often favor the interest groups that shape the institutions and regulations governing market transactions. Indeed, as he puts it: "not

having an industrial policy—leaving it to the market, structured as it is by special interests—is itself a special interest agenda" (Stiglitz 2017, 24).

There has also been considerable rethinking of the theory underpinning the arguments for industrial policy in the last decade, and there is a growing consensus that market imperfections in low-income countries are widespread and impede structural change.³ Many markets are incomplete and suffer from coordination failures. Collateral constraints combined with asymmetric information in credit markets limit investment, and there are potentially large spillovers associated with learning, not just among firms, but also among institutions. Imperfections in risk and capital markets mean that individuals, who should move from old to new sectors in low-income countries, cannot get access to the resources needed to make the shift; yet they have to bear the inevitable risks associated with the transition (Stiglitz 2017). In addition, the new economic geography has drawn attention to a major collective action problem—agglomeration (UNIDO 2009). Taken together, these arguments make a strong theoretical case for industrial policy.

3 FIRM CAPABILITIES

Empirical microeconomic studies repeatedly find that there are large productivity differences among enterprises in quite narrowly defined industries. Even in rich countries, the magnitudes involved are striking. In US manufacturing, on average a plant in the 90th percentile of the productivity distribution produces about twice as much output of the same product as a plant in the 10th percentile, using the same measured inputs. In developing countries the differences in plant level productivity within well-defined industries are even larger. While poorer countries have some firms that achieve world-class productivity levels, they also have a much higher percentage of low productivity firms. There is a long "left-hand tail" of poorly performing firms in the productivity distributions of developing countries. In China and India, for example, average 90-10 total factor productivity (TFP) ratios are more than 5 to 1. Large differences in productivity at the firm level reflect, in turn, profound differences in firm capabilities.

3.1 What Are Firm Capabilities?

Firm capabilities are the knowledge and working practices used by firms in the course of production and in developing new products. The term is relatively new, but management experts and businesspeople have known for a long time that firms differ markedly in the knowledge and working practices of both managers and workers. Productivity is one dimension of capability. The other is quality. To use Sutton's (2012) terminology, quality is a "demand shifter," shorthand for anything that moves the demand schedule outward at every price, including such things as after-sales service, or brand image. Used in this way, "quality" embraces a much wider range of characteristics than the technical excellence of the product itself. Productivity, on the other hand, 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.

Globally, firms are competing in capabilities. The differences in the contributions of quality and productivity to international competitiveness are subtle, but important. To some extent, low productivity can be offset by low wages. Shortfalls in quality on the other hand may make it impossible for firms to break into global markets. At some price-quality combinations, firms can succeed in entering a market, local or global; at others higher capability competitors will exclude them.

Productivity and quality depend in turn on the knowledge possessed by the individuals who make up the firm. In this respect, capabilities are fundamentally different from technology. Technology can be codified and purchased. Capabilities are mainly embodied in people and in working practices, so they are more difficult to codify and measure. They reflect the capacity of managers and workers to work effectively together within some framework of rules, routines, and tacit understandings that have been put in place or have evolved over time.⁸

3.2 Building Capabilities

Capability building takes place in two phases. The first phase involves the introduction of a higher level of capability into an economy, either because of the entry of new, more capable firms or as a result of learning by existing firms. Foreign direct investment (FDI) is one—and some would argue for countries at low levels industrial development the most important—way of introducing higher capability firms. 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 TFP than similar domestically owned firms.⁹

"Learning by exporting" is an example of how domestic firms build capabilities through learning. Two of the key mechanisms by which firms learn higher capabilities are:

- *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 the buyer and the supplier, which often involves a two-way movement of technical and engineering personnel between their respective plants.¹⁰

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 the means by which suppliers and purchasers exchange knowledge.

The empirical literature strongly suggests that exporting strengthens capabilities through improvements in working practices. One recent study of Vietnam, for example, found that the sources of productivity improvements differed markedly between foreign and domestic exporters (Newman et al. 2016). Foreign firms experienced an early surge of productivity growth upon entering export markets, attributable to increases in scale. Domestic firms on the other hand had longer-term productivity improvements, mainly from introducing process innovations. This pattern is consistent with the initial presence of higher capabilities in foreign firms and the greater opportunities for learning by domestic enterprises.

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 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 foreign direct investment (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.

There is econometric evidence of positive productivity spillovers from foreign firms to domestic suppliers and from foreign suppliers to domestic firms. Surveys show that spillovers are often due to spin-offs by former employees of FDI firms and labor movements from foreign to domestic companies (Newman and others 2016). One-third of multinationals interviewed in Vietnam, for example, reported that employees left their company to set up local enterprises directly connected to the multinational, as customers or suppliers. Linked domestic firms reported that they, in turn, hired employees initially trained by the multinational companies.

3.3 The Role of Management

Intuitively, managers must largely be responsible for productivity and quality differences, either because of innate differences in their abilities or differences in management practices. Managers must be able to identify and develop new products, to organize production activity, to motivate workers, and to adapt to changing circumstances. Bloom and Van Reenen (2007) use interviews to score managerial practices from best to worst practice across a wide range of day-to-day operational management activities. They have by now undertaken surveys of more than 6000 firms in seventeen countries, including China, India, and Brazil.¹¹ They find that better management practices (measured by higher scores) are strongly correlated with several measures of productivity and firm performance, including survival. 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. 12 This is due mainly to a very large left-hand tail of low scoring firms in the management practice distribution; a pattern that parallels closely the productivity distributions in these countries relative to higher-income countries.

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. To address this, Bloom, Van Reenen, and their associates (2013) randomly assigned a sample of large, multi-plant 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. In addition to increasing produc-

tivity, the intensive training led to significant improvements in quality and inventory control. The better-managed firms also grew faster and voluntarily spread the management improvements from their treated plants to other plants they owned.

4 Capabilities and Kaizen

Capabilities reflect two closely related elements. The first is technical knowledge or engineering expertise, the element that has been most studied by economists.¹³ The second is improvement in "working practices." This has traditionally been the domain of management studies. Working practices are always critical to achieving high quality, but the relative importance of technological knowledge shifts as countries move into more sophisticated products. Engineering good practice is far more important in manufacturing pharmaceuticals or machine tools than in making t-shirts.

Kaizen—"continuous improvement"—while based originally on US principles of industrial engineering and quality management has a uniquely Japanese twist. It is incremental, continuous and involves all levels of workers within the firm, from top management to the factory floor (Imai 2012). Kaizen was mainly developed and spread through the manufacturing sector in Japan during the period of high economic growth after World War II, a period when Japanese productivity levels converged rapidly toward those in the United States. Initially developed in large manufacturing enterprises—Toyota remains one of its foremost exponents—through the efforts of the Japan International Cooperation Agency (JICA) Kaizen has found its way into training for large-scale firms, micro, small and medium enterprises (MSMEs) and even into the public administration in developing countries.

Imai (1997) defines *Kaizen* as a commonsense, low-cost approach to management. Its goal is to help enterprises attain higher quality products and services, lower costs, and achieve timely delivery by the continuous collaborative effort of managers and their workers (Imai 2012). It is a process-oriented approach based on the belief that "processes must be improved for results to improve" (Imai 1997, 4). Key *Kaizen* elements include:

 Good housekeeping: Tools and raw materials used at the workplace are put in good order.

- *Eliminating waste (muda)*: Wasteful processes and methods are reduced or eliminated throughout the firm.
- *Adopting Standards*: Small improvements in many processes are undertaken and gradually accumulate into "best practices."

Through these elements, firms are able to improve quality and productivity, cut costs, reduce lead times, and create a better work environment.

Kaizen often involves the so-called 5S system of seiri (sorting), seiton (setting in order), seiso (systematic cleaning), seiketsu (standardizing), and shitsuke (sustaining adherence to rules) to improve the efficiency and overall quality of the work environment. Experience indicates that it is not difficult for many enterprises to adopt the first three of the 5S. They will, however, revert to their original state unless efforts are made to institutionalize the behavioral changes learned. The fourth and fifth Ss are therefore focused on longer-term efforts to turn good housekeeping into habit.

Given their shared heritage in management studies, it is not surprising that *Kaizen* and capabilities are closely related. Imai (2012) stresses the concepts of quality, cost, and delivery (QCD). In his terminology, quality refers not only to the quality of finished products or services but also to the quality of the processes that go into those products or services. In the terminology of capabilities these are "working practices." Cost reflects the overall cost of designing, producing, selling, and servicing the product, and delivery means delivering the requested volume on time. All of these elements can be mapped into the quality and productivity dimensions of firm capabilities. Quality and delivery are "demand shifters," while cost is a "cost shifter." In fact, *Kaizen* is a Japanese approach to building firm capabilities.

Ethiopia provides a case study of *Kaizen*'s relevance to improving capabilities in larger firms. JICA provided *Kaizen* training to selected large manufacturing firms in Ethiopia from 2009 to 2011. The first part of the training was in the classroom and a second phase was onsite. Thirty large firms were selected by the Ethiopian government based on their ability to use the training effectively. Gebrehiwot (2013) compares the performance of these "treated" firms and 40 large comparator firms that did not receive training. Because the treated firms were selected due to their high growth potential, issues of bias cannot be ignored. Nevertheless, statistically significant increases in labor productivity, declines in production costs, and improvements in the quality of products were observed in treated firms.

JICA has invested significantly in Kaizen as a way to increase the capabilities of micro, small and medium enterprises, and a growing number of evaluations have been undertaken. Shimada and Sonobe (2017), for example, attempt to assess the impacts of Kaizen training on workers, using survey data collected from firms in eight countries in Central America and the Caribbean. Kaizen appears to have induced a number of important behavioral changes at the firm level. Managers in Kaizentrained firms developed a greater understanding of the importance of sharing basic information with workers. Shimada and Sonobe also found that Kaizen improved employees' attitudes toward work, increased the number of productivity-enhancing suggestions from workers, and resulted in the introduction of more measures to prevent accidents. Better attitudes toward work were associated with more rapid wage growth. A majority of managers found Kaizen useful within three months, although some took considerably longer, and employees were initially more skeptical than management. Shimada and Sonobe conclude that the gradual pace of adoption reflects the fact that Kaizen is predicated on building a cooperative relationship among workers and between managers and workers, a process that takes time and validation.

In a recent contribution, Mhede et al. (2018) assess the durability of *Kaizen* training and provide some insight into its relationship with more standard MSME training curricula. Using a randomized controlled trial (RCT) of garment manufacturing firms in Dar es Salaam, Tanzania, the authors found that three years after the training intervention treated firms had adopted a statistically significantly larger number of good management practices than their untreated counterparts, and their business performance had improved. They found a slight difference in scale of adoption of *Kaizen* and non-*Kaizen* management practices, favoring the non-*Kaizen* practices, but they also found that the educational attainment of the owner was significantly correlated with which management practices were adopted. Non-*Kaizen* practices, such as planning and recordkeeping, were more likely to be adopted by better educated owners.

5 Some Implications for Industrial Policy

For the industrial transformation of low-income countries to succeed, industrial policy must address three objectives. First, while some firms in some countries are already sufficiently productive to be competitive internationally, a larger share of existing firms must become more productive.

Second, because the manufacturing sector in most low-income countries is quite small, governments need to create the conditions to attract new firms able to compete in regional and global markets. Finally, governments may wish to encourage firms to move into promising new areas of potential comparative advantage, what Rodrik (2009) has labeled "industrial policy in the large."

Of the three industrial policy objectives, management training falls most squarely into the first category, reducing differences in firm-level productivity. A change in management practices, for example, can increase the potential productivity of all firms. This is equivalent to shifting the entire productivity distribution uniformly to the right. With the growth of global value chains, it has become increasingly important for domestic firms to engage effectively with the multinational lead firms that drive them. This means that management training also has the potential to contribute to the second industrial policy objective by attracting new value chains.

Placing management training in the broader context of industrial policy raises important questions regarding when and for which types of firms management interventions are appropriate. The mixed results of evaluations of management training interventions for MSMEs—whether *Kaizen* or other types of training—offer evidence that context is important. Not all firms may be able or willing to benefit from training. This in turn raises the question of why firms fail to adopt good management practices in the first place.

5.1 Why Do Firms Fail to Adopt Good Management Practices?

One of the central questions concerning management training is why managerial good practices are not taken up more rapidly. 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 do not 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 (Gibbons and Henderson 2012).

Interestingly, Bloom and his collaborators observed all three of these problems in their India case. Their evidence 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. Competition in India was heavily restricted by high tariffs in the case of imports and in the case of new entry by lack of finance. Barriers to entry and the family structure of enterprises acted as a disincentive for firms to adopt better management practices.

5.2 Options to Improve Management Practices

Kaizen is not the only way in which governments can address the need to increase the productivity of existing firms. Organized efforts to acquire good management practices could take the form of collective actions by firms or a public-private partnership to seek out information on managerial good practices and make it available as a public good. 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 Fundacion 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. Initiatives of this type might be undertaken at lower cost, and with a greater share of the cost borne by the private beneficiaries, than training interventions. They also face a market test.

Management training of large-scale firms of the type offered in India by Bloom and his associates or in Ethiopia by JICA 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. In the case of larger firms, however, care must be taken to put in place complementary policy changes to promote competition. In the absence of competitive pressure, firms may fail to recognize that improvements in management practices will be beneficial and any changes may be short lived.

Business training is one of the most common forms of support to micro, small and medium enterprises (MSMEs) around the world. There are a large number of programs offered by governments, aid donors, microfinance organizations, and NGOs. This is a very different target group for training than medium- to large-scale plants, and the results of most training programs have been disappointing (McKenzie and Woodruff 2012). The evaluations of *Kaizen* as a method of MSME management training are encouraging, but have not yet reached the point of being conclusive. Otsuka and Sonobe (2014) suggest that the reason for the disappointing results of evaluations of *Kaizen*—and of MSME training more generally—may be due to an excessively optimistic view of the types of firms that can benefit from training.

The literature on MSME often misses the fact that there is an enormous amount of heterogeneity among firms. ¹⁵ Recent research using nationally representative samples of MSME firms shows that there is a small but significant subset of MSME firms that have productivity levels higher than economy-wide manufacturing productivity (McMillan et al. 2017). These are the high capability firms in the MSME sector. Otsuka and Sonobe argue that these firms are the relevant target for management training. They further suggest that management training can be used to screen for promising entrepreneurs, because, if effective, it should produce visible changes in the way in which owners manage their firm.

6 CONCLUSIONS

Firm capabilities determine productivity and quality—the two key components of international competitiveness. Intuitively, they are closely related to management. Historically, economists have neglected management, preferring instead to focus on factors external to the firm. Recent work at the intersection of economics and management studies, however, very strongly points to the conclusion that management matters. Differences in management practice between firms and countries are responsible for much of the difference in measured productivity.

Building firm capabilities is a complex process. The capability transfer consists of both "hardware"—technological knowledge and engineering—and "software"—the working practices that are crucial to master technology and achieve higher quality. The relative importance of these two factors changes as countries move toward more complex, technologi-

cally sophisticated products. In low-income countries, for the time being, working practices are likely to be more important.

Capability building—including management training—is well within the mainstream of contemporary industrial policy. It is a means by which two of the major objectives of industrial policy in low-income countries—increasing the number of more-productive firms and attracting new firms along global value chains—can be pursued. *Kaizen* is a promising and uniquely Japanese approach to capability building, but it is not the only one. Further evaluations of the impact of capability building interventions, ranging from collective action by private firms to structured training programs, will be essential to understanding the costs and benefits of management interventions.

Notes

- See Hausmann et al. (2007), Rodrik (2009) and Harrison and Rodriguez-Claire (2010).
- 2. See Pack and Saggi (2006) for a statement of the mainstream view.
- 3. See, for example, Stiglitz (2017), Cimoli et al. (2010), and Szirmai et al. (2013).
- 4. Syverson (2011).
- 5. Hsieh and Klenow (2009).
- 6. See Sutton (2012).
- 7. The low-wage advantage is limited because virtually all manufactured exports require some minimum amount of intermediate inputs sold at fixed international prices. Where—as in the case of trade in tasks—these comprise a significant share of total production costs the low-wage advantage erodes.
- 8. See Sutton (2005, 2012).
- For a survey of the relevant literature, see Harrison and Rodriguez-Claire (2010).
- 10. Sutton (2005).
- 11. See Bloom and Van Reenen (2010) and Bloom and others (2010).
- 12. Bloom and Van Reenen (2010).
- 13. UNIDO in particular has had a long tradition of studying the role of technological knowledge in development. See UNIDO (2003) for an example.
- 14. The integration of domestic firms into global value chains is a particularly significant challenge in Africa, where there are few linkages between foreign and domestic firms. See Newman et al. (2016).
- 15. For the conventional view see La Porta and Shleifer (2014).

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