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Industrial policies refer to a broad range of policies that aim to accelerate the acquisition and adoption of superior technologies by domestic firms. The aim is to raise productivity and therefore living standards. For the sustainability of growth, it is also necessary that a country should succeed in creating a substantial base of domestically-owned firms. Domestically-owned firms are much less likely to relocate to other countries as global relative prices change, so the creation of a broad domestic base of domestic entrepreneurs ensures that the country is likely to move to new products and technologies as conditions change. At the same time, foreign-owned firms can be the source of new technologies and management practices as long as attracting them is part of a policy of encouraging spillovers to local producers.

Industrial policy does not necessarily refer to the industrial sector narrowly defined, but rather to policies that promote the acquisition and adoption of superior technologies in any productive sector of the economy. To avoid confusion, some analysts use the term 'technology policy' instead of industrial policy to signal that they are not just interested in the industrial sector narrowly defined. But this paper will stick to the older term on the assumption that the meaning is clear.

Industrial policies are necessary because for a number of reasons market opportunities are often insufficient for ensuring the most rapid acquisition of technologies by domestic firms. There are costs of arranging and enforcing transactions in markets, known as transaction costs. For complex transactions, transaction costs may preclude potentially beneficial activities if the transaction costs of protecting the interests of the different parties are too high. This is the root cause of all market failures (or contracting failures). Industrial policy is concerned with the market failures that can prevent markets from organizing investments with the appropriate terms and conditions for achieving rapid technical progress.

High transaction costs and therefore market failures affect market transactions in all countries, but they are particularly serious in developing countries because institutions such as property rights and the governance capabilities for enforcing contracts are weak. These institutional conditions raise the transaction costs facing the organization of such activities as investments in new technologies. Industrial policies are responses to these market failures, and if properly designed, they can help to accelerate the successful acquisition of technologies, and therefore the rate of productivity growth to a higher level than would otherwise have been possible.

It is not possible or useful to have a general list of industrial policy instruments. A wide variety of policy tools can contribute to industrial policy. Any policy instrument that addresses a contracting failure blocking technological upgrading can in principle be an instrument of industrial policy. These can therefore range from temporary tariff protection, subsidized credit or even making credit available to sectors that are not yet creditworthy, direct subsidies, subsidies for training, land acquisition and so on.

The appropriate instruments of industrial policy depend on two different sets of considerations. First, the instrument has to be designed to address the most important market failures that are affecting technology acquisition and adoption in the particular sector that is being targeted. Second, the instrument should be effective given the distribution of organizational power in the society (described as the political settlement) (Khan 2013a, 2013b). Many well-meaning industrial policies in developing countries fail in terms of both these criteria.

Industrial policy is often not based on a thorough analysis of the most important contracting failures affecting particular sectors, and therefore the policy instruments may not even be targeting the most important constraints. No less important is the second concern mentioned above, because every society has a specific power structure embodied in its political and economic organizations. Since any policy instrument will affect the distribution of benefits across organizations, and conditions have to be imposed on them to achieve the intended results, every instrument is not equally enforceable in every political settlement. If the design of the policy is such that it requires hard conditions to be imposed on powerful

organizations that do not have an incentive to follow all these conditions and that might be more powerful than the enforcing organizations, the outcomes are likely to be poor. This is why similar policy instruments, for industrial policy and more generally, can have very different effects across different countries.

This analytical frame suggests that a general discussion of industrial policy instruments based on what worked in countries that successfully deployed industrial policy is not likely to be useful for informing Ethiopian policy-makers. The lessons to be learnt from more successful countries are more complex. First, Ethiopian analysts and policy-makers can learn about the types of market failures that can constrain technology acquisition and productivity growth in developing countries. But the precise market failures that are important in the Ethiopian context will still need to be carefully identified.

Second, they can look at the different types of policies that have been used to address these problems in different countries, in order to understand why particular policies worked in particular contexts and not others. But this is a more difficult part of the policy learning process because the links between the political settlement and policy implementation, on the one hand, and the ensuing successes and failures, on the other, are harder to trace. Moreover, the political settlement in Ethiopia is likely to have unique characteristics that may not match those of other countries. Moreover, the organizations involved in different sectors and technologies are also different, so a more granular analysis of the political settlement is required to understand the relative power of organizations affected by policy in particular sectors and using particular technologies.

The details of policy design are therefore necessarily specific to the country, sector and the technologies being used. Nevertheless, general methodological insights can be used to initiate a process of systematically thinking through the likely support for, and resistance to, the effective implementation of particular policies in the Ethiopian political settlement. The aim of analysis and discussion should be to narrow down the range of instruments that are more likely to work in particular sectors and for particular technologies. However, policy still has to have the flexibility to experiment with different instruments on a small scale (within the range of what is more likely to work in that area) and then replicate and scale up

the instruments that work in particular sectors and for particular technologies in the country.

The EDRI document review entitled *Industrial Policies and Strategies in Ethiopia* provides a very useful overview of the existing approaches to industrial policy in Ethiopia. This document shows that while the government is highly committed to technological upgrading across economic sectors, so far there are obvious gaps in identifying the precise contracting failures that policies are trying to address, and there is virtually no discussion of whether the specific policy design is likely to be effective in addressing these market failures given the political conditions in the country. Both aspects of the policy design problem therefore pose a challenge for the future. The next two sections discuss the design of instruments from these two perspectives as a guide to further discussions.

Designing instruments to address specific contracting failures

Market failures can range from those that limit the growth of existing firms to those that may preclude the discovery of new industries (i.e., the actualization of latent comparative advantages). Most problems, such as the limited provision of necessary physical infrastructure and power for firms, formal skills for different categories of workers, incentives for innovation, failures of coordination across sectors, and the critically important problem of financing the development of within-firm organizational and technical capabilities through learning-by-doing, affect both existing firms and potential industries. Moreover, firms engaged in the discovery of latent comparative advantages face the additional problem that their discovery will be a public good and the market will not fully compensate them for it. In other words, there is a problem of incentivizing first movers who often face a loss of, or lower, profits than followers.

Each of the above problems is due to quite different contracting failures, and while all solutions require the expenditure of public funds, the allocation of these funds to different types of organizations, and the conditions that the organizations have to meet to get support are quite different.

Industrial policies are a set of policy instruments that are intended to rectify these market failures in order to enable technological upgrading by firms. Broadly speaking the nature of appropriate industrial instruments depends on two basic considerations: political economy and firm capacities.

In countries that have (i) strong developmental states, where the distribution of power between different levels and types of political organizations is structured in such a way that higher state authorities could impose discipline on lower state organs and on firms and face little competition from excluded coalitions in society, so that, for instance, firms being disciplined could not easily get support either from within the state structure or from excluded political organizations in society (Khan 2010); and have (ii) firms that have significant internal technical and organizational capabilities and could organize their learning-by-doing given the monitoring of outcomes and the sanctions that the state could impose on firms that failed to achieve targets, then broad subsidization strategies for infant industries so that they can acquire technical and organizational capabilities through learning-by-doing may be successful. This was the case in South Korea in the 1960s.

Either one or both conditions are missing in most developing countries, which are often characterised by weak governance and weak firm capacity to do learning by doing.

Weak governance

One reason why industrial policy instruments often fail in countries with weaker governance is that these instruments (like tariff protection, subsidized credit, or a straight subsidy) provide implicit or explicit subsidies that could in principle help address many different market failures. However, since the effective external pressure that state agencies can exert on firms to raise their productivity can be low in these contexts, within-firm effort at raising productivity by acquiring organizational capabilities is also usually low. As a result, even if other problems are addressed, such as capital market constraints preventing the purchase of machinery, the failure to raise organizational capabilities means that the firms in question never become competitive.

The experience of industrial policy successes in countries with weaker governance shows that success usually depends on 1) policies emerging (either by accident or design) that provide the right level of support to firms so that they can engage in effective learning-by-doing as well as 2) the right conditions and penalties that ensure that there will be a high level of effort in raising within-firm productivity. For a fuller discussion of different contracting failures and conditions required for positive outcomes, see Khan (2013a) and Lall (2000a, 2000b).

Firms with low capacity for learning by doing

There are developing countries like Ethiopia that have inclusive political organizations that apparently face limited external opposition and where higher levels have the capacity to discipline lower levels. These countries are, however, characterized by the absence of a wide range of domestic firms with the capabilities to organize production competitively even when they have access to the appropriate capital equipment and a workforce with sufficient formal training that is appropriate for the job.

The missing capabilities are often not formal skills but the tacit or informal know-how about how to set up and manage production lines within a productive unit to maximize efficiency and minimize bottlenecks and downtime, how to manage quality control and inventories (which can make the difference between profit and loss in many cases), how to manage sales and after-sales networks, and other organizational capabilities. These capabilities cannot be formally learnt (in a college or by reading manuals), and even when some formal knowledge is relevant, the bulk of the relevant knowledge is *tacit knowledge* that is acquired and adapted through learning-by-doing.

The 'doing' results in the adaptation of within-firm processes and routines to local conditions in order to achieve global competitiveness. However, while learning-by-doing has to be supported by some mechanism of financing, the firm also has to be under sufficient pressure from competition or state monitoring to put in the effort to raise its competitiveness through learning-by-doing. As the contracting of these conditions is complex, the financing of the learning of organizational capabilities is subject to severe contracting failures.

In situations outlined above, where either the states have limited capacity to monitor and sanction individual firms or firms have weak organizational capabilities, generalized support is less likely to lead to the desired outcome. In such a scenario, it is much more important to have very specific instruments targeting particular contracting failures.

Ensuring that policy instruments are effective in a political settlement

Even if policy is narrowly defined to solve particular contracting failures, this condition is not sufficient to ensure that the policy will succeed. This is because every policy requires resources to be allocated to particular organizations with particular conditions, and the effectiveness of the policy depends on whether these conditions are aligned with the interests of different stakeholders within firms, and in the typical case where this is not entirely so, whether governance agencies have the capacity to enforce the required conditions on the firms in question.

If the political settlement of a country appears to preclude the application of an instrument that worked in a similar sector in another country, that does not mean that there are no effective policy instruments available. Any particular market failure can be addressed by many different policy responses. Just as an environmental externality can be addressed by taxing the polluters or subsidizing them, or imposing regulations or creating tradable rights, and just as the effectiveness of each of these solutions depends on the technologies involved and the capabilities of states to enforce different conditions, market failures in technology acquisition can also be addressed in different ways and the effectiveness of each depends on local conditions and political contexts.

This is why some developing countries with apparently weak governance, which had performed poorly with East Asian type industrial policy instruments, achieved significant successes in some sectors in the 1980s. They did this by using policy instruments that happened to be targeted to specific problems in ways that were effective in the local political settlements. Examples include the rapid growth of the automobile components industries and ultimately the automobile industry as a whole in India, the growth of the garments and

textile industry in Bangladesh, and other similar examples (Becker-Ritterspach 2007; Khan 2009, 2013b; Rhee 1990).

Lessons for Ethiopia

Two major features characterize recent iterations of industrial policies in Ethiopia. First, they identify strategic sectors in which the country is deemed to have a comparative advantage. Among these sectors are: export-oriented agro-processing, textiles and garments, and processed leather. The second feature is that they institute what may be termed generalized support or incentive schemes. These schemes include, among other items, free or cheap land, duty-free imports and exemption from profit taxes.

Some sectors, for instance floriculture, have registered remarkable growth under the umbrella of these policies. However, the industrial sector in general and the manufacturing sector in particular are not growing at the intended speed stipulated in the various five-year development plans.

The slower than expected growth rate of the manufacturing sector at least partly reflects the limitations of the policy setting mechanism. First, it lacks dynamism in defining priority sectors. In particular, the process of identifying the sectors in which the country has latent and/or obvious comparative advantage is not clear. Second, as mentioned above, in a setting where firms have lower capacity to conduct self-oriented learning-by-doing, generalized incentive schemes are less likely to work. In other words, although it may be possible to define a list of generic incentives, the actual assistance needed by firms may be highly specific, requiring tailored industrial support. For example, cheap land and tax breaks may suit some firms; but others may have different needs such as easing regulations or tariff exemption on inputs and so on. Ethiopia's policy of the provision of generalized incentive schemes may run counter to this idea. Third, the various industrial policy documents do not contain a discussion of how the various instruments will survive under the political economy conditions of the country. In other words, the comparative effectiveness of the different incentive schemes, under the political settlement structure of the country in general, and in specific industries in particular, is not seriously considered.

Given the above limitations, policy research on industrial policy instruments relevant for Ethiopia therefore has to proceed in *two stages*. The first stage is a sectoral or an even more disaggregated analysis of the nature and types of constraints faced by firms with regard to technology upgrading in the country, essentially identifying the dominant contracting failures that need to be addressed. However, the needs of specific firms and the obstacles that they face are likely to be diverse and highly specific to each of them. We are likely to observe not only significant differences in the mix of problems across sectors, but also constraints that change over time, rendering it difficult to list firm-level industrial obstacles *ex ante*.

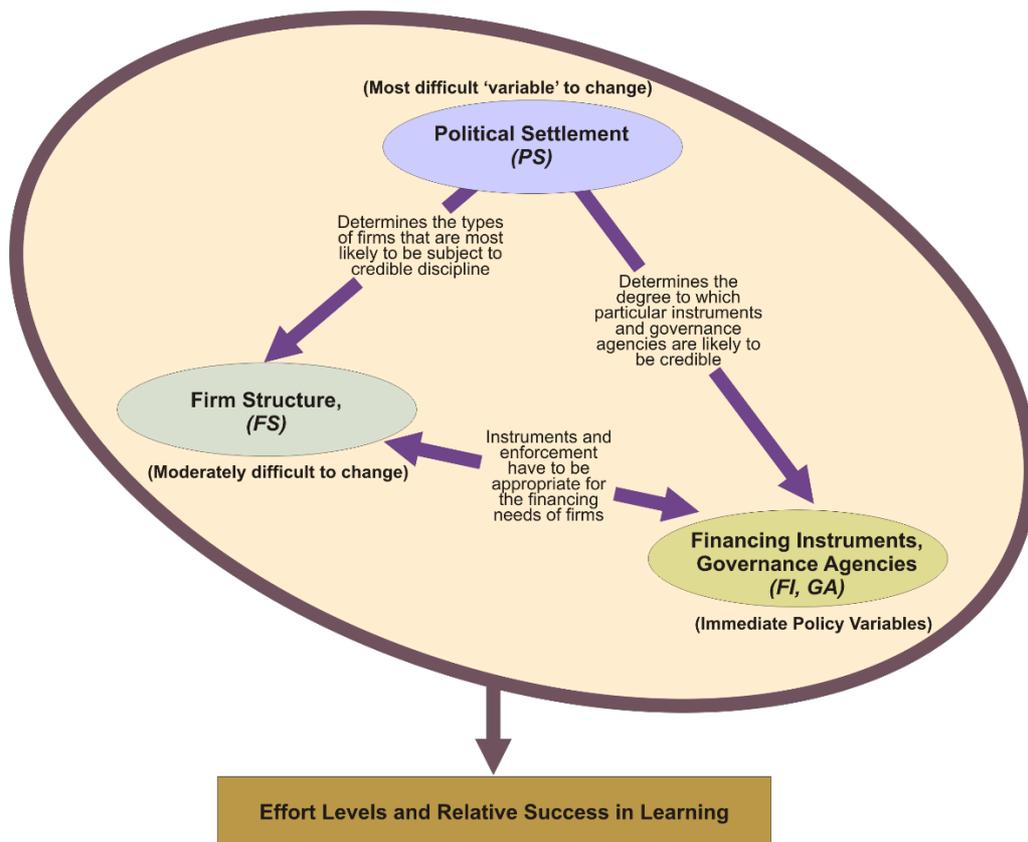
For instance, some argue that missing organizational capabilities and the challenge of developing firm-level capabilities in domestic firms is likely to be a fairly common problem across sectors. But even then challenges in terms of organizational and firm-level capabilities could be diverse and changing through time. As a result, the identification and analysis of problems have to be iterative, involving a continuous dialogue and consultation between firms and the government. Through such iterative consultations with firms, the government can elicit important information on the key constraints that need to be addressed by the industrial policy.

The second stage will be to take each identified contracting problem and investigate the types of conditions that need to be enforced on firms and other stakeholders in order to achieve desirable technology acquisition results. This assessment will require an analysis of the distribution of organizational power in the sector, and often an understanding of the distribution of power at federal and national levels as well. Industrial policy design, and even the selection of sectors and types of firms to support them, becomes an iterative process of asking whether the constraints in a particular sector at a particular time can be effectively addressed by policy design, given the information on and the analysis of the political settlement. It may also mean shifting attention away from some types of firms or technologies if these are unlikely to be effectively managed given the political configuration of power.

The iterative process of evaluating industrial policy instruments is illustrated in the diagram below, which focuses on the industrial policy instruments appropriate for addressing contracting failures that affect learning. The immediate policy variables for a government are the design and selection of these industrial policy instruments (such as direct subsidies, protection, subsidized inputs, tax policy and licensing of technologies), and the selection and design of the governance agencies tasked with monitoring and enforcing particular policy outcomes. However, these choices also depend on the firms and technologies that we are targeting for upgrading.

Firms come with pre-existing organizational capabilities, political connections with other organizations in the political settlement, the technologies that they already use and so on. The firm structure in a country is not an immediate policy variable because it is obviously not easy to change rapidly, but policy can still select particular sectors and firms and leave out others, precisely on the grounds of their likelihood of benefitting from particular policy instruments and being effectively subjected to the conditions required for achieving success in developing competitiveness.

Finally, the political settlement, namely, the distribution of power across the organizations relevant for the policy discussion, also needs to be broadly identified, based on a historical reading of organizational developments in the country. A picture of revealed organizational power can be built up by examining the history of the types of policies that have worked or failed in the country, and that can tell us a lot about the relative power of different types of organizations. Obviously, the distribution of power is always gradually changing and new sources of organizational power can be developed, but a historical understanding of these organizational features of the country can provide a robust basis for policy discussions about what is feasible and the likelihood of success for different strategies.



Source: Khan (2013b)

Finally, it is important to keep in mind that while this type of political economy exercise is meant to limit the chances of failure, it can never identify with certainty the instruments and strategies that will work. Once a sphere of possible policy entry points have been identified that are likely to work given the economic and political conditions of the country, policy-makers have to be prepared to engage in small-scale experiments with different policy instruments in order to test whether they are adequate for addressing the country's economic problems in ways that can be implemented. The instruments that work better can then be scaled up in that sector. Indeed, the success stories in India, Bangladesh and elsewhere to which we referred earlier all started as experiments affecting a small number of firms, or even one firm in its early stages, before being replicated and extended.

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