New Open Economy Industrial Policy: Making Choices without Picking Winners

Yevgeny Kuznetsov and Charles Sabel

Policy makers cannot do everything at once: they have to focus and set priorities. How can policy makers make accountable choices on which economic activities to support while operating under pressures from politicians and vested interests, and with only a partial view of an economy? One priority-setting domain—open economy industrial policy—focuses on connections among domestic firms and between firms and the world market. In contrast to import substitution, the objective of open economy industrial policy is to increase economic openness by enhancing knowledge flows and fostering productive innovation and nontraditional exports. “Old” industrial policy focused on justification of specific set of priorities. In contrast, “new” industrial policy focuses on the governance of the priority-making process.

Motivation: Casting Choice as Search

How can policy makers set priorities or provide public inputs customized and bundled to suit the needs of particular domains of one economic activity, but not others? This note starts from the premise that policy makers invariably make mistakes, both intentional and unintentional. That requires shifting the focus from one-time choice of winners (sectors, industries, firms, and other organizations) to the process of error detection and error correction of the choices (with corresponding attention to governance).

As a second step, obstacles of informed and accountable choice (influence of entrenched interests, low capabilities of public sector, and the like) are used as endogenous variables—objects of analysis in itself. Three of them are particularly important:

• **Power of vested interests.** Entrenched interests are likely to derail the search from the provision of public goods to self-dealing and rent seeking. In particular, disengagement of the public sector proves to be much more difficult than its engagement, even in successful and promising cases of industrial policy.

• **Necessarily partial view of the economy.** No actor has a panoramic view of the economy or knowledge of the distortions the public sector is supposed to correct. In today’s fast changing economy, neither economists, public officials, nor private actors know where the relevant distortions are or have a sufficiently panoramic view of the economy.

• **Weak capabilities of governments and other economic agents to undertake industrial policy tasks.** In low-income economies in particular, public support to the connections with the world economy can become self-defeating, because capabilities to make these connections do not exist. The issue is how to generate such capabilities.

The hypothesis is that agents with new capabilities, such as a new private sector (which learns to innovate by connecting to the world economy)
and new public sector (capable of providing complementary public inputs for private sector research), develop together—they are two sides of the same collaborative process. This process can begin even if government is, on the whole, weak, and many firms are rent seeking because both the public and private sectors are highly heterogeneous. Some parts of governments work well, or well enough to improve the vocational schools, if not the public school system; or improve some parts of the agricultural extension service, if not its industrial counterpart; or build a taskforce on business development or create industrial parks, if not the development bank. Similarly, as research on new exports shows (Sabel 2010), some firms will prefer to seek high but uncertain quasi-rents (contingent on research and innovation) rather than the lower but more certain rents accruing from the position of privilege.

The approach outlined in this note thus shifts the debate from the one-time choice of “picking winners” or “letting losers go” to creating institutions to support private sector connections with the world economy. If no agent has a panoramic view of the economy, then all views are partial and political economy considerations are central, and mistake-proof industrial policy is impossible. The solution is to design a process that can—through a variety of private-public partnerships—detect and correct mistakes (including those instigated by special interests).

Examples of New Industrial Policy as Management of Search

Evidence for new open economy industrial policy process is available at both the national and micro-level. At the national level, small open economies—Taiwan, China, Ireland, or Chile—provide various examples of how to build capacity-enhancing connections with the world.

Taiwan, China implemented the open economy industrial policy process through the formation of a venture capital (VC) program that allowed Taiwanese born engineers, trained both at home and abroad, to deploy their skills in start-up firms whose activities complemented and facilitated the reorganization of U.S. leaders in the computer and semiconductor industry. VC—even today slowly diffusing within the advanced economies, and virtually unknown in developing ones outside of Taiwan, China and Israel—thus became in effect an instrument for orienting and reorienting the direction of the national economy’s development in rapidly shifting and highly demanding markets.

Ireland created an analogous method for identifying and developing growth-enhancing connections starting in the 1950s: tax exemptions (later reductions) to the corporate profits tax attracted subsidiaries of multinational corporations (MNCs) from promising sectors such as chemicals, pharmaceuticals, and software. While Taiwan, China used VC to connect its expatriate engineers to each other and world markets, Ireland used selective foreign direct investment (FDI). The result in both cases was cumulative capacity building, evident in Taiwan, China in the creation and evolution of firms, and in Ireland, at least through the mid-1990s, principally in the growing responsibilities of managers rising through the professional networks of particular sectors. The chief vehicle of learning—for selecting the most promising collaborators from among those attracted by the incentives, and working with them to ensure incremental improvement of local supply networks, infrastructure, education, and the like—was at first the Irish Development Agency, then, from the late 1980s, as domestic firms increased in importance, Enterprise Ireland. The Irish Development Agency’s attention to the systemic or economywide implications of its collaboration with groups of firms are evident by the way it tracked and reacted to indications of possible skill shortages and in its efforts at supplier development (box 1).

Thus between 1977 and 1979, the Irish Development Agency negotiated agreements with electronics firms that together would create demand for some 600 electrical engineers per year, about four times the number Irish universities and regional colleges were then graduating. Because it takes between two to five years to educate technicians and engineers, there was need for a short-term remedy and a plan for a long-term expansion of the education system. The short-term solution was conversion of science graduates to electronics qualifications via one-year courses; the longer-term solution was expansion of existing courses and the addition of new ones. The rapid response of the Higher Education Authority provided reassurance to subsequent investors that Ireland could provide the skills needed and contributed to renewal of the university and technical training systems.
The type of organization best suited to perform a collaborative search is an autonomous entity with a mandate to experiment by assembling and carefully monitoring a portfolio of projects and that is also accountable for the portfolio’s results. A typical project is a collaborative program—a search network—that seeks to alleviate a specific constraint such as a skills shortage or lack of qualified suppliers for electronic firms, as was the case for the Irish Development Agency. A project in the new industrial policy portfolio could be a private firm, incubated in collaboration with private partners.

For instance in 1982, Fundacion Chile, an autonomous private-public agency with a modest endowment, acquired necessary technology for free from specialist public agencies in the United States, and founded one firm to produce smelts, another to develop hatching and ranching technology for Chilean waters, and a third firm for smoking fish, creating a foundation for the salmon cluster. Crucially, as the technologies it aimed to commercialize grew in complexity, Fundacion went from seeding firms on its own to coventuring with external partners.

But an enlightened skeptic would say these examples only confirm the doubts. Ireland, Taiwan, China, or Chile have the capacity to undertake challenging tasks, but what about low-income economies with a dysfunctional public sector?
The public sectors of these economies also reveal heterogeneity of performance and thus increasingly provide customized and flexible public inputs. The emergence of a new public sector in Kenya as a result of institutional reforms responsible for ensuring hygiene and food safety at the Nile perch fishery on Kenya’s portion of Lake Victoria is a prime example.

Perch exports, predominantly to the European Union, increased from just under $100,000 in 1985 to almost $44 million in 1996. Starting in that year, however, the European Union and various member states began to restrict perch imports from Kenya because of concerns about pathogens and pesticide residues, and, more generally, because of concerns that Kenyan producers did not meet EU regulations based on Hazard Analysis of Critical Control Points (HACCP) and therefore could not ensure food safety and hygiene. Under this form of regulation, producers identify the production steps where pathogens are most likely to be introduced; devise remedial measures; test to verify that these measures produce outcomes within parameters set by the regulator for the relevant class of product; correct remaining shortfalls; and regularly verify, by routine tests, the effectiveness of the eventual methods. A competent public authority periodically verifies the reliability of this self-monitoring.

The European Union inspected the fishery with Kenyan counterparts and documented problems including unhygienic storage of fish on the fishing vessels; spotty record keeping, especially of “own checks”; inadequate vermin control at processing facilities; insufficient training of fishery inspectors; and a wide variety of deficiencies in testing laboratory organization, maintenance, and equipment. In response, the Kenyan government combined oversight authority for the fisheries industry from three entities into one, and the fisheries producers formed themselves into a single association to work with the government. The World Bank study (Henson and Mitullah 2004) on which this account is based notes substantial improvements not just in compliance with HACCP regulation, but also in the organization of many links in the supply chain and the public sector infrastructure (though the landings often fell short). During the period of these reforms, Kenya ranked around 80th out of 117 counties on the World Economic Forum’s competitiveness index: a poor enough showing in the league tables of institutional adequacy to cast doubt on its ability to accomplish any reform, let alone to effect, in a short period, a coordinated series of demanding changes within the public sector and between it and private firms. Despite its marginal economic significance—in good years Nile perch accounts for only 2.5 percent of Kenyan exports—the regulatory reform of the fishery reflects broad trends in the provision of customized public services and just-in-time regulation. In effect, the regulatory authorities are requiring firms to demonstrate the same general capacities to detect and correct problems upon which the firms’ customers insist as a condition of doing business.

Partial reform, domain by domain, or, as in this case, reform of one cluster at a time, also appears to be commonplace: the accounts of cluster development referred to above almost invariably interweave discussion of the restructuring of firms, and the relationship among them, with re-organization in that particular cluster of the public infrastructure for verifying compliance with standards set both by public authorities and private buyers of the cluster’s products. A recent World Bank (2009) publication documents Africa success stories and confirms that such simultaneous emergence of new private and public sectors is relatively common in difficult environments, but they remain small and fragile.

The fragility of the fishing clusters in Chile and Kenya is illustrated by the collective action problem of overfishing. In Chile, the dynamic segments of the government notwithstanding, the inadequate capabilities of government agencies were not improved as a result of the fast growth of the industry. Indeed, the dynamic segments may have been weakened as companies lobbied to maintain short-term profitability and an underground market for antibiotics emerged—and this led to the collective action failure to address the virus threat. A similar problem has emerged in Kenya, as well as in the other Nile perch producing countries. Exports to the European Union have fallen dramatically because the industry grew without putting in place the needed trade infrastructure—and the government did not do enough to ensure that the quality infrastructure institutions would regulate product quality in accordance with European Commission food safety norms.
Framework Programs That Help Scale up Microchanges to the Macro Level

How to scale up and institutionalize the natural experiments, diverse but fragile microlevel new industrial policy episodes, to the national level? A key problem is the gap between microinnovations and improvements in macro conditions. In principle, incremental changes can lead to wide and abiding transformations. But deep constraints can remain binding if microchanges do not achieve a critical mass. To lessen the risk of such limited outcomes, framework programs provide an environment for microlevel changes to continue and scale up. The Irish Linkage Promotion Program (box 1) and the Taiwanese VC initiative are two examples.

By the end of the 1970s, Taiwan, China had already developed significant research and development (R&D) capabilities, such as the Industrial Technology Research Institute (ITRI) and the Electronic Technology Research Institute (ETRI). Yet transforming technology into firm creation proved difficult. The large Hinschu Science Park, which opened in 1980, was unable to find tenants in spite of aggressive efforts to lure multinationals. The program started with the efforts of Minister without a Portfolio Li and his influential allies, who convinced the Ministry of Finance to introduce legislation to create, develop, and regulate VC in Taiwan, China, including comprehensive tax incentives and financial assistance. Institutions such as Seed Fund provided matching capital contributions to private VC funds. Two American-style venture funds, H&Q Asia Pacific and Walden International Investment Group, were created and managed by U.S.-educated Chinese living overseas who received invitations to relocate to Taiwan, China. Once the first venture funds proved successful, domestic banks and large companies created their own VC funds. Once those started to payoff, even the conservative family groups decided to invest in VC funds and information technology businesses. By the late 1980s, when companies like Acer and returnee company Microtek were publicly listed on the Taiwan Stock Exchange, the VC industry in Taiwan, China took off.

A search network (to identify successive constraints and then people or institutions that can help mitigate them) consisting initially of key, dynamic, and forward-looking members of the Taiwan, China government and leading overseas Chinese engineers in Silicon Valley was central to the emergence of the VC industry. This network did not have a blueprint, yet it did have a role model (Silicon Valley) and a clear idea of “what to do next.” By defining each subsequent step along the road, the network became wider and eventually incorporated skeptics and opponents.

As the Taiwanese and Irish examples illustrate, framework programs have three distinct features that distinguish them from typical government policies. First, they start with existing institutions and programs and reshape them. By linking better-performing segments of private and public sectors, they alleviate existing institutional constraints and come up with new solutions. They link exceptions from a general rule allowing them to institutionalize their agendas. Both the Taiwanese VC program and Irish linkage efforts were initially viewed with skepticism; yet, drawing on existing organizations and programs, the champions created sustained dynamics (in backward linkages with VC development) and won skeptics over.

Second, framework programs start at the organizational periphery and are therefore less susceptible to rent seeking. Public programs and policies have three constituencies: users/clients, public sector bureaucrats, and politicians. All three rely on government programs as a source of rent seeking: visible political payoffs in case of politicians, kickbacks in case of public sector servants, and subsidies to maintain current business practices in case of users. But by design, framework programs do not have a large budget of their own: they rely on other programs. In economic parlance, the motivational effect is transformation from rents to quasi-rents—rents contingent on performance and effort. Framework programs start small and require a small amount of public money, but they do require a substantial effort to implement. As the Taiwan, China example illustrated, for that reason, these programs have not been taken seriously by established interests: they were contingent on articulation of quasi-rents (which by definition require creativity and effort) rather than the simple capture of rents (Kuznetsov 2009).

Third, by linking better-performing segments of an existing institutional framework and searching for out-of-the-box solutions to familiar problems, the institutional framework too is reshaped.
There appeared to be no institutional space for the VC industry in Taiwan, China in the 1980s, so tight was the grip of established large agents (large firms and banks). The institutional framework for the VC industry emerged simultaneously in a dynamic virtuous cycle.

Framework programs, constructed from institutions already in operation, allow public and private actors to respond to the demands of the moment without having to pretend that their initial choices somehow escape the ambiguity that confounds all others. Moreover, and crucially, they help the actors address the governance questions that their openness creates.

**Contrasts with Previous Generations of Industrial Policy**

The instruments of traditional industrial policy are easy to list: tariff protection, tax rebates, R&D subsidies, directed credit, industrial zones, and so on. These instruments serve priority sectors, such as autos, call centers, or biotechnology. The priority sectors at any moment are those thought to have, by their nature, certain promising developmental features and to be hindered by significant market failures: for instance, investments in these sectors are held to induce important complementary investments, to represent the next step in the developmental sequence appropriate to an economy of a particular type, or to facilitate the climb of domestic industry up global supply chains. In contrast, the approach presented here emphasizes strategic collaboration with the private sector to ensure interventions to work as expected. Very little can be said ex ante about either the instruments to be used or the economic activities to be promoted. Recommendations therefore are for the processes and procedures for selecting and correcting selections of both, rather than for specific policy instruments or sectors.

One such procedure is **diagnostic monitoring**: systematic evaluation of a portfolio of projects or programs to detect and correct errors as each project evolves (including weeding out inefficient projects) in light of implementation experience and other new information. Fundacion Chile provides a good example of how diagnostic monitoring is conducted: staff members, hired on the basis of demonstrated technical knowledge and familiarity with the markets and business practices in a particular sector, apply for internal grants to develop a case for launching a new venture in some general area. The best of these preliminary plans can be used to apply for a second, longer-term grant to develop a business plan for a new venture, typically in partnership with outsiders. This process continues until the proto-venture becomes a candidate for seed capital and enters the familiar sequence of VC financing. At every stage, projects are benchmarked against internal and external alternatives, and the start-ups that result are the institutionalized expression of the searches provoked by that benchmarking. The operation of the start-ups in turn relaxes constraints on the formation of the clusters whose growth propels the Chilean economy.

The Fundacion Chile’s style of diagnostic monitoring is far from error proof: it failed to introduce vaccines to prevent the propagation of disease that devastated the salmon cluster. But so far, at least, the transparency inherent in the broad and continual benchmarking of projects at every stage has also functioned as an effective governance mechanism, assuring that public funds are indeed directed toward public purposes.

Table 1 summarizes and juxtaposes three generations of industrial policy: vertical (“picking winners”), horizontal (assuring adequate background conditions), and new (open economy) policy.

**Conclusion: Hayek Meets List**

International organizations are familiar with “studied to death” economies. For instance, by conservative count, during 2007–10 in countries as diverse as the Russian Federation and Tanzania, there were 43 studies on constraints of the investment climate, innovation, and competitiveness in Tanzania and 18 studies of constraints to innovation and the investment climate with participation of international organizations in Russia. While international observers involved in these studies do learn, for the client, each additional study may provide diminishing, if not outright negative value added: they already know the constraints and what to do, the issue is how to put the recommendations in practice, and the studies are usually mute on implementation. Countries would like to see implementation capabilities as endogenous variables of the analytical work. Responding to this demand, this note is covers the theory of industrial policy practice.

Austrian thinkers such as Hayek (1949, 2002) would have been surprised by such a flurry of
For them, understanding reality implies engaging with it through microlevel experiments and projects. Arms-length information from micro- and aggregate-level constraints is no substitute for the real-time knowledge of microlevel details and constraints revealed in projects and experiments. Hayek himself was not interested in the studies of policies. This does not mean there can be no Hayekian perspective on policy making and implementation.

In the German and Austrian historical traditions, List (1841) and Hayek are usually perceived as a pair of opposites or two sides of the state intervention–free market continuum. This note aims to bring together List’s concerns with industrial growth and transformation and attendant microeconomic constraints with Hayek’s insight that economic phenomena are spontaneously emerging and experimental, with a focus on knowledge that is tacit and easily accessible. Hayekian perspective on industrial policy is long overdue. In the traditional analysis, policy instruments are given and fixed: tariff protection, tax rebates, R&D subsidies, directed credit, industrial zones, and so on. These instruments serve priority sectors, such as autos, call centers, and the like, rather than the entire economy.

Table 1: Generations of Industrial Policy

<table>
<thead>
<tr>
<th>Focus</th>
<th>Vertical industrial policy: backward linkages</th>
<th>Horizontal industrial policy: market failures</th>
<th>Open economy industrial policy: missing connections</th>
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</thead>
<tbody>
<tr>
<td>Incentives for private agents</td>
<td>Rents (in the form of infant industry protection or other price distortions)</td>
<td>Subsidies (when private returns are believed to be lower than social returns)</td>
<td>Quasi-rents—rent opportunities that are contingent on effort and/or performance</td>
</tr>
<tr>
<td>How capabilities of private agents are enhanced</td>
<td>Rents are invested in firm-level learning</td>
<td>Background conditions are improved: improvement of investment climate</td>
<td>To capture rent opportunities, the firm and the government jointly engage in root cause analysis: identification of bottlenecks to progressively relax the binding constraints</td>
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<tr>
<td>Focus</td>
<td>Microlevel and sectoral (&quot;picking winners&quot;)</td>
<td>National level: institutional infrastructure—financial markets and regulatory environment (&quot;backing winners&quot;)</td>
<td>Mezzolevel: connections between agents (&quot;matching winners&quot;)</td>
</tr>
<tr>
<td>Main conceptual axis</td>
<td>Unusually strong government capabilities enable and monitor firm-level learning</td>
<td>Background conditions: reduction of market failures and distortions; assuring balance of macro aggregations and eliminating, in the aggregate, the many micro-impediments to growth</td>
<td>Search network—to identify successive constraints and then people or institutions that can help mitigate (in part) the difficulties associated with these constraints</td>
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<td>Main problem</td>
<td>State capture: development of capabilities gets subverted by entrenched interests; lock-in of link between macro and micro</td>
<td>Absence of a link between macro changes in these various senses and increase in micropotential</td>
<td>Gap between microinnovations and improvements in macro conditions. Deep constraints remain binding; microchanges do not necessarily achieve critical mass</td>
</tr>
<tr>
<td>Examples</td>
<td>Infant industry protection</td>
<td>Reduction of regulatory burden; creation of VC funds</td>
<td>Supplier development program; development of VC networks</td>
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</tbody>
</table>

Source: Authors’ compilation.
or biotechnology. The priority sectors at any moment are those thought to have, by their nature, certain promising developmental features and to be hindered by significant market failures: for instance, investments in them are held to induce important complementary investments, to represent the next step in the developmental sequence appropriate to an economy of a particular type, or to facilitate the climb of domestic industry up global supply chains.

The—Hayekian—approach presented here, by contrast, emphasizes ensuring that strategic collaboration with the private sector, which directs interventions, to work right. Not much can be said ex ante about either the instruments to be used or the economic activities to be promoted, this note’s recommendations therefore are for the processes and procedures of selecting, and correcting these selections, of both, rather than specific policy instruments or sectors. Open economy industrial policy facilitates the search process—the facilitation of connections among domestic firms, and between them and world market actors. This search is not automatic. Developing countries that want to encourage capacity-building connections with the world economy must devise novel institutions—search networks—to connect actors, domestic and foreign, to overcome constraints and provide complementary public inputs. The issue is to shift the debate from “why industrial policy” to “how to” design appropriate governance institutions.

This note shifts the debate on government activism in support of globally competitive industries from a choice of picking/dropping winners to a process of step-by-step transformation of private and public sectors. In such a process, new industrial policy creates its own context for efficient design and implementation in two ways. First, by shifting the focus of analysis and institutional design from private sector to a new public sector capable of providing customized and flexible public goods and enabling private agents to compete globally. To put it another way, new public and private sectors emerge simultaneously. The key concept here is heterogeneity (discretionary differences) of institutions: it is almost always possible to find some that are working. The issue is using the ones that work to improve those that don’t. This hypothesis assumes that there are nearly always opportunities for development in a given economy, and that some actors, private and public, begin to take advantage of them.

Second, turn obstacles (corrupt and dysfunctional governments, clientelistic networks, and so forth) into variables. Errors and entrenched interests subverting the public good are assumed as normal and in fact are invited to speak out. Error-proof institutions are replaced by continuous error detection and correction. In this view, the developing economy resembles a vast, continuously improving Toyota-style production system, in which it is presumed that no actor can have a sufficiently panoramic view of operations to be able identify obstacles ex ante (rendering vertical industrial policy naïve and unrealistic). The chief problem for the policy and policy maker is devising search networks (with corresponding governance mechanisms to check opportunism) to detect and help facilitate the relaxation of constraints to growth as they emerge.

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References
Prepared for World Bank staff

Notes
1. We are grateful Juan Gabriel Goddard (World Bank) for articulating this point to us.
2. For Tanzania, the estimate was provided in December 2010 by Josaphat Paul Kweka, World Bank Country Economist based in Tanzania.