INDUSTRIAL STRATEGY AND ECONOMIC TRANSFORMATION:

Lessons of five outstanding cases

April 2013

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Abstract

Industrial development, especially industrial structure up-grading and diversification, is considered essential for economic transformation and sustained growth. The objective of this paper is to obtain insights into how crucial factors for industrial development, such as accumulation of knowledge and capabilities, technological innovation, infrastructure, institutions, interact in practice, focusing on several outstanding cases of industrial development, which produced a remarkable economic transformation. In these cases, different factors including investment in infrastructure, technological breakthrough, as well as external factors, triggered the economic transformation, but it could not have happened without continuous accumulation of capabilities and knowledge through learning. In all cases, effective institutions accomplished the role of facilitator or catalyzer of transformation.

[1] The author would like to express his gratitude to Yasuo Fujita, Go Shimada and Ayako Otaguchi of JICA Research Institute for their valuable comments. Errors and omissions are the responsibility of the author.

1. INTRODUCTION

Industrial policy and economic transformation have been attracting renewed attention of late. Thus several studies in the past decade or so have focused on industrial development, especially industrial structure upgrading and diversification, as a basis for sustained economic growth and development.

These studies have emphasized such aspects as the accumulation of knowledge and capabilities, and creation of a learning society (Cimoli, Dosi and Stiglitz 2010; Greenwald and Stiglitz 2012); exploiting and changing factor endowments and comparative advantage (Lin 2012); need to compensate for the information externalities generated by pioneer firms (Rodrik, 2004); and pragmatic policymaking for developing countries that must cope with the strong pressures of market-orientation and globalization of our times (Ohno 2013).

The main objective of this paper is to obtain insights into how the above-cited crucial factors interact in practice, focusing on several outstanding cases of what we term "industrial policy." which resulted in a remarkable economic transformation in a country or in regions of a country. These five cases are of the automobile industry in Thailand; the transformation of the "Cerrado" in Brazil from barren lands to a source of high-productivity agriculture; the garment industry in Bangladesh; salmon fishing in Chile; and the upgrading of Singapore's industry from labor to knowledge intensive.

As these five cases suggest, we use the terms the terms 'industry' and 'industrial sector' very broadly to refer not only to manufacturing sector but also agro-business, modern agriculture, aquaculture, transport, logistics, tourism and any other activities that produce non-traditional or "modern" goods and services that require significant human and/or physical capital. Similarly industrial strategy refers not only to narrowly defined 'industrial policy' targeted at manufacturing but also other policies such as education policy, fiscal

policy, financial policy, trade policy and labor policy, which encourage the development of the aforementioned productive activities.[2]

The next section briefly reviews the major findings of some recent studies related to industrial policy and economic transformation and sketches the analytical perspective of this paper. Then, country case studies will be presented. Finally, the concluding section attempts to extract lessons that could be derived from these cases.

2. AN ANALYTICAL PERSPECTIVE

2.1. MAJOR FINDINGS OF SOME RECENT STUDIES RELATED TO INDUSTRIAL STRATEGY AND ECONOMIC TRANSFORMATION

(A) LEARNING AND ACCUMULATION OF KNOWLEDGE AND CAPABILITIES

Noman and Stiglitz (2012, p.7) emphasize that "long-term success rests on societies' 'learning'—new technologies, new ways of doing business, new ways of managing the economy, new ways of dealing with other countries." Related to this notion of a "learning society" is Cimoli, Dosi, and Stiglitz (2009)'s view that great industrial transformation "entails a major process of accumulation of knowledge and capabilities, at the level of both *individuals and organizations*." The author finds a lot of similarities of this view with that of the 'Capacity development (CD)' approach in which the capacity refers to individuals', organizations' and society's (or the country's) as a whole. Knowledge and learning in a CD process has increasingly been a feature of recent discussions (Hosono *et al*. 2010, p.180-181).

[2] Greenwald and Stiglitz (2012, p.3) use a similar definition: "Industrial policies are what we call those policies that help shape the sectoral composition of an economy. The term is used more broadly than just those policies that encourage the industrial sector. A policy which encourages agro-business, or even agriculture, is referred to as an industrial policy."

Noman and Stiglitz contend that "capabilities have to do with the problem-solving knowledge embodied in organizations—concerning, for example, production technologies, marketing, labor relations, as well as the 'dynamic capabilities' of search and learning". (*Ibid.* p.2) Here again, we find similarities between their ideas and the concepts of CD. The problem-solving knowledge could be considered as a core capacity in terms of CD, which could include problem-identifying and problem-solving capacities (Hosono *et al*. 2010, p.180).

Regarding this aspect, Greenwald and Stiglitz (2012, p.18) further elaborate: "The discussion so far has focused on 'learning,' but even more important is 'learning to learn' (Stiglitz 1987). Industrial and trade policy can enhance an economy's learning capacities, its underlying 'capabilities,' and development strategies need to be focused on that, especially in an era with fast-changing technologies, where specific knowledge learned at one moment risks rapid obsolescence."[3] In the management field, this fundamental capacity based on "learning to learn" of individual workers and of an enterprise as a whole could be enhanced through "continuous improvement activities (also called *kaizen* activities)" aimed at improving productivity by organizational or work flow and incentives modifications—with the participation of workers—rather than via significant physical investment. These activities enable the enhancement of both workers' and enterprises' capabilities to get more out of its physical assets. This paper will highlight this fundamental aspect of learning when it discusses the Singapore case later.

(B) CHANGE OF ENDOWMENTS AND COMPARATIVE ADVANTAGE

According to Noman and Stiglitz (2012), the "old" policies focused on improving economic efficiency *within a static framework*. "But the essence of development is dynamic. What matters, for instance, is

[3] This view is also similar to the recent argument on CD. The wider acceptance of systems thinking in the current CD discussion is based on the assumption that it can better capture and explain the complexities of multilayered transformative processes in a constantly changing external (that is, development) environment (Hosono *et al*. 2010, p.181).

not comparative advantage as of today, but dynamic comparative advantage" (p.7).

Justin Lin (2012a) discusses "changing comparative advantage": "The more effective route for their learning and development is to exploit the advantages of backwardness and upgrade and diversify into new industries according to the changing comparative advantages determined by the changes in their endowment structure" (p.73). Lin puts it: "Conceptually, it is useful to add infrastructure as one more component in an economy's endowments. Infrastructure includes hard infrastructure and soft infrastructure" (*Ibid.* p.22). The New Structural Economics, which he advocates, "considers human capital to be one component of a country's endowment....And, several components, among others, infrastructure and human capital, which determine changing comparative advantage, are endogenous"(*Ibid.* p.36).

The concepts of accumulation of knowledge and capabilities, and the creation of a learning society, especially for "learning to learn" or core capacity, discussed above, are intimately related to the "soft infrastructure" (or human capital), which, together with "hard infrastructure," constitutes an important part of a country's endowment.

However, we should emphasize the fundamental differences between "hard infrastructure" and "soft infrastructure" in this context. First, while the former (roads, ports, airports, energy plants and so on) could be realized through intensive investments in a relatively short period, the latter is achieved only through a longer-term, incremental process, and is essentially path-dependent. Second, investments in learning are high-risk, and risk markets are absent (especially in developing countries), which also discourage such investments (Noman and Stiglitz 2012, p. 6), while the feasibility and rate of return of investments in hard infrastructure can be measured. Both knowledge and hard infrastructure tend to have a public good dimension but as Noman and Stiglitz (2012) mention, "markets by themselves are never efficient in the production and utilization of public goods" (p.5) .

JICA and JBIC (2008, p.48-55) review some cases of the industrial development of Asian countries through "developing new comparative advantage". Diverse specific cases are discussed: the Development of ICT industry through higher education; investment climate enhancements through the establishment of special economic zones; strategic human resource development and support for overseas

employment; and establishment of a development corridor. In this study, both "soft" and "hard" infrastructures are included.

(C) LEADING INDUSTRIES, ECONOMIC TRANSFORMATION AND ROLE OF GOVERNMENT AND INSTITUTIONS

Now two basic questions need to be answered in this context. One is how and under what conditions do countries change endowments? The other is how and under what conditions do countries take advantage of changing comparative advantage to develop new industries?

Endowments could be changed dynamically. As soft and hard infrastructures, important components of endowments of a country, are endogenous and essentially public goods. As the market is often not efficient in the production and utilization of public goods, government and/or public and private institutions have to play an important role in the process of dynamic change of endowments. In this regards, more attention is increasingly being paid to the government, and public and private institutions as agents for accomplishing this role, together with appropriate policies related to such issues.

The Growth Commission's report studied the experience of 13 countries that achieved annual growth rates of seven percent or more for at least 25 years. The report identified "committed, credible, and capable governments" as one of five characteristics of high-performing countries. These governments, except that of Hong Kong, were more hands-on, intervening with tax breaks, subsidized credit, directed lending, and other such measures. These interventions may have helped them to discover their comparative advantage (Noman and Stiglitz 2012, p.12).

Their finding is convincing as it drew on the experience of 12 high-performing countries throughout the world. However, this governments' role referred to by the Growth Commission's report is related basically to the static comparative advantage of countries. Rodrik (2007)'s view on "self-discovery" as well as market failures related to information externalities is important principally in terms of static comparative advantage. As the dynamic change of endowments that transform long-term comparative advantage is endogenous, the

governments also have an important role to play in relation to dynamic comparative advantage. Noman and Stiglitz (2012, p.40, note 15) mention this point. In short, governments' role is two-fold: 1) facilitating 'self-discovery' of static comparative advantage and 2) investing in soft and hard infrastructures which are endogenous components of endowments for dynamic comparative advantage.

This paper's objective is to get insights into both of these aspects, but with special reference to the second aspect, based on case studies of countries which realized outstanding economic transformation, not just high performance in terms of growth. We will focus on (a) how factor endowments dynamically changed in terms of hard and soft infrastructures; (b) how investment in hard infrastructure was made and how learning as well as accumulation of knowledge and capabilities were achieved; (c) how the transformation was triggered (initiated) with the change of endowments; (d) what kind of drivers (driving forces) kept the momentum of transformation; and (e) what kind of strategy/vision was behind and what policies and institutions promoted the process.

The World Bank (2012, p.218) summarizes the current discussion on "industrial policy" highlighting three schools of thought: (i) New Structural Economics; (ii) an approach that emphasizes the policy process and especially a public-private partnership; and (iii) the school of thought that stresses spillovers of productive knowledge-mastering ways of doing things. The document cites views of opponents regarding, among others, the practicality of implementation of such policy, doubting, especially, whether the public sector has the capacity to identify industries with potentially sizable knowledge spillovers and dynamic scale economies.

This paper's analysis on the abovementioned five aspects, in addition to addressing basic questions of the 'industrial strategy and economic transformation agenda' discussed in this section, would also get insights into several aspects of the controversy between the three schools of thought and those opposing them.

(D) TYPOLOGY OF INDUSTRIAL DEVELOPMENT AND TRANSFORMATION CHALLENGES

Challenges facing countries are different as they move along the development path and endowments change. Industrial development strategies could be different according to these challenges countries face. They could have different focuses on infrastructure, human resource development, technological innovation and so on. In some countries, industrial challenges are shaped by special circumstances affecting particular groups such as resource rich countries, small countries, and post-conflict countries.[4]

A typological approach could be useful to address these diversities. JICA and JBIC (2008) distinguish, first of all, resource-rich countries and resource-poor countries. The World Bank (2012) identifies eight categories of "job challenge," including resource-rich countries, urbanizing countries and conflict-affected countries.

From the 'economic transformation agenda' point of view, meaningful categorization could be made according to both the endowments of such almost fixed or exogenous factors as mineral and energy resources on the one hand, and to the endowment of endogenous factors such as hard and soft infrastructure on the other. In this sense, as regards the former line of typology, we need to introduce categories of resource-rich countries and resource-poor countries. As for the latter line, we need to take into account the development phases reflecting human resource development as well as physical infrastructure endowment such as 1) agrarian countries, 2) urbanizing and early-industrializing countries based on labor intensive sectors, 3) industrializing countries with higher skills and technology, and 4) countries with high-level technology and innovation capabilities.

These categories are not mutually exclusive and might not cover all types of divergence among countries. Having this endowments-based categorization in mind, we selected for our analysis three resource-poor Asian countries with different phases of development: Bangladesh, Thailand and Singapore. From Latin America, two

[4] This typological approach is inspired by World Development Report 2013, p.18-19.

resource-rich countries are included: Brazil and Chile. All of them have been at least fairly high-performing countries for about a couple of decades.

2.2 RESEARCH QUESTIONS FOR CASE STUDIES

The most important research question to be answered in case studies of selected countries is how economic transformation was achieved with endowment changes and how such endowment changes had been attained. More concretely, how learning and accumulation of knowledge and capabilities took place and how hard infrastructure was constructed, as well as what kind of policies and what kind of institutions enabled the process of change and transformation. These practical aspects need to be analyzed in order to get insights into successful industrial strategies with impacts on economic transformation.

As mentioned above, how the transformation process was triggered (initiated) with the change of endowments and what kind of drivers (driving forces) maintained the momentum of transformation are important research questions as well.

3. CASE STUDIES

3.1. CASE 1: EASTERN SEABOARD, "DETROIT OF ASIA" AND BEYOND: PRODIGIOUS DEVELOPMENT OF THAILAND'S AUTOMOBILE INDUSTRY

In 1995, Thailand's annual automobile exports were less than half a billion US dollars, well below exports from India and Malaysia. By 2008, exports approached US$28 billion, making Thailand the largest automobile exporter in the ASEAN region, the third largest in Asia, after Japan and South Korea, and the seventh largest exporter in the world in 2012. Production of 1 million cars was achieved in 2005 and 2.5 million cars in 2012. It is estimated that there are about 690 first-tier parts makers, 30 percent of them Thai majority joint venture companies, and 23 percent of them pure Thai companies, and 1,700 second- and third-

tier parts makers, most of them locally owned small and medium enterprises (SMEs), supporting the automobile industry in Thailand in 2010 (Natsuda and Thoburn 2011, p.8). At present, the automobile industry is the principal engine for growth in Thailand's economy. "The Detroit of Asia" envisaged once by the Thai government is now a reality and the "automobile belt" is established from Ayutthaya to the Eastern Seaboard.

(A) ACCUMULATION OF KNOWLEDGE AND CAPABILITIES, PREREQUISITE FOR DEVELOPMENT OF AN AUTOMOBILE INDUSTRY

As Athukorala and Kohpaiboon (2011) mention, "the automobile industry has been the target of industrial development in many countries as a growth driver—a source of employment, technological expertise, and a stimulus to other sectors through backward linkages….But only a handful of developing countries have managed to develop an internationally competitive automobile industry."[5]

Development of an automobile industry requires skilled labor and supporting industries to provide up to 20,000 to 30,000 parts and components. Supporting industries and automobile assembly plants are closely related and provide externality to each other. Accordingly, in many countries, lack of supporting industries made the installation of automobile assembly plants difficult, while supporting industries are constrained by the demand of parts and components of assembling plants. Their relationship is like that of the chicken and egg. Furthermore, the development of supporting industries for automobile industries takes years because they need a prolonged process of accumulation of knowledge and capabilities, especially the formation of human resources and learning about technology.

[5] It goes without saying that the automobile is a complex product, consisting of a large number of parts and components which involve different production processes and factor proportions. Many of these parts and components are manufactured by independent suppliers in other industries such as textiles, glass, plastic, electronics, rubber products, and steel and other metals (Athukorala and Kohpaiboon, 2011, p.1).

Among several policy measures, a series of initiatives by the Thai government to incrementally enhance the localization of parts production was important for the accumulation of knowledge and capabilities of supporting industries. In the 1960s, the Board of Investment (BOI) introduced the Industrial Investment Promotion Act, and six major foreign automobile joint venture companies were established with Thai capital by the end of the decade. However, the production of vehicles remained very limited, accounting for only 18.5 percent of the total sales of automobiles in the country in 1969, and the process heavily depended on assembly operations using imported complete knock-down (CKD) kits that created a serious balance of trade and payment deficits (Natsuda and Thoburn 2011, p.13).

The specific policy for the automobile industry was introduced for the first time in 1971, establishing, among others, a local contents requirement (LCR) of 25 percent, which became effective in 1973, and conditions for new market entry over 0.2 million baht for investment (except for land) and production capacity of 30 units per day, in order to achieve economies of scale, which is essential for competitive development in the automobile industry.[6] The LCR encouraged car assemblers to produce locally or to purchase parts from local companies. This was not easy because supporting industries in Thailand did not exist. Assembling companies had to start the process of localization from scratch. Following this, the LCR was raised incrementally through 1994 up to 60 percent for pick-up trucks with gasoline engines and 72 percent for those with diesel engines. The LCR was abolished in 2000 in consideration of WTO rules.[7]

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[6] As regards this new policy, see Natsuda and Thoburn (2011), p.13.

[7] From 1978, the LCR for passenger cars was increased from 25 percent to 35 percent in the first two years and was then raised by 5 percent every year until 1983, eventually reaching 50 percent, and for commercial vehicles from 20 percent to 45 percent. The new policy also required assemblers to localize specific parts production by introducing a 'mandatory deletion' scheme, targeting specific parts such as brake drums and exhaust systems. In 1994, the LCR was further raised to 60 percent for pick-up trucks with gasoline engines and 72 percent for those with diesel engines. In 1996, the government announced the abolition of the LCR by 1998 prior to the WTO target date,

Techakanont (2008, p.8) considers that "the most important policy of the Thai state was the implementation of the LCR." In order to comply with the LCR, automobile assembly companies in Thailand had to increase the local content of components which were produced by themselves, to ask their component suppliers in their countries of origin to invest in Thailand, or to support local Thai firms to produce components with the required quality standard. Yamashita (2004, p.5), based on his extensive field research concludes that "the process of adaptation to the LCR enabled the accumulation of a very wide range of automobile parts industries and formation of skilled technicians and engineers, both of which are indispensable for the development of the automobile industry."[8] Through this process, assembly companies have offered continuous technological support to local supporting industries.

In this context, it should be emphasized that "most of the policies in the early 1980s were deliberated in a formal public-private cooperation committee (PPCC) before they were officially declared as government policy" (Techakanont 2008, p.12) . Doner puts it: "the policymakers were quite flexible for assemblers to choose how to produce parts: either produce them locally or assemble components from imported parts" (Doner 1991).[9] Assembly companies asked the Thai government to revise the LCR policy when they reached the 54 percent level because any further increase of the LCR percentage would make it difficult to assure the safety of the cars and reduce further the cost of production. Responding to this request, the government switched its policy from the LCR to one requiring the local production of specific important components such as engines (Techakanont 2008, p.9).

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although, eventually, the period was extended to 2000 (Natsuda and Thoburn 2011, p.15).

[8] Yamashita (2008, p.5), translation by the author.

[9] Cited in Techakanont (2008), p.9.

(B) FORMATION OF AUTOMOBILE CLUSTERS AND INDUSTRIAL ESTATES

The government facilitated the formation of industrial clusters by establishing the infrastructure for manufacturing activities, especially, automobile assembly and parts production. Automakers and their components suppliers enhanced their competitiveness when they were agglomerated as a cluster with articulated value chains.

For this purpose, the Industrial Estate Authority of Thailand (IEAT) was established in 1972 and many industrial estates (IEs) were constructed, firstly around Bangkok and later on the Eastern Seaboard and its vicinities. The agglomeration of assemblers and part makers in IEs was observed since the 1970s. The establishment of IEs, leading to cluster formations, has been an important instrument through which the Thai government attracts foreign investors by providing infrastructure and tax incentives (Lecler 2002, p.802).

(C) INFRASTRUCTURE WHICH TRIGGERED THE RAPID EXPANSION OF THAILAND'S AUTOMOBILE INDUSTRY, CHANGING SIGNIFICANTLY THE ENDOWMENT OF THE COUNTRY

The automobile industry requires efficient ports and logistics facilities, in order to be competitive in the export market. From this perspective, the most important milestone for Thailand's automobile industry was the construction of infrastructure on the Eastern Seaboard.

The Eastern Seaboard Infrastructure created an export hub and center for technology-intensive industries: 14 industrial estates; 360,000 workers; 1,300 factories; and 516 automobile-related factories. The explosive emergence and concentration of the new machinery, metal and non-metal industries with FDI inflows in the early 90s, which occurred around Leam Chabang, became possible only through the completion of such large-sized infrastructure as the Eastern Seaboard Development Plan, which became a synergetic production nexus and a hub for the shipment of products (Shimomura and Mieno 2008, p.14-16).

The Eastern Seaboard Development Plan is a leading large-scale development scheme that the Thai government implemented in the 1980s with assistance from Japan and the World Bank. It had a twofold

purpose of boosting international strength and inviting direct overseas investment in export-oriented industrial fields, and easing the over-concentration of economic activity in Bangkok. The large-scale project, which extends over three provinces in the coastal area southeast of Bangkok, consists of a composite industrial site formed by two deep sea ports, Leam Chabang and Map Ta Put, supported by harbors, roads, railways, dams, service pipelines and other facilities.[10]

Today, Leam Chabang is Thailand's largest port and plays a significant part in increasing trade in Thailand. It is where Thailand's automobile industry is most heavily concentrated, with many automakers' and parts manufacturers' operations set up in the area (Japan ODA White Paper 2005). Figure 1 illustrates how these activities have moved into the Eastern Seaboard demonstrating that this infrastructure produced a major change in the endowments structure in Thailand and played a crucial role in this country becoming the "Detroit of Asia".

(D) "DETROIT OF ASIA" VISION

The Thai automobile industry experienced different phases of development, namely, the introduction of the localization policy (1971-77), the strengthening of localization capacity (1978-90) and liberalization (1991-99) (Natsuda and Thoburn 2011, p.13-20). A new phase started from 2000. The Thai government, after abolishing the LCR in 2000, introduced the New Automobile Investment Policy in 2002, which aimed to develop Thailand into a regional center of the automobile industry in Southeast Asia. Two years later, a further automobile development plan was introduced, the so-called "Detroit of Asia" plan, which was later renamed the "Production of Asia" plan (*Ibid.* p.22). In order to meet the targets of this plan by 2016, the government's first 'product champion', the pick-up truck, was not considered enough. To attract additional foreign investment from automobile producers, the "Eco Car" project was introduced as the second 'product champion' in 2007 (*Ibid.* p.23). At the same time, a policy to strengthen supporting industries through the promotion of

[10] This summary is based on JICA/JBIC (2008), p.50.

SMEs was established: the SMEs promotion law in 2000 and the Master Plan of SMEs promotion in 2003. In addition, the "Automotive Human Resource Development Project (AHRDP)" was launched in 2006.

(E) INSTITUTIONS WHICH FACILITATED CHANGES OF ENDOWMENTS

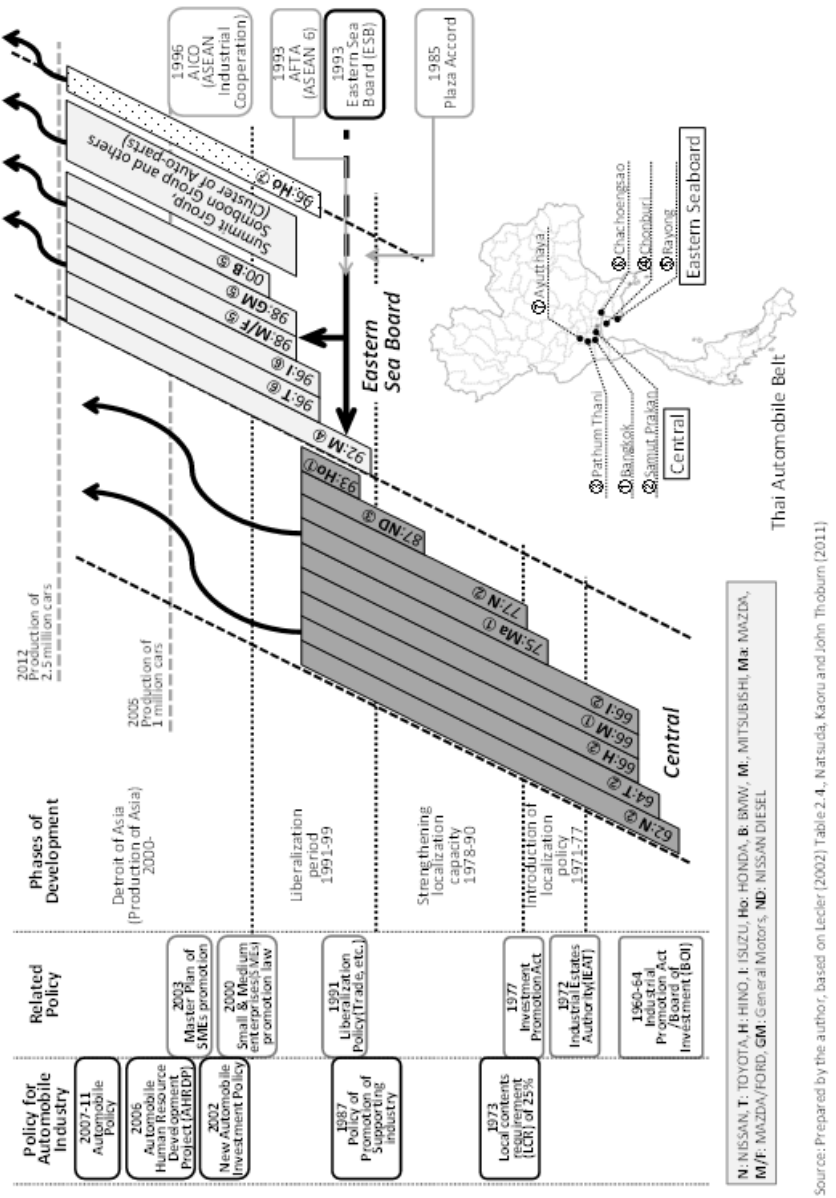
Among others, there are two public institutions that have contributed to the development of Thailand's automobile industry. One is the Automobile Development Committee and the other is the Eastern Seaboard Development Committee (ESDC), a cabinet-level national committee chaired by the prime minister, together with the Office of ESDC (OESD).

The Automobile Development Committee provided an effective institutional setting for middle-level and senior officials to formulate policies in consultation with firms and business organizations. Interference by political leaders and top-level policymakers was virtually absent in the decision making process (Athukorala and Kohpaiboon 2011, p.12). Thai authorities adopted a consensual and pragmatic approach to setting the LCR target in consultation with automakers, as mentioned above. Athukorala, and Kohpaiboon (2011) highlight that the consensual approach to policy making and absence of abrupt policy shifts created stable expectations and confidence in the overall business environment.

As regards the Eastern Seaboard, JICA/JBIC (2008, p.51) evaluates: "The reasons behind the success of the Thai government's plans for the Eastern Seaboard Development are 1) the consistent skill level of the technocrats and their independence from politics; 2) the unique check and balance structure in Thailand (several players sharing influence meant that mutual checks were continuous); 3) the development- centered orientation of the Prem administration and, 4) 'the unintended transparent and open political process' created by the intervention of the media."[11]

[11] Another study reached a similar conclusion: "It was the cumulative synergetic effect of a number of factors that had contributed to pushing the Eastern Seaboard Development Program forward. These included: Effective leadership

Figure 1: Development of Automobile Industry in Thailand



Source: Prepared by the author, based on Lecler (2002) Table 2.4, Natsuda, Kaoru and John Thoburn (2011)

to ensure the public's interest, competency of technocrats, powerful central economic agencies, special institutional settings, functioning coordination mechanisms, and external global factors" (GRIPS Development Forum 2007 p.131).

(F) OTHER FACTORS

In addition to the abovementioned factors which enabled the outstanding development of the automobile industry of Thailand, we should add others such as the advancement of economic integration among ASEAN countries via the ASEAN Free Trade Area (AFTA), ASEAN Industrial Cooperation (AICO) and others, and the size of the country's automobile market (the largest among ASEAN countries).

3.2. CASE 2: CERRADO MIRACLE: VAST BARREN AREA TRANSFORMED INTO ONE OF THE MOST PRODUCTIVE AGRICULTURAL REGIONS IN THE WORLD

Starting from the mid-1970s, the tropical savanna of Brazil, called the Cerrado, was transformed into one of the world's most productive grain-growing regions in just a quarter of a century, realizing modern upland farming in a tropical region for the first time in human history. This remarkable transformation has become known throughout the world as the Cerrado Miracle (*The Economist* 2010). Today, Brazil is one of world's major grain-producing countries, and in 2012 exported the world's largest volume of soybeans. Dr. Norman E. Borlaug, who received the Nobel Peace Prize for his work related to the Green Revolution, rated the development of agriculture in the Cerrado as one of the great achievements of agricultural science in the 20th century. The World Food Prize founded by Borlaug was awarded in 2006 to two Brazilians who contributed to the Cerrado Miracle. This agricultural transformation not only increased the production of competitive commodities such as soybeans, corn, coffee, sugar, and cotton but it also enabled the development of food value chains both inside and outside the Cerrado region. While the production of broiler chicken and pork had been growing steadily in the 1990s, this growth accelerated at the end of the decade and a sharp increase in meat exports was seen.

The Portuguese word *cerrado* refers to "closed" land, or land that was for many years regarded as being unfit for agriculture. The

total area of this vast region is about 240 million hectares, or 5.5 times the land area of Japan. This land was considered to be unsuitable for agriculture because the soil has extremely high acidity, and because lack of potassium and phosphoric acid and damage caused by aluminum hinder crop growth.

(A) CHANGE OF ENDOWMENT BY TECHNOLOGICAL INNOVATION: FROM ALMOST ABANDONED LAND TO FERTILE LAND, "A NEW COMPARATIVE ADVANTAGE" ACHIEVED

For the development of Cerrado agriculture, three technological aspects appear to have been essential. Firstly, soil improvement and the development of new crop varieties suited to the tropical zone were crucial. These constituted the core technological innovations needed to launch Cerrado agriculture from a base of practically zero. Secondly, there was the need for effective dissemination of new technologies and practices to an increasing number of farmers who were the main actors in Cerrado agriculture. This was because this new industry was undertaken by a large number of farmers and enterprises instead of a limited number of companies, as is the case in some manufacturing industries. Thirdly, a solid and highly effective system was indispensible to continue achieving the technological innovations required for Cerrado agriculture.

The vast land of the Cerrado had a drastic value change, which produced a "new comparative advantage," in the terms of a JICA and JBIC study (2008). Here, technological innovation was crucial, but the inland transport infrastructure constructed before and after the transfer of the national capital from Rio de Janeiro to Brasilia could have been another factor.

The Brazilian government "invested in learning" in terms of Noman and Stiglitz (2012). Investments in learning are highly risky, and risk markets are absent (especially in developing countries), which also discourage such investments (Noman and Stiglitz (2012, p.6). For Cerrado agricultural development, the government took the initiative. The Brazilian Agricultural Research Corporation (EMBRAPA) and its Cerrado Agricultural Research Center (CPAC) were established in 1973

and 1974, respectively, and did in fact achieve a lot of innovations: recent discussions on the Cerrado point out that EMBRAPA's greatest contributions were soil improvement in the Cerrado and breeding improvement for soybeans and other crops. A significant technological breakthrough was the success in developing new varieties of soybeans that were fit for the tropical climate.

Soybeans, a crop suited to temperate regions, bloom and sprout by sensing differences in day length (photoperiod), and soybean cultivation was therefore difficult in the tropical region. Cultivation is even more difficult in lower-latitude areas in the Cerrado because the day length is nearly constant year-round. Dr. Plínio Itamar de Mello de Souza developed the revolutionary varieties of soybeans suited to the tropical region. Dr. de Mello collected 3,000 soybean varieties from the southern United States, the Philippines, Japan, and other parts of the world, selected those with low sensitivity to changes in day length, and then selected those that grow tall in tropical regions, and crossbred them with varieties with high yields. Finally, in 1980, the first soybean variety was completed for cultivation in the Cerrado.

Soybean varieties adapted to tropical zones were essential not only as a new crop, but also for soil improvement in the Cerrado. Soybeans fix nitrogen in the soil through root nodule bacteria and facilitate the soil to absorb fertilizers. Therefore, soybeans played the role of a precursor among the plants introduced to the Cerrado.

(B) ACCUMULATION OF KNOWLEDGE AND CAPABILITIES

Although the technology for Cerrado had been developed from scratch, there had been years of effort to establish Cerrado agriculture even before the establishment of EMBRAPA. Initiatives of farmers with experience in the southern region (the non-Cerrado region) were crucial as well. They undertook pioneering experimental work in the Minas Gerais Cerrado region. Drawing on their experience, the Program of Guided Settlement of Alto Paranaiba (PADAP) was implemented by the state of Minas Gerais together with the Cooperative Cotia. It was the first structured program to prove the feasibility (for business development) of Cerrado agriculture. The starting point was São Gotardo, in the state of Minas Gerais in 1974.

On the basis of the successful PADAP experience, the Japan-Brazil Cooperation Program for Cerrados Development (PRODECER) was launched to extend Cerrado agriculture to other areas of Minas Gerais. The pilot projects of the first phase of PRODECER fully demonstrated the feasibility and high potential of Cerrado agriculture. The second phase of PRODECER carried out full-fledged projects in Minas Gerais as well as in the states of Goiás and Mato Grosso do Sul. At the same time, PRODECER also started pilot projects in the states of Bahia and Mato Grosso. The third phase of PRODECER covered the states of Tocantins and Maranhão. In this way, PRODECER was scaled up from the core regions to the frontier regions of the Cerrado. Figure 2 depicts PADAP, PRODECER, and the development of Cerrado agriculture.

In this process, there has been continuous learning and accumulation of knowledge and capabilities for both the researchers and farmers. How did these groundbreaking technologies developed by EMBRAPA spread? How did the pioneers of Cerrado agriculture improve their technological capabilities after they settled in the Cerrado, once believed to be sterile, and strove tirelessly to establish agricultural land? As noted by Dr. Eliseu Alves, who is known as the father of EMBRAPA, many of the farmers who migrated to the Cerrado from southern Brazil had experience in agricultural production and were proactive about adopting new technologies. Cooperatives such as Cotia contributed greatly to the process of technological dissemination. The Technical Assistance and Rural Extension Company (EMATER) was initially in charge of disseminating technologies developed by EMBRAPA. A recent study by the Inter-American Development Bank points out that after the company was liquidated as part of a deregulation policy, producers utilized technological innovations through cooperatives and other organizations.[12] In PRODECER, the growth pole strategy was adopted at Cerrado frontiers. Cotia and other

[12] Inter-American Development Bank (IDB) (2010) states that the Technical Assistance and Rural Extension Company (EMATER) worked to widely disseminate the technologies developed by EMBRAPA. After EMATER was liquidated as one of a number of deregulation measures, producers were able to utilize technological innovations through cooperatives and other organizations (IDB 2010, p. 320).

cooperatives provided detailed technological consultations for individual farmers, contributing greatly to raising their technological capabilities.

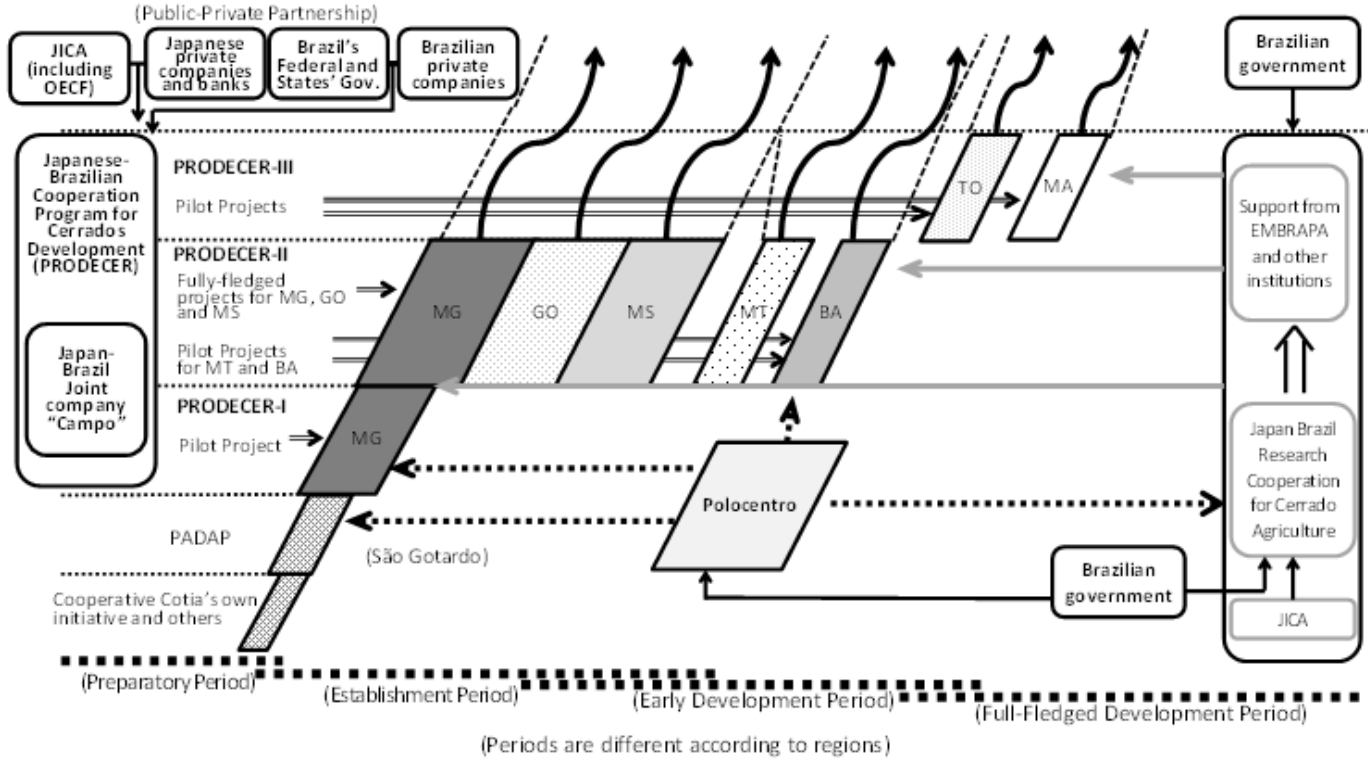
(C) INSTITUTIONS WHICH FACILITATED CHANGES OF THE ENDOWMENT

The single most important institution that enabled the amazing change of the Cerrado and the establishment of Cerrado agriculture is considered to be EMBRAPA. The research begun by EMBRAPA in 1973 progressed steadily, making it one of the largest agricultural research institutes in the southern hemisphere, and one of the largest tropical agricultural research institutes in the world. As of 2010, there were over 8,637 people working with the institute, with 2,116 researchers, 1,622 of them holding doctorates. Only three researchers with doctorates were with the institute at its founding in 1973. Since then, EMBRAPA has dispatched 3,000 people to advanced countries to study, and it now has 43 affiliated research centers. EMBRAPA is today highly appreciated overseas for its distinguished research. Analyzing the factors behind its success reveals some clues on how to develop institutions capable of research and development activities suited to a country's conditions, which at the same time generate technological innovations, cultivate human resources, and produce 'miracles' similar to that in the Cerrado.

EMBRAPA set the development of Cerrado agriculture as its core mission, achieved success, and therefore established its eminent position, thus succeeding in steadily securing its research budget while maintaining political neutrality; by securing its research budget, further research results were obtained, which further reinforced its position. Alves (2012) described the situation thusly: "What solidified the position of EMBRAPA was the achievement of transforming the Cerrado into a modern agricultural region. EMBRAPA's contributions are at the core of Cerrado agriculture, and society recognized that its involvement is vitally important for its success."

In addition, Alves and other authors emphasize other factors which made the EMBRAPA model successful: close relations between researchers and farmers; meritocratic incentive system and structure; transparency; and so on.

Figure 2. Development of Cerrado Agriculture



Source: Prepared by the author, based on Hongo, Yutaka and Akio Hosono (2012)

3.3. CASE 3: BANGLADESH GARMENT INDUSTRY: FROM ADVERSE INITIAL CONDITIONS AT INDEPENDENCE TO ONE OF THE WORLD'S BIGGEST EXPORTERS OF READY-MADE GARMENTS

In 1981, ten years after Bangladesh achieved independence, raw jute and jute goods were its major exports, corresponding to 68 percent of total exports. In 2011, garments and textiles constituted 85 percent of total exports, of which 76 percent corresponded to garments. These industries' business entities amounted to 50 percent of all manufacturing establishments in the country (UNCTAD 2012, p.11). Today, the garment industry has 5,000-6,000 factories with 7-8 million workers using the assembly-line method of production. The wages of the workers in these industries are around 35 percent higher than the national average (*Ibid.* p.11). Exports as a percentage of GDP tripled between 1990 and 2010, with much of the increase in the thriving ready-made garment industry, which is highly intensive in female labor (WB 2012, p.197). This Bangladesh success story is remarkable, because as a recent World Bank study highlighted, "the country was often held out in the development literature as a hopeless case" (*Ibid.* p.197).

(A) LEARNING, ACCUMULATION OF KNOWLEDGE AND CAPABILITIES

Rhee (1990) undertook extensive research on how this country's garment industry started.[13] In 1978, Daewoo of Korea proposed to the government of Bangladesh, an ambitious joint venture involving the development and operation of tire, leather goods, cement and garment factories. As it turned out, the Bangladesh government actually put the garment industry first. Although the public and private sectors were particularly interested in the garment industry, Bangladesh was not exporting garments because of a total lack of domestic production technology and marketing knowhow, and had no apparent means of acquiring them from overseas (Rhee 1990, p.336). In this context, Noorul Quader, who had been exposed to the foreign business world as a senior

[13] This and following two paragraphs are mainly based on Rhee (1990).

official in the previous government, founded the Desh Garment Company, and he expressed the desire to collaborate with Daewoo in a new garment venture in the country (*Ibid.* p.336). Quader and Daewoo signed an agreement to collaborate in the areas of technical training, purchase of machinery and fabric, plant start-ups and marketing. Desh recruited 130 workers for training at Daewoo's Busan plant, where "they received some of the most intensive on-the-job training in garment production ever seen in the history of developing countries" (*Ibid.* p.337) for seven months in 1979.

One of the most outstanding features of this training is, as Rhee emphasized, that in addition to the in-depth, excellent skills training they received, Desh workers received a wide-ranging, high-quality education involving a look at the entire operations of a highly successful, multifaceted international company and the corporate culture that created and supported its superior performance (*Ibid.* p.338). The 115 Daewoo-trained workers who left Desh after the middle of 1981 proved a very powerful medium for transferring knowhow throughout the whole garment sector and for significantly improving garment exports. In 1985, there were more than 700 garment export manufacturing factories in Bangladesh, compared with a few such factories in 1979. Rhee mentions that many new garment firms have been able to handle production and marketing without involving expatriates or foreign companies because they have been staffed by former Desh workers who had fully mastered production and marketing knowhow (*Ibid.* p.342). However, he also recognizes the continuous need for many of these new factories to collaborate to some degree with foreigners in the areas of marketing and technology (*Ibid.* p.342).

Another noteworthy feature of Daewoo's training is that there were 14 women among the trainees. Rhee (1990, p.337) puts it, "Muslim tradition had precluded females from working in factories in Bangladesh. However, Quader had been so impressed by the efficiency and sheer numbers of women at Daewoo and other garment factories in Korea that he persuaded the Bangladesh government to support female trainees."

Easterly (2002, p.149) comments on the Desh-Daewoo collaboration from the standpoint of learning and knowledge creation: Creating knowledge does not necessarily mean inventing new

technologies from scratch. Some aspects of garment manufacturing technology were probably several centuries old. Furthermore, Bangladesh has the legacy of Dhaka Muslin. The relevant technological ideas might be out there floating in the ether, but only those who apply them can really learn them and can teach them to others. In this regard, Mostafa and Klepper (2011, p.3) emphasize that tacit knowledge seeding was essential for the initial establishment and subsequent expansion of the Bangladesh garment industry. They contend that key to the explosive growth of the industry was knowledgeable workers leaving Desh, and then other successful firms, to set up the production processes of later entrants. These workers organized an assembly-line production process, trained workers, and supervised production, effectively diffusing vital tacit knowledge to new garment producers. Despite having limited literacy, Bangladesh had a sufficient number of educated entrepreneurs with some prior business experience who could gather the relevant resources and establish garment factories (*Ibid.* p.29).

The process of learning and accumulation of capabilities continued after this impressive transfer of technology from Korea. Mottaleb and Sonobe (2011) conjectured that highly educated entrepreneurs have been attracted to the garment industry by high profitability, which was boosted initially by the Desh-Daewoo infusion of Korean skills and know-how (p.4-5). Their analysis indicated that the high-level education of manufacturers and enterprise performance were closely associated. This is because manufacturers have to continuously upgrade their skills and know-how in order to survive the intense competition in the world garment market and because high levels of general human capital for the entrepreneur are needed to manage an increasing number of managers and experts (*Ibid.* p.20-21).

(B) CHANGE OF ENDOWMENTS: RURAL DEVELOPMENT AND MOBILIZATION OF FEMALE WORKERS WITH LOW OPPORTUNITY COST

World Bank (2012, p.197-199) classifies Bangladesh as an urbanizing country. Indeed, the changes in rural society in this country have been profound and are related closely to the massive mobilization of female workers by the garment industry located mainly in two big cities: Dhaka and Chittagong. Generally speaking, urbanizing countries

are endowed with abundant unskilled labor, and these countries' integration into the world economy can lead to the development of light manufacturing industries. In the case of Bangladesh, several factors interacted in order that this change took place. Modernization of agriculture based on technology adoption which enabled farmers' shift from low-yield, single crop, deep-water rice to double cropping of short maturity, high-yield rice, as well as the well-known rapid spread of microfinance and construction of rural infrastructure, were among major factors that changed the rural society of Bangladesh (*Ibid.* p.197). More specifically, rural roads, irrigation, market facilities and other rural infrastructure, micro-credit, school education and so forth, provided by NGOs, central and local governments and donors, all together enabled the remarkable agricultural and rural development of Bangladesh in the last three decades. In this process, the rural development programs of the government and donors were implemented effectively by the Local Government Engineering Department (LGED), which played a critical role in the provision of rural infrastructure.[14] Micro-credit and related services were also effectively extended by NGOs including BRAC and Grameen Bank.

This process enhanced the mobility and readiness of low-opportunity-cost labor in rural Bangladesh and changed gradually, but steadily, the endowments of the country.[15] The mobilization of this labor

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[14] The role of LGED in the rural development cannot be overemphasized. LGED is one of the largest public sector organizations in Bangladesh, with a staff exceeding 10,000 and a development budget accounting for 14 percent (FY2009-10) of the total development budget of the Government. For details of LGED, see Fujita (2011).

[15] We should remember that a pessimistic appraisal was common as regards women's role in the labor market in Bangladesh, which caused pessimism about the country's growth, due to, among others, the fact that most East Asian countries had the advantage of a high initial female labor force participation rate at the start of the growth process. As Hossain, Sen and Sawada (2012, p.29) emphasize, none of the predictions could anticipate that women would offer the secret ingredients of success that was achieved in Bangladesh from exports to schooling to microcredit use. The dramatic nature of the increase in female participation in the growth of ready-made garment (RMG) workers is a case in point.

was triggered by the Desh-Daewoo garment project. Rhee (1990, p.45) puts it, "development is a dynamic process in which self-generating mechanisms may emerge once action is initiated….To start on the path of development in an outward-oriented direction, a first spark must be created." That spark was the collaborative effort of a domestic catalyst (Desh) that mobilized the necessary local resources and a foreign catalyst (Daewoo). It was a process of self-discovery of the changing comparative advantage of the country.

Hossein, Sen and Sawada (2012, p.5) contend that "in the predominantly agricultural economy with high population density and high population growth, the critical challenge is to reduce the burden of surplus labor in agriculture. This challenge can be met through sustained sectoral and social policies and attendant institutional changes *commensurate to each stage of development* to support productivity/growth-enhancing relocation of "surplus" farm labor to non-farm and non-agricultural jobs" (italic is original).

(C) CHANGE OF ENDOWMENTS: CONNECTIVITY AND LOGISTICS UP-GRADING BY INFRASTRUCTURE

When Desh started its business in 1980, its factory was located in Chittagong, the country's main port. The first Export Processing Zone (EPZ) was also constructed in 1983 in this port city. Exports from Dhaka, which does not have an efficient port facility nearby, had a serious bottleneck due to the lack of bridges on rivers which cross Highway No.1, which connects the capital city with Chittagong. As trucks had to use ferries, the transport between Dhaka and Chittagong was constrained in terms of time and unpredictability. This handicap affected the competitiveness of the garment industry in Dhaka. It was overcome by the construction of Meghna Bridge in 1991 and Meghna-Gumti Bridge in 1995. The Dhaka EPZ was constructed in 1993.

Jamuna multipurpose bridge, inaugurated in 1998 as the largest construction in Bangladesh history, has been a major channel for integrating the lagging western region of the country with the leading eastern region, enabling cheaper transportation of gas, electricity and telecommunications, and enhancing the labor mobility of the western region (Hossein, Sen and Sawada 2012, p. 11).

(D) INSTITUTIONS THAT FACILITATED GARMENT INDUSTRY DEVELOPMENT

Initial conditions in Bangladesh, when the garment industry started with the Desh-Daewoo initiative, were affected by high levels of policy distortions and weak institutions. However, in spite of the rigidity of the government's response in terms of the adaptability of the ideas coming from private entrepreneurs, which is very common in developing countries, Yunus and Yamagata (2012, p.5) mention that in the case of Bangladesh the innovative ideas and strategies from the entrepreneurs were well accommodated by the government policymakers. A back-to-back letter of credit (L/C) system[16] and special bonded warehouse facilities were two of the most important features and were formulated based on the prescription of the leading entrepreneurs (*Ibid.* p.5).

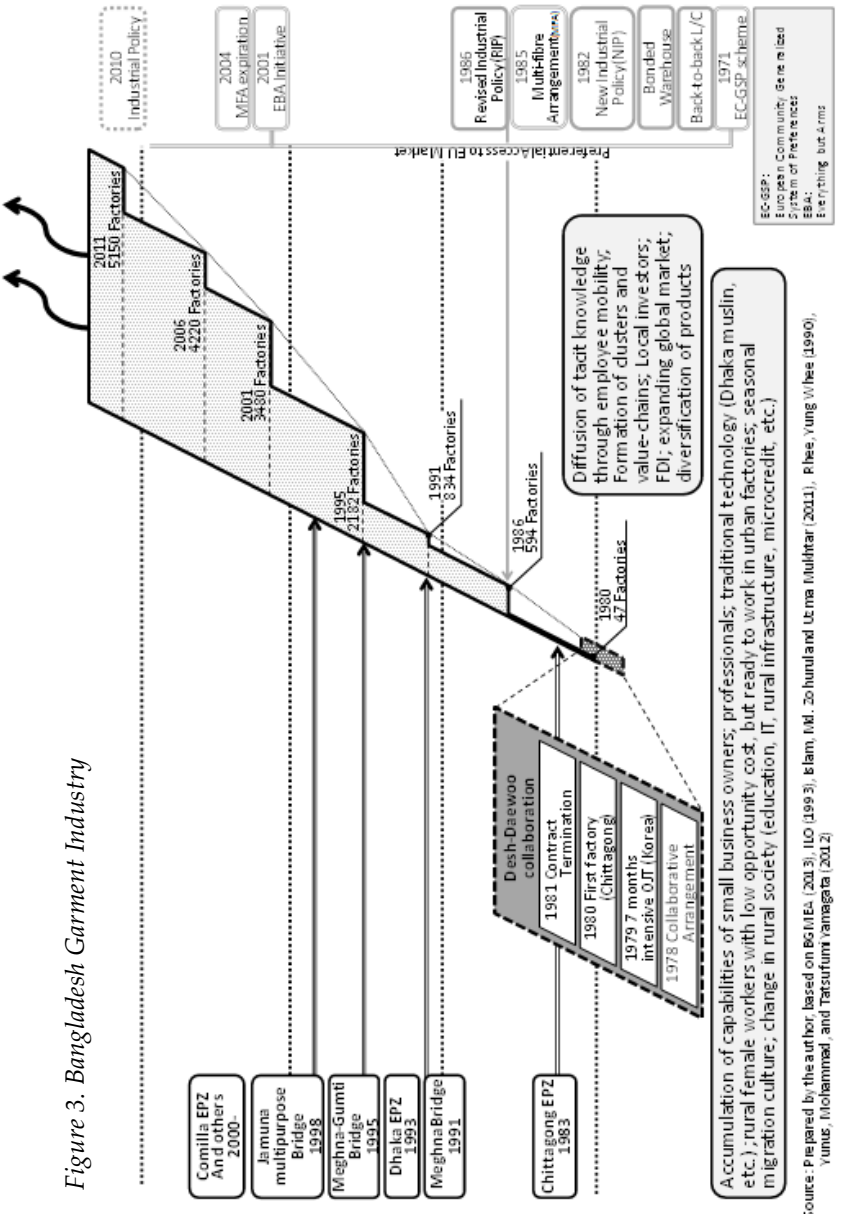
The special bonded warehouses were critical to the initiation of garment export production. According to Rhee (1990, p.339), "it appears that Daewoo's intimate knowledge of the nuts and bolts of the successful bonded warehouse system in Korea, its ability to transmit that knowledge to Desh staff, and the advice that Desh's senior manager gave to administration officials on the new system were instrumental in the design and implementation of the special bonded warehouse system." Although the government did not provide any import financing facility, it did allow the back-to-back L/C, which was a very effective instrument, given the system of strict foreign exchange controls in the country at that time. Here again, Daewoo and Desh's influence on the public agencies was instrumental (Rhee 1990, p. 340).

The consequent accelerated development of the garment industry was enabled by learning and the accumulation of the capabilities as mentioned above. The government facilitated its development through infrastructure investment, construction of Export Processing Zones, policies for the free importation of machines, bonded warehouses and back-to-back L/C, followed by other general policies such as the New Industrial Policy (1982), Revised Industrial Policy (1986), and credit facilities (1991). At the same time, the Multi-Fiber-

[16] For details of this system, see Easterly (2002), p.149.

Agreement (1985) and its quotas as well as preferential access to the EU market have been important factors. Interaction of all such factors is roughly illustrated in Figure 3.

Figure 3. Bangladesh Garment Industry



3.4. CASE 4: CHILE'S SALMON INDUSTRY: STARTING FROM SCRATCH TO BECOME A MAJOR WORLD SALMON-EXPORTING COUNTRY[17]

Salmon did not exist in Chile four decades ago. Natural salmon still does not exist in the Southern Hemisphere except for king salmon in New Zealand. Now, Chile is one of the world's top salmon-exporting countries, ranked on a par with Norway. It is no exaggeration to describe this as a "miracle." Moreover, Chile is a resource-rich country that is highly dependent on copper exports. In 2011, exports of mineral ores and their refined products corresponded to more than 60 percent of total exports, 52 percent of which are copper ore and refined copper. The challenge for resource-rich countries is diversification of exports. The ensuing export revenue from rich resources leads to strong real exchange rate appreciation and deterioration in competitiveness in sectors exposed to international competition (WB 2012, p.199).

(A) CHANGE OF ENDOWMENT BY TECHNOLOGICAL ADAPTATION/INNOVATION

Chile's comparative advantage in salmon sea farming was definitely confirmed when the Chile Foundation's subsidiary, Salmones Antartica, demonstrated the commercial feasibility of salmon aquaculture at a scale of 1,000 tons a year in 1988. The Chile Foundation (*Fundación Chile* in Spanish) is a public-private corporation that aims at developing technologies for establishing new industries, setting up businesses, and selling successful ones for profit. This unique organization, which has no equivalent elsewhere in Latin America, was created through compensation consultations that the Chilean government had been having in the mid-70s with an American multinational corporation that was nationalized by the previous government.

In general, for a new industry to be established so that it grows in a self-sustaining manner, the industry must demonstrate its feasibility

[17] This case study is based on Hosono (2010). The English version is forthcoming.

and international competitiveness as a sustainable profit-making business. This requires, as a precondition, technological development, which in turn calls for sizable investment. Many venture businesses invest in the development of such technologies and new products. Although technology development itself carries the risk of failure, the guarantee that the founder's profit will be secured under the protection of patent rights provides a substantial incentive for creating a new industry. This is not to say, however, that the founder's profits in a new industry are always protected by patent or other means. There are many cases to the contrary.

In developing countries trying to catch up with developed countries, for example, entrepreneurs aiming to develop a new industry with the help of technology transfer from other countries usually find it difficult to protect their technologies gained through such transfer. Such technologies will not be protected by patent. As a result, as soon as a company succeeds in technology transfer, others will soon follow in the successful company's footsteps. This will intensify competition. In this case, the profit the pioneer deserves may not be guaranteed. Or worse still, the investment may not be recouped. Therefore, Rodrik (2007) argues that costs of "self-discovery" of pioneers should be subsidized (p.117).

This may be described as a case of market failure, in that open access to the information in question discourages investment. Specifically, this is known as market failure associated with 'information externalities'. In the case of Chile in the 1970s and 1980s, the government did not take an interventionist policy of directly supporting the development of industries. However, it is clear that the Chilean salmon industry was not developed as a result of the private sector making voluntary investments from the outset. In this context, noting that the major export items for Chile include copper, grapes, fish, and lumber/wood, Rodrik (2007) stresses that the diversification of export products from the traditional item of copper has not been achieved in a laissez-faire market (p.109).

In the case of the Chilean salmon industry, market failure was averted by the Chile Foundation and Japan-Chile salmon project. The Chile Foundation, a newly-created, semi-governmental foundation made an investment large enough to support salmon production through sea-farming on a major scale and successfully recouped this

investment. The foundation thus demonstrated the commercial profitability of sea farming on that scale. In addition to proving the profitability of such venture, the Chile Foundation provided information on salmon farming for free or for a fee as public goods so as to allow many companies to invest in the salmon farming industry without having to make a sizable investment in research and development.

Two private companies had started salmon sea farming before the Chile Foundation started its salmon initiative. In 1978, Nichiro Fisheries of Japan set up Nichiro Chile, which in 1979 launched salmon sea farming, near the city of Puerto Montt, the first of its kind in the country. This was a groundbreaking event that astounded fisheries experts at home and abroad who were familiar with the situation. Nichiro had already accumulated salmon sea farming technology in Japan. Following Nichiro's groundbreaking success in salmon farming, the Chile Foundation acquired the facilities that Domsea Pesquera, a company under the umbrella of Campbell Soup of the United States, had owned in Chiloé Island and elsewhere. This represented the starting point for the Chile Foundation to enter the salmon industry in earnest.

Nichiro's success in pioneering mariculture and its commercialization in Chile had a great impact on the Chile Foundation; it preceded the success of the semi-governmental corporation. Nichiro's corporate history says, "the Chile Foundation of the Republic of Chile had been keeping an eye on our progress in coho salmon sea farming. Upon learning about our success, the foundation wasted no time in launching feasibility studies on sea farming." Despite being a latecomer that followed trailblazing Nichiro and Mytilus (latter-day "Mares Australes"), the second entrant into the market, Chile Foundation's Salmones Antártica successfully put larger-scale salmon mariculture on track. What factors lay behind this success? In short, the Chile Foundation was a semi-governmental corporation capable of mobilizing ample risk capital. Originally designed to encourage venture businesses, the Chile Foundation was in a better position to promote salmon farming than private companies in general.

The Chile Foundation, following the successful achievement of the 1,000-ton program, decided to sell the venture to a private company. This led to an international bidding contest in 1988, in which many companies participated. Nippon Suisan Kaisha (today Nissui), one of

the major fisheries in Japan, which operated in Chile at that time, won the bid. As a result, Salmones Antártica became a wholly owned company of Nippon Suisan Kaisha, which had been conducting salmon and trout businesses in the North Pacific Ocean since before WWII and had acquired advanced technical capabilities.

The Chile Foundation unexpectedly came up with the idea of offering corporate consulting services, started by the broadcasting in 1986 of a TV program featuring salmon farming in cooperation with Salmones Antártica. Many Chilean entrepreneurs who watched the program made inquiries to the TV station. Some of them later ventured into the salmon industry. In the mid '80s, the Chile Foundation supported projects by seven private companies.

(B) LEARNING AND ACCUMULATION OF CAPABILITIES AND KNOWLEDGE

In the case of the Chilean salmon industry, the natural conditions, capital, and labor were generally favorable. With technological adaptation and development, the value of these endowments changed, enabling Chile to attain a new comparative advantage. However, what was still scarce were R&D professionals and trained industrial personnel. Introducing and developing technology with high-level professionals is not an easy task for the private sector. Industrial personnel will not be trained overnight, and it will cost a lot for the private sector. In the preparatory phase of the Chilean salmon industry, these circumstances made it difficult for private companies to develop technologies and train industrial personnel by themselves.

This gap was filled by the Japan-Chile Salmon Project, which was implemented from 1969 for 20 years by Japan International Cooperation Agency (JICA) and its counterparts, National Fishery Services (SERNAP) and Fishery Promotion Institute (IFOP), under an agreement between the Japanese and Chilean governments. Because the Japan-Chile Salmon Project was under the auspices of these two governments, technologies developed and personnel trained by the project were public goods and were available to what was to later become the salmon industry in Chile. This allowed salmon firms to save on the cost of investment in industrial personnel training. The Chile Foundation also played a similar role.

Between 1969 and 1989, 28 Chileans received training in Japan under the salmon project, which was implemented by JICA and its counterpart organizations in the Chilean government—firstly, SERNAP, including its predecessor, Agriculture and Livestock Service (SAG), and secondly, IFOP. The training participants to be dispatched to Japan were selected from Chilean professionals who had been assigned to the project based on an order of priority that took their assignments into consideration. What the Chilean participants learned in Japan, where the technology of seed production and fry farming was advanced, as well as in the joint project, later translated into their own specialty, which in turn proved to be of great help in establishing and developing the salmon farming industry in Chile. The Chilean fishery journal *AQUA* attracted the attention of people who had been involved in salmon farming in Chile when it issued a 20th anniversary special issue (December 2007). The article on the aquaculture pioneers in Chile carried pictures of familiar faces who had worked in the industry for more than two decades. In all, six out of the 11 pioneers in salmon farming in Chile had received training in Japan. Of the six, five played a central role in the Japan-Chile Salmon Project over a long period.

(C) INSTITUTIONS WHICH FACILITATED THE DEVELOPMENT OF THE CHILEAN SALMON INDUSTRY

As explained above, it was important to demonstrate that the salmon business was promising and commercially viable. This was done by conducting feasibility studies and investing in the salmon business. This role was played by the Chile Foundation, and contributed greatly to the establishment of the Chilean salmon industry. In addition, the Chile Foundation's feasibility studies were partly supported by the Japan-Chile Salmon Project. Together with technology development, industrial personnel training was an important activity in this establishment phase.

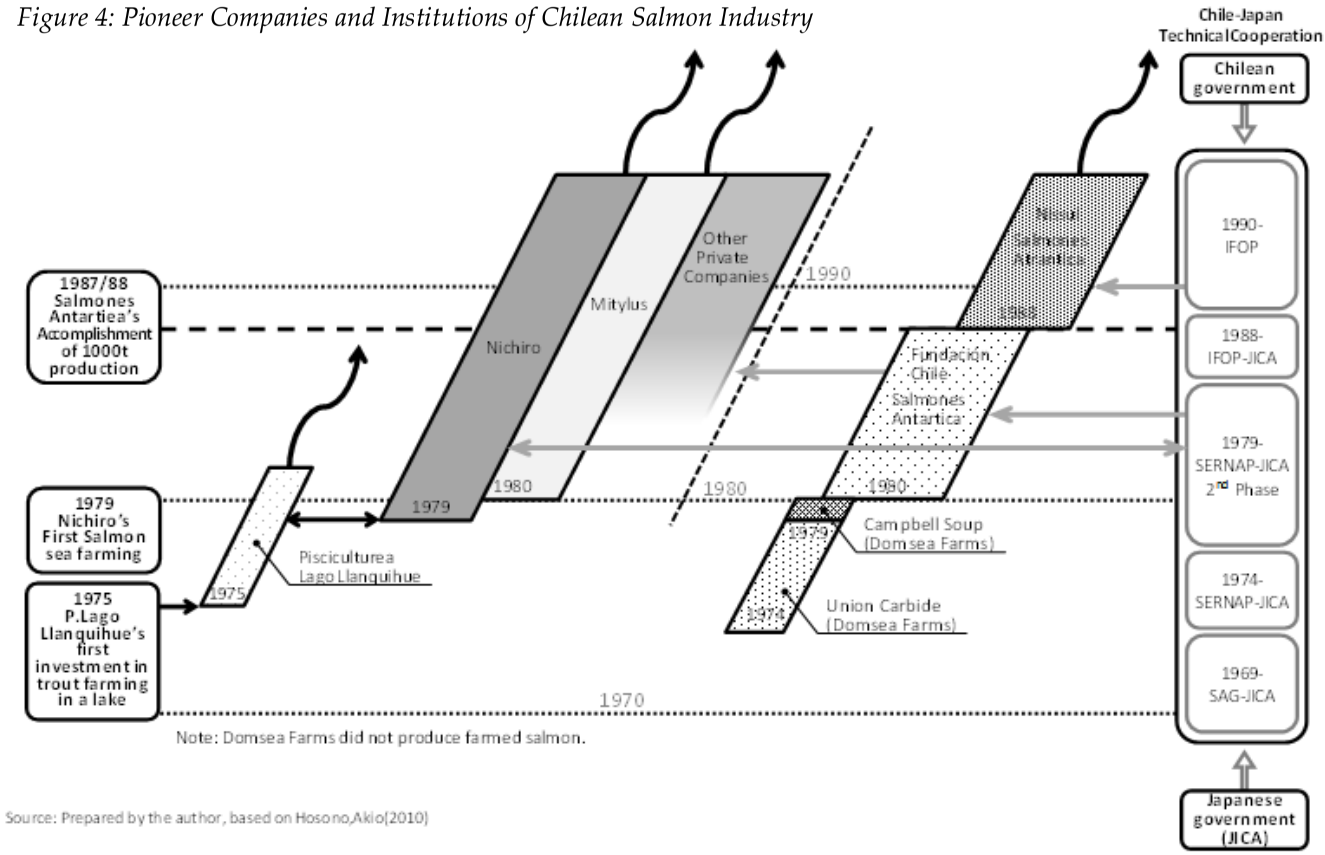
It was not until the full-fledged development phase that salmon industry clusters increased their importance as an innovation system. It is worth noting here that the nascent form of that innovation system was already emerging in the establishment phase and that the Chile

Foundation and the Japan-Chile Salmon Project contributed to the process. Although industrial clusters in a wider sense include research institutes and universities, Chilean universities did little in the role as components of such clusters at the beginning. The scale-up of salmon production resulted in the deepening of the division of labor, the expansion of the value chain, and the development of salmon industry clusters involving a wide range of components, including salmon farming companies and their affiliated firms, government agencies, universities, and research institutes. One of the organizations that played an important role in this context was the Chilean Association of Salmon and Trout Producers (APSTCH, today SalmónChile). The Chile Foundation again made a significant contribution here, supporting the establishment of APSTCH.

The Chilean government, its specialized entities, SERNAP and IFOP, through the Japan-Chile Salmon Project, also served as a catalyst and played a facilitating role contributing to technological development in the area of national salmon eggs production, fish diseases as well as fry farming. Furthermore, the Japan-Chile Salmon Project contributed a great deal to the establishment and enforcement of relevant laws and regulations. The Office of the Undersecretary of Fisheries of the Ministry of Agriculture, established in 1978, played the pivotal role in establishing relevant laws and regulations. SERNAP assumed the responsibility for their enforcement.

Each of these two organizations served as the counterpart organization of JICA. SERNAP, the Chilean counterpart organization for the Japan-Chile Salmon Project until 1987, has put many of the project's outcomes to good use in establishing laws and regulations concerning the aquaculture industry in Chile. For example, technical cooperation in the area of fishery disease control has resulted in the development of regulations on the prevention of infectious disease epidemics associated with salmon and trout farming. Likewise, a Chilean Ministry of Economy ordinance issued in 1985 has imposed control on imported salmon eggs. The ordinance has also provided for the disinfection of hatcheries, among other control measures. In addition, it has prompted the veterinary check of farmed salmon, making the ordinance the starting point for salmonid infectious disease control in Chile.

Figure 4: Pioneer Companies and Institutions of Chilean Salmon Industry



Source: Prepared by the author, based on Hosono,Akio(2010)

3.5. CASE 5: SINGAPORE: BECOMING ONE OF THE WORLD'S MOST COMPETITIVE COUNTRIES WITH HUMAN CAPITAL, TECHNOLOGY AND LOCATION

Singapore, a country without natural resources and with a large number of unemployed people at the time of independence, is today one of the most competitive countries in the world. The experience of Singapore is particularly relevant as a highly successful industrial development and economic transformation case regarding a small country. Its population was 2.7 million in 1985 and 4.8 million in 2008. A small country faces a different agenda to larger countries and needs to adopt different strategies.

Singapore was one of the first Southeast Asian countries to promote export-led growth rather than import-substitution-led growth. In the late 1970s, faced with rising competition from other exporters whose wage rates were lower, Singapore decided to transition from exports dependent on cheap labor into a knowledge economy based on skilled labor and higher value-added exports. During the last three decades, the country has continuously upgraded its industrial structure, overcoming the so-called middle income trap. As Yusuf and Nabeshima (2012) mention in their study on Singapore, Ireland and Finland, by the 1980s, it was becoming apparent that by betting on the technologically dynamic industrial subsectors—principally electronics, telecommunications, chemicals, and pharmaceuticals—small countries could improve their longer-term growth perspective. In this context, the rapid transformation should have demanded increasingly higher-level human resources and entrepreneurs. In many cases, in which foreign direct investment played an important role in transferring and disseminating cutting-edge technology, especially in the areas of electronics, the Internet, and biotech industries, transnational companies would not have been interested in investing in Singapore if the country did not have the human capital and knowledge base to absorb such technology.

The following section intends to get insights into how human resource development and accumulation of capabilities to address the global competition was achieved. Then, the institutions which formulated the country's development strategy and facilitated the transformation will be discussed.

(A) HUMAN RESOURCE DEVELOPMENT AND ACCUMULATION OF KNOWLEDGE AND CAPABILITIES

In the transformation process of Singapore, Yusuf and Nabeshima (2012, p.34-36) emphasize the importance of general-purpose-technologies (GPTs). They further argue: "The revolution caused by advances in semiconductors, electronics, and telecommunication technologies is widely associated with new products and the ways products are manufactured. Undoubtedly, these advances have contributed significantly to economic changes, but product innovation was powerfully reinforced by numerous collaborative innovations in other areas—for example, in services, institutions, organizations, and habits and lifestyles. GPTs have proven to be an extraordinarily potent transformative force because the learning economy generated a cross-disciplinary matrix of supporting and intersecting innovations that enormously magnified the influence of core technologies."

Yusuf and Nabeshima (2012, p.44) highlight that in embracing technology as a driver of long-term growth, Singapore, Finland and Ireland successfully engaged in building capabilities. This success is the core of the three countries' models and resulted in the making of a networked learning and innovation system of the highest rank. The concept of such capabilities has a close similarity with that of "learning to learn", as coined by Stiglitz and cited in section 2 of this paper. He stresses that development strategies need to be focused on "learning to learn", especially in an era with fast-changing technologies, where specific knowledge learned at one moment risks rapid obsolescence.

So, how did Singapore succeeded in building such capabilities? A close look at Singapore's national initiative in increasing productivity, together with strengthening quality and later with innovation will help us to understand Singapore's experience. "The shift to a knowledge-intensive industrial structure with strong international competitiveness is only possible through the human-resource development of 2.6 million people, the only resource Singapore has," said Prime Minister Lee Kuan

Yew.[18] Lee was concerned about how to organize and motivate Singapore's labor force in such a way as to make the most of plant modernization and skills development (JICA/IDCJ/IDJ 2010, p. 30). In April 1981, the Singaporean Committee on Productivity was formed by representatives of enterprises, workers' organizations, government officials, and academia. The committee reviewed the experiences of productivity movements in Japan, another country without natural resources but with abundant labor. It then presented a report to the president of the National Productivity Board (NPB) of Singapore. NPB was designated as the main body for promoting productivity development in Singapore. In June 1983, the Singapore Productivity Development Project (SPDP) was launched with the support of the Japanese government.

Some 15,000 Singaporean engineers, managers, and other professionals participated in the project. Two hundred engineers, managers, and other professionals from Singapore took part in training courses in Japan. More than 200 Japanese experts were dispatched to Singapore. More than 100 textbooks and other training materials were prepared specifically for the project. During the period of SPDP and beyond, labor productivity in manufacturing industries improved by an annual average rate of 5.7 percent (1981-86), 3.0 percent (1986-91), and 4.8 percent (1991-96).[19]

In 1990, when SPDP ended, 90 percent of workers in the country were involved in productivity development activities, compared with 54 percent in 1986. In 2001, 13 percent of the total labor force was participating in quality-control circles, in comparison with 0.4 percent in 1983, when SPDP started. Quality control circles are considered the most effective vehicle for improving quality and productivity with the active participation of workers. Through this participatory approach, workers' ideas are incorporated into the production process with innovative

[18] Remarks made by the prime minister when he visited Kohei Goshi, honorary president of Japan Productivity Center in June 1981. Japan Productivity Organization (1990, p. 1).

[19] The figures and those of the following paragraph are from JICA/IDCJ/IDJ (2010) p.16 and p.22.

solutions. Hence, SPDP became one of the driving forces for productivity gains in Singapore.

NPB's activities gathered considerable momentum, progressing from the awareness stage (1982-85), in which it created widespread awareness of productivity among companies and the workforce, to the action stage (1986-88), when it translated awareness into specific programs to improve productivity in the workplace, and then to the follow-up stage (1988 to the present), in which it encouraged ownership of the productivity movement (Ohno and Kitaw 2011, and Ohno 2013). The NPB was merged with the Singapore Institute of Standards and Industrial Research in 1996 to create the Productivity and Standards Board (PSB), bringing together the soft skills and the technical aspects of productivity. The PSB was later strengthened and reorganized into the Standards, Productivity and Innovation Board (SPRING) in 2002.

NPB, PSB, and now SPRING became global centers of excellence in the field of productivity, quality, standards, and innovation. Other key factors that bolstered these institutions include the transition from a public-sector-led entity to a private-sector-led entity, active advocacy and publicity, human resource development inside and outside the institution, and the establishment of a skills development fund by the government. Singapore's productivity initiative was strongly encouraged by the country's senior leaders, especially Prime Minister Lee. He understood the need for institution building and the need to promote creativity and the capacity to innovate in order to sustain growth for Singaporeans.

Here, it should be particularly emphasized that the above-mentioned process enhanced capabilities of both individuals and organizations. Ohno (2013, p.190) reiterates that a nationwide productivity drive requires a paradigm shift and a mindset change and that it requires the establishment of an attitude by which all people strive for and acquire the habit of improvement, as well as systems and practices that translate such an attitude into action. He further emphasizes that a new way of thinking, living, and working must be firmly built in the minds and actions of all leaders and actors and highlights the importance of strong political commitment from the top and strong organizational backup (*Ibid.* p.190).

(B) INSTITUTIONS THAT ENABLED THE PROCESS OF TRANSFORMATION

In Singapore, its Economic Development Board (EDB) was a single agency with the task of delivering the key elements of a growth strategy (Yusuf and Nabeshima 2012, p.105). It was established in 1961 with the original goals and organizational structure as spelled out in its first annual report: "The primary function of the Board is to promote the establishment of new industries in Singapore and to accelerate the growth of existing ones" (cited by Schein 2001, p.38). Schein, who described the culture of EDB as "strategic pragmatism" based on an extensive study of EDB, summarizes that Singapore displayed a remarkable adaptive and learning capability without, however, sacrificing short-term problem solving (*Ibid.* p.57-58).

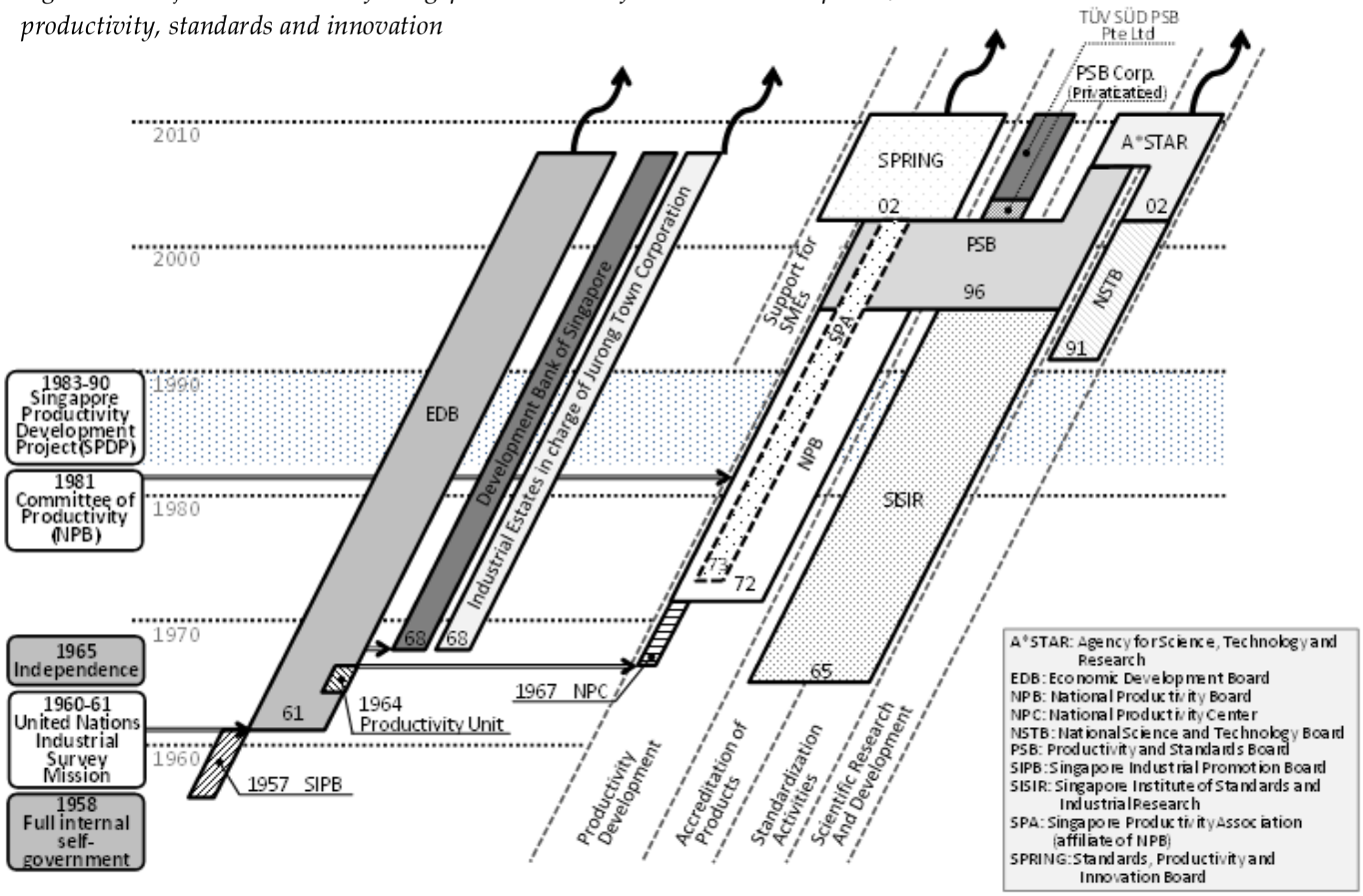
Ohno points out that EDB is a business-friendly, one-stop agency for domestic and foreign investors (Ohno 2013, p.172). EDB, in attracting FDI in priority sectors, uses both broad-based approaches and targeted approaches (*Ibid.* p.172-173). Holding first position among more than 180 countries in the World Bank Doing Business Reports for five consecutive years, EDB also engages in individual negotiations with foreign companies to offer company-specific support and incentives in what is called the "Queen Bee" approach.

Kuruvilla and Chua (2000, p. 40-41) considers the following, among others, to be the major reasons behind Singapore's remarkable success in upgrading workforce skills: General linkage between economic development needs and skill formation/development facilitated by an institutional structure that places the EDB at the center of the efforts with responsibility for both areas; EDB's model of technological transfer linking FDI to skills development as well as of joint government-private sector operation for skill training; and educational reform for long-term skills development.

In the area of productivity, quality, standards and innovation, NPB, PSB and now SPRING, played a crucial role in mainstream cross-cutting general purpose technologies (GPTs) in Singapore's industrial development and economic transformation.

Furthermore, the provision of infrastructure for industrial development by Jurong Town Corporation (JTC) as the principal statutory board for industrial development cannot be overemphasized.

Figure 5: Major institutions of Singapore in areas of economic development, productivity, standards and innovation



Source: Prepared by the author, based on JICA/IDCJ/IDC (2010), Ohno, Izumi and Daniel Kitaw (2011)

It is seen as a strategic developer of cutting-edge industrial spaces bringing forth new paradigms in industrial planning and urban design (Kaushik 2012, p.13). It now aims at strategic clustering and innovation providing new estates, new cluster hubs, new paradigms, new land creation and eco-sustainability.

Figure 5 illustrates roughly the development of institutions in Singapore responsible for economic development, productivity, standards and innovation, as well as infrastructure provision.

4. CONCLUDING REMARKS: FINDINGS FROM CASE STUDIES

The five cases show how distinctive critical factors identified by several recent studies interact in practice. Learning and accumulation of knowledge and capabilities are essential. The process is gradual, incremental and, generally, path-dependent. It is also vital for changing the endowments to attain dynamic comparative advantage. In most of the cases, the government or public institutions facilitated the process. In Thailand, Bangladesh and Singapore, the constant improvement of the capabilities of those involved in the new industries was crucial.

Change of endowments is also attained by infrastructure construction and technological innovation. They often trigger or accelerate industrial development and transformation. The Eastern Seaboard was crucial for the expansion of the automobile industry in Thailand, which eventually enabled the country to be labeled the "Detroit of Asia". In Bangladesh, construction of more efficient transport and logistics infrastructure facilitated and accelerated the process of transformation via the garments industry. In Brazil, technological breakthroughs changed the endowments and comparative advantage of the country and, together with institutional innovations, triggered the transformation of Cerrado from barren land into one of the most productive agricultural regions in the world. In Chile, technological adaptation and development changed the endowments. But in all these cases, industrial development and economic transformation could not have happened without constant development of capabilities and knowledge through learning. In Singapore, "learning

to learn" was a key factor in the country's rapid and profound transformation.

In all five cases, effective institutions accomplished the role of facilitator or catalyzer of transformation. First of all, many of them had been created for specific purposes and embodied long-term vision and sense of mission. Second, most of these institutions regarded public-private interaction, consultation or coordination to be of the highest priority: this was demonstrated in the cases of Thai automobile industry, Brazilian Agricultural Research Cooperation, Bangladesh's garment industry, Chilean Foundation, and Singapore's Economic Development Board, and Standard, Productivity and Innovation Board. Third, most of these institutions adapted flexibly to changes in the global market and phases of industrial development.

These findings generally confirm the conclusion of JICA/JBIC (2008) regarding factors of economic growth found in the Asian experience. They are the mid-to long-term vision for development and strategies, flexibility in responding to a changing environment, and government's close ties with the private sector, harnessing the private sector's capacity to the maximum.

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GROWTH STRATEGIES FOR AFRICA IN A CHANGING GLOBAL ENVIRONMENT:

Policy observations for sustainable and shared growth

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Abstract

Following decolonization, growth accelerated in the leading African economies with the emergence of industrial activity, the modernization of physical infrastructure, and the quickening of urbanization. However, by the mid-1970s this initial phase of catching up had run out of steam, and African countries entered a long economic twilight that extended through the mid-1990s. Since then, and for over a decade, Africa, has benefitted from a widely shared revival of economic activity. Some reasons for this revival are shared worldwide, including globalization, innovations triggered by the advent of the Internet and advances in semiconductor/digital technologies, expansionary monetary policies, and by the growth of Asian countries that accelerated industrialization and trade volume. Other causes are internal to Africa, such as greater stability, better-managed macroeconomic policy, more

open economies, and improved human development indicators. But this new-found momentum cannot be taken for granted. In particular, the financial crisis of 2008–09 has weakened Africa's principal Western trading partners. Export-led growth is no longer the recipe for all seasons. This paper sketches a strategy for African late starters that identifies the key objectives and policy initiatives appropriate for a post-financial-crisis environment where South-South trade and capital flows are taking on a greater salience.

1. INTRODUCTION

Following decolonization in the 1950s and the 1960s, growth accelerated in several of the leading African economies with the flowering of long-delayed industrial activity, the modernization of physical infrastructure, and the quickening of urbanization. However, by the mid-1970s this initial phase of catching up had run out of steam, as countries fell prey to political turbulence, internal and cross-border conflicts, and economic distortions introduced by policy mismanagement and import-substituting industrialization. Problems internal to the continent were exacerbated by the weakening performance of Africa's main trading partners in the West. African countries entered a long economic twilight that extended through the mid-1990s;[1] since then and for over a decade, Africa has benefitted from a widely shared revival of economic activity. Reasons for this revival include the spurt in growth worldwide that can be traced to globalization, the upsurge in innovations triggered by the advent of the Internet and advances in semiconductor/digital technologies, by expansionary monetary policies, and by the extraordinary economic prowess of China and other Asian countries that raised the tempo of industrialization and the volume of trade. Other causes for this

[1] Only two countries, Botswana and Mauritius, bucked the trend and grew strongly during this period. The former grew because political stability, sound governance, and the effective management of the production and export of diamonds yielded steady returns; the latter successfully used policy measures to attract FDI into the apparel industry and to capitalize on preferential access to European markets.

resurgence are internal to Africa. On balance, there is greater stability and a democratization of politics, and macroeconomic policy is better managed, African economies are more open, and human development indicators have improved. Also, higher primary product prices have enhanced export earnings and increased the volume of FDI in resource-based sectors and linked infrastructures.[2]

With growth averaging over 5 percent per year during 2000 and 2011, both African policymakers and external observers are confident that that the continent has turned the corner and its long-term prospects are brighter than at any time in the recent past. But this newfound momentum cannot be taken for granted and sustaining or even improving on this performance will depend upon how effectively African countries, both individually and collectively, respond to a number of challenges—old and new. In particular, the financial crisis of 2008–09 has seriously weakened some of Africa's principal Western trading partners and suspended questions over the future contribution of industrialization, trade, and the flow of aid to Africa's growth. Aid fatigue, and doubts as to its efficacy,[3] is compounded by the budgetary woes of Western countries that are unlikely to be resolved during this decade. Moreover, the sources (and the future[4]) of growth are less easy to discern than was the case just five years ago. Export-led growth is no longer the recipe for all seasons with even the East Asian economies casting around for additional drivers of growth. The fragmentation of production and its offshoring from Western countries might have run its course. A sharp and sustained increase in capital investment, rapid technological advance, and innovation complemented by human capital deepening and a strengthening of governance institutions are plausible

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[2] See Miguel (2009).

[3] Aid effectiveness is the subject of a recent meta-study by Doucouliagos and Paldam (2007) and a literature review by Roodman (2007). Both conclude that there is little evidence that aid raises investment and growth or reduces poverty. William Easterly (2009) has poured cold water on the efforts of Western countries to transform Africa instead of supporting dispersed and incremental efforts at home-grown improvement that are seen to yield results. However, aid has many supporters and one of the most articulate is Jeffrey Sachs (2005).

[4] See Rodrik (2011) and Rogoff (2012).

options, but all demand a commitment to long-term development strategies backed by the sort of sustained political resolve that has been in short supply in Africa.

So much is at stake that inaction is not a viable option. African countries will need to adopt a proactive approach and capitalize on both the newly gained confidence in the continent's future, but also the mineral and energy discoveries that have brightened the growth prospects of countries such as Mozambique, [5] Ghana, and Uganda, among others. Several attempts have been made to craft a strategic framework for African countries,[6] but the uncertainties injected by the lingering aftermath of the financial crisis have complicated the situation and made it harder to chart a course forward. While recent research offers a plethora of findings, these too add to the confusion because not infrequently their relevance for Africa and the practical policy implications are left unstated.

The purpose of this paper is to sketch a modern strategy for African late starters that identifies the key objectives and the mix of policy initiatives appropriate for a post-financial-crisis environment where South-South trade and capital flows are taking on a greater salience. In sketching this framework, the paper will draw upon the empirical work that is helping spell out the constants in growth economics and what our new knowledge suggests are the changes that need to be factored into policies.[7] The paper is divided into three parts. Part 1 briefly reviews the performance of African economies over the past decade; it highlights the factors that enabled the continent to escape from a prolonged spell of stagnation. Part 2 notes the challenges for African countries and how these have been sharpened by the crisis and by other developments, such as the greatly enlarged role of China in both the global economy and in Africa. Part 3 defines a diversified

[5] See Smith (2012).

[6] See, for example, the New Partnership for Africa's Development (NEPAD), which defines a strategic framework covering six thematic areas and the Programme for Infrastructure Development (www.nepad.org).

[7] See Growth Dialogue (2012).

strategy[8] that could help African countries remain on their current growth paths while addressing challenges they cannot afford to sidestep.

2. AFRICAN ECONOMIC PERFORMANCE, 1990–2011

The first half of the 1990s was a low point for growth in Sub-Saharan Africa—0.8 percent per year. In the latter half of the decade, growth rose to an average of 3.9 percent per year, well in excess of the 2.4 percent average of the 1980s,[9] and it continued accelerating into the first decade of the twenty-first century.[10] Growth between 2000 and 2010 averaged 5 percent per year and in spite of spreading gloom in the EU was 5.1 percent in 2011. In fact, 6 African countries[11] were among the 10 fastest-growing economies in the world during 2011. This performance was supported by a rise in investment rates from an average of 18 percent in 1990 to 21.8 percent in 2011[12]—not comparable to East Asian levels, but respectable nonetheless. Exports grew from just over 26 percent of GDP in 1990 to almost 30 percent in 2009.[13] Several countries

[8] Minerals and petroleum accounted for well over half of Africa's exports and are key to the prosperity of countries such as Botswana and South Africa. They also sustain the economies of others such as Ghana, Nigeria, the United Republic of Tanzania, and Zambia. Diversifying the sources of growth is a priority for all mineral exporters, a point driven home yet again by the crisis.

[9] See UNCTAD (2001).

[10] See, for example, Radelet (2010).

[11] These included Ethiopia, Ghana, Mozambique, Rwanda, Liberia, and Equatorial Guinea.

[12] The investment rate was 22.9 percent excluding South Africa and Nigeria.

[13] Some researchers (Gruber and Koutroumpis 2011) claim that the penetration of mobiles has contributed to innovation—such as the justly famous M-PESA mobile banking innovation in Kenya and Tanzania—and to growth, especially in the higher-income countries with greater mobile penetration. Annual growth in the higher-income countries has risen by 0.2 percent per year whereas in the lower-income countries it is up by 0.11 percent. Seventy-four percent of Kenyans now use a mobile phone (the average for SSA in 2012 was 60 percent) and a

also improved their social and Doing Business indicators,[14] and foreign investment in Africa rose from US$9 billion in 2000 to US$82 billion in 2011 (after peaking in 2008 at US$88 billion)[15] with African countries attracting 4.4 percent of all investment in developing countries between 2008 and 2011. Remittances also climbed to US$41.6 billion in 2011.[16] And African countries reduced their external debt in 2012 to 22 percent of GDP from 63 percent in 2000 (Severino and Debled 2012).

The stronger growth performance is reflected in further progress towards several Millennium Development Goals (MDGs). The African population living on less than US$1.25 (in 2005 prices) a day fell from 56.5 percent in 1990 to 47.5 percent in 2008 (World Bank 2011a), and according to Pinkovsky and Sala-i-Martin (2010), Africa is en route to halving its poverty rate by 2017—missing the MDG target by just two years. In a recent paper, Alwyn Young (2012) goes further to claim that income statistics might be seriously underestimating the actual gains. By using the Demographic and Health Surveys, which collect data on household ownership of durables, he concludes that household consumption has in fact been increasing by between 3.4 and 3.7 percent per year, which is 3–4 times the rate reported by international data sources. Declining rates of poverty have had positive spillover effects, with the percentage of underweight and malnourished children declining by 25 percent. Furthermore, primary school completion rates rose to 79 percent in 2009, with countries such as Burundi, Madagascar,

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quiet digital revolution appears to be stirring in the country (*Economist* 2012a). M-PESA has facilitated bank transfers and encouraged users to put their money in banks rather than in rural credit co-ops. See Mbiti and Weil (2011).

[14] Between 2000 and 2010, the time required to register property was almost halved to 65 days on average. Furthermore, time required to enforce contracts and to obtain construction permits were among the areas showing improvement.

[15] FDI in Sub-Saharan Africa still amounts to only 5.5 percent of global FDI (see England 2012).

[16] See IMF (2011) and African Economic Outlook (http://www.africaneconomicoutlook.org/en/outlook/financial_flows/remittances/). The African diaspora totals some 30.6 million people and their remittances account for a large part of the GDP of countries such as Lesotho (30 percent) and Cape Verde (10 percent).

and Rwanda achieving near-universal primary enrolment; child mortality dropped from 181 to 130 over the same period; and there was a significant slowing in the growth of new HIV infections (United Nations 2012).

Other indicators convey a less positive picture. Gross savings fell from an average of 24.6 percent in 2006 to 19.8 percent in 2011.[17] Gross capital formation rose from 18 percent of GDP in 1995 to a still modest 22 percent in 2011, but private fixed investment was unchanged at 13.4 percent of GDP from 2006 to 2009, and the infrastructure deficit scarcely narrowed.[18] In a disturbing trend, the share of manufacturing in GDP for Africa as a whole declined from 13 percent in 2000 to 10.5 percent in 2008 (UNCTAD 2011). It was 9.7 percent in East Africa, 5 percent in West Africa, and 18.2 percent in Southern Africa.[19] Moreover, most manufactures are resource-based with low domestic value added and they register limited productivity gains and spawn few linkages with the rest of the economy (UNCTAD 2011). Diversification of manufactured exports was correspondingly limited. The share of manufactured exports, which was 43 percent in 2000, fell to 39 percent in 2008 (UNCTAD 2011), and Africa was responsible for just 1.3 percent of global manufactured exports in 2008 (and 1.1 percent of global manufacturing value added in 2009), as against 1 percent in 2000 (and 1.2 percent of global manufacturing value added). The top exports of even the more industrialized African countries were resource based. For example, South Africa's top two exports were platinum and gold; Kenya's were tea and cut flowers; Ethiopia's were coffee and sesame seeds; Tanzania's were coffee and tobacco; and Ghana's were cocoa beans and manganese ores (World Bank 2011b). Exports as a share of GDP, which had risen to 41.8 percent in 2008, dropped to 37.9 percent in 2011, with commodities accounting for 80 percent of the total.

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[17] See IMF (2012). Gross savings in East Asia reached 47 percent in 2009—a figure that is somewhat biased because of China's weight in the total and very high savings.

[18] According to some estimates, the incremental capital output ratio (ICOR) for Sub-Saharan Africa during 1980–2010 averaged 5.23, which is high in comparison with East Asian countries during 1970–2000. See Kumo (2011).

[19] Manufacturing accounted for 32 percent of GDP in East Asia in 2009.

3. CONTRIBUTING TO GLOBAL PUBLIC GOODS AND RAISING GROWTH POTENTIAL

The accumulated experience of more than half a century has substantially enhanced the developmental potential of the African continent. Technological advances and globalization have improved the growth prospects of late starters and opened up avenues for leapfrogging in areas such as telecommunications, banking, and power generation. Having internalized decades of lessons, it is now possible for African countries to pursue smart urban development and avoid the many missteps of countries at a more advanced stage of urbanization. Increased South-South trade and capital flows and Africa's diminishing reliance on its traditional trading partners reduces the continent's vulnerability to a prolonged stagnation of Western economies. In comparison to the 1970s, Africa is far better prepared to forge ahead and to sustain its regained growth momentum. But success continent-wide will rest on two factors. First, Africa must increase the supply of global public goods that have helped foster recent prosperity but are currently inadequate to sustain future growth. Second, African countries must take a strategic and methodical approach to transforming economic assets into innovative drivers of economic performance.

Africa faces a host of challenges and an exhaustive listing serves no useful purpose. However, a small subset of global public goods is likely to exert a profound influence on Africa's prospects. These include continued integration with the global trading environment in a manner that contributes to the diffusion of capital and ideas; continent-wide political stability; and a wide-ranging, multi-sectoral response to global climate change that minimizes economic costs while containing the increase in greenhouse gas emissions.

3.1. INCREASING THE PROVISION OF PUBLIC GOODS

Preserving globalization: The past decade has witnessed a sea change in international relations alongside a rebalancing of the global GDP. It appears that we are on the threshold of a multipolar world where a number of regional hegemons are likely to displace a single superpower. This could have political and economic consequences. On

the political front, the risk of regional tensions leading to arms races and flaring into sharp and costly conflicts is greater. On the economic front, the stalemated Doha Round provides a foretaste of what a multipolar world may be like. There is risk of a slide back to a more protectionist environment, if countries are unable to correct trade imbalances, and if industrial hollowing and unemployment induce politicians to buy short-term relief by raising barriers to trade. The term "murky protectionism" has been coined to describe the creeping revival of trade impediments, which if not contained, could begin to eat into the gains from trade and the opportunities for export–led growth (Baldwin and Evenett 2009). The backlash following the financial crisis against international capital could result in "sudden stops" in flows to some countries when investors panic, the appreciation of exchange rates in others faced with a surge in inflows, and asset bubbles. Similarly, the backlash against financial innovations (including securitization and exotic derivatives) could easily lead to the imposition of punitive taxes and regulations. These could curb not only the excesses of financial globalization, but also limit the benefits to developing countries in the form of productivity gains from financial development (Bekaert, Harvey, and Lundblad 2011), equity capital for industrialization, and sophisticated banking technologies that improve access of local businesses to capital and resource allocation.[20]

Although its promoters[21] can exaggerate the advantages of globalization and a tempering of certain trends may well be desirable,[22] a reversal would not be in the interests of the community of nations. The world has lived through one such reversal in the early decades of the twentieth century and a recurrence is best avoided. But unless the

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[20] Beck, Chen, Lin and Song (2012) present evidence on the links between financial innovation and growth and also the link between innovation and financial fragility.

[21] See Bhagwati (2007) and Wolf (2004). See also review summaries of Wolf at http://www.complete-review.com/reviews/economic/wolfm.htm.

[22] Sundaram, Schwank, and von Arnim (2011) claim that much of the FDI in Sub-Saharan Africa, courtesy of globalization, has gone into mineral extraction and that trade liberalization, by exposing infant African industries to competition, has stunted their development.

widening cleavages between the interests of the advanced countries and developing countries can be bridged, there is great likelihood of a partial retreat from globalization and a weakening of the institutions that contribute to the benefits from closer integration. Africa cannot afford to remain a largely passive bystander, and the challenge for African countries is how to collectively work with and influence other nations to secure and improve the institutional underpinnings of globalization. This institutional infrastructure, painfully pieced together over the past several decades, is an enormous asset. It has its deficiencies; however, the priority should be to fix the problems so that the gains from economic globalization are more widely shared and there are effective procedures and fora for settling political differences. In an increasingly fractious world, the importance of the latter and its bearing on the former cannot be minimized. Africa will need to use "voice," diplomacy, and its growing economic clout to help safeguard the future of 'good' globalization.

Sustaining globalization and contributing to the public goods that will maximize its advantages must be complemented by continent-wide efforts at trade integration that could serve as an additional engine of growth. In particular, Africa's many small, landlocked countries stand to benefit from increased intra-African trade. This has risen more rapidly since 2000 than exports to the rest of the world, but still amounts to less than 10 percent of Africa's total trade, with the large countries accounting for the lion's share.[23] Intraregional trade confers an additional advantage on the smaller countries because it favors the exports of processed goods to partner countries in Africa as against the export of unprocessed goods overseas.[24] Regional institutions supporting trade liberalization, and backed by domestic policies promoting export-oriented development, will contribute to greater integration, as would investment in infrastructure to close the wide remaining gaps, and removal of other behind-the-border impediments

[23] See Broadman (2007)' for a detailed account of Africa's trade prospects with Asia and the trade facilitation issues that dog the growth of trade.

[24] See Douillet and Pauw (2012). Severino and Debled (2012) cite a higher figure—15 percent.

to the flow of trade.[25]

Political stability and institutions: It is a commonplace to note that political stability and conflict avoidance are critical for growth to be sustainable. Africa has had its share of local conflicts[26] and has experienced their destructiveness.[27] With the spread of democratic and more inclusive regimes, the continent is enjoying a period of relative respite. But the threat of renewed instability has not disappeared. Internal conflicts continue to smolder in Côte d'Ivoire, Sudan, Uganda, Mali, and in the Democratic Republic of Congo. Democratic rules of government appear to be widely applied throughout the region with all countries except Eritrea holding elections, but both the Mo Ibrahim Index and the Freedom House Index point to a decline in "full electoral democracy" and in political participation since 2007. Only Mauritius can be classified as a "full democracy."[28] However, as the *Economist* (2012a) notes, there are grounds for optimism in the blurring of ideological fault lines, the increasing numbers of young voters, the information and media access made possible by information and communication technology, and more carefully supervised elections in some countries. Nevertheless, Africa's political institutions are at the embryonic stage and the recent progress seems tentative and precarious. There is unabated need for continuing national and Pan-African efforts to secure

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[25] The defragmenting of African markets would be a boon for Africa's exporters, especially smaller firms (see Brenton and Isik 2012). Also helpful would be progress at strengthening road and rail infrastructures and reduced delays at customs and border checkpoints (see Rippel 2011). Infrastructure gaps in Sub-Saharan Africa are spelled out in World Bank (2011). Closing these by 2020 could require as much as US$93 billion. Maintaining the infrastructure, another major issue in Africa, would demand adequate budgetary provisioning thereafter (see AfDB 2010).

[26] Some of these conflicts were the result of interventions by the superpowers and were in effect proxy wars fought in Africa. See Hironaka (2005), Shah (2012), and Gettleman (2010).

[27] According to Paul Collier (2003), the "conflict trap" is one of the causes of stalled development in many African countries. Some others are reliance on natural resources, being landlocked, and bad governance.

[28] See the *Economist* (2012a).

the gains achieved and create the political milieu conducive to inclusive growth. How to minimize economic instability, political tensions, corruption, and violent conflict will be a continuing test for many African countries.[29]

Climate change: The third most pressing challenge, which is entwined with preserving globalization, is climate change. Many African countries are at the epicenter of the changes to come that will result in higher temperatures, desiccation, worsening water scarcities,[30] extreme weather events, and coastal flooding.[31] Adaptation will undoubtedly provide partial relief, and as Africa becomes more prosperous, the continent will find it easier to absorb the additional costs. But early and concerted efforts to mitigate climate change would ease the burden on later generations. In this regard, the challenge for Africa is to play a proactive role in international negotiations—because it has so much at stake—and for Africa's leaders to make an early commitment to greening growth. With the advanced economies preoccupied with their fiscal and employment problems, by default the baton is for developing countries to grasp. They should engage in bold commitments followed by determined efforts at implementing difficult and initially unpopular policies. With so much urbanization, industrialization, and transport development ahead, Africa could embark on a path that tightly constrains the growth of energy, water, and resource utilization. Similarly, Africa could constrain increasing greenhouse gases emissions caused by deforestation by preserving carbon-sequestering forests. This step would help Africa avoid becoming locked into less resource-frugal technologies and forms of urbanization. It would also protect the continent's wealth of biodiversity

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[29] Acemoglu and Robinson (2012) refer to the failure of countries "not with a bang but with a whimper" because they are "ruled by extractive economic institutions, which destroy incentives, discourage innovation, and sap the talent of their citizens by creating a tilted playing field and robbing them of opportunities."

[30] On water stress in Africa, see Tatlock (2006).

[31] Cities at risk in Africa include Abidjan, Accra, Dakar, Dar es-Salaam, Durban, Maputo, Mombasa, and Port Elizabeth. See the figure "African cities at risk due to sea-level rise" in UH-HABITAT (2008).

(Steiner 2010). The policies and technologies to achieve these objectives are well known, if governments can muster the political will and the administrative capacities to put them into effect. In the long run, such green policies are likely to prove much more inclusive than current strategies, which will entail costly adjustments that could destabilize societies and be especially hard on the poor.[32]

In part, growing sustainably will depend upon global developments, which Africa can influence—if it tries. Successful intervention would require a joint and unified approach predicated on an alignment of key objectives among African countries, using existing Pan-African institutions; making common cause with other developing nations; and articulating the approach forcefully in international bodies such as the G-20, which have the capacity to affect the direction of global change.

3.2. RAISING AFRICA'S GROWTH POTENTIAL

How Africa mobilizes its own resources and enlarges its economic potential will largely determine its future. The potential differs significantly among countries, which range in size from Nigeria, with a population of 150 million, to the Comoros and Cape Verde, with populations of just half a million, and will evolve at differing rates. Moreover, natural resource endowments differ widely among countries. Hence strategies and policy options will vary and need to be country specific. These country characteristics will affect how countries respond to trends and harness their factor endowments. Nevertheless, broadly speaking, growth potential is likely to be keyed to the following conditions.

Natural resources: Africa's growth spurt is closely tied to the export of mineral resources and to the higher prices these now command. Looking ahead, the abundance of natural resources will be a major determinant of future potential. Therefore, it will be vital to accurately assess the magnitude of resources; adopt a rate of exploitation that maximizes long-term benefit streams, while taking

[32] The desirability of greening urbanization and in the process making it more inclusive is discussed in ADB (2012) and McKinsey Global Institute (2010).

account of absorptivity; and carefully choose options for investing the proceeds from the mineral wealth.[33] Furthermore, augmenting resources through discovery[34] and with the help of technological advances will further contribute to the potential. Arable land and water resources are no less important. Both are scarce in a number of countries and their efficient utilization can be enhanced with the help of new technologies that minimize the wastage of water and the degradation of arable land through erosion. More fortunate countries, such as Zambia, by effectively managing their water resources,[35] can benefit from the food security and agricultural exports that could derive from an abundance of cultivable land.

Population and the youth dividend: Demographics will have a large hand in the fortunes of African countries, all of which have growing populations. Between 1950 and the end of the century, Africa's population ballooned from 230 million to 811 million and by 2010 had passed the 1 billion mark (Deen 2011). At current trend rates of growth of 2.2 percent per year it will approach 2.3 billion by 2050. There is scope for reaping a demographic dividend because more than one half of Africa's population is under the age of 20 (Fine 2012); and Africa will add 122 million people to its workforce between 2010 and 2020. Whether the dividend, which offers a window of opportunity,[36] is realized will depend upon the quality of education provided,[37] measures to secure the health of the population, and investment that generates jobs.[38]

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[33] An assessment of Africa's mineral resource potential can be found in Custers and Matthysen (2009).

[34] Gelb, Kaiser, and Viñuela (2011) show that new discoveries have substantially replenished mineral resources and contributed to national wealth.

[35] World Bank (2009b).

[36] In the form of lower dependency rates, higher savings, a more elastic labor supply, and increased entrepreneurial energy.

[37] About 42 percent of the 20–24 year olds have some secondary education.

[38] See AfDB et al. (2012). The official unemployment rate for the continent is 9 percent. However, only 28 percent of the workforce has stable and well-paid jobs and the safety net is nonexistent in most countries (McKinsey Global Institute 2012).

Export-oriented industrialization: The development of productive activities, mainly by the private sector, and their composition, will decisively affect growth potential and employment. How these evolve is a function of entrepreneurship (including from the large African diaspora), investment, and technological change. As noted above, investment in productive assets and in infrastructure has been low. No African country has a manufacturing base or export-oriented services—other than tourism—comparable to the East Asian countries. Perhaps more damaging to export performance is the fact that, with the exception of South Africa, African countries host very small numbers of companies employing more than 100 people,[39] the sort of companies likely to venture into overseas markets. Moreover, as evident from the Boston Consulting Group's report on Africa's new challengers, the vast majority of the larger firms are in services (such as banking, telecommunications, transport and construction) (Ndulu *et al*. 2007). Strengthening and diversifying the base of tradable products, not only in urban areas but also in the agricultural sector, will ultimately determine if Africa can reap the advantages of globalization. It will also determine whether African firms can integrate with global value chains, especially those that will tighten Africa's links with markets in developing countries where demand is likely to be growing faster.

Rural economy: The demographic center of most African economies is in the rural sector. In Sub-Saharan Africa, 63 percent of the population was rural in 2009, although on average, agriculture generated just 13 percent of the GDP. Nevertheless, the unexploited agricultural potential is large (60 percent of the world's uncultivated cropland is in Africa[40]) and as global population grows and food security becomes an issue, some African countries could emerge as major exporters. In 2008, arable land per 100 people amounted to over 24 hectares—well above the average for low- and middle-income countries. Moreover, because of the neglect of agricultural R&D, fertilizer inputs, irrigation infrastructure, and better tillage practices, agricultural productivity is the lowest in the world. Yield increases have

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[39] The UNCTAD (2011) report observes that small firms dominate African manufacturing. See also Mckenzie (2011)."

[40] See Fine and Lund (2012).

contributed 34 percent to the increase in production since 1960 as against 80 percent in South Asia (Smith *et al*. 2010). The opportunities for catching up are considerable and with climate change, the development of drought and disease resistant crop strains and lean irrigation techniques is rapidly becoming a priority.

Technology, innovation, and FDI: Africa has gained relatively little from the huge advances in industrial, agricultural, and services-based technologies, although mobile telephone has made substantial inroads. There is a wealth of opportunity for late starters if they can mobilize skills and capital. For Africa, the shorter route to growth could be via human capital deepening and determined efforts at raising its quality so that it can harness the technologies now available. Once a pool of human capital initiates a virtuous spiral, the supply of capital can follow from local sources and overseas. Casual empiricism suggests that there is no shortage of capital globally that is searching for profitable opportunities. Over the medium term, FDI could substitute for domestic savings if the business climate is propitious and foreigners can perceive the market opportunities. In addition to capital, FDI can be a source of much-needed technologies and it can help stimulate local innovation. For Africa, the benefits of plugging into the global innovation system will increase commensurately as innovation becomes a bigger source of growth.

Demand as a driver: There is a limited likelihood that Africa's growth will be constrained by a dearth in the demand for its mineral resources. However, that alone might not be enough for the continent as a whole to sustain the growth and to create the jobs that it needs to. Agro-industrial development and a robust services economy are sources of tradables that the rest of the world demands, and they will to varying degrees figure in the strategies of all countries. However, as seen in the case of South Africa, rich in resources, stable in politics, and large in size, the development of new industries, especially manufacturing, has been limited (Yusuf 2011). Africa will need to derive a substantial boost from the growth of its own middle classes eager to raise their own consumption standards—especially the younger elements (Fine 2012). By 2020, this class is projected to number 130 million, which will generate a large demand for consumer goods (Fine and Lund 2012). This potential source of future growth must be facilitated and factored into any calculation of longer-term growth prospects.

4. A FRAMEWORK FOR SUSTAINABLE GROWTH

A two-pronged strategy straddling the global and the local is central to the achievement of sustainable economic growth; African economies will have to conduct policy on both registers depending on their international salience and capabilities. Here we will focus on how countries might go about augmenting and realizing their growth potential starting with the minimum objectives for sustainable and inclusive growth: the rate of increase of GDP; employment opportunities for the vast majority of the workforce; the avoidance of wide income disparities without eliminating "good inequality" that sharpens incentives; and containing of the ecological/resource footprint.

A growth rate averaging 7 percent per year would bring Africa to the level reached by the Republic of Korea at the end of the twentieth century.[41] Although higher than what most African countries have registered during the past decade, it is a desirable target for a number of reasons. Africa's current low per capita income and large technological gaps permit an acceleration of growth, and also present well-charted opportunities for catching up. The current overhang of unemployment, which exceeds 20 percent of the workforce in countries such as South Africa, and the anticipated increase in the labor force,[42] cannot be accommodated except through growth in excess of current levels. Technological change that is capital-intensive and unskilled labor–displacing is also reducing the elasticity of labor demand in manufacturing and in services (and at least in the advanced countries, resulting in jobless growth) (Kapsos 2005). Therefore, absorbing Africa's growing pool of workers will call for faster growth than in the past, even if most of the jobs are in light industry and services. Ensuring an acceptable sharing of the fruits of growth will be a challenge, but one that could be manageable if more of the growth derives from (i) labor-

[41] The *Growth Report* (Commission on Growth and Development 2008) also recommended a growth target of 7 percent.

[42] Africa's population is expected to grow at 2.4 percent per year during 2009–15, and although the rate is likely to slow further down the road, reaching replacement-level fertility by 2050, the United Nations (2004) projects that the African population will exceed 1.8 billion by mid-century.

intensive manufacturing (some of it shifting from East and South East Asia to Africa), (ii) relatively labor-intensive tradables, and (iii) labor-intensive services. Finally, green growth (which encapsulates some of the messages embedded in "sustainable") will be a function of price signals that encourage conservation and changing life styles. But it equally will be influenced by regulatory policies; government procurement; by standards (for vehicles, equipment, and durables, among others) and their enforcement; by technological change; and by the pace of absorption of new ideas into equipment and in production practices.

Looking forward, we elaborate the five elements of a strategic framework for sustainable growth in Africa: (i) the political system; (ii) state policy making, regulatory, and implementation capacities; (iii) resource mobilization, investment, and total factor productivity (TFP); (iv) learning and innovation systems; and (v) management of the urban system. Although many of these elements are not new, the global situation in which economic growth is proving more difficult for all economies makes this a necessary list of priorities in our view to propel Africa's future growth.

4.1. POLITICAL SYSTEM

There has never been much doubt that economic policies are almost always freighted with myriad political concerns. They leave an imprint on policy design, affect implementation, and influence both the outcomes and how the public perceives them. The varied, and in many instances, partial and halting responses to the financial crisis across the world have brought home once again the far-reaching role of politics and of political institutions in how countries respond to crises and how they struggle to arrive at a consensus on longer-term strategies.[43]

What kind of a political system delivers the better economic

[43] The political economy of Botswana's growth and stability is analyzed by Acemoglu, Johnson, and Robinson (2001). Acemoglu and Robinson (2010, p. 22) claim in another paper that "the main reasons why African nations are poor today is that their citizens have very bad interlocking economic and political institutions."

results has been endlessly debated and accumulating experience subjected to rigorous testing. A prior belief in the efficacy of democracy and the enlightened resilience of democratic institutions has been challenged by the superior economic performance of a handful of countries all in East Asia; they achieved outstanding results under autocratic regimes and without the benefit of institutions that credibly protected individual rights to speech and to property against the grasping hand of the state.[44] With two exceptions, China and Vietnam, all of the East Asian star performers have embraced democracy and the two African countries that vied with East Asian ones with regard to economic performance—Botswana and Mauritius—managed to grow rapidly under democratic regimes. But the belief lingers that the wise and far-seeing autocrat, who can create an effective bureaucratic machinery, is more likely to deliver the prosperity that developing countries are seeking. The empirical research suggests, however, that the prior belief in democracy has considerable merit (Radelet 2010). At worst, democracy does not impede growth, and for developing countries that are taking the democratic road, the direct and indirect benefits of democracy can be large. Pereira and Teles (2010) state that political institutions supporting a more pluralitarian electoral system are important determinants of growth in incipient democracies, but political institutions have a weaker bearing on growth in consolidated democracies that have already internalized their effects. Indirect benefits of democracy derive from increased stability; a higher degree of accountability; lower rates of inflation; the greater protection afforded to property rights; and the responsiveness to popular demands for education, health care, and a safety net.[45]

In a globalized world, countries are more exposed to external shocks, and will require collective action and sacrifices if a liberal multilateral trade regime is to be sustained and climate change curbed. Under such conditions, democracies are better placed to win the support of the majority and to more equitably distribute rewards or burdens. For

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[44] Easterly (2011) finds that on balance, the occasional and temporarily benevolent autocrat does not promote long-term economic growth.

[45] See Doucouliagos and Ulubasoglu (2010); Feng (2003); Gerring et al. (2005); Knutsen (2009); Pereira and Teles (2010); and Rock (2009).

African countries that have embraced democracy (and the majority have), the priority is to continue the process of building institutions and strengthening those already in place. African democracies have been buoyed by good economic times, but the danger of slippage has by no means passed. A precondition of future sustained and inclusive growth is surely the commitment of governments and of the public to making democracies work better. To this end, Africa's democracies should use the political leverage of representative government to craft long-term growth strategies.

4.2. STATE CAPACITY

Democratic institutions can serve as the foundation of growth, but absent state capacity to frame and implement policies derived from an overarching strategy, progress is unlikely. For example, East Asian economies notably have delivered good economic results under both autocratic and democratic regimes, and have performed credibly on the international stage. To be successful, they all have relied on the capacity of the state's bureaucratic machinery to efficiently conduct wide-ranging development activities—including long-range planning policies to develop comparative advantage—and to steadily build the market and regulatory institutions that determine how well or poorly an economy functions. Weak state governing and policymaking capacities have been the bane of many African countries. These deficiencies should be remedied through public sector reforms that address problems with recruitment, culture, incentives, accountability, and the motivations to serve the public and to deliver results. A reformed public sector is the necessary complement to a development strategy aimed at prolonging the recent growth spurt and tackling the challenge of sustainability.

State capacity might be even more vital in the future because the financial crisis has stirred doubts and forced a rethinking of neoliberal policies.[46] The retreat of the state in developing economies (if such a retreat was ongoing or in the offing) is over, for the time being at least. A number of countries—including some advanced economies—are

[46] Among the expressions of doubt that have surfaced since the crisis, see Turner (2011).

taking a second look at updated variants of industrial policies practiced by China[47] (and earlier by the Republic of Korea; Taiwan, China; and other Asian "tigers"). There is also a renewed push to fashion policies compatible with World Trade Organization rules to stimulate industrialization.[48] Widening income inequality compounded by structural unemployment might also demand a more active role in creating jobs (as is currently the case in the Middle East and a number of African countries). However, for industrial, active labor market, and redistributive polices to succeed, state policy making and implementation capacity must be up to the task. Thus far, only a tiny handful of African countries can claim to have reached the requisite level of public sector efficiency and transparency needed to accomplish the task.[49]

4.3. RESOURCE MOBILIZATION, INVESTMENT, AND TFP

Capital investment in infrastructure,[50] housing, and productive assets is critical in the earlier stages of industrialization. However, as countries develop, more of the growth is derived from total factor productivity (TFP), which reflects embodied and disembodied technological change, innovation, tacit knowledge and gains in efficiency from a variety of sources. Income gaps and the slow speed of income convergence among countries are associated with slowness in

[47] See the championing of the Chinese approach by Justin Yifu Lin (in Chandra et al. 2012), who is of the view that as China vacates certain industries as its costs rise, African countries could move in.

[48] See Aghion, Boulanger and Cohen (2011); Leipziger (2012); Yusuf (2011).

[49] See the World Bank's Public Expenditure and Financial Accountability Assessment Reports (PEFA) for African countries. http://web.worldbank.org/WBSITE/EXTERNAL/PEFA/0,,contentMDK:22687152~menuPK:7313203~pagePK:7313176~piPK:7327442~theSitePK:7327438,00.html

[50] The recent adoption of the Programme for Infrastructure Development in Africa is a step toward a regionally coordinated approach that responds to the anticipated growth in demand.

assimilating technologies and persisting technology gaps.[51] When technology gaps are wide, as in most African countries at an early stage of industrialization, more of the TFP accrues from investment in fixed assets and linked processes embodying the latest technologies. Jorgenson and Vu (2007) estimate that between 1989 and 1995, capital accounted for 41 percent of growth, and TFP accounted for 22 percent of growth in 110 countries analyzed. By 2000–04, the share of capital had declined to 34 percent, while that of TFP had risen to 37 percent. In developing Asia, the share of TFP was 39 percent, while that of capital was 35 percent. In other words, between 70 percent and 74 percent of growth is from these interlinked sources. For African countries, during 2000–04, capital contributed 21 percent of growth and TFP 23 percent. Much of the growth in Africa came from labor inputs, with quantity prevailing over quality gains. Ndulu *et al*. (2007) point to the low or negative contribution of physical capital and TFP to growth in Africa between 1990 and 2003. However, recovery in the late 1990s was substantially aided by improved TFP.

If African countries want to follow the path of other industrializing economies over the next couple of decades, particularly East Asian economies, then they may need to invest heavily to generate growth and make up for infrastructure deficits in the agricultural and urban sectors, and also widen and deepen the productive base. Further down the road, TFP could move into the lead once incomes are considerably higher. For this reason, measures to raise investment in specific areas with the highest growth potential deserve priority. These are likely to differ from ones that have been the principal sources of recent growth. A third of Africa's growth in the past decade was from the exploitation of natural resources; the balance was from development of wholesale and retail activities (13 percent), transport and telecommunications (10 percent), real estate and construction (10 percent), financial intermediation (6 percent) and public administration

[51] See Parente and Prescott (2000) and Comin and Hobijn (2010). Francesco Caselli (2005) shows that an equalization of physical and human capital across all countries would explain only 37 percent of the differences in GDP per capita. The balance is due to productivity differences arising from technology of all kinds.

(6 percent). The real sectors—manufacturing and agriculture—contributed 9 percent and 12 percent, respectively.[52] In contrast, over the same period these latter subsectors were the main sources of growth and employment in East Asia, and arguably will play a vital role in enabling Africa to grow at higher and sustainable rates.

The markedly small share of manufacturing in African economies is responsible for weaknesses in the export mix. Abdon and Felipe (2011), using the product space methodology[53] devised by Hidalgo and Hausmann (2009), show that the export structure of resource-rich African countries barely changed between 1962 and 2007. They remained exporters of a narrow range of products, almost all lying on the edges of the product space (although it should be noted that exports from Ghana, Kenya, and South Africa are dominated by manufactures). A few landlocked countries added exports to their portfolio that were closer to the networked interior of the product space, while coastal countries revealed a comparative advantage in more networked products, particularly garments. But the results for African coastal economies were dominated by South Africa, which has the most products in the core of the product space. Abdon and Felipe observe that Africa's poorly diversified productive structure and the high proportion of standardized ubiquitous (peripheral) products exported by many countries seriously compromise their export prospects. Especially for the smaller countries that need external markets to generate sufficient demand for rapid growth, export diversification and upgrading is a must.

Moreover, as Easterly and Reshef (2010) note, the desired growth outcomes will depend upon achieving "big hits," that is, large exports of a few products to a single market or a limited number of markets.[54] They claim that a disproportionate share of export earnings derives from big hits that are difficult to anticipate, and in addition the

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[52] See McKinsey & Company (2010). See also UNCTAD (2011).

[53] The product space refers to a network that brings out the interrelationships between products traded in the global marketplace. See http://www.chidalgo.com/productspace/.

[54] See also Lederman and Maloney (2010).

composition of the big hit is itself subject to churning.[55] The winning recipe, discerned from the experience of leading export nations, consists of conditions facilitating the entry and maturing of companies that can opportunistically become exporters of diverse products. Creating these export-friendly conditions requires a long-term strategy to stimulate domestic and foreign investment (supported by domestic saving) by improving the business climate and access to financing at reasonable cost,[56] and through incentives for entrepreneurs. The strategy can be supported by investments in infrastructure that ease troublesome logistics constraints for businesses, but infrastructure-building by itself will not alone lead to a crowding in of industrial investment needed to deepen and diversify the industrial sector. For that, some form of state-led industrial policy based inducements might be required as well, and East Asia is replete with such examples.

4.4. LEARNING AND INNOVATION SYSTEM

If growth is sustained, domestic public and private savings could rise and help finance increased investment. However, it is unlikely that Africa will be able to realize East Asian levels of resource mobilization; if so, increased TFP will be an asset. The road to higher TFP winds through the learning and innovation system, which is a weak point for all African countries, even South Africa. But it is a weakness that can and must be addressed.

The research of Hanushek and others[57] suggests that such a growth path will require improving and deepening human capital with the help of education and related health policy reforms. If African economies can substantially raise the quality of their workers, and if this

[55] The composition of the Republic of Korea's exports changed from one decade to the next. Garments, steel, and footwear in the 1980s were displaced by semiconductors, computers, and autos in the 2000s, and semiconductors, vessels, and autos in the 2010s.

[56] The cost of financing and limited access is frequently blamed for the slow entry growth and lagging export capacity of firms in Africa. See Venables (2010).

[57] http://hanushek.stanford.edu.

in turn makes it possible for businesses to step up the pace of technology absorption, research, and development and innovation, then it is possible to envisage a shift to a sustainable high-growth path less reliant on capital accumulation. In fact, the quality of the labor force affects economic performance through multiple channels. Human capital is key to the building of research infrastructure, the production of ideas, and their commercialization. And human capital, suitably motivated, will influence the vigor of entrepreneurship. The difficult part—a difficulty underscored by the Glewwe *et al*. (2011) review—is actually identifying and implementing the policies that will produce results within the space of 5 or 10 years,[58] and then translating the gains in human capital quality into growth performance. No country has found a durable recipe, although small countries such as Finland and Singapore can claim a measure of success.[59]

For health policies, Africa's disease burden and epidemiological profile raise the challenge for policymakers by an order of magnitude. The widespread prevalence of debilitating infectious diseases and helminthic infections erodes efforts at building human capital, but these have been joined by the spread of chronic diseases arising from changing lifestyles and eating habits associated with urbanization and rising incomes (Aikins *et al*. 2010). As with education, there is some low-hanging fruit to harvest with the help of policy changes, the harnessing of appropriate technologies, and foreign assistance. But the key to success again lies with implementation, monitoring of results followed by policy adjustment as needed, and persistence.[60]

Development thinking buttressed by the experience of East Asian countries has given most attention to manufacturing and tradable services. However, for decades ahead, Africa's growth and export prospects will also hinge upon the productivity and diversification of the agricultural economy. In almost every African country, agriculture is the largest employer, especially of women; and given Africa's reserves

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[58] On recipes and progress to date in Africa, see World Bank (2009a).

[59] See Yusuf and Nabeshima (2012).

[60] Glewwe and Kremer (2005) present the findings from research on initiatives in the area of education and deworming of school children in Africa.

of unused arable land, agriculture is a potentially large source of exports.[61] Africa has lagged behind in agricultural research, and as a result labor and land productivity is well below levels elsewhere (Paarlberg 2008). African researchers are making limited progress in developing disease-resistant and drought-resistant strains of the crops most vital for farmers.[62] Compounding the problem is increasing water scarcity in a number of countries, particularly in the north and the east of the continent. This is likely to become more acute as populations expand, industrial and urban demand increases, and global warming leads to worsening desertification that is already apparent in Ethiopia and Kenya. Both rural and urban dwellers will need to come to terms with water scarcity in the coming decades,[63] and the risk is that difficulties in agreeing on a fair sharing of water resources could lead to tensions between riparian nations. A combination of pricing, conservation, and many technological fixes will be part and parcel of development strategies, but recent history offers scant encouragement. Evidence of shrinking freshwater resources has been growing, but African countries have yet to take the needed initiatives to manage their water resources, which will be a key to sustainable growth. Whether independently or in conjunction with agricultural development, water must figure prominently in the defining of a sustainable growth strategy. Water management will be an ongoing and expensive undertaking.[64] However, if neglected, poor water management will lead to rising food prices, trade imbalances, and water stress, and cities will

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[61] See Klaus Deininger and Derek Byerlee (2011). They note that of the 10 countries with large stocks of potentially cultivable land, 5 are in Africa. Globally there are 446 million hectares of such unutilized land that is unforested, uncultivated, and with less than 25 people per square kilometre. Of this stock, 201 million are in Africa. Chad, the Democratic Republic of the Congo, Mozambique, the Sudan, and Zambia head the list.

[62] The breakthrough will come from replacing annuals with equivalent perennials so as to reduce erosion and enable soils to hold on to nutrients.

[63] See UNEP (2008), Chapter 2, "Freshwater Resources," section on "A Scarce and Competitive Resource," graphic on "The coming water scarcity in Africa." Available at: www.unep.org/ dewa/vitalwater/article83.html.

[64] See Schaefer (2008) and *Science* (2006).

suffer under the weight of unchecked migration from rural areas.

4.5. URBAN SYSTEMS

Industrial and innovation policies (which have a bearing on the business climate) are intermeshed with urbanization policies. Together these affect what sort of productive activities flourish and where, their competitiveness, how much employment they generate, their growth potential, and the revenue they produce for cities. Managing the process and the characteristics of urbanization in Africa to extract the productivity gains from agglomeration economies will be a crucial test for policymakers. This challenge must be confronted while containing per capita resource and energy costs, and also minimizing the negative externalities that undermine the quality of urban life and contribute to environmental degradation.[65] Policymakers will have to battle the inertial patterns of sprawling urban development prevalent in almost all countries because of widening private automobile use, the problems caused by past infrastructure and housing development, and resistance from all those who benefit from the existing land use and urbanization patterns. But neglect of urbanization strategy and enabling policies would seriously compromise an important strand of development and also cripple efforts to limit climate change and mitigate its consequences. Urbanization strategies can be highly complex, and most African municipal administrations will need to develop the technical capacity, the administrative skills, and the financing to craft and implement workable strategies that take full advantage of new technologies, hard as well as soft.

5. CONCLUDING OBSERVATIONS

The current decade is likely to differ markedly from the preceding one and this will have significant implications for national

[65] The urbanization rate in Africa was 36 percent in 2011. See http://data.worldbank.org/topic/urban-development.

growth policy formulation in Africa and for the policies of others, principally donors and foreign investors (see Rodrik 2012a, 2012b). The evolving global economic environment is both a blessing and a curse. It is a blessing because the high-growth engine of the world economy, China, is generating substantial and sustained demand for raw materials that Africa has in abundance, and because China's financial status, and its willingness to use its surpluses, make Africa a privileged destination. Moreover, China's resource commitment to Africa in recent years exceeds that of the World Bank and the AfDB combined, if one looks at lending and foreign direct investment flows.[66] Hence, Africa has everything to gain under current circumstances. Of course, the generalized global slowdown is not good news for the export of manufactures; however, it will take a while for Africa to reach the stage when it can compete in many developed markets and by then the outlook may well have improved. Moreover, while the advanced economies are struggling to extricate themselves from the financial crisis aftermath, Africa until now has been largely spared these dislocations. It is for this reason that we argue that this could well be the take-off decade for the continent, provided that progress is made on some key infrastructure and institutional bottlenecks.

Africa's growth momentum, if sustained, will also continue to benefit from the policy dividend arising from favorable macroeconomic developments. Independent examination by the IMF, the World Bank, and others show that macroeconomic management has been increasingly prudent in many African countries, and that as a group, they are in a better position than at any other time in recent memory to make significant advances (according to the IMF and others).[67] By any

[66] Although data is often imprecise and confusing, Fitch reported than China's Exim Bank lending over the 2001–10 period totalled US$67.2 billion compared with US$54.7 billion for the World Bank, and that in 2011 lending from China was an estimated US$11 billion without counting either Chinese grant aid or its considerable FDI in the continent, a stock figure reported to be US$40 billion. See www.bloomberg.com (12-28-2011) and www.ChinaDaily.com as well as Ali and Jafrani (2012).

[67] See IMF (2010). More generally on China's contribution to Africa's investment and growth, see, among others, Weisbrod and Whalley (2011), Kaplinsky and Morris (2009), and Renard (2011).

number of measures of macroeconomic probity—fiscal and current account balances, foreign exchange reserves, and access to capital markets or inflation—the situation is generally propitious and governments are well positioned to take advantage of this. According to most analysts, moreover, the historically low interest rates that now prevail are unlikely to continue in the medium term, another reason to attract capital for the myriad of needed investments previously mentioned. Hence, there is ample reason to act vigorously and to act now.

So what constitutes a vigorous growth policy and how might governments act so as to achieve the elusive 7 percent per year growth rate that doubles incomes in a decade? From past experience, it is clear that few countries have managed growth acceleration without considerable policy effort (Commission on Growth and Development, 2008). Rapidly growing countries have generally made conscious choices to defer some consumption in order to promote investment. While a country is living near subsistence, this may be a difficult tradeoff to manage, yet, Africa as a region is no longer in this absolutely dire situation (although there are of course counterexamples and special cases). The policy elements that have worked have included high and effective investments in human capital; strong efforts on infrastructure; the channeling of savings into productive export-led growth (executed by the private sector but supported by public sector policies); well-coordinated, yet malleable programs; and a long-term vision to propel the economy forward.

Some of the necessary, but not in and of themselves sufficient, conditions have already been mentioned, in particular capable bureaucracies, effective public spending, low levels of corruption, and a workable relationship between business and government. With respect to a key point on cooperation between business and government, it should be noted that local entrepreneurs with the ability to tap informal overseas financial markets can be effectively mobilized—provided they understand what is expected of them. In the case of Malaysia, the 30-year pro-Bumiputra policy stance yielded some positive results in terms of redistribution and opportunity for the Malay majority. It is now widely accepted that the ethnic Chinese Malaysians (who saw themselves as nationals but may not have been perceived as such) needed to be given a firm stake in the future of the country to harness

their considerable talent, finance, and energy. The same is true in Africa, where entrepreneurship is scarcer and where offshore ties to its diaspora (Ratha and Plaza 2011) and East Asian financing can be an asset if properly exploited. Affirmative action programs, along with other pro-growth policies, can be meritorious, as long as the opportunities are judged as to their effectiveness in delivering jobs, manufactures, and exports.

Another lesson to be learned from East Asia is that vigorous competition is a good thing. In some countries, such as the Republic of Korea, access to scarce finance was used as the lever to force firms to compete for export markets, with the successful ones being given the opportunity to grow and ultimately become national champions.[68] If firms are protected in the domestic market, they will have little incentive to improve productivity, pursue innovation, and shift their energies to exports.[69] Examples from Latin America abound, where either a lack of domestic competition has resulted in high-cost services (for example, Mexican telecommunications charges are the highest in the OECD) or where comfortable domestic markets have limited the export drive in new products (for example, Chilean manufacturing). Where domestic markets are small, as in most African economies, the focus should be on regional markets supported by regional trading arrangements. These can be encouraged by cross-border policies on infrastructure, regulations, and standards (as has been happening in East Africa with some success).[70]

The interest on the part of China in both exploiting natural resources on the continent and also providing large infusions of capital provides an opportunity that is not infinite in duration. The rules of the game, therefore, become quite crucial in determining how natural resource rents will be used, what kinds of enticements will be offered and in exchange for what, how infrastructure projects will be

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[68] See Amsden (1992) and Kim and Leipziger (1997).

[69] In his recent book on the making of an antifragile system, Nassim Taleb (2012) makes the case for tough love.

[70] On East African trade-related arrangements, see "EAC and China Discuss Partnerships for Trade and Investment" and "The Future of East African Integration," at www.eac.int.

sequenced, how much job creation will occur, and how much technical knowhow will be transferred. Africa's policymakers can take advantage of favorable circumstances, provided that they have strong and viable development strategies prepared. This is a clear lesson of East Asia's success.[71]

Finally, the role of bilateral and multilateral donors in helping Africa to make maximum use of this "decade of opportunity" requires some elaboration. The stories of bilateral assistance programs that are too small to be effective, too narrowly focused on areas that seem to generate support in donor capitals, and too short-term in duration to generated sustainable impact are well known. Also well established is the insufficient level of cross-border financing for projects, especially in infrastructure needed on the continent, but that cannot command sufficient international development assistance. To break free of their low-manufacturing, low-value-added export structure, African countries need a significantly altered flow of assistance. Priority needs to be given to those flows that can be leveraged with private sector investments in energy, transport, ports, and rails. The analytic work of the Stern Report on Infrastructure (Commission for Africa 2005) and the follow-up work by the World Bank (Foster and Briceno-Garmendia 2010) leave no doubt that there are a myriad of high-return projects waiting to be funded. Action on these, some of which NEPAD has identified, is long overdue.[72]

Africa is the last region to be facing the huge development challenges of today. In the past, much time was spent lamenting what did not happen and explaining why, and much of the scholarly work was excellent in its diagnostics.[73] The game has to move on to the phase where action is required to enable Africa to make the necessary strides forward. A great deal can be learned from the policies of other regions, particularly East Asia. After all, Vietnam 20 years ago had an average per capita income of around US$100 and a poverty rate of 70 percent;

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[71] See Leipziger (1997) and World Bank (1993).

[72] The role of the New Partnership for Africa's Development (NEPAD) and Africa's regional infrastructure needs are outlined in Estache (2011).

[73] See Collier (2007).

currently its average per capita income is above US$1,000 and poverty is below 20 percent. While still an agricultural exporter, Vietnam managed to attract FDI and expatriate capital and move into new and higher value–adding industries. Vietnam was better endowed with energy than other poor developing countries, had a population of close to 70 million and thus a large domestic market, and is not landlocked. Nevertheless, Vietnam's vital statistics as of 1990 were far worse than those of many African economies. Yet it has begun transforming into a more modern economy. Africa can and should do no less.

A final observation based on the work of the Commission on Growth and Development is that countries that radically transformed themselves and grew at high and sustainable rates decade upon decade did so not with the stroke of the pen or a single policy intervention, but with the help of many, coordinated policy interventions. The *Growth Report* (Commission on Growth and Development, 2008) enumerates these interventions, and most have found their way into this diagnostic paper on Africa's future growth. The salient finding of that exhaustive exercise, however, was that countries needed to get many policies right, needed to have coherence among policies, needed effective leadership and political stability, and needed a long-term vision of where the economy was headed. Africa is at a moment in history, in our modest opinion, where it must grasp the opportunities that exist and propel itself forward. The time is now!

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INDUSTRIAL AND TRADE POLICIES IN AFRICA:

From unproductive rents to learning and accumulation

February 2013

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Abstract

The resumption of growth in Sub-Saharan Africa though impressive has yet to translate into the economic transformation that provides the basis for sustained, rapid growth. The shares of manufacturing and formal sector employment have still not recovered to 1980 levels. Governance concerns have unduly inhibited emulation of successful trade and related policies that have worked elsewhere and can work in Africa. Many of the liberalization policies not so much reduce rents and corruption as divert them into unproductive activities and capital flight. Africa can choose selectively from lessons of successes and failures in trade and industrialization policies, including in institution building. A carefully crafted system of protection can help to divert rents to productive activities and learning that are the basis for sustained

[1] Sanjay Reddy provided valuable comments. Along with gratitude for his help comes the usual caveat absolving him from any responsibility for errors and omissions.

growth. The neglect of the need for appropriate protection and finance needs to be rectified.

1. INTRODUCTION

Transforming the economic structure of Sub-Saharan Africa (hereinafter, simply referred to as Africa) is essential for placing the region on a path of sustained, rapid economic growth. Arguably, a major failing of the conditionality-intensive "structural adjustment" reforms of the 1980s and early 1990s in Africa was the neglect of structural change. A focus on getting prices right tilted the balance so much in favor of the pursuit of static *efficiency* in the allocation of resources that these so-called "Washington Consensus" reforms neglected incentives for the *accumulation* of resources and learning required for growth and transformation.

That there are potential conflicts between the efficiency and the amount of investment and learning is reflected in the many failed polices of excessive and inappropriate protection and financial repression in Africa and elsewhere that these reform programs aimed to correct. But that conflict and associated moral hazard is also reflected in the sort of protection and subsidies that raised the profitability and socialized the risks of investment in many of the most successful economies such as the East Asian star performers[2]. Moreover, liberalization policies aimed at correcting price distortions and improving efficiency can be counterproductive by diverting rent-seeking activities into even less productive forms, as arguably, they have done in many countries, notably in Africa. The question then is not what should receive precedence—static efficiency or dynamic accumulation/learning—but how to strike the right balance and manage the moral hazard.

This question remains largely unasked even as the worst excesses of those so-called "Washington Consensus" reforms have been widely accepted and corrected. It is argued below that this stems in part

[2] See, for example, World Bank (1993) *The East Asian Miracle: Economic Growth and Public Policy* (Oxford University Press, New York and London).

from neglecting a vital prerequisite of private sector led industrialization or indeed of a well-functioning market economy, and that trade policies by providing appropriate protection can play a vital role in overcoming that shortcoming.

The implications of these considerations for trade and industrial polices in Africa are the focus of this essay.

2. ADAM SMITH, KARL MARX AND INSTITUTIONS: IMPLICATIONS FOR AFRICA

In his foundational work, Adam Smith ((1776] 2003) spoke of a "previous accumulation" of wealth in the economy into the nature and causes of whose wealth he was inquiring. This "previous accumulation" predated and preconditioned his analysis: "the accumulation of [capital] stock must, in the nature of things, be previous to the division of labor, so labor can be more and more subdivided in proportion only as stock is previously more and more accumulated"[3]. Smith then could be said to have explicitly assumed the existence of capitalists, i.e. private agents with the ability and willingness to invest.

Karl Marx followed Smith in making that assumption, translating "previous" as "ursprunglich" in German, which his translator rendered back into English as the famous "primitive" accumulation[4]. By being embellished by Marx and becoming part of the Marxist lexicon, "primitive accumulation" presumably acquired the

[3] Smith , Adam([1776] 2003), *The Wealth of Nations* (Bantam Dell), p. 350. "Stock" is Smith's term for capital stock. Smith elaborates that for example, in a market society, "a weaver cannot apply himself entirely to his peculiar business, unless there is beforehand stored up somewhere, either in his own possession or in that of some other person, a stock sufficient to maintain him, and to supply him with the materials and tools of his work, till he has not only completed but sold his web. This accumulation must, evidently, be previous to his applying his industry for so long a time to such a peculiar business" (Smith [1776] 1976).

[4] Perelman, Michael (2000) *The Invention of Capitalism: Classical Political Economy and the Secret History of Primitive Accumulation* (Duke University Press) p. 25

connotations that perhaps led to its neglect by economists of other persuasions. Marx (1867) criticized Smith for being ahistorical in his explanation but agreed on its essentiality.[5]

The fundamental point on which Smith and Marx agree is that the accumulation of capital, at any point in time, depends on some already existing capital accumulated earlier to invest in the production process. In other words *accumulation or investment requires the existence of the institution of capitalists or investors*.

Hoff and Stiglitz remark that "in leaving out institutions, history and distributional considerations, neo-classical economics leaves out the heart of development economics."[6] But even the large recent literature on institutions, including notably those required for the existence and proper functioning of markets, ignores the institution implied by "previous" or "primitive" accumulation. In other words, it implicitly assumes the existence of economic agents who have monies to invest and the ability to do so—capitalists and entrepreneurs. Incentives play the role of simply determining their *willingness* to invest—how much and in what—but not their *ability* to do so.

But almost by definition, that assumption is not particularly valid for economies at early stages of development, like many countries

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[5] In highlighting the historical process, Marx developed a different meaning of primitive accumulation in that he linked it to the notion of capital as "class relation" rather than as "stock." Given that "the capital-relation presupposes a complete separation between the workers and the ownership of the conditions for the realization of their labour," it follows that "the process … which creates the capital-relation can be nothing other than the process which divorces the worker from the ownership of the conditions of his own labour." By turning "the social means of subsistence and production into capital, and the immediate producers into wage-labourers," this process is therefore the basis of class formation. Thus, the "so-called primitive accumulation is nothing else than the historical process of divorcing the producer from the means of production", Marx, Karl ([1867] 1976). *Capital*. Vol. 1. (Penguin, New York) pp. 874-875.

[6] Hoff, K. and Stiglitz, J.E. (2001) "Modern Economic Theory and Development" in Meier, G. and Stiglitz, J. (eds) (2001) *Frontiers of Development Economics* (Oxford University Press, New York), p.390.

in Sub-Saharan Africa today or many in East and South Asia yesterday and elsewhere the day before yesterday. Arriving at later stages of development requires economic agents with adequate ability to invest.

Some of the earlier literature on development with its emphasis on capital accumulation as being central to development did pay some attention to the issue of the absence or weakness of the institution implied by Smith's "previous" or Marx's "primitive" accumulation. Gerald Meier, for example, remarks that "Believing that [in] a developing country…the supply of entrepreneurship was limited and large structural changes…were needed the first generation of development advisers… turned to the government…to promote *capital accumulation*, utilize reserves of labor, …undertake policies of deliberate industrialization …" (emphasis added).[7]

More often than not, the focus was not so much on the complete absence of capital and capitalists as on their inadequacy. Peter Evans notes that "Gerschenkron's work on…late industrializers confronting…technologies with capital requirements in excess of what private markets were capable of amassing were forced to rely on the power of the state to mobilize…resources…The crux of the problem faced by late developers is that institutions that that allow large risks to be spread across a wide network of capital holders do not exist.…Hirschman takes up this emphasis on entrepreneurship as the missing ingredient for development in much more detail."[8]

However, as noted above, the large literature on the economic

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[7] Meier, G. (2001) "The Old Generation of Development Economists and the New" in Meier, G. and Stiglitz, J. (eds) (2001) *Frontiers of Development Economics* (Oxford University Press, New York). Also see (See for example, Papanek (1967); Lewis (1971); Little, Scitovsky and Scott (1971), where the issue of creating or strengthening the institution of the private sector or capitalists/entrepreneurs is discussed. Elsewhere, advocates of public sector led industrialization based their case partly on the weakness of the private sector.

[8] Evans, Peter (2005) "The State as Problem and Solution: Predation, Embedded Autonomy and Structural Change", excerpted in Meier, G. and Rauch, J, (eds) (2005) *Leading Issues in Economic Development* (Oxford University Press, New York and Oxford), p. 543.

role of institutions that has emerged rapidly in recent years ignores this dimension and thereby implicitly assumes the existence of capitalists/entrepreneurs in adequate measure.[9] Thus, Dani Rodrik in answering the question of which institutions matter according to the new institutional literature identifies the following five pertaining to: (a) property rights, (b) regulatory functions; (c) macroeconomic stabilization, (d) social insurance and (e) conflict management, (whilst adding that in his view participatory politics is a "meta institution").[10]

Many of the failures of privatization in the transition economies of Eastern Europe and the former Soviet Union are attributed to the neglect of this pre-requisite.[11] Some of the critics of privatization, particularly the Russian privatization of the 1990s, blamed the disaster not only on the absence of the "standard" institutions of property rights and contract enforcement that figure so prominently in the institutional literature but also, in effect, of capitalists.[12] This has also been an issue in some of the reform programs of Africa that have also been beset by cases of privatization without the requisite institutional underpinnings.

This essay focuses on the implications of the neglect of the institution of capitalist-entrepreneurs for economic policy in countries at early stages of development. In particular, it is concerned with the fact

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[9] For a general overview and critique of this institutional literature, see Mushtaq Khan (2012), "Governance and Growth: History, Ideology and Methods of Proof" in Akbar Noman et.al. (eds) *op.cit.* Also see, in the same volume, Thandika Mkandawire (2012) "Institutional Monocropping and Monotasking in Africa."

[10] Rodrik, Dani (2007), *One Economics Many Recipes: Globalization, Institutions and Economic Growth* (Princeton University Press, Oxford and Princeton), Chapter 5.

[11] The schemes for voucher privatization in some of these countries reflected an attempt to deal with the problem posed by the absence of the institution.

[12] See for example, Stiglitz, Joseph (1999), "Quis Custodiet, Ipsos Custodes?", *Challenge,* Vol. 42, No.6.. Also see Ellerman, David (2003) "On the Russian Privatization Debate", *Challenge*, vol. 46, No. 3. And Godoy, S and Stiglitz, J (2006) "Growth, Initial Conditions, Law and Speed of Privatization in Transition Countries: 11 Years Later", NBER Working Paper No. 11992.

that whilst the past decade or so has witnessed a reversal in the collapse of growth in Sub-Saharan Africa that resulted in its "lost quarter-century," progress in bringing about economic transformation of the sort that lays the foundations for sustained growth and development remains very limited. Indeed, the share of manufacturing and formal sector employment has been generally declining since 1980.

On average, the share of manufacturing in GDP in Africa fell from 17.5 percent in 1965 to 12.9 percent in 2009. Relatedly, as Noman and Stiglitz point out "there has been little success in exporting manufactures and in attracting foreign direct investment in non-extractive activities. Much of the growth of the past decade or so is accounted for by extractive activities in non-renewable resources—minerals, metals and above all, oil…"[13]

In section 4, we attempt a diagnosis of this phenomenon of deindustrialization or "detransformation" of African economies. Much of it is necessarily speculative and more in the nature of hypotheses than established results of research. Before that, in the next section, we sketch a formal case for infant capitalist protection with minimal mathematics to keep it accessible to a wider audience. The final section makes concluding remarks.

3. THE INFANT CAPITALIST ARGUMENT

The explicit assumption of Adam Smith and Karl Marx and the implicit one of much (all?) recent institutional literature acquires particular salience at early stages of development. Formally, this can be characterized, along the lines of Greenwald and Stiglitz,[14] as the stage

[13] Noman, Akbar and Stiglitz, Joseph (2012) "Strategies for African Development" in Noman et.al (eds) (2012*), Good Growth and Governance in Africa: Rethinking Development Strategies*, (Oxford University Press, New York and Oxford), p.8.

[14] Greenwald, Bruce and Stiglitz, Joseph (2006) "Helping Infant Economies Grow: Foundations of Trade Policies for Developing Countries", *American Economic Review*, 96 (2): 141-6.

when the economy is embarking on *development aimed at moving beyond simple agriculture and crafts to producing output for which capital and learning are important.*

By definition, "modern" private sector and its capitalists/entrepreneurs are absent at this stage and all output emanates from sector A which comprises agriculture and crafts, using only labor L (including skills). Sector M, consists of manufacturing (and modern agriculture and services) and employs both L and capital, K, which is owned and operated by capitalists, C.

$$Y = A = f_1(L)$$

$$M = f_2(L, K) = f_3(L, C) \{ \text{i.e.} = f_4(C) \}$$

With both sectors, total output

$$Y = A + M = f_1(L) + f_3(L, (f_4 C))$$

C either exists on account of primitive/previous accumulation or must be acquired. There is no foreign capital or capitalist[15].

The argument that is elaborated below on the acquisition of C and its impact on Y can be summarized as:

$$C = f_5(T, F)$$

$$Y = f_1(L) + f_3(L, (f_5(T, F))$$

where T stands for tariffs (implicit and explicit) and F for investment finance. With no protection and no finance for investment there is no capital accumulation, and hence no capitalists and no output in M.

The relationship is not monotonic, especially with respect to T.

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[15] Alternately, foreign capital/capitalists are very imperfect substitutes for those of the domestic variety or domestic capital/capitalists are a different and necessary factor of production. This is essentially a political economy argument for the need for local capitalists, where "local" could mean a particular ethno-linguistic group like the "bumiputras" in Malaysia.

Indeed it can be thought of as having a threshold below which and another above which there is no relationship between C and T (or indeed even a negative one beyond a point as the static efficiency costs outweigh dynamic gains) i.e. $T \geqq T_a \leqq T_b$

Inevitably at early stages of development, the form of industrial organization is characterized by an absence of divorce between ownership and management of capital. *The capitalist and the entrepreneur are one and the same.* So protection stimulates both accumulation and entrepreneurship.

Industrial (or modern sector) entrepreneurship requires capital, which can be borrowed—and much of it typically is, especially at early stages of industrialization—or saved out of profits.

Again inevitably, the financial sector is very weak and highly imperfect at the stage we are concerned with. Stock and bond markets do not really exist and the availability of long–term finance is largely characterized by its absence, especially at rates of interest that would allow borrowing for investment that does not yield immediate and very high returns.

The venerable infant industry argument used by Alexander Hamilton, the first Treasury Secretary of the United States, to establish the system of protection under which US industrialized[16] can be said to have matured some six years with the infant economy argument of Greenwald and Stiglitz.[17]

The essence of these arguments is well known and revolves around learning and spillovers. Activities in countries at an early stage of development cannot compete with those already well-established in more advanced economies and protection is necessary to help them grow, learn and become competitive. That case is extended or adapted in this essay to what we refer to as the *infant capitalist argument: protection by reducing risks and boosting profits can help create and nurture capitalists and enable learning.* It does so by facilitating both higher

[16] See Ha-Joon Chang (2002), *Kicking Away the Ladder: Development Strategy in Historical Perspective* (Anthem Press, London)

[17] Greenwald, B. and Stiglitz, J.E. (2006)

accumulation (savings) out of profits and bigger borrowings—as larger profits and reduced risks in the protected activities enhance creditworthiness.

If the capitalist and the entrepreneur are one and the same then capital accumulation and entrepreneurship are intertwined at "infancy," and physical and human capital are accumulated jointly. Acquiring physical capital is necessary for learning, which in turn facilitates further accumulation.

Moreover, as argued below, a well-designed structure of protection can also help to improve the quality of rents by directing them into industry and entrepreneurship from arguably the more wasteful forms that rents have often taken, particularly after trade liberalization in many countries, notably in Africa.

4. INFANT CAPITALISM IN AFRICA: FACTS, SPECULATIONS AND HYPOTHESES

At the dawn of independence, African countries typically can be characterized as lacking a class or private sector with the wherewithal to become entrepreneurs in "modern" activities. More precisely, to the extent such groups existed, they predominantly comprised foreigners or ethnic minorities of relatively recent origin (such as Indians and Lebanese in parts of East and West Africa, respectively).[18]

Arguably, there was a greater divorce between economic and political elites in Africa than anywhere else at the end of colonial rule. This would seem to underlie the emergence of the political economy of what Meles Zenawi calls the "predatory state" in Africa.[19] At any rate,

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[18] This is analogous to the situation in Malaysia that led to the New Economic Policy (NEP) launched in 1971 to promote the development of Bumiputra (indigenous Malay) businesses/capitalists/private sector. Whilst controversial and flawed in some respects, NEP is credited with possibly staving off ethnic conflicts.

[19] Zenawi. Meles (2006) *African Development: Dead Ends and New Beginnings (excerpts)* available at

this phenomenon is likely to have provided the basis for an attitude of ambivalence, at best, towards the private sector and of resort to public ownership of industries that characterized much of Africa, especially in the 1960s and 1970s.

Whilst some individuals and groups have acquired significant wealth from rent seeking in the post-independence period, that does not serve the purpose that previous or primitive accumulation performed in the analysis of Adam Smith and Karl Marx. This reflects the fact that typically, incentive regimes provide little or no encouragement for investing in modern, transformational sectors in which learning is important or indeed for investing domestically as opposed to transferring assets abroad. The sources of wealth have become predominantly trading or unproductive rents in a system of incentives that emerged from the economic reforms that are commonly referred to as of the Washington Consensus (WC) variety.[20] Typically, rents have taken the form of kickbacks on government contracts, insider wheeling and dealing associated with contracts for mineral resources or real estate, privatization or just plain theft. Such wealth is also more likely to end up overseas than that emanating from investments in modern productive sectors such as manufacturing.

Trade and financial sector reforms aimed at liberalization have often taken away the incentives to invest in domestic production activities. As Azizur Rehman Khan put it, such reforms have often taken away bad incentives but replaced them with worse ones.[21] There is a political economy case to create, protect or nurture infant or toddler

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http://policydialogue.org/events/meetings/africa_task_force_meeting_manchester_2006/materials/

[20] For a more general critique see for example Serra, Narcis and Stiglitz, Joseph (eds) *The Washington Consensus Reconsidered* (OUP, New York and Oxford). In particular, see the paper of Stiglitz, Joseph "The Post-Washington Consensus Consensus" in that volume.

[21] Khan. A.R. (2009) chapter 4 in Shahabuddin, Q and Rahman, R.I. (Eds), *Development Experience and Emerging Challenges: Bangladesh (*University Press, Dhaka), especially pages 66-72.

indigenous capitalists/entrepreneurs in modern, transformational sectors.

Nicholas Stern argues that the "central policy question here is: How can a country develop governance and institutions to support entrepreneurship and well-functioning markets?…The policy challenge is thus the promotion of growth through improvements in the investment climate: it is about creating conditions so the pie keeps expanding. It is not just a question of how to avoid or limit losing slices of the pie as measured by Dupuiy-Harberger triangles or even rent-seeking quadrilaterals…."[22]

However, the investment climate and related governance reforms of the type that have become the fashion or part of donor conditionalities, have been very imperfect substitutes for the sort of trade and industrial policies that attract investments in productive, learning activities. The private sector development and associated governance reforms have focused on the business climate or ease of doing business such as property rights, contract enforcement, rules and regulations, bribes to agents of the state, level playing field and so on.

Reform programs focused on such governance and institutional reforms, along with liberalization and privatization, have more often than not led not so much to reducing rents and corruption as to diverting them into unproductive forms.

They have ignored or neglected incentives that enhance the profitability and reduce the risks of investment such as tariff protection, subsidies and access to long-term finance at modest interest rates. Such rents acquired via incentives for infant industrialists to invest in infant industries can contribute to structural transformation and learning of the type that succeeded so spectacularly in East Asia and to varying degrees in South Asia and Latin America.[23]

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[22] Stern, Nicholas (2003) "Public Policy for Growth and Poverty Reduction" in Arnott, R., Greenwald, B., Kanbur, R., and Nalebuff, B.(eds) *Economics for an Imperfect World: Essays in Honor of Joseph E. Stiglitz* (MIT Press, Cambridge, Mass and London) .

[23] See for example, Wade, Robert (1990), *Governing the Market* (Princeton University Press, Princeton); Amsden, Alice (1989), *Asia's Next Giant* (OUP, New

5. LESSONS OF SUCCESS: INFANTS WHO GREW UP

Much of the literature on policies for developing countries to catch-up revolves around the interpretation and lessons of the astounding success in several East Asian countries that has been labeled the East Asian miracle.[24]

The replicability of the East Asian "model", especially with regard to trade, industrial and financial policies has been much debated essentially on account of its "governance" requirements. The "developmental state" that is said to account for the success of East Asian-style public policy interventions is also said to be well-nigh impossible to emulate. However, others such as Ha-Joon Chang, Mushtaq Khan, Noman and Stiglitz, and Meles Zenawi have emphasized that governance is not entirely exogenous and argued that the non-replicability of East Asian style policies in Africa and elsewhere is much exaggerated.[25]

York); Chang, Ha-Joon (1994) *The Political Economy of Industrial Policy*, (Macmillan, London and Basingstoke); Ocampo, Jose Antonio (2012) The Economic Development of Latin America since Independence, (Oxford, Oxford University Press).

[24] The literature is vast. In addition to Amsden (1989) and Wade (1990); see for example, World Bank (1993), *The East Asian Miracle: Economic Growth and Public Policy* (OUP, New York); Chang, Ha-Joon (2006), *The East Asian Development Experience: The Miracle, The Crisis and the Future*, (Zed Books, London and New York); Balassa, Bela "The Lessons of East Asian Development: An Overview", *Economic Development and Cultural Change* No. 3, April 1988, Supplement; Vol. 36; Stiglitz , Joseph (1996),"Some Lessons from the East Asian Miracle", *The World Bank Research Observer,* Vol. 11, No.2; Stiglitz, J. (2001) "From Miracle to Crisis to Recovery: Lessons from Four Decades of East Asian Experience," in Stiglitz. J and Yusuf , S. (eds.*), Rethinking the East Asian Miracle*, Oxford: Oxford University Press. Also see Commission on Growth and Development, *The Growth Report: Strategies for Sustained Growth and Inclusive Development* (World Bank, Washington DC).

[25] See Ha-Joon Chang's contribution to this volume. Also see the following essays in Noman, A., Botchwey, K,, Stein, H., and Stiglitz, J., (eds) (2012) *Good Growth and Governance in Africa: Rethinking Development Strategies* (OUP, Oxford,

Whatever one's views on the replicability of the East Asian "developmental state", the feasibility of success with the sort of infant capitalist promotion outlined above is demonstrated by relevant examples from other regions, including notably that of Pakistan. An excellent, detailed study by Gustav Papanek[26] shows how Pakistan created a class of "capitalist-industrialist-entrepreneurs" pretty much from scratch almost overnight— in not much more than five years. Protection played a key role.

Papanek notes that "Pakistan like other countries in Africa and Asia, not only lacked industrial entrepreneurs; it seemed unlikely to develop them in the short run… [but] in fact industry grew rapidly, indeed and was largely developed by private entrepreneurs."[27] He attributes it at the most proximate level to "annual profits of 50-100 percent on investment" in industry[28] in the early 1950s (which moreover "helped to restrict both capital flight and consumption").[29] By the late 1950s, Papanek reports, such profit rates had fallen to 20-50 percent. Nonetheless by then enough of a class of industrial entrepreneurs and momentum had been created for industrial growth to continue at heady rates.

Stephen Lewis (1970) and Akbar Noman (1991) also examine how industrialists/entrepreneurs/capitalists emerged and blossomed. At the center of a host of incentives for investment in manufacturing were

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New York): Mushtaq Khan (2012) "Governance and Growth Challenges for Africa"; Akbar Noman and Joseph Stiglitz (2012) "Strategies for African Development" and Meles Zenawi (2012) "Neo-liberal Limitations and the Case for a Developmental State".

[26] Papanek, Gustav(1967) *Pakistan's Development: Social Goals and Private Incentives* (Harvard University Press, Cambridge, Mass.). See in particular chapters II and III.

[27] *Ibid*. p.29.

[28] *Ibid*. p.33.

[29] *Ibid*, p.36.

rates of protection that provided high and assured profits.[30] With long-term credit at modest interest rates provided in ample measure by two development banks—Pakistan Industrial Credit and Investment Corporation (PICIC) for large industries and the Industrial Development Bank of Pakistan (IDBP) for medium sized industries—in a context of reasonable macroeconomic stability, investment and accumulation boomed.

The aforementioned Lewis study was undertaken under the rubric of the highly influential OECD research program on trade and industry directed by Little, Scitovsky and Scott (LSS) that resulted in their seminal synthesis volume and accompanying country studies.[31] Even as LSS noted and criticized the many pitfalls of the protection regime they pointed out that "within our seven countries, only Pakistan had to discover an entrepreneurial class" and as the accompanying country study, Lewis (1971) showed, it had done so well within a decade.

LSS and Lewis agree with Papanek (1967) on this count but they differ from him, in emphasizing the static inefficiencies generated by protection. Indeed, LSS go as far as to suggest that the rapid industrialization that Pakistan experienced was so inefficient that value-added at world prices remained almost negligible. However, this claim of LSS has been subjected to several criticisms with the upshot that there is little doubt that these inefficiencies are much exaggerated.[32] The

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[30] Lewis, S.R. (1970), *Pakistan; Industrialization and Trade Policies* (OECD, Paris). Noman, Akbar (1991) "Industrial Development and Efficiency in Pakistan: A Revisionist Overview", *The Pakistan Development Review*, Vol. 30, No. 4 (Winter 1991).

[31] Little, I.M.D., Scitovsky, T. and Scott, M.F. (1970) *Industry and Trade in Some Developing Countries,* (OECD, Paris).

[32] See Noman (1981) *op. cit*. for the compelling reasons for considering the LSS estimates of inefficiency to be grossly exaggerated and references to other relevant studies, including Kemal, A.R. (1974) "The Contribution of Pakistan's Large-scale Manufacturing Industries Towards GNP at World Prices", *The Pakistan Development Review*, vol. 13. No. 1.

system of protection in Pakistan had many excesses, irrationalities, and attendant inefficiencies but they were nowhere near as bad as claimed by LSS and Balassa (1971)[33]. Moreover, there was considerable learning with productivity growth and declining inefficiencies over time[34].

Indeed, Pakistan's GDP and industrial growth accelerated to what came to be known as East Asian miracle levels before Korea, as did the emergence and growth of manufactured exports. Such exports in the mid-1960s exceeded those of Korea by a substantial margin. Korea actively sought to learn from Pakistan, including by sending the staff of its economic ministries for training there.

Whatever the inefficiencies of Pakistan's industrialization, there are, arguably, some important lessons about creating or building the institution of capitalists/entrepreneurs, albeit whilst avoiding the excesses that vitiated Pakistan's trade and related policies. The rates and variability of protection in Pakistan during the 1950s and 1960s were so high as to leave considerable scope for improvements in trade polices while still providing the critical level of incentives for the building of a group or class of economic agents with the ability and willingness to invest in modern, transformational activities.

6. CONCLUDING REMARKS

The case for infant capitalist or any other rationale for protection has to be tempered in the light of the many failures of interventionist policies for trade and industrialization. But the dangers of excessively high and irrational protection can—and should—be avoided. We have lessons of failure that were not available or widely

[33] Balassa, B. and Associates (1971) *The Structure of Protection in Developing Countries* (Johns Hopkins Press, Washington).

[34] See, for example, Ahmed, Meekal (1980) *Productivity, Prices and Relative Income Shares in Pakistan's Large-Scale Manufacturing* (D.Phil. Thesis, Oxford University); and Kemal A.R. (1978), *An Analysis of Industrial Efficiency in Pakistan, 1959-60-1969-70* (PhD thesis, University of Manchester).

appreciated in the 1950s and 1960s and perhaps even in the early 1970s.

The importance of an experimental approach that scales up successes and abandons failures quickly is one of the lessons of success. However, learning and implementing the lessons of successes and failures well does demand capacities that not all governments have. More precisely, the risks and rewards depend on the particular circumstances of a country including its governance. But governance capabilities are not given and immutable: the question is not only what governance capacities exist at any point in time, but what need to exist and what can be built up at what speed. This way of posing the question is all too often ignored or neglected.

As noted above, the absence of protection of infants also carries risks. Inevitably, there are and will be rents and corruption everywhere. The questions are what forms of corruption are most intolerable, what forms can be eliminated and how to minimize the negative effects of corruption and rents, and channel them into productive activities and learning. A blanket attempt to eliminate all corruption and rents, as is the avowed aim of the good governance agenda that has become so dominant in the policy discourse, may make the pursuit of the best the enemy of the good by a failure to prioritize and by unintended consequences.

Diverting rent-seeking towards rents that accrue from investing in domestic transformational activities such as industry in poor countries can be done by a well-designed system of protection. We have a much better appreciation of the need to avoid extremes of level and variability of protection, but some variability is needed: broadly speaking moderately nigh for simple consumer goods in which low income countries have comparative advantage, lower on intermediate goods (none for those that are inputs for exports) and very low or none for capital goods.

Trade policies need to be embedded in a vision, a strategy for economic transformation, in *industrialization* policies (broadly understood to include modern activities in which learning is important). Managing the moral hazard emanating from socializing risks of investment and accumulation in industry requires ensuring that infants grow and learn. The successful cases provide ample evidence of the role

of exports and competition in achieving that: protection and export promotion can co-exist and competition can be gradually increased.

Another challenge is to avoid exchange rate overvaluation in resource-rich and heavily aid-dependent economies. That is beyond the scope of this paper, except to point out that such overvaluation is an argument for protection. Indeed, trade liberalization in such a context can exacerbate the adverse effects of currency overvaluation and arguably did so in some African economies.

This is reflected in the de-industrialization or "de-transformation" of African economies in their lost quarter-century that has not been reversed even as economic growth has accelerated in the past decade or so. Bringing about that reversal, in particular the role that trade policies can play in facilitating Adam Smith's "previous" or Karl Marx's "primitive" accumulation or just plain private sector investment in domestic activities that transform the economy is what we have been concerned with. Infant capitalists establishing infant industries in infant economies need some protection. They also need long-term finance at reasonable interest rates. These considerations were neglected in the so-called Washington Consensus inspired reform programs. The neglect remains to be rectified.

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THE RETURN OF INDUSTRIAL POLICY:

(What) Can Africa learn from Latin America?

April 2013

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Abstract

High growth in Africa and the changes in the global economic landscape have contributed to redefine development policy and open new spaces for debating the role of industrial policies in promoting structural transformation and development. Despite the high growth of Africa during the last decade, the continent not solved the problems of youth employment and low productivity of the domestic industry. Nor it has seen the flourishing of domestic entrepreneurship. After decades in which industrial policies were banned from the development agenda, their return is welcomed. However "What to do?" and "How to do it?" remain unanswered questions. Latin America is often regarded as a "failure" in contrast with the "success" of South East Asia. Nonetheless, the region has accumulated learning about designing and implementing industrial policies, especially taking into account the resurgence of interest in the last decade. The Latin American experience in industrial policies offers lessons that could help the policy making process in

[1] The views expressed in this paper are those of the author and do not necessarily reflect those of the Organisation. This paper is part of the background research carried out by the Author in the frame of the elaboration of the *OECD Perspectives on Global Development 2013- Shifting up a Gear: Industrial Policies in a Changing World*, OECD (2013, forthcoming), Paris.

Africa, if adapted to the specificities and varieties of its different countries.

1. INTRODUCTION

Africa is growing. The development debate in Africa has shifted from how to overcome poverty in a low-growth continent to how to profit from the high growth momentum. The rise of China and its appetite for raw materials have contributed, to a large extent, to boosting growth and to raising dynamism in African markets. Poverty has been decreasing, access to information technologies has increased in most of the countries of the region and new partners have emerged in trade and investment. Media, on their side, are playing their part portraying Africa as the next "booming" continent, with a growing and young population that could be a big reservoir for growth and development in the medium-term. However, all that glitters is not gold, and Africa still suffers from deep structural problems. Youth employment is high and growing; middle classes are emerging with new demands and aspirations that need to be addressed. The African production structure is still weak, with few domestic companies operating at the technological frontier and with the majority of firms lagging behind in terms of productivity and innovative capabilities. Diversification and upgrading are, in fact, often confined to "islands of excellence" within the countries of the region.

While optimism regarding growth and development opportunities abounds, there is growing recognition that the new context is not a guarantee of structural transformation and job creation for Africa, unless targeted policies are implemented (Chang, 2012; Greenwald and Stiglitz, 2012; Noman, 2012; Noman *et al*. 2012). In addition, the new global economic context is changing the debate on development policy, and it is re-opening the debate on industrial policies. While the Washington Consensus had wiped them away from the policy mix, the new global economic context and the growing discontent with conventional economic approaches are contributing to bring industrial policies back on the development agenda. Few believe today that open and free global markets would allow each country to specialize in the "best" possible sector/activity. However, "what to do?"

and "how to do it?" are questions with no easy answers. In Africa, in particular, most of the good practices and policy advices look even more difficult to implement: corruption, weak states, lack of public resources, low entrepreneurial culture, elites, poor infrastructure and skills are often quoted as barriers for designing and implementing effective industrial policies in the countries of the region. In addition, there is a generalized policy aversion about government "interventions" in most Ministries of Finance in African countries. This, matched with the recognition that "most of the policy tools applied by South East Asian economies during their catching up are not available anymore," turns industrial policies into an option with low feasibility and political acceptability in many countries of the region. Yet, things are changing.

Industrial policy in the new global economic landscape is much more than the policies applied by South East Asian countries in the past. During the last decade there has been a resurgence of interest in industrial policy at the global level, in OECD and in developing countries (Cimoli *et al*. 2009; Naudé, 2010; Lin, 2012; OECD, 2012a; OECD, 2013a). Latin America has often been regarded as a "failure" in contrast with the "success" of South East Asian economies[2] in respect catching up and industrial policies. However, the region has accumulated an extensive experience in designing and implementing industrial policies, and has advanced, particularly since the last decade through a process of trial and error (Peres, 2009; Peres and Primi, 2009; Devlin and Moguillansky, 2012; Coutinho *et al*. 2012). Latin America is far from having solved its development problems and it is still struggling in tackling inequalities and achieving economic transformation. But the region has been witnessing high growth, the emergence of new middle-classes with new aspirations and demands and a renewed commitment of many governments to promote science, technology and innovation as pillars of new development strategies more in line with the new global economic landscape. Like Africa, Latin

[2] What is a "failure" in the Latin American experience is also part of the debate. Some argue that the Import Substitution Policies of the 1950s and 1960s have been a failure, while others see in the Washington Consensus recipes and in their diligent application the reason of the "failure" of the Latin American catching up.

America is also varied, with countries that differ in endowments, geography and institutions, as well as in size.

Can the recent experience of Latin America in industrial policies offer lessons for Africa? Policies are always time and context specific, but they are also shaped by regularities and general principles that make the sharing of practices and challenges in design and implementation a valuable exercise. The idea is not to find shortcuts or easy answers through the experience of others, but to enrich the analysis and add dimensions that might be under the radar in different geographic and economic contexts.

This paper aims at contributing to the renewed debate on industrial policy in Africa. It focuses on the changing economic landscape in which Africa is developing and it looks at the experience of Latin America in industrial policy to identify some policy principles that could be of help in shaping the debate in Africa. The paper is structured in three sections. The first describes the changes in the global economic landscape that are redefining the context in which developing countries are re-thinking about industrial policies. It focuses on the new geography of growth, production and trade and on the emerging new geography of innovation. The second discusses the implications of the new global context on development policy and the resurgence of interest about industrial policies. Finally, the third section focuses on identifying what lessons for Africa can be derived from the recent Latin American experience.

2. A CHANGING GLOBAL ECONOMIC LANDSCAPE

We are living in a fast changing world and our economies and societies are experimenting big transformations. Among the multiple (and interrelated) issues that are contributing to redefining development opportunities today, I will recall two aspects that are, to my view, crucial to understanding and contextualizing the return of industrial policies on the development agenda and that are determining some of the major policy challenges that developing economies are facing today:

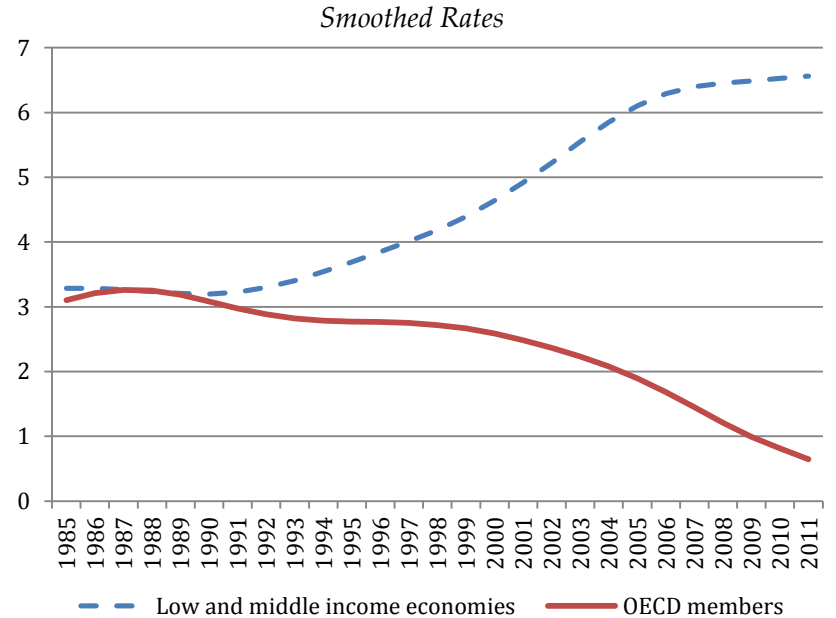
i. A new geography of growth, production and trade is emerging due to the rise of China and its growing integration into world trade; and

ii. A new geography of innovation is emerging too, but at a much slower pace. The increased diffusion of information technologies and growing priority given to science and technology in emerging countries are defining new micro-dynamics of learning, knowledge circulation and innovation and are contributing to create new innovation hubs in the world. However, Africa still lags behind other developing continents, including Latin America.

2.1. AN EVOLVING GEOGRAPHY OF GROWTH, PRODUCTION AND TRADE

Developing countries have been growing more than advanced economies since the late 1990s. Despite recent concerns about global economic slowdown, this trend is likely to continue, even though many emerging economies will be advancing at a slower pace than their previous two-digit growth pattern (OECD, 2010; 2013). This phenomenon has been driven mostly by China, but other countries, like India, have also contributed (Figure 1). This shift of the center of gravity of the world economy towards the East (and partially the South) has also contributed to make Africa the fastest growing continent in the world. While it is clear that growth is not enough for development, it is evident that it opens new opportunities for development and that it is challenging the existing the political economy dynamics of policymaking in developing countries. Policy priorities (and consequent agreements and disagreements) tend to change when policymakers discuss investment options in low-growth or in high-growth contexts.

Figure 1. Annual GDP growth rates by income group, 1985-2011

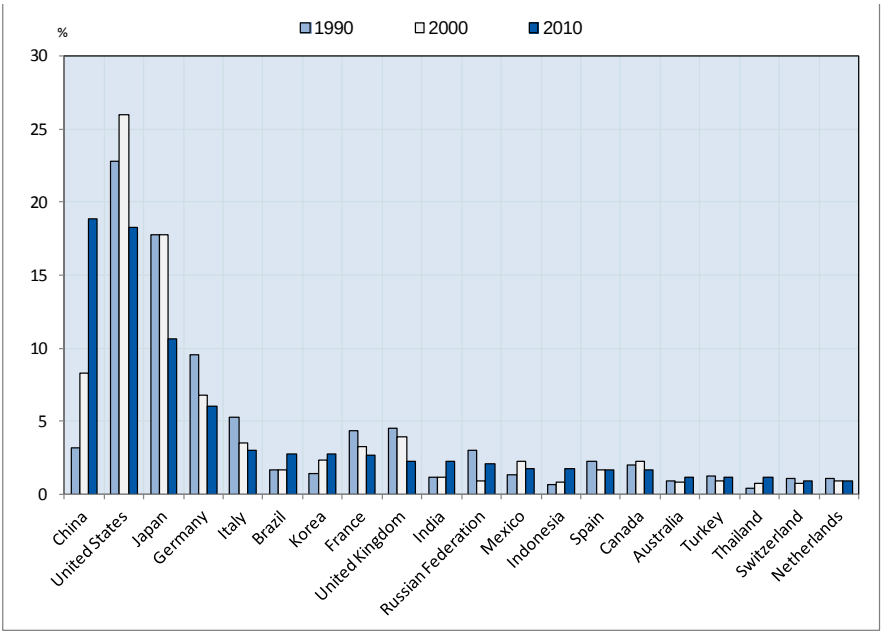


Note: Chile, Mexico and Turkey are included both in low and middle-income economies and in the OECD.
Source: OECD (2013), Perspectives on Global Development 2013- Shifting Up a Gear: Industrial Policies in a Changing World, OECD Paris, based on World Development Indicators (2012) and OECD National Accounts data files.

The new global geography of growth, where growth poles are today more numerous and increasingly localized towards the East and the South, is coming together with changes in the organization of production at a global scale and with new trade and investment patterns. China is today the world's largest manufacturer. Its share of total world manufacturing value added (18.9 percent) outperformed that of the US (18.2 percent) in 2010 (Figure 2). Over two decades its share in world manufacturing output has increased six-fold. The rise of this giant is reshaping the global landscape, and developing countries are aware that they need to take this into account when designing their strategies for the future (Barros de Castro, 2009; Castro and Castro, 2012).

Figure 2. World top 20 manufacturers, 2010

Country share in total world manufacturing value added

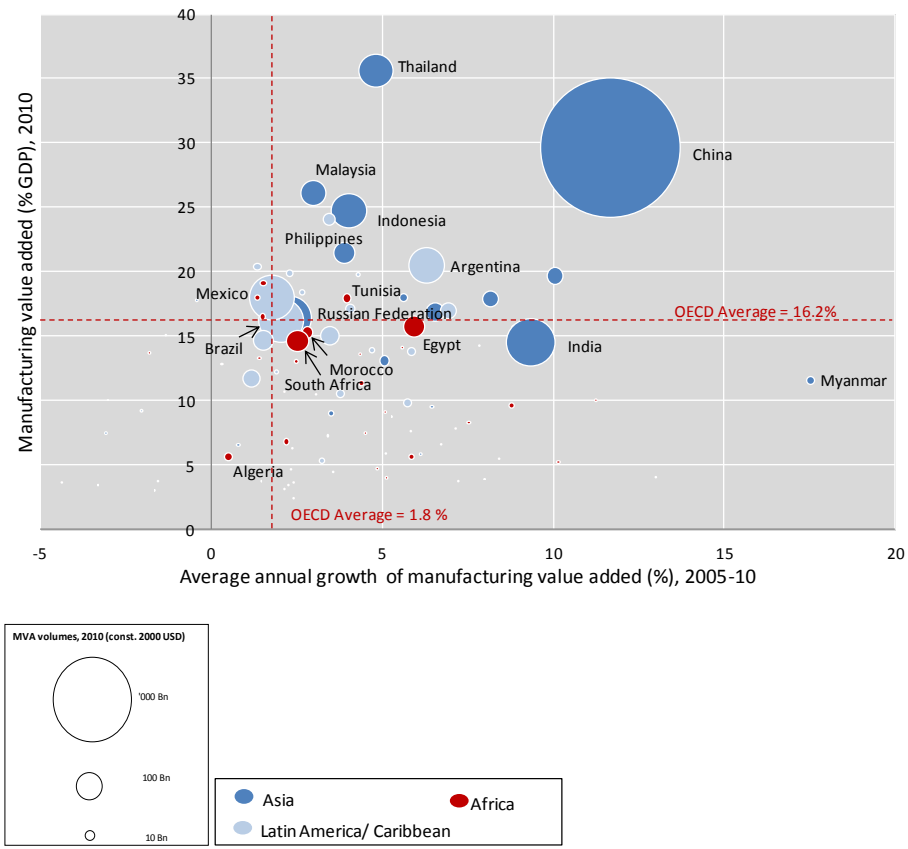


Note: Manufacturing refers to industries belonging to International Standard Industrial Classification (ISIC) divisions 15-37. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The origin of value added is determined by the ISIC, revision 3.
Source: OECD (2013), Perspectives on Global Development 2013- Shifting Up a Gear: Industrial Policies in a Changing World, OECD Paris based on United Nations Statistical Division, National Accounts Main Aggregates Database, March 2012.

Manufacturing is shifting to China, but it is also growing in most developing economies. The share of non-OECD economies, without China, in total world manufacturing value added rose from 14 percent in 1990 to 20 percent in 2010 (UN, National Accounts Main Aggregates Database, 2012). And even though Africa is suffering from deindustrialization with respect to the 1980s, more recent trends are

indicating a renewed dynamism in the countries of the region. For example, Egypt, Morocco and South Africa have much lower shares of manufacturing in their GDP than the OECD average, but their manufacturing output has been growing more rapidly than in OECD countries between 2005-2010 (Figure 3).

Figure 3. Manufacturing, intensity and dynamism in developing economies, 2005-10.



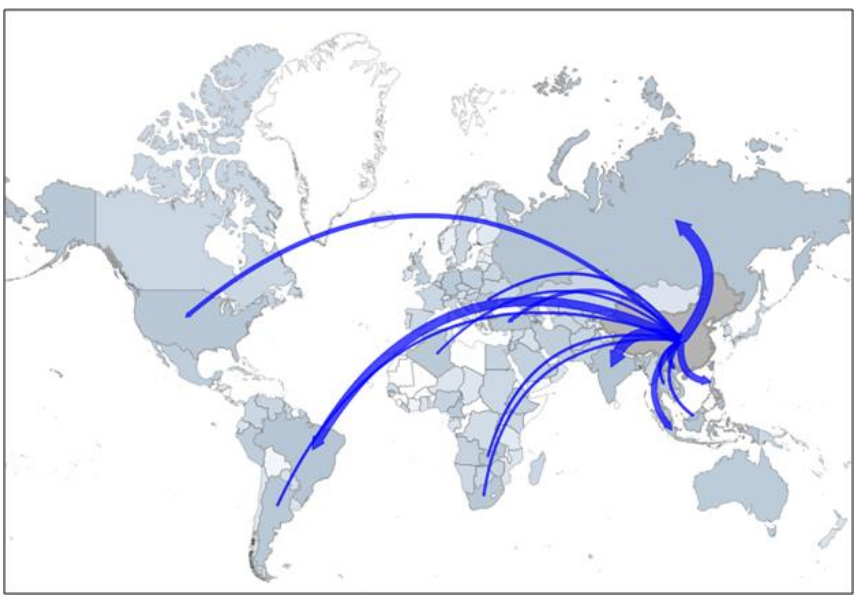
Note: OECD average: Manufacturing value added (% GDP) =2009 data or latest.

Source: OECD (2013), Perspectives on Global Development 2013- Shifting Up a Gear: Industrial Policies in a Changing World, OECD Paris, based on UN National Accounts Main Aggregates Database, World Bank, World

Development Indicators, and OECD STAN Database, for OECD average, July 2012.

These changes in growth and production are accompanied by growing trade between developing economies. China, India and Brazil are emerging trade partners for Africa. They increased their share of total African trade from 2.3 percent and 1.7 percent respectively in 2000, to 7 percent and 3 percent in 2011 (OECD, 2013). China is playing a determinant role in African trade. In 2011, it accounted for 19 percent of total African exports, while in 2000 that share was only 5 percent. African imports from China also grew from 5 percent of total imports in 2000 to 17 percent in 2011 (OECD, 2013a). China has also started to generate FDI outflows in a growing number of African countries (Figure 4). These new trade partnerships are contributing to open new technology transfer and learning opportunities.

Figure 4. Top 15 destinations of Chinese foreign direct investment, 2003-12.



Note: The size of the arrows indicates the number of jobs created by Chinese FDI from January 2003 to December 2012 in the top 15 recipient countries. The graphic only includes data from greenfield and expansion-related investments; merger and acquisition transactions are not captured. This map is

for illustrative purposes and is without prejudice to the status of or sovereignty over any territory covered by this map.
Source: OECD (2013), Perspectives on Global Development 2013- Shifting Up a Gear: Industrial Policies in a Changing World, OECD Paris, based on fDi Markets. A service from the Financial Times Ltd., 2012.

In addition, growing developing economies are expressing new and diversified demands. Their growing middle classes are opening new consumer markets to be captured. These new consumers represent an enormous potential, and companies will struggle to gain their confidence and sell to them. This is happening not only in Asia, but also in Latin America and Africa. This rising demand can represent a strong incentive for domestic companies to develop products and services, and also to customize existing solutions to domestic market needs. The competition to gain those markets will be harsh. So far established multinational companies (MNC) have not being particularly active in targeting the emerging middle classes, but all points to the fact that they will increasingly do so (McKinsey, 2012). It is probable that MNCs will partner with local firms and institutions in order to penetrate the new market segments. The growing demand together with the new learning opportunities could be powerful allies for production transformation strategies in developing countries.

2.2. A NEW GEOGRAPHY OF LEARNING AND INNOVATION IS EMERGING TOO, BUT AT A MUCH SLOWER PACE

In addition to the new geography of growth, production and trade, a new geography of innovation is also emerging, but at a much slower pace. The diffusion of information technologies has contributed to increasing the possibilities for knowledge transfer and processing. Learning is increasingly happening not only through market channels. The new forms of knowledge flows go beyond capital imports or FDI and happen through networks and growing mobility of skilled personnel. Research partnerships between agents facing similar challenges and having complementary competences are happening on a global scale. A growing number of cities or localities hosting specific

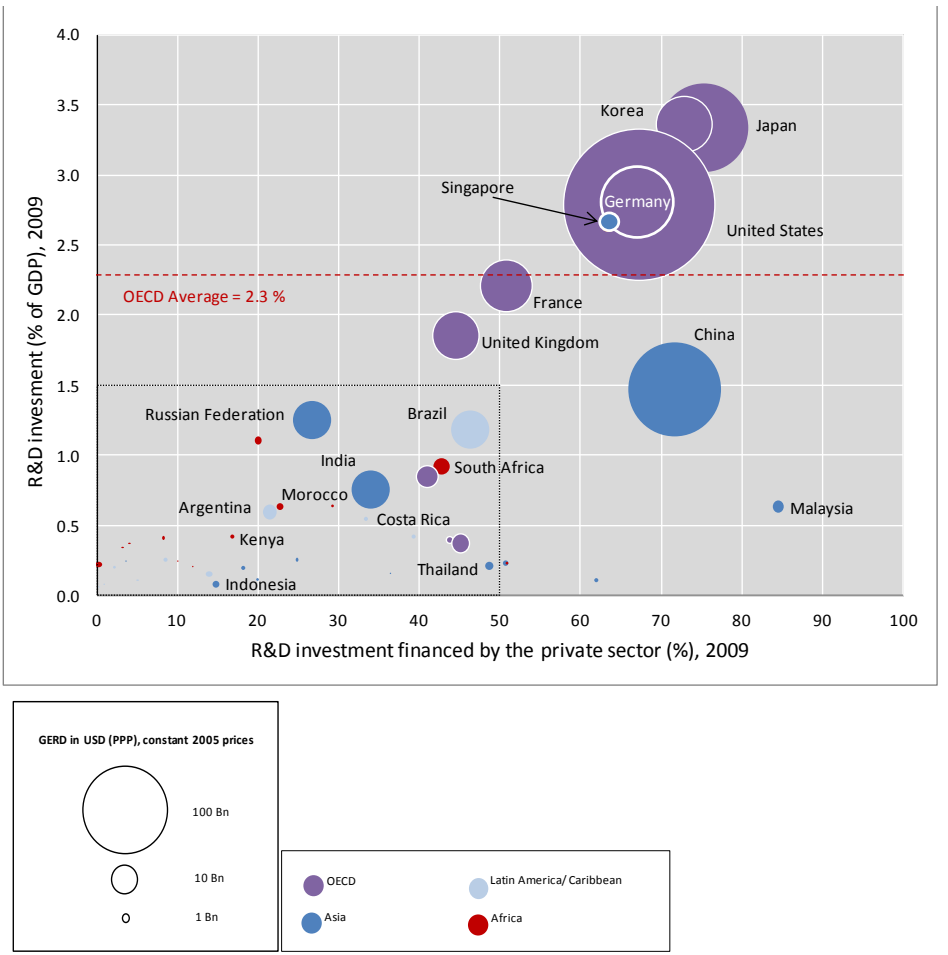
competences are investing in "branding" themselves to reaching new partners beyond any national effort. For example, the French city of Lyon, hosting a cluster of companies with high tech and logistical competences in urban lighting, is involved in a knowledge transfer partnership with growing Vietnamese cities willing to implement new forms of urban lighting. This is not an isolated trend; in the new global context new forms of partnership are developing by which highly localized competences and businesses can establish global partnerships to open new business and learning opportunities. But often only the localities with empowered governments and with at least basic capabilities are taking advantage of these new opportunities.

A growing number of developing economies are becoming attractive locations for research and innovation. For example, a raising number of R&D centers are opened in developing countries thanks to public policy support and to new business strategies of MNCs that increasingly perceive developing economies as future markets. These new trends are opening opportunities for learning and accumulating capacities in developing economies that were not available during the first generation of FDI that only included delocalization of the lowest levels of production phases.

Developing countries are also increasing their investment in skills, science and technology. Nonetheless, the gap with OECD countries persists (Figure 5). China is emerging as an innovator. Its image as a low-cost competitor is still present, but it is not predominant anymore. Chinese factories have accumulated capabilities and learning and are now moving up in the value chains. China more than doubled R&D expenditures over the last decade and in 2009 invested 1.5 percent of its GDP in R&D (the OECD average for the same year was 2.3 percent) and it is increasing training technical workers and scientific and engineering personnel. In Latin America innovation is, at least in terms of declarations, a key priority for most countries. However the countries of the region are far from the OECD average in R&D expenditures, patents and trademarks. Brazil, for example, is the leading country in the region, and its investment in R&D was 1.2 percent of GDP in 2010. Africa lags behind; investment in R&D, patents and trademarks are minimal when compared to other regions. The majority of African countries invest little in R&D and the private sector hardly engages in

innovation activities. No African country devotes more than 1 percent of GDP to R&D and most of the financing comes from the public sector.

Figure 5. R&D intensity and private sector commitment in selected countries, 2009.



Note: 2009 or latest available year.

Sources: OECD (2013), Perspectives on Global Development 2013—Shifting Up a Gear: Industrial Policies in a Changing World, OECD Paris, based on OECD MSTI Database for OECD countries, RICYT for Latin America and the Caribbean: RICYT; UNESCO for other countries.

3. CHANGES IN DEVELOPMENT POLICY AND THE "RETURN" OF INDUSTRIAL POLICY

3.1. THE QUEST FOR NEW FORMS OF ECONOMIC THINKING

The new geography of growth, trade and innovation is not only changing development opportunities; it is also contributing to redefining development policy and the main issues on the development agenda. On the one hand, there are emerging global development challenges, like health and environment that are calling for new forms of global governance. On the other hand, there is wide consensus that growth, albeit necessary, cannot be an end in itself. Growth needs to be inclusive and sustainable, and not only for reasons of external pressures, but for growing internal demands. The new "middle classes" and the growing young populations in emerging and developing countries are increasingly expressing new aspirations and demands, putting pressures on national policy choices and calling for new responses to increase their opportunities and achieve better lives. These new demands represent a growing source of pressure for governments in emerging and developing economies to shift towards new development models that match global aspirations with local needs. Examples of these trends range from the growing demand for better and fairer education in Chile, a high-growth and well export-performing country in Latin America, to the call for social and economic fairness expressed by the Arab Spring. On the financial side, the new emerging countries are discussing how to close the financial gap and mobilize new sources of finance for development. The project of a BRICS bank could represent a major novelty in development finance (and hence in priorities for investment); however, the agreement between these emerging countries will require some time as many fear the potential predominance of China in this sphere. In addition, the 2008 financial and economic crisis has contributed to shake the fundamentalism in free markets and has re-opened a debate on the role of the state in contemporary capitalist economies (Skidelsky, 2009; Griffith-Jones *et al*. 2010). A growing quest for new forms of economic thinking and policy models is arising in

OECD and non-OECD countries due to the growing recognition that markets alone do not always perform optimally for the society.

From the 2000s onwards, as the promises of the Washington Consensus were not fulfilled, developing countries have started to look at new development models. The rise of political leaderships concerned with the welfare impact of traditional market-led growth policies, together with the growing discontent with conventional growth recipes and the more ambitious demands and raising aspirations of the societies in growing developing countries, are concurring to define a new landscape in which the fundamental trust in self-correcting markets is started to be questioned, or, at least, not automatically assumed as the reference for policy action. This has implied on the one hand, the return to classical ideas of economic development, including the recognition that production activities differ in their capacity to generate linkages and raise aggregate productivity and a growing attention towards the role of demand, especially the domestic one. But it has also required searching for new policy models capable of taking into account the specificities of the new landscape, characterized by increasing relevance of (local, regional and international) networks for production and innovation, higher speed of diffusion of information (when not of knowledge), and higher mobility of capital and talents.

How the changing economic landscape will affect development policy is still to be clarified on many fronts (including the future of aid, development finance and development cooperation priorities). However, a major difference with respect to the previous decades has already emerged: production structure (i.e. what countries produce, trade and consume and how they organize these processes) is back on the development agenda. Production structure is, once again, seen as an essential determinant of growth, productivity and income distribution. Even the discussion on the post-2015 MDGs has revealed that the neglecting of the "production and structural side" in the first generation of MDGs had been a weakness that needed to be addressed in the next generation of development goals, as often outcomes on poverty and inequality are shaped by structural issues. However, there is also a growing recognition that the development debate and the challenges differ today from the ones of the 1950s and 1960s where the structural issues were at the core of the development agenda. Today the level of integration of global economies (especially on the financial side) is much

higher, thus requiring different types of policy approaches. On the other hand, the diffusion of information technologies has deeply changed the speed of information flows, thus creating new pressures for the accountability of policy actions.

3.2. THE RESURGENCE OF INTEREST IN INDUSTRIAL POLICIES

Together with the renewed interest in the "structural" dimension of development comes the resurgence of interest in industrial policy. After its golden age—which spanned from the 1940s to the 1970s—industrial policy was banned from development strategies in the name of structural adjustment programs. From the late 1940s onward, the majority of developing economies had put in place strategies, with mixed results, to foster the creation of endogenous technological and production capabilities to shift from agricultural to industrialized societies (Amsden, 1989; Wade, 1990; Reinert, 2007). With the upsurge of the debt crisis, the development agenda shifted from policies to foster structural change and productivity catching up, to narrowing poverty gaps. Poverty was considered an area that needed targeted strategies and active policy support, while the development of industrial capabilities was assumed to be an automatic process guaranteed by open capital and good markets, which once freed from the ties of state intervention and regulation would have conduced countries to specialize in exporting what they were best at. This was not the case in practice. While structural adjustment programs and globalization contributed to macroeconomic stability and fostered modernization of production activities, they also brought about job losses and dismantling of production and institutional capabilities in key manufacturing and technology areas, contributing to truncate the state-led industrialization efforts started in many developing economies in the previous decades (Fajnzylber, 1983).

The resurgence of interest in industrial policy does not mean that the controversy about it is over. But it seems that after decades of good and bad examples of industrial policies and in the presence of a new, more challenging economic landscape, the discussion is shifting to a more pragmatic level where economists and policymakers discuss not

about the need (or not) of industrial policy, but on "what" to do and on "how" to do it (Chang, 2011). Somehow there has been a convergence towards recognizing that state intervention is needed in order to engender processes of structural change and favor the transition of the economy towards superior stages of development, in which rents are extracted more from knowledge than from capital accumulation or raw materials (Reinert, 2007; Cimoli *et al*. 2009; Chang 2012; Lin; 2012).

A major novelty in the current debate is that industrial policy is less and less viewed at as a set of targeted government interventions linked to the South East Asian policy management style. Industrial policy today is much more than a "South East Asian phenomenon". The interest on industrial policy today is coming from different countries and in different ways (Rodrik, 2004; Chang, 2009; Cimoli *et al*. 2009; Noman *et al*. 2009; Noman, 2012; ECLAC, 2012; Lin, 2012; OECD, 2012a, 2013a). China is a peculiar case; it has been implementing industrial policy for a long time, mixing open economy approaches with strategic management of accumulation of capabilities and technology transfer for domestic learning. Most South East Asian economies are implementing production transformation strategies each with a peculiar focus; Malaysia is fostering FDI spillovers and SMEs development, Singapore is promoting technological upgrading and global integration and Korea is focusing on promoting national champions and the development of new key technologies.

A growing number of OECD countries are reopening the debate on industrial policies due to the long-lasting effects of the 2008 economic and financial crisis (OECD, 2012a). Austria, France and the UK are implementing new industrial policies to boost the competitiveness of their domestic industries and to create better jobs. The US is crafting new strategies to face the growingly competitive global scenario by implementing new manufacturing and innovation initiatives to strengthen the national production and technology clusters, as well as by promoting the creation of new US-based firms. In Latin America, the return of industrial policy predated the 2008 financial and economic crises. Brazil re-launched its industrial policy in 2003 and since then it is refining the institutional and financial arrangement for its production transformation strategy based on technological upgrading, diversification and specialization. Industrial policy is also rebounding in Africa. South Africa is the most pro-active country with its multi-annual

Industrial Policy Action Plan (Zalk, 2012), but Morocco is also actively involved in designing and implementing a new industrial policy to better leverage from growing FDI in key strategic sectors, as the car industry. Senegal, on its side, is planning to re-create a national development bank to channel resources to production development.

Several issues are contributing to the resurgence of interest in industrial policy in developing economies:

i. First, sustained growth and catching up are not low-hanging fruits for most of these countries. Globalization with a booming China opens new opportunities but also threats for growth job creation and is requiring new strategic approaches to grasp the benefits of the new scenario (Dahlman, 2011). China evidently impacts different countries in diverse ways. It is boosting the demand for natural resources exports contributing to sustain growth in several developing economies; it is fostering new investment flows in the developing world contributing, for example, to the new dynamisms in African markets and it is challenging the survival of low-cost assembly and manufacturing in most developing economies. The rise of China is pushing countries to look at trade, manufacturing and defense under new angles due to the changes in the global geopolitical order. Creating and retaining manufacturing, technological and scientific capabilities is becoming more difficult and it is rising in countries' priorities.

ii. Second, growth in emerging and developing economies has also opened spaces for proactive policies, which were not available in the 1980s and 1990s. In Brazil it allowed boosting investment for production development and social inclusion, contributing to create incentives both on the supply and on the demand side since the early 2000s. In Colombia the rise of revenues from natural resources has recently contributed to reopening the debate on the competitiveness strategy and on how to channel funds from natural resource extraction to support innovation and regional development. The coming into power of political leaderships in favor of a pro-active role of the state in fostering structural change also contributed to creating pressures to

design and implement industrial policies in countries like Brazil and South Africa.

iii. Third, the costs of poor industrial and innovation capabilities have become more visible. No country has developed without the creation of a sound and productive scientific and manufacturing base (Amsden, 1989; Wade, 1990; Chang, 1994; 2002; Reinert, 2007; Cimoli et. al 2009; Lin, 2012). This is even truer in global economies. The existence of knowledge-based capabilities is the precondition to grasping the benefits of global markets. The issue is not merely to be part of value chains, but to be in the position that allows capturing the most of their value. It is the existence of production and knowledge capabilities that allows seizing the benefits of global economies, not the other way round. Manufacturing has been changing in nature, and *per se* cannot be the only locus for absorbing the rising mass of workers, neither in OECD nor in emerging markets (IDA, 2012). But it is widely agreed that it is a key area to creating better jobs, promoting productivity growth and engendering linkages with other sectors. History shows that manufacturing is key to contributing to sustain growth and productivity and that it fosters the accumulation and diffusion of technical change. Advanced economies too, which have been praising the benefits of the "tertiarization" of the economy, are increasingly worried about their loss of manufacturing competences, especially in the aftermath of the 2008 financial and economic crisis (OECD, 2012a; IDA, 2012).

When governments envisage a more pro-active role of the state in the economy, the risks of capture and rent mismanagement are of course high. Policymakers and the public administration are often well aware of the major bottlenecks in the policy processes and of the difficulties in implementing industrial policies. But new policy circles in developing countries today are starting to debate on how institutions and performance-based management schemes can help to maximize the effectiveness of government intervention to reduce lock-in and capture, instead of preaching for a minimalist policy approach to avoid mistakes and failures.

Since the last decade many developing countries are designing and implementing new industrial policies in a variety of ways. In general industrial policies involve a set of coordinated actions directed to change the prevailing specialization pattern of a country over the medium and long term, by increasing the rents derived from knowledge and innovation with respect to the ones deriving from the extensive use of raw material and labor. Often industrial policies include government actions designed to support the creation of endogenous production and technological capabilities in areas that are considered strategic for national development. The identification of these activities is country and time specific, but it is also based on the emulation of successful past experiences. When they are successful, industrial policies contribute to achieving a deep transformation of the socio-economic structure of the country in the medium and long run (Chang, 1994; Reinert, 2007; Cimoli *et al*. 2009).

By observing the theory and practice of industrial policies in different countries, it is possible to identify the principal features that shape them. Industrial policies differ, or resemble, across countries, for their governance, priorities, objectives and policy mix (Table 1). Some countries have a centralized/plan-based industrial policy model. Targets are set, and objectives and lines of action are formalized in national plans. This is the case for most East Asian economies, as well as for Brazil, Morocco and South Africa. But even countries without a formalized "industrial policy plan" or strategy implement *de facto* an industrial policy by financing research and technology transfer, by setting up regulations that favor certain types of agents over others and by promoting trade in specific industries. This is, for example, the case of the US where industrial policy follows what can be called a "decentralized/initiative-based" system where a variety of Federal and State-led programs and initiatives contribute to establishing a preference for American industry, including the intellectual property regimes law and some of its provisions, such as the Bayh-Dole Act (Cimoli, Coriat and Primi, 2009; Block and Keller, 2011).

Industrial policy has often a strong regional and/or local component. In some countries there is a prevailing bottom-up approach where most of competences at the level of industrial and technological capabilities are managed at the sub-national level; Germany and India are cases in point. Other countries follow a more top-down approach

with reduced margin of maneuver for regional and/or local authorities, as it happens in South Africa. In other cases a more mix-approach prevails where national initiatives coexist in a more or less coordinated way with regional actions. This is the case in China, Brazil and Italy, for example.

In addition, industrial policy today needs to deal with the issue of the greening of the economy. The green economy represents a potential new paradigm for which industries need to be prepared for (Mathews, 2012). Not all will be leaders in green production and technologies, but there are windows of opportunities for first comers in this area that should not be disregarded by developing countries. In fact, developing economies include territorial and social inclusion (i.e. Brazil and India) and green (i.e. China and South Africa) as priorities in their industrial policies.

Developing countries often face multiple challenges when designing their industrial policies. Some industrial policy actions aim at diversifying the production structure, contributing to creating capacities in new economic sectors (e.g. electronics, pharmaceuticals or biotechnology, etc.), or in new types of activities (e.g. design, research and development, value-added services, etc.). Other actions aim at fostering specialization and upgrading of existing activities and sectors. This means favoring modernization of production, increased efficiency and improved performance of existing companies or clusters of entire sectors. But industrial policy also aims at strengthening the density of a production system by fostering entrepreneurship, networks and collaborations, on the basis of the recognition that denser systems are more resilient, innovative and productive. This also implies including specific policies to address the drawback of persistent informality in developing countries (Srinivas, 2012). Each of the objectives poses specific challenges to the policymakers: how to identify the beneficiaries and stakeholders? Which incentives are needed to get them interested in the policy and which forms of dialogue are better suited to foster the necessary public-private partnership required for going from design to implementation?

In every country industrial policy is often nested in a strategic vision about the country's development path. The end is not to strengthen national economic actors (weather large or small firms or clusters); the end is to achieve higher growth, better jobs by

simultaneously improving the positioning of the country in the global political and market place. This strategic dimension of industrial policy requires actions in multiple fields, well beyond private sector operations. For an industrial policy to be effective, targeted actions in finance, skills, infrastructure and trade are needed, as well as alignment with macroeconomic policy and competition policy. This systemic dimension is often difficult to achieve, but it is what ultimately determines the effectiveness of industrial policy in the medium and long term.

Table 6. Main features of contemporary industrial policies.

POLICY MODEL GOVERNANCE	**Plan-based:** (*i.e.* formalised in national development plans/strategies). *Ex. Brazil, India, Korea, South Africa.*	**Top-down:** (Low responsibilities for regional/local governments). *Ex. South Africa.*
		Mixed: (Co-existence of national and regional/local initiatives). *Ex. China, Brazil, Italy.*
	Initiative-based: (*i.e.* based on multiple-government-led initiatives). *Ex. US*	**Bottom-up:** (High responsibilities for regional/local governments). *Ex. Germany, Spain, India.*
PRIORITIES/SCOPE	**Traditional**	**Growth** **Job creation** **International competitiveness**
	Emerging	**Territorial inclusion & competitiveness** **Social inclusion** **Sustainable/green economy**
OBJECTIVES	**Diversification** (*i.e.* entry in new sectors/types of activities) **Specialisation and upgrading** (*i.e.* scaling up in local and/or global value chains) **Increasing the density of the production system** (*i.e.* fostering entrepreneurship, linkages, networks)	
POLICY MIX	**Industrial policy tools *strictu-sensu*** (*i.e.* direct and indirect incentives to firms; business regulation) **Trade policy and FDI** **Support to science and technology** **Skills development**	**Infrastructure building and upgrading** **Financing** (*i.e.* development banks) **Macroeconomic policy** (*i.e.* exchange and interest rate management) **Competition policy**

Source: Author's elaboration.

4. (WHAT) CAN AFRICA LEARN FROM THE RECENT LATIN AMERICAN EXPERIENCE IN INDUSTRIAL POLICY?

There are no blueprints for designing and implementing a "good" industrial policy. Each country will need to identify its own approach taking into account its vision for development, as well as its endowments and challenges. However, countries can learn from the experience of others. We are often told by experts on Africa, that "Africa has another history, challenges and heritage" and that hence, most policy recommendations valid for other parts of the world do not apply. Africa is also highly heterogeneous, it includes small and large economies, natural resource rich and poor countries, landlocked countries and islands, countries at war and countries that are consolidating their democratic systems.

Even though every country is unique and faces challenges that require a context-specific approach, lessons can be learned from the experiences of others. Countries learn how to implement policy by trial and error and by accumulating know-how and expertise. The past and the current successful cases show that industrial policy works better when it has clear priorities, it is capable of getting a constructive dialogue between the public and the private sector, and it mobilizes investments in bundles in critical areas, including infrastructure, skills and finance. Since some South East Asian countries have been extremely successful in implementing industrial policies and achieving structural transformation, it is common to look at their experience and try and identify lessons for other developing countries. Often the "success" of the East Asian experience is confronted with the perceived "failure" of Latin America. However, Latin America has also accumulated extensive learning in industrial policies, not only in the past, but also in the last decade. Latin America has witnessed a (slow) return of industrial polices (Peres, 2009). Clearly, the fact that industrial policies are back in the region to a different extent and under different forms is not a proof of their effectiveness and good management; structural transformations tend to occur over decades and often industrial policies deliver results on the medium and long run. But many lessons can be learned from the

ongoing experience of Latin American countries in designing industrial policies in the new and changing economic landscape.

The learning in industrial policies in Latin America can offer interesting contributions to the debate in Africa for several reasons. Both regions have been growing since the late 1990s and are facing the challenge of sustaining this growth and reducing inequalities in the long run. At the same time, they are both influenced by the new trends in their traditional OECD trade partners and in their emerging partners, which are redefining their development opportunities. In addition, they are both profiting from a good global momentum in which windows of opportunity for new comers seems to be more accessible due to increased diffusion of ICT, emerging global challenges such as the search for new and renewable energy sources and greener production and consumption modes, and changes in the organization of production at a global level, with growing specialization opportunities. In addition, countries in Latin America, as well as in Africa, are increasingly involved in developing new visions for their development in context of new societal demands and growing concern about equity. Most countries in the two regions have in fact suffered from a process of institutional weakening in the realm of science, technology and production in the aftermath of the structural reforms, and are now facing the challenge of design and implementing industrial policies with old or weak institutions.

Since the 2000s Latin America has witnessed a resurgence of interest in industrial policies. Brazil has been the pioneer, with the Integrated Industrial, Technology and Trade Policy introduced in 2003, that then evolved into the Production Development Policy in 2008 and in the *Plano Brazil Maior* in 2012. Other countries in the region have had a shier approach towards explicitly using the term industrial policy, but in practice sectoral technology initiatives and governments incentives to promote domestic scientific, technological and industrial development have been strengthened in most countries of the region. Argentina, for example, has created its Ministry for Science, Technology and Productive Innovation in 2007, signaling the willingness of the country to increasingly shift towards a more knowledge-based growth pattern. Chile has focused on promoting industrial clusters and has created a new government funds to promote innovation by extracting rents from mining.

The return of industrial policy comes in a new and rapidly evolving global context that calls for new policy approaches. The reshaping of the global development landscape and the rise of China are nor a blessing, nor a curse for developing countries. In the medium and long term, much of its impact on other emerging and developing economies will depend on the strategies and policies they will implement in the short and medium term. If the ultimate goal of industrial policy is still sustaining growth, productivity and employment, countries today need to do it by operating in global knowledge economies and by fostering at the same time social and territorial inclusion as well as the greening of production and consumption modes. The broadening scope of industrial policy and the increased interdependency of economic agents in global economies pose new challenges to the creation and retention of production and knowledge capabilities. How to better tap into the resources and competences available elsewhere? How to create the incentives to go beyond easy short term gains and engage in the costly and painstaking effort of building domestic capabilities?

Latin American countries are recognizing the importance of strengthening their production and innovation capacities. Despite the still-prevailing suspicion about the risks of failure of industrial policy, the wind is changing. The new context and the increased availability of information about countries' strategies are showing that a great deal of state intervention is needed to back up private sector dynamics and boost development. In the last decade several emerging and developing economies re-engaged in active industrial policies in Africa, Asia and Latin America.

Latin America looks today like a region in motion that is increasingly acknowledging the relevance of science, technology and innovation for development and that is, in different ways, trying to foster production transformation and upgrading though different channels (Peres and Primi, 2009; David and Moguillansky, 2012). From the recent experience of the return of industrial policies in Latin America it is possible to identify some lessons for Africa around the following eight main points:

4.1. REHABILITATING THE PLANNING FUNCTION IN GOVERNMENTS

Industrial policy is back in Latin America, but with different strengths and nuances in the different countries. Brazil is the country that more openly speaks about its industrial policy, however most Latin American countries have reinforced in the last decade government actions to strengthen domestic entrepreneurial activities and/or to promote a better inclusion in global value chains by promoting new forms of FDI and by increasing support to science and innovation. Achieving structural transformation in Latin American countries means overcoming several barriers—low skills, poor infrastructure, low demand and scant financing, for example. Critics often argue that getting all these conditions right is a luxury that most developing countries cannot afford. But clarifying the objectives of structural transformation helps in revealing the barriers and in creating a demand for articulating the necessary actions.

Regardless of the specific country approach, the countries of the region are facing a major governance challenge to rehabilitate the planning functions in countries where these capabilities had been reduced due to the extensive application of the structural reforms packages of the 1990s. In the last decade, Argentina, Brazil, Chile, but also smaller countries like Costa Rica, have re-strengthened their planning functions by creating inter-ministerial bodies for policy coordination. The institution of these councils is not a guarantee of their capacity to operate, but when matched by Presidential commitment they help in creating spaces for aligning actions of different ministries to the objective of structural transformation and production upgrading. In certain cases they can help in building trust and alignment with the Ministries of Finance, which often are the most adverse to endorse production transformation strategies.

4.2. RECOGNIZING THAT IT IS POSSIBLE (AND LEGITIMATE) TO GO BEYOND CURRENT COMPARATIVE ADVANTAGES

The heritage of structural reforms has contributed to a generalized perception that production activities and sectors are all alike

and that deliberate efforts to "build" competences in given technological and production fields were doomed to failure. However, one of the most welcomed changes in the policy discussion in Latin America in the post-Washington Consensus period has been the return of the sectoral dimension in innovation and competitiveness strategies; i.e. sectors differ for their impact on aggregate productivity and for inter-sectoral technological spillovers and for the ways in which they create, absorb and diffuse knowledge. Hence, policies need to openly take into account the sectoral dimension.

However, many countries in Latin America struggle when it comes to deciding how to prioritize actions. And often policymakers feel more comfortable (or face less opposition) when dealing with horizontal measures. The discussion on how ambitious should the policy be and how far from existing assets and competences a country can target are non-consensual issues in the region. A large economy like Brazil with a quite articulated industrial matrix and a young and growing population is putting in place a strategy (Brazil *Plano Maior*) with multiple targets: some incentives target the creation of frontier knowledge and technology, others aim at boosting the competitiveness of existing sectors and others target national priority sectors like energy and health. For smaller economies the issue is more challenging. Costa Rica has opted for a competitiveness model that focuses on the attraction of FDI as a lever to transform the economy, while Chile has followed a softer approach by promoting cluster development in areas where the country already had some advantages and capabilities (copper and mining, wine and ICT, among others). In addition, even in the same sectors some firms operate at the frontier and are well integrated in global production networks. Yet most of the domestic firms are small and characterized by low productivity and reduced international competitiveness, when they do not operate in conditions of informality. The experience of Latin American countries shows that horizontal measures have limited impact in context characterized by high structural heterogeneity.

The return of industrial policy is contributing to redefining the development debate and to re-legitimizing interventions to create new capabilities. This can be done in several ways, by promoting the upgrading and diversification of existing companies, by fostering the creation of new companies and by strategically dealing with foreign ones. While there is disagreement on how to choose the direction of

technical change, and who should do it, there is consensus on the fact that the new context opens opportunities for going beyond the current specialization pattern. Countries can mobilize different levers for strengthening capabilities, including financing of S&T development, public procurement, FDI and entrepreneurship promotion. Those instruments are not novel, but can be designed in new ways to be in line with the new scenario and be more effective.

Science, technology and innovation do not receive the same attention in all Latin American countries. Some countries are trying to exploit the synergies between industrial development and promotion of science, technology and innovation. Brazil is a case in point where the partnership between the Ministry of Science and Technology, Ministry of Development, Industry and Foreign Trade and the Brazilian Development Bank (BNDES) is a clear advance in institutional design. Fostering science, technology and innovation requires new spaces for vertical and horizontal co-ordination. Innovation is increasingly a cross-cutting issue in the agendas of different sectoral ministries (such as health, energy, the environment and education), beyond its traditional role for development in agriculture and manufacturing. There is an increasing need for more co-ordination between different sectoral agendas (of the various ministries) to increase the effectiveness of public action. Brazil has responded to these challenges by creating co-ordination mechanisms between innovation policy and productive development policy. At the same time, in line with the recent national strategy for growth with social inclusion, the Ministry of Science and Technology has supported the strengthening of institutions in Brazil's federal states in order to promote production structure diversification and to increase the country's scientific, technological and productive strength.

Among some of the recent tools that Latin American countries are introducing to foster the strengthening of domestic innovation capabilities and sustain learning processes, there are:

i. *The strategic management of FDI*. While in the past FDI was considered a potential threat for the creation of endogenous technological and production capabilities, many countries in Latin America are now trying to profit from the new generation of FDI. Companies have, in fact, started to delocalize not only

assembly functions, but also more knowledge intensive activities including design, testing and R&D. Some countries in the region have started to put in place on the one hand incentives to attract these types of FDI and, on the other hand, to promote the generation of backward and forward linkages with the local economy. Costa Rica is probably the best known example in the region (OECD, 2012b), but Brazil (especially some states) and Chile have also been active in this field. And have accumulated negotiation capacities with potential investors.

ii. *Public procurement*, that until few years ago was another taboo in the regional policymaking, is now starting to be included among the tools to strengthen the domestic industry and to attain social goals (like for example in the health-care sector). It is generally used in areas such as health, defense, infrastructure and energy where there are high social and economic issues at stake and where in general the state is involved on the research, use, service delivery and/or production. Brazil includes public procurement as one of the tools of its industrial policy. However, public procurement needs strong government capabilities. Often there are controversies, especially from foreign companies, which claim for the application of the WTO principle of equal treatment. In addition, it happens that the existing legal frameworks can act as barriers for the required procedures. Developing countries would benefit from building institutional capabilities at the national, regional and local level to allow policy learning in the management of public procurement (Kattel and Lamber, 2010).

iii. A new and fashionable trend in Latin America is the setting up of new *government programs to promote the creation of start-ups*. These programs have low operation costs and are contributing to create an image of Latin America as a new place for innovation (OECD, 2013b). Initiatives of this type are flourishing in most countries in the region, including, Brazil, Chile, Colombia and Peru. Some are more oriented towards the attraction of foreigners with entrepreneurial skills and

experience, as the Chilean program. Others, as the Brazilian one, target mostly national entrepreneurs, even though 25 percent of total beneficiaries can be from outside the country.

A major puzzle for Latin America, as well as for Africa, is how to promote the transformation and upgrading of the agricultural sector, while promoting diversification and industrialization. Brazil offers an interesting example. In the 1970s Brazil instituted a National Corporation for Agricultural Research (EMBRAPA); a public company is in charge of carrying out frontier research to increase the productivity of the national agro-industrial production, while at the same time preserving the environment. The organization is financed by the general government budget, but it is also allowed to receive additional contributions by external partners, including multilateral financing agencies, private companies and foundations. The organization is managed with high research standards, but it is strongly oriented towards technology transfer and productive application. It works both with small rural producers and in partnership with large domestic and foreign companies. The work with local producers heavily relied on the existence of rural extension services that have been closed or impoverished by the structural reforms, inducing EMBRAPA, to develop ways to share solutions with agricultural producers; some branches of EMBRAPA have in fact developed new "mobile units" that travel to the regions and help the small producers to introduced the innovations in their processes.

4.3. FINDING APPROPRIATE SOURCES OF FINANCE AND TAILORING FINANCING SCHEMES TO THE NEEDS OF BENEFICIARIES

The recent experience of Latin America shows that appropriate, long-term oriented financing schemes are necessary. Industrial policy needs to get the private sector on board, and for this, long-term financing and clear regulatory framework for financing schemes are necessary.

Development banks are proving to be powerful allies in channeling financial resources to production development and innovation. But these institutions need to introduce innovations in their

management and operational routines to be able to foster innovation and operate in a fast-changing environment. For example, in Brazil the National Development Bank (BNDES) is a key actor in the design and implementation of the national industrial and innovation policies. The bank had introduced new procedures to evaluate intangibles to be more capable of screening projects with higher innovation potential, and it has introduced new tools for targeting the different demands. For example, a key challenge for Brazil is increasing SMEs financing. Scanning and evaluating credit requests for SMEs is not only challenging and time-consuming, it also requires multiple operations that could result in delays that actually inhibit the operation of the firms and their investments in innovative projects. The BNDES has introduced a credit card for SMEs (*cartão* BNDES) that allows them to easily access government credit lines in a quicker and safer way than through credit cards operated by other first-tier banks.

Latin American countries have also developed new forms of partnership with the private sector to match funds and finance innovation and production development. On the one hand, some countries have introduced sectoral technology funds to finance mission-oriented research programs and innovation projects in fields of strategic importance (e.g. oil, energy, and water management in Brazil; software and biotechnology in Argentina). Sectors matter for industrial policy because production, technology and innovations have organizational, technical, skills and infrastructure requirements that are highly sector-specific. These systems that channel private and public resources to innovation projects are operative in Argentina, Brazil and Mexico, among others. Brazil has been the pioneer. As early as in 1999, it instituted a system of sectoral technology funds to finance R&D and innovation in specific sectors, thanks to a system of matching grants from the private and the public sector (Cimoli *et al*. 2005; 2009). The existence of these funds contributes to build partnerships and trust between universities and the private sector. The operation of these funds is complex because they require coordination between industry and academy, and these relationships are often difficult and built over time through processes of trial and error.

Natural resource-abundant countries have also introduced new forms of financing for innovation. The rising prices of raw materials opened opportunities for extracting rents from these activities and

channeling them to economic development. Chile has been the pioneer. In 2005 it issued a law that channels royalties from mining exploration to a public fund for innovation. Colombia and Peru are today debating on introducing a similar type of mechanism. The use of this source of finance for production development and diversification requires addressing the territorial dimension, because consensus is needed both on the sectoral allocation of those resources and on their territorial destination. The communities hosting the natural resource related activities claim rights on the use of those resources and consensus-building efforts are needed. While the creation of funds based on natural resource rents is a step in the right direction, it is not a panacea for countries rich in natural resources. The design and management of those financing schemes is complex and requires strong learning processes both at the central and at the regional level. High political leadership and long-term support are required to allow the mechanisms to function and be effective.

4.4. CLARIFYING WHO ARE THE STAKEHOLDERS AND BUILDING TRUST

In Latin America, a major challenge is to identify the stakeholders and the beneficiaries of the industrial policy initiatives, as well as to get a consensus for these policies in a context with high social and poverty challenges. The conformation of the "elite" challenges the capacity of industrial policy to get the private sector on board and to establish a pact for national development. Often the "elite" is well-connected with foreign economies, but shows low level of trust with domestic financing and production agents. Today the option of picking few national companies as major beneficiaries and stakeholders of the policy would not be feasible. Not only is the context characterized by a variety of agents that the policy is called to act upon, but it would not be socially sustainable to make industrial policy a policy for the few. Even accepting that a degree of concentration of efforts and resources is needed, because scattered interventions are inefficient, the new industrial policy needs to be inclusive. Countries need to decide how to deal with a variety of stakeholders including SMEs, start-ups, foreign companies operating in the country and with the nationals installed

abroad. A key challenge for Africa, as well as for Latin America, is how to create incentives for the birth and evolution of a national entrepreneurial class. It is not only about having companies operating in the country; it is about creating a system in which nationals can grow as Schumpeterian entrepreneurs.

4.5. MOBILIZING REGIONS AND TERRITORIES AS AGENTS OF CHANGE

The return of industrial policy in Latin America is characterized by a growing attention devoted to the "territory." While in the past industrial policy interventions have been territory-blind, today this option is not sustainable and not desirable. In some countries in Latin America, including Chile, Colombia and Peru the willingness to channel resources from the mining sector towards innovation is helping to create a demand for strengthening institutions at the regional level. In Argentina and Brazil, the governments are increasingly concerned about promoting a more balanced development pattern and finding new sources of growth in provinces and states.

Regions and cities can be powerful additional sources of growth and innovation on the one hand, and on the other hand, industrialization today needs to take into account its impact on urbanization and territorial management. Many countries in Latin America (as well as in Africa) are consolidating their democratic systems and their industrial policies need to be nested in these political schemes; they cannot be a kind of closed-door bureaucratic exercise that then has to permeate the whole country. The development of production capabilities in Latin America is not happening in a harmonious way within countries. Often, rising growth and accumulation of production and innovation capabilities is happening in specific locations within the countries, while the majority of the territory still lags behind. This agglomeration trend, if not counterbalanced with active policies for territorial development, might undermine potential growth in the future by underestimating new sources of growth and by engendering growing social tensions.

4.6. PLANNING INCENTIVES FOR THE NEXT PARADIGM: INVESTING IN GREEN SOLUTIONS

Despite the disagreement at the multilateral level, many developing economies are recognizing the opportunities and challenges of the new green economy paradigm. On the one hand, they need to foster learning and increasing participation in global production networks, which is many cases are still based on "back" technological paradigms. On the other hand, they will all need to invest and prepare themselves for the future. This means being involved in research, as well as profiting from importing greener technologies which are increasingly cheaper in the markets thanks to the Chinese action (Mathwes, 2012). Brazil, for example, is investing in green technologies, building up on government-led efforts started in the 1970s. Environmental sustainability is a priority also for small economies like Costa Rica and Panama, but it is still not high up in most countries in the region. In addition, most of the "green" transformation programs focus on the technological dimension, as in Brazil, while the green paradigm would require to address in addition to the technological dimension, also the consumption side and the change in behaviors, service delivery and urban planning. These are all areas where developing countries could make big steps.

4.7. INVESTING IN STRENGTHENING STATE CAPABILITIES

The role of institutions is paramount in development. These are created through time in a cumulative process. The countries where the government administration has been reduced or minimized due to the implementation of the structural reforms face peculiar challenges, when there is a growing demand for more and better state intervention. Institutional strengthening is necessary. The traditional argument states that countries should get the "institutions" right and only then get the policies "right"; but the reality shows that things work the other way round. Institutions co-evolve with the challenges they are called to face and with the policies that they administer and implement. Poor institutional capabilities are no excuse for calling for low state intervention. Investing in institutional strengthening is part of a pro-active policy package. Latin American countries have strengthened their

institutions for innovation in the last decade. Argentina created a Ministry for Science, Technology and Productive Innovation in 2007 to signal the willingness of the country to promote knowledge-based growth. Brazil introduced innovation among the priorities of its national development bank (BNDES), and it is promoting the creation of a new corporation to promote mission oriented research. Chile created a Ministerial Council for Innovation. Smaller economies have made progress too: Costa Rica has created a ministerial council to promote the coordination between FDI policy and innovation and Uruguay has created a National Agency for Innovation, for example.

4.8. DO NOT LEAVE EVALUATION AS AN ADDITIONAL ITEM ON THE "TO DO LIST"

Latin American countries have been investing more in policy planning than in implementation and have been traditionally sloppy in policy evaluation. Most countries lack systems for policy monitoring and evaluation. However, in the last decades, thanks to the diffusion of ICT, knowledge about "inputs" has increased in quality, quantity and accessibility, but still impact evaluation has not been developed in an adequate manner. In addition, even in countries where there is a favorable climate for industrial policy today, like Brazil and South Africa, proponents are required to be "accountable" for the executed actions and to prove the effectiveness of the implemented measures. The slowdown of the global economy in the aftermath of the 2008 crisis (and the entry into a non-expansionary phase of the economic cycle) led to advocate for fiscal consolidation in order to stabilize the economy.

The experience of Latin American countries shows that targeted efforts to create a culture of evaluation is needed. It will not develop spontaneously in most countries. Evaluation is more useful when it is conceived of as an integral part of the policy cycle, and not an "external" function of control of check and balances. In small countries, external support is often essential to carry out policy evaluation; however, even in those cases, direct participation of local constituencies is essential to ensure meaningful evaluation exercises. Some Latin American countries have introduced industrial and innovation surveys to monitor trends and assess policy impact (Cimoli *et al*. 2011). Improving the capacity to

use surveys is a mid-long term process requiring a permanent dialogue between experts, statisticians and policymakers.

While impact assessment in rare in Latin America, most countries advanced in creating and facilitating access to information about policy programs and their implementation. In some countries agile agencies like observatories are contributing to information generation and analysis. For example, in Argentina the Observatory on Employment monitors job and production trends in the country and favors policy fine-tuning by operating in close collaboration with the ministerial level. In Colombia the Observatory for Science and Technology (OCyT), created in 1999 as a public-private partnership initiative, is responsible for the elaboration of qualitative and quantitative indicators to monitor trends and support the process of strategic decision-making.[3]

5. CONCLUSIONS

The new economic landscape is opening up opportunities for Africa, but market forces alone will not be enough. Creating more and better jobs, improving the participation of Africa in production networks and increasing scientific and technological capabilities in the countries of the region are still goals to the reached by African countries. History shows that development is a process that goes hand in hand with the building of domestic institutions, strengthening of domestic demand and supply and with the creation of backward and forward

[3] In South Africa, for example, the *Department of Trade and Industry* (DTI) has to report annually to the Parliament the implementation results of the *Industrial Policy Action Plan*. It is also required to present a mid-term implementation review, including quantitative and qualitative achievements of strategic and sectoral targets, including the number of beneficiary firms, number of jobs created, allocation of government support and changes in legal framework. The evaluation process includes a review of mid-term challenges and opportunities and a re-assessment of strategic priorities taking into account what has been achieved through policy implementation and the eventual rise of new challenges. In South Africa the industrial policy implementation mid-term review also clarifies the coordination requirements with other policies, including trade, competition, technology, innovation, and green economy.

linkages within the economy and with foreign partners. These processes entail accumulation of scientific, technological and production capabilities as well as intensive institutional learning. Creating the conditions for promoting learning and structural change in Africa could help the countries of the continent to fully grasp the opportunities of the new global economic scenario and reduce the deep gap that still separates opportunities and living standards in Africa from the rest of the world.

The re-legitimization of the "production structure" as an area for policy intervention and the resurgence of interest in industrial policies can be allies in engaging African countries in implementing new transformation strategies and improving the participation of its countries in the global economy and achieving progress on the domestic fronts. For example, South Africa is engaged in Multi-Annual Industrial Transformation Plans and Morocco has a new industrial policy aiming at strengthening domestic production leveraging on FDI in priority sectors, including the automotive one. However, designing and implementing industrial policies is easier said than done. Especially in the new economic landscape characterized by high mobility of capital and labor, the growing relevance of international knowledge and production networks and in countries where there is still a high policy resistance in accepting the legitimacy of embracing ambitious transformation strategies.

Southeast Asian countries are often looked at to derive lessons about industrial policies; however, Latin America has also recently accumulated interesting experiences to share with Africa in this respect. Countries should not underestimate the importance of claiming the right to deliberately intervene to alter the production structure and favor specialization in more knowledge and technology intensive sectors and activities as a key pillar in a country's development strategy. There are no automatisms in development processes, and market incentives alone are not generally enough to promote a transition towards superior stages of development. Science, technology and innovation, as well as learning processes, are paramount in development. Investing in building learning and absorptive capacities is crucial to be able to tap into existing knowledge and to open opportunities for leap-frogging. Latin America has started to advance in this area by increasing the importance of the innovation agenda in the

countries' development strategies; Africa has much to do in this respect. Creating a culture for innovation and stimulating domestic entrepreneurship are important component of development strategies.

Industrial and innovation policies are effective when they manage to get the private sector on board; this is an open challenge for countries in Latin America as well as in Africa. It is not uncommon that business and political elites are responsible of the low impact of government industrial development strategies because they tend to have low trust in domestic consummation and production. Creating a national entrepreneurial class is a key component of the development process. Africa has a big asset for breaking this vicious cycle and grasping the opportunities of the new global economic and political context: the potential of its young and growing population. The young population is increasingly skilled and is expressing new demands and aspirations that are at the essence of the "animal spirits" that are behind the dynamism of our economies. Industrial policies should be able to mobilize them, whether they are in the continent or abroad, to make Africa the next rising giant.

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THE ECONOMIC IMPLICATIONS OF COMPREHENSIVE APPROACH TO LEARNING ON INDUSTRIAL DEVELOPMENT (POLICY AND MANAGERIAL CAPABILITY LEARNING):

A Case of Ethiopia

April 2013

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Abstract

Industrialization is the key for sustainable economic growth in Africa. The role of industrial policy has been discussed intensively recently. This paper sheds light on the learning (or learning how to

[1] The author would like to express his gratitude to, Akio Hosono, Hiroshi Kato, Naohiro Kitano, Akbar Noman, Miho Oikawa, Kanako Nakayama, and Megumi Niimura for their valuable comments. Errors and omissions are the responsibility of the author. The opinions expressed and arguments employed in this paper are the sole responsibility of the author and do not necessarily reflect those of JICA.

learn) aspect of industrialization policy, proposing a comprehensive approach. A great deal of past literature focuses only on the technological aspects of learning, but industrialization is a multi-faceted task, covering policy planning, policy implementation, and managerial knowledge. This paper took up a case from Ethiopia. The case study confirmed that learning on managerial knowledge improved performance of private firms. It also confirmed that policy learning expanded the policy scope of the government to help private sector development. These two aspects are inseparable, and this comprehensive approach should be used by donor countries for the industrialization of Africa.

1. INTRODUCTION

Notwithstanding the much improved economic performance of Africa in the past decade or so, industrial development continues to languish. The percentage of the GDP held by the manufacturing sector has been declining since the 1980s. Recent economic growth is dominated by the mining sector. Foreign Direct Investment (FDI) also goes into natural resources and not the manufacturing sector. As the population grows, youth unemployment (in other words, job creation) will become a serious issue for sustainable growth as well as political stability in the region. Therefore, industrial development, which contributes to increase in employment and income, is crucial.

There has been heated debate over industrial policy elsewhere and a renewal of interest recently; it remains one of the most controversial topics (Noman *et al*., 2012; Lin, 2011; Lin and Chang, 2009; Cimoli, Dosi, and Stiglitz, 2009; Hausmann, Rodrik, and Velasco, 2005; The Economist, 2010).[2] This debate even goes back to 19th century

[2] Following past literature such as Rodrik (2007) and Noman and Stiglitz (2012), this paper also considers that industrial policy covers not only the manufacturing sector, but also broad sectors such as the agricultural and service sectors.

economists Ricardo and List.[3] There is still little consensus. From the viewpoint of the Washington Consensus, a number of issues such as rent-seeking, political capture, policy mistakes, and picking the winner were raised (Krueger, 2011; Pack and Saggi, 2006). On the other hand, advocates of industrial policy have emphasized that the market cannot be said to function perfectly to achieve general Pareto optimality under the assumption of perfect information and perfect competition, among other things (Greenwald and Stiglitz, 2012).

This paper will focus on the "learning" (or "learning how to learn") aspect of industrial policy. Knowledge gaps (not just resource gaps) have long been identified as issues requiring attention for development, but have been long neglected (Stiglitz, 1998; Greenwald and Stiglitz, 2012; Noman and Stiglitz, 2012). Further, only a small number of papers have performed empirical analysis on learning in Africa in the past. Due to the recent growing interest in this field, the number of empirical studies has been growing gradually. These include the World Bank's report by Dinh *et al*. (2012) on light manufacturing in Africa: Eifert, Gelb, and Ramachandran (2008) on infrastructure and doing business: and de Mel, McKenzie and Woodruff (2008), and Banerjee and Duflo (2005) on financial market failures.

Regarding learning, it is important to disaggregate "what to learn." Technology and skill are not the only areas of importance for Africa. Industrial development does not occur by simply adopting new technology. There are other types of knowledge necessary to learn for industrial development, such as policy planning and managerial skills, as we will see later. Almost all the past literature on Africa, however, focused mainly on the technology/skill aspects. There is only limited literature surveying the policy and managerial aspects of learning in Africa, and still further empirical studies on other aspects of learning are required to see how effective learning is for economic growth (Sonobe and Otsuka, 2006; Sonobe, Suzuki and Otsuka, 2011; Klinger and Schündeln, 2007; Karlan and Valdivia, 2011; Field, Jayachandran, and Pande, 2010). This paper intends to shed lights on a comprehensive

[3] Historically, the most successful countries including the US and UK, among other counties also proactively used industrial policy in its development process (Chang, 2002).

approach to learning, which will be discussed in detail later. For this purpose, this paper will look at the on-going project by JICA (Japan International Cooperation Agency) in Ethiopia.

2. LITERATURE REVIEW

2.1. INDUSTRIAL POLICY

In the 1990s, the major development policy was based largely on liberalization, privatization, and price-stability, and regarded industrial policy as a source of inefficient, market distortion. In 1993, the OECF (Overseas Economic Cooperation Fund, now JICA) published Occasional Paper No.1 entitled "Issues Related to the World Bank's Approach to Structural Adjustment: Proposals from a Major Partner" (OECF, 1993a), arguing in favor of infant industry protection and of credit subsidies for selected industries believed to have export potential, which was in opposition to the Bank's approach. In the same year, the World Bank published "The East Asian Miracle," which gave very guarded and qualified support to industrial policy, and that too only for export promotion, not on import protection and credit market intervention. The OECF (1993b) disagreed with its view (Mosley *et al*., 1995). Although the World Bank published the report, the mainstream policy has not changed. Industrial policy was by and large sidelined.

In the wake of emerging economies such as China, India, Brazil, and South Korea, a growing number of people have started to regard industrial policy as an important policy tool for economic development as well as private sector development (Lin, 2012; The Economist, 2010; Hausmann, Rodrik, and Velasco, 2010; Lin and Chang, 2009; Cimoli, Dosi, and Stiglitz, 2009; Rodrik, 2007).[4] This trend is partly due to the response of developed economies after the Financial Crisis; Rodrik (2010) called this movement the "return of industrial policy." At least, if and how donors should promote industrial policy has become a hotly

[4] Michael E. Porter (2007) proposed cluster approach and public policy to foster clusters instead of industrial policy because it minimizes distortions to competition, and is better aligned with market competition.

debated subject in recent years.

In the African context, in January 2008, the African Union Summit dedicated to the theme "the Industrialization of Africa," AU (African Union) (2008) adopted AIDA (Action for the accelerated Industrial Development of Africa), declaring that:

> it is Africa's turn….the time is now….(n)o country or region in the world has achieved prosperity and a decent socio-economic life for its citizens without the development of a robust industrial sector (p. 1).

The UN Economic Commission for Africa (UNECA) and AU published their annual Economic Report on Africa (ERA) in 2011. This report also concluded that the role of states needs to be enhanced to foster economic and social transformation, and to correct market imbalances.

Justin Lin (2012), the former Chief Economist of the Bank, proposed what he calls New Structural Economics (NSE). The concept of NSE is controversial because it differs from the traditional World Bank approach. In his classification, the NSE is the third wave of developmental thinking. The first wave was from the emerging and developing economies (old structural economics). They emphasized market failure and proposed import substitution for structural changes. The results were disappointing, and the second wave of thinking highlighted government failures, and emphasized a "getting the prices right" policy. The third wave, which Lin proposed, intends to bring structural change back to the core of the discussion. His proposal is to industrialize according to the comparative advantages under the given endowment structure, which old structural economics went against. Regarding the last point on comparative advantage, Ha-Joon Chang is against comparative advantage theory, and argues that developing countries need to take more proactive industrial policy beyond the comparative advantage theory like Japan and South Korea (Lin and Chang, 2009).

Krueger (2011) commented on Lin's proposal that his view is industrial and urban-biased (distortion), and there are many questions on the role of the state. Questions are, for instance, whether support

should be given to all industries or to a specific industry, and what incentives (e.g., firm-specific treatment, subsidies, or tariffs?) should be included. She also pointed out the issues such as picking the winner and government failure as well.

On the other hand, Stiglitz (2011) agrees with the NSE proposal, and stressed, as Solow (1957) found, advances in technology have been the source of increase in per capita income over the last two centuries. In his view, disparity in knowledge matters for developing countries, so Stiglitz proposed to create "a learning society," in which society intends to absorb and adopt knowledge, and eventually to produce new knowledge. In addition to "learning," he also stressed the importance of "learning to learn (or the ability to learn)"[5] (Greenwald and Stiglitz, 2012; Stiglitz, 1987).

2.2. LEARNING

Regarding learning, investment in learning tends to be less than expected (underinvestment) due to market failure. This is because of imperfect information and the nature of knowledge, with characteristics of public goods associating with externalities (spillovers). Knowledge itself should be essentially zero marginal cost. In the real world, however, firms have a tendency of neglecting to take learning benefits into account, so the "learning phase" incurs losses for private firms. This becomes a barrier to entry, implying the existence of a monopoly (Stiglitz, 2010 and 2012). Unlike the aggregate growth model of a closed economy with competitiveness assumed by Arrow (1962) and Kaldor and Mirrlees (1962), Dasgupta and Stiglitz (1988) found that the assumption is not valid. In other words, market equilibrium is not efficient if firms learn with cost. Because of the market failure, the state has to play the role of a catalyst to learning.

Noman and Stiglitz (2012) discussed that development strategies need to focus on a LIT (Learning, Industrial, and Technology) policy. This is due to the effectiveness of the LIT policy in promoting

[5] Stiglitz (1989) explained the "learning to learn" effect by the following function: $lnC_t - lnC_{t+1} = a + blnQ_t$. Here, learning to learn changes the parameter b.

technological changes and encouraging shifts in production structure, just as knowledge accumulation could change the endowment.[6] Further, it is argued that the LIT policy needs to support investment projects with large spillovers. The reason why the industrial sector is considered important is that learning in the industrial sector has more spillovers to the rural/agricultural sector. Moreover, there is greater incentive to invest in R&D (innovation) in the industrial sector than in the rural/agricultural sector. In this regard, linkages between the natural resource extraction sector and other sectors were typically weaker than the manufacturing sector and the rest (Greenwald and Stiglitz, 2006 and 2012).

2.3. MANAGERIAL CAPITAL

Then, the next question of "what to learn" comes to mind. Do we have to learn only "new technology," as Solow (1956) found?[7] When Lall, S. (1987) surveyed Indian firms, he stressed the importance of technological capability (TC). He disaggregates the TC into five elements: (1) project execution; (2); product engineering; (3) process engineering; (4) industrial engineering and planning; and (5) technological transfer. This classification is useful to deepen our

[6] They referred to examples from the US that the LIT policy led to the development of the telegraph, the Internet, and successful companies such as Federal Express.

[7] Ansu and Tan (2012) argued that even though skill development is indispensable for economic growth and employment, it costs too much for Sub-Saharan governments to finance. In other words, they need growth to finance skill development. To solve this chicken-and-egg problem, they proposed a two-way solution. First, in the short term, the strategy needs to focus on meeting industrial needs and spurring growth. Second, in the long term, the strategy needs to improve the whole educational system. As for education, a number of studies found that higher education is closely correlated with firm growth in Africa (McPherson, 1996; Mead and Liedholm, 1998; Ramachandran and Shah, 1999; Mengistae, 2006).

understanding on elements of technology/skill.[8]

There is however, bias in his definition toward technical aspects of the firm. Other than these technological capabilities, private firms need to have other abilities as well: "management capabilities" which include marketing, finance, and external relations, among others (Wad, 1991).[9]

Although management capability is important, it has been neglected in development and growth literature. For Solow (1956), management capability is reduced to the residual of a production function (the error term).[10] In the early days, Lucas (1978) and Rosen (1982) proposed "talent for management" as an important factor for production. Few empirical studies however, have been conducted on the managerial capital in the theory literature. Bruhn, Karlan, and Schoar (2010) discussed that the capital missing in developing countries is "managerial capital." In their views, managerial capital can affect the production function through two channels. One is improving the marginal productivity of inputs (e.g., labor, physical capital). The other is improving resource constraints (e.g., access to capital or labor with

[8] Cimoli, Dosi, and Stiglitz (2009) discussed that technological learning is mainly done by imitation, reverse engineering, and copying, for example. This kind of capacity is called "absorptive capabilities."

[9] This thinking is the same as that of Cimoli, Dosi, and Stiglitz (2009) when they differentiate technological knowledge and sheer information. For them, technological knowledge is embodied in specific people, organizations, and local networks. They further classified production capacity and technological capabilities (or dynamic capabilities). The former is capacity to do routine work, and the latter is for technological change. It is argued that it is important for a country or organization to transition from production capacity to technological capabilities. Stiglitz (2012) also identified various structure of learning including these management capabilities as well, such as: inventory control process, labor management process, computerization, and financial service.

[10] Bruhn Karlan, and Schoar (2010a) incorporate management capital into endogenous growth theory, as A in the production function: $y = AK^{\propto}l^{(1-\propto)}$. This implies that A decides if other inputs lead into high level of outputs.

better resource forecast).[11]

Recently, with the attention on this field growing, the number of empirical studies has been increasing. These include: Klinger and Schündeln (2007) on a business training program held in Central America; Karlan and Valdivia (2011) on basic business training in Peru; Field, Jayachandran, and Pande (2010) on financial and basic business training in India; and Bruhn, Karlan, and Schoar (2010a) on consultant services to supplement management knowledge. These studies found mixed pictures that some training improves business performance (e.g., revenue, profits, employment, productivity), but others may not.

Through an empirical study in Africa, Sonobe, Suzuki, and Otsuka (2011) also confirmed the importance of management capital, in that technical assistance on "*kaizen*" enables informal firms to expand operations and generate employment.[12] As we will see in detail in the case of Ethiopia later, a productivity and quality improvement method, called *kaizen*, provides inexpensive basic management skills and can improve management practices. Their study focuses mainly business administration, basic business skill, and desk study of manufacturing floor management. They found that in Tanzania the training effects on record-keeping and *kaizen* practices are highly significant, and so affects marketing in Ethiopia. According to their study, a majority of entrepreneurs do not keep records of the costs and revenues, and it hampers their objective judgment on their operation.[13]

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[11] Recent papers also found that management practices and education are of low quality in developing countries, such as Chaudhry (2003) and Bloom and Van Reenen (2010).

[12] Similarly, Cimoli, Dosi, and Stiglitz (2009) also emphasized "problem solving knowledge" embodied in organizations (such as production technologies, marketing, labor relations, as well as "dynamic capabilities" of learning).

[13] Sonobe and Otsuka (2006) studied eight industrial clusters in Japan, China, and Taiwan, and found that multi-faceted innovations are needed to achieve a major improvement in the enterprise performance. Further, they argued that the innovations are difficult tasks, and are possible only by entrepreneurs with higher education or entrepreneurs with rich managerial human capital.

2.4. POLICY LEARNING

In addition to the managerial capital, there is another important element of learning. That is policy learning. When Lall (1987) surveyed Indian firms, he rightly concerned the methods by which individual firms acquired technological capability (TC). These firms considered policy environment as an external factor, and they had got TC without any support from the government. As we have already seen, because of market imperfection, the knowledge does not spillover automatically. It is important for governments in developing countries to promote knowledge spillover, and to encourage learning.

There have been successful policies and failures in the past. Looking at the development cases of Asia, their recipe and timing (what and when) varies country by county (JICA, 2008). In other words, country context mattered greatly when planning industrial policy. As country context matters, a government should not just blindly copy the successful policy of another country: they need to learn how to analyze country context and how to adopt the best possible scenario. In other words, they need to "learn how to learn" selectively from the cases of various countries. For instance, the role of public sector to develop SME (Small and Medium Enterprises) changes according to the country context and to the stages of industrial development. Ito and Urata (1998) compared the development of the auto parts industry in Japan and Korea, and found different roles for the public sector to promote the auto industry. In Korea, the public sector was to dissipate knowledge to SME, but in Japan, the public sector played a small role. Ohno (2013) stressed the importance of policy learning, and discussed that policy learning should be based on a systematic collection and comparison of international best policy practices and failures. This is to enhance government capability for a country to be able to become industrialized. Thus, policy learning is another aspect on which some thought is required.

Regarding learning on a policy level, there are several attempts from donor countries. One example is the KSP (Knowledge Sharing Program) of the KDI (Korean Development Institute). The case we will see in this paper is JICA's program in Ethiopia. One feature distinguishing this program is a comprehensive approach, which we will discuss in the next section.

3. POLICY AND MANAGEMENT CAPITAL LEARNING IN ETHIOPIA

3.1. A COMPREHENSIVE APPROACH TO LEARNING

As we have seen so far, two levels of learning are necessary: (1) policy level (policy learning) and (2) private firm level (technology/skill and management capital learning). The two of them are inseparable. Business environment affects private firms' strategy in the market. There are various elements in the business environment that private firms need to take into consideration. Among them, the following elements are especially important: outlook on inflation and exchange rate, changes in the system of taxation, and industrial policy.

Here, industrial policy in broad definition includes various policies. These are: infrastructure development policy, education and vocational training policy, financial policy (especially loans to small and medium-sized enterprise), FDI promotion policy, trade policy, intellectual property rights policy, and industrial standards policy, among others. The outlook of these policies will affect a private firm's long-term strategy, especially for its investments, but not its short-term strategy. If the future is uncertain, it will result in low investment in the private sector, since private firms would not take the risks. The term "investment" includes investment on productivity and quality improvement as well as physical investment.

A government policy will affect private firm's decision in many ways. For instance, productivity and quality improvement will be discouraged under high inflation and exchange rate volatility. This is because it is difficult for private firms to recognize and measure the results of the improvements under uncertain situations. On the other hand, government support such as infrastructure development, education, vocational training, and SME development policy will encourage private firms to improve productivity. Thus, policy and private firms' operations are closely connected to each other. In order to industrialize, it is necessary to tackle both policy and private levels.

Table 1: Structure of Learning

1. Policy Level
1-1 Policy Planning
1-2 Policy Implementation
2. Private Firm Level
2-1 Strategic Business Administration
2-2 Manufacturing Floor Management
2-3 Basic Business Skill
2-4 Technology/Skill

Now, each level can be disaggregated. Regarding the policy level, these are (1-1) policy planning and (1-2) policy implementation. The capacity of policy planning is important, as the previous section discussed. The capacity for policy implementation is different from that of policy planning. How effectively a government can implement a policy largely depends on their organizational capacity. Industrial development is a multi-sector (or a multi-ministerial) task. Several sectors can be involved in exporting even a single agro-industrial product abroad: for example, agriculture, manufacturing, and transport sectors. In addition, factors such as quarantine, tax and customs procedures, and exchange rate also affect export performance. In other words, promoting exports requires total governmental effort with inter-governmental coordination as well as public-private consultation. Coordination with all stakeholders requires very high capacity, and is a difficult task.

In some countries, excellent policy plans are drafted without taking feasibility and government organizations' capacity into account. These two factors are correlated, but the issues that need to be learned are different. As Cimoli, Dosi, and Stiglitz (2009) discussed, "organization building" is one of the most difficult tasks, and policies and institution-building have shaped both the accumulation of technological and organizational capabilities. These capabilities decide the national capabilities to catch up with crucial knowledge (Cimoli *et al*., 2009). This paper disaggregates these.

Turning now to the private firm level, there are four sub-levels of entrepreneurial skills: (2-1) strategic business administration

(including labor management and computerization); (2-2) manufacturing floor management (including inventory control); (2-3) basic business skill; and (2-4) technology/skill. Basically the first three items are elements of managerial capacity. The capacity of strategic business administration (2-1) is required for employers and the business administration department. Manufacturing floor management (2-2) is required for factory workers as well as factory managers. The basic business skill (2-3) was found lacking by Sonobe, Suzuki, and Otsuka (2011) in many micro and small enterprises in Africa. This includes skills such as record keeping, which is essential for the day-to-day operation of a company in any general affairs. This paper will look at the case of Ethiopia based on this structure.

3.2. BACKGROUND OF THE PROGRAM IN ETHIOPIA

As a comprehensive approach to learning, this paper will take up a program in Ethiopia supported by JICA in collaboration with GRIPS (National Graduate Institute for Policy Studies of Japan). This program was initiated in response to the request from the late Prime Minister Meles Zenawi, and has two components: support to formulate industrial policy in the new five-year development plan (industrial policy dialogue); and support to develop private firms (a project for quality and productivity improvement). These two components are implemented side by side, taking the linkage between the policy and operation of private firms into consideration. This program started in 2009 and completed its first phase in 2011. The program was started with strong leadership by high-ranking government officials (top-down), and was implemented by equally strong ownership by government technocrats and private firms (bottom-up).

The late Prime Minister was critical of the Solow model because the model treats technological change as something external to the economic process, as an exogenous factor (Zenawi, 2012). In his view, technology is a public good, and there are market failures in providing it. Therefore, he believed that developing countries should not leave technological development (innovation) to the market, and the key to this is learning from abroad. He argued that technological capability accumulation is the central challenge for developing countries to

achieve continued growth. It will enable developing countries to move up the technological ladder. He compared two types of national innovation systems, and discussed that the system needs to reflect the structure of the economy. Those systems are the mission-oriented systems in the US, UK, and France, and the diffusion-oriented systems of Germany, Sweden, and Switzerland. A mission-oriented system is a system to explore the new technology, such as by first-rank universities. A diffusion-oriented system is to exploit existing technologies through social mechanisms such as standardization of products, or an apprentice system of training craftsmen. For developing countries, he argued that it would be easier to adopt and adapt existing technology in developed countries rather than innovation.

With this view, he tried to learn from cases in foreign countries such as South Korea and Taiwan. He even sent government officials to these countries. In addition, he requested specific assistance to adopt and adapt existing technology from development partners such as Germany, Italy, and UNIDO (United Nations Industrial Develop Organization) (Ohno, 2013). In response, Germany implemented ECBP (Engineering Capacity Building Program). ECBP includes a TVET (technical and vocational education and training) system, engineering and private sector development, among others. From Japan, he requested the specific support mentioned above.

3.3. OUTLINE OF THE PROGRAM

(A) INDUSTRIAL POLICY DIALOGUE – MUTUAL LEARNING

The industrial policy dialogue was started in June 2009 and ended the first phase in May 2011. The dialogue was started together with the pilot project for productivity and quality improvement (*kaizen*), which we will see in the next section. The aim of the dialogue is to exchange views on: (1) the new five-year development plan;[14] (2) issues

[14] The five-year plan (2005-2009) is the Plan for Accelerated and Sustained Development to End Poverty (PASDEP). The debate was also held for the new five-year plan namely, the Growth and Transformation Plan (GTP, 2010-2015).

needed to be tackled for policy planning and implementation (e.g., inter-governmental coordination); and (3) progress and issues on the pilot project. These three elements complement each other, and cover policy strategy to private sector operation on the ground.[15]

The dialogue was held quarterly eight times at three levels: (1) Prime Minister, (2) Ministers and State Ministers, and (3) Heads of Directorates and Institutes. These three levels have different organizational responsibilities and authorities on policy planning and policy implementation. Therefore, naturally, even if the topic is the same, the contents of discussion and issues to be challenged are different. From the Japanese side, the core members of JICA-GRIPS team were Professors Kenichi Ohno and Izumi Ohno.

(B) THE PILOT PROJECT FOR PRODUCTIVITY AND QUALITY IMPROVEMENT (*KAIZEN*)

In parallel with the policy dialogue, a pilot project for productivity and quality improvement started in October 2009 and ended in May 2011 (phase 1). Phase 2 of the project has been underway since November 2011. The productivity and quality improvement is called "*kaizen*." It is a method to continuously improve productivity and quality in a participatory process and a bottom-up approach. Under the structure of learning we discussed above, *kaizen* mainly focuses on (2-1) strategic business administration, and (2-2) manufacturing floor management. It does not require additional cost from the employer. It does not require restructuring such as cutting employment, unlike BPR (Business Process Reengineering).

Japan itself introduced productivity and quality improvement in 1955 at the start of Japan's era of rapid economic growth, learning

[15] This dialogue was an approach to "mutual learning" between the Ethiopian side and the Japanese side. As discussed, context matters greatly for policy planning; the Japan side has rich knowledge on East Asian cases, but little knowledge on the Ethiopian economy. The Ethiopian side understands its own economy, but has little knowledge regarding East Asian cases. If policy prescription were one-size-fits-all, things would be much simpler. The dialogue approach provided mutual learning opportunity to find solutions.

from American business management tools.[16] There were dual aims. One was to enhance competitiveness to expand the market, utilizing resources effectively and scientifically, at the same time reducing production costs. The other was to boost employment and to enhance real wages and the standard of living.

3.4. IMPACTS AND THEIR CAUSES

What kind of impact did the program have? Before examining overall impacts, we will start by looking at the impacts of the pilot project. There is a certain degree of limitation in this analysis due to lack of data such as benchmarking data, since the program was not designed to be analyzed by econometric analysis such as RCT (Randomized Control Trial). Therefore, the analysis here is only a qualitative analysis. It is a future task after phase 2 to run a more rigorous impact analysis.

Regarding the pilot project, a team of JICA and Ethiopian experts together visited 28 pilot private manufacturing firms 10 times each, and gave them questions, rather than answers, on what the companies needed to think about to improve their operations. The 28 pilot private firms were from the (1) agro-processing, (2) chemical, (3) metal, (4) leather, and (5) textile industries. After the 10 consultations over a half-year, as Table 2 shows, the highest benefit to a company was 3.25 million Ethiopian Birr (ETB), equivalent to around US$195,195. The 28 firms had obtained an average benefit of ETB 500,000 (equivalent to around US$30,030). Given that the average number of employees was 402 per company, the pilot project generated a benefit of ETB 1,240 (US$74.5) per head, which almost equaled the prevailing gross monthly wage (US$75).

These improvements, having such significant impacts, were made without additional investment cost. The firms simply improved their method of operations through *kaizen* by conducting 5S activities and reducing seven types of waste (overproduction, inventory,

[16] The three guiding principles of productivity improvement were set out in 1955 in Japan, which were: (1) expansion of employment; (2) cooperation between labor and management; and (3) fair distribution of the fruits of productivity.

repairs/rejection, motion, processing, waiting, and transport).[17]

Table 2: Results Observed from the Pilot Project Companies (examples)

Quantitative Results (Monetary Impacts)
(1) Average quantitative benefit of ETB 500,000 (US$30,030) per pilot company. Given that the average number of employees is 402 per company, the average benefit per head is ETB 1,240 (US$74.5), which is comparable to the prevailing gross monthly wage (US$75).
(2) Company A reduced costs by (a) ETB 10,000 (US$600) per month and (b) ETB 78,000 (US$4,685) per annum.
(3) Company B generated additional income of ETB 1.2 Million (US$78,072) per year.
(4) Company C decreased down time ETB 204,000 per day (US$12,252).
(5) Company D rectified raw material defect used for manufacturing ETB 2.4 million (US$144,144).
(6) Company E identified repaired and reused usable machines and equipment worth 3.25 million US$.
Quantitative Results (Non-monetary Impacts)
(1) Company F increased labor productivity, by reducing time loss for searching for tools on average by 50 percent.
(2) Company G reduced floor space by around 50 percent.
(3) Company H improved the defect ratio in the range of 50 to 70 percent.
(4) Company I improved lead time in the range of 16 to 90 percent.
Qualitative Results
(1) Clean working environments created.
(2) Teamwork and motivation of workers developed.
(3) Health and occupational safety of workers improved.
(4) Increased employee participation.
(5) Knowledge obtained on how to meet quick delivery and to reduce costs.

Source: the author based on Shimada, Homma, and Murakami, 2013 and JICA, 2011b

Note: 1 ETB = US$16.65

[17] 5S is the working environment improvement methodology called *Seiri* (orderliness), *Seiton* (tidiness), *Seiketsu* (cleanliness), *Seisou* (cleaning up), and *Shitsuke* (discipline); these terms have been standardized in English as Sort, Set in Order, Shine, Standardize, and Sustain.

Table 3 shows qualitatively measured results by the Ethiopia-JICA team. Companies classified as Grade 5 means that there is a high possibility to be a model company, with the other grades meaning: Grade 4 (good possibility); Grade 3 (some possibility); Grade 2 (low possibility); and Grade 1 (no possibility). In short, this table shows 10 companies out of 28 companies (more than one-third) are graded 5 and 4 as candidates for being excellent companies in the near future. These results indicate that even if the input is small, learning about (2-1) strategic business administration and (2-2) manufacturing floor management have certain positive impacts. In other words, according to the 28 pilot companies experiment, there are huge possibilities for Ethiopian (or African) enterprises to improve productivity and quality greatly with small changes in (2-1) strategic business administration and (2-2) manufacturing floor management.

Table 3: Qualitatively Measured Results from the Pilot Companies

Sub-sector	Grade					Total No. of Companies
	5	4	3	2	1	
Metal	1	2	2	2	1	8
Textile	1	1	1	1	1	5
Agro-processing	1	1	1	2	1	6
Chemical	3		2	1	3	6
Leather			2			3
Total Occurrences	6	4	8	6	6	28

Source: JICA, 2011a

(A) FACTORS OF DIFFERENT PACE OF PROGRESS: CLEAR POLICY MESSAGE FROM THE GOVERNMENT AND MANAGER'S STRONG COMMITMENT AND OWNERSHIP

Is learning about (2-1) strategic business administration and (2-2) manufacturing floor management enough to improve private sector operation without any learning on the policy level? What are the

decisive factors for success and failures among pilot companies? The pace of progress is different among companies participating in the *kaizen* project.

One of the important factors of success was the managers' strong commitment and ownership to introduce the new method. Managers of successful companies understood that the key to improve productivity and quality is a bottom-up approach at the manufacturing floor. They tried to build good management-employee relationships, appreciating communication with employees and employee training. This commitment of managers is difficult to measure. Before the project, *kaizen* was new to Ethiopia, and managers did not have knowledge about the method. Considering the situation, it was extraordinary that Ethiopian entrepreneurs showed strong commitment to the new method. What was the reason behind it?

It was the clear policy message from the government that the government will support the introduction of the new method. The late Prime Minister and other government high-ranking officials had mentioned the initiative to introduce *kaizen* on TV and in public speeches. This clear message reduced the entry barrier for private companies to learn the method and improve productivity and quality. Unlike under the condition of asymmetry of information, managers took the learning benefit into account, so the learning phase was not considered a loss for them. Because of this clear policy message, an introduction seminar on *kaizen* held in Addis Ababa before the project started attracted huge attention. Even though *kaizen* was very new to Ethiopian entrepreneurs, more than 320 entrepreneurs from 170 private companies attended the seminar. The policy message generated commitment and ownership of Ethiopian entrepreneurs.

(B) LEARNING POLICY PLANNING: FOCUS ON QUALITY AND PRODUCTIVITY

In spite of the clear massage from high-ranking officials, the same policy massage was not clear in the policy documents, such as the five-year development policy and sectorial development policy. In the process of the preparation of the GTP, the policy message was discussed in the policy dialogue. The issue was how to synchronize the GTP, a guiding framework of national development plans, and activities on the

ground. For that purpose, MSE (Micro-Small Enterprises) policy was discussed in detail.

The Ethiopian government examined Asian cases by themselves, with JICA-GRIPS providing some comparative case studies from East Asia such as Japan's SME development policy and Singapore's nation-wide movement of productivity and quality improvement. This self-learning increased policy space, and a result of this, in the framework of the GTP, a new MSE development strategy was adopted, referring the introduction of *kaizen* to industrial development. This policy shows the policy direction, and catalyzes learning in the private sector.

(C) LEARNING POLICY IMPLEMENTATION – COORDINATION AND CAPACITY DEVELOPMENT

Another important point is policy implementation by government bureaucrats and technocrats. One of the issues raised and discussed in the policy dialogue was a policy coordination mechanism across ministries and agencies. For industrial development, as we saw, different ministries and agencies are involved. For any government, it is a challenge to build consensus on key policy directions and the way it is implemented among stakeholders inside and outside government. East Asian countries have certain mechanisms to coordinate this. JICA-GRIPS provided the Ethiopian government with various case studies of such mechanisms.

In terms of MSE development in Ethiopia, there are several ministries and agencies in charge of it, and the government setup is very complex. These include the Ministry of Industry (MoI), Ministry of Urban Development and Construction (MoUDC), Ministry of Education (MoE), TVET, and the EKI (Ethiopian *Kaizen* Institution). Learning the coordination mechanisms of East Asia, the Ethiopian government also developed several coordination mechanisms. For example, for MSE development, a National Council was established to coordinate it, co-chaired by MoUDC and MoI. This coordination mechanism reduces unnecessary fragmentation.

Further, regarding learning *kaizen* at the private firm level, the government agency plays an important role in catalyzing the learning. The important thing is that the above impacts of the project were

brought from the Ethiopian government experts who learned the method based mainly on on-the-job training (spillover effects based on the knowledge acquired by doing).

The experts belonged to the *Kaizen* Unit in the then Ministry of Trade and Industry (now the Ministry of Industry). The late Prime Minister established this new unit just before the start of the pilot project, as a part of his initiative. The membership of Unit consists of nine young Ethiopian professionals, but without any knowledge about the method. There was very clear policy guidance for them from the Government high-ranking officials and the new MSE development policy. They also received higher demand from private firms other than the pilot companies (bottom-up needs), as they knew that the government supported the introduction of *kaizen*. These demands from the top and from the ground are the driving force behind their self-learning.

(D) POLICY LEARNING AND EXPANDING POLICY SCOPE

The business environment for pilot companies was an important factor. The successful companies had no disruptive management condition. On the other hand, companies with disruptive management conditions failed to progress. The condition was mainly being unable to procure essential materials for their operations due to the shortage of foreign currency. Ethiopia had difficulty with importing some essential materials.

The issue of shortage of foreign currency had been discussed at the policy dialogue, and pros and cons of import substitution policy discussed in the process to prepare the GTP. With careful examination, the government of Ethiopia expanded the scope of the policy from an export promotion policy focusing on a few selected sectors (such as leather and leather products, textile and garment, and agro-products) to an import substitution policy. The import substitution policy focuses on industries such as chemical, metal and engineering. Regarding the expansion of policy scope, Dani Rodrik of Harvard University also advised the Ethiopian government in 2008 (Rodrik, 2008; Ohno, 2013).

As Table 4 shows, although this management skill was new to the Ethiopian experts before the project, after the project six out of nine experts were assessed as being competent enough to be a Consultant

and provide a consultancy service, and three experts were assessed as assigned to be Assistant Consultants.[18]

Table 4: Assessment of Capacity Development of Ethiopian Experts on kaizen

Level	Competence	Level of knowledge and skill	Assignment	Before Project	After Project
5	Competent to provide consultancy services on *kaizen*	- 8 years of experience and more - Experience of consultancy services for at least 30 companies by him/herself in 6-years' service	Lead Consultant		
4	Competent to provide consultancy services on *kaizen*	- 6 years' experience - Experience of consultancy services for at least 15 companies by him/herself in 4-years' service	Senior Consultant		
3	Competent to provide consultancy services on *kaizen*	- 4 years' experience - Acquired relevant knowledge and skills for *kaizen* in addition to TQM/QCC/5S/QC 7 tools - Acquired other knowledge and skill on industrial business engineering	Consultant		6

[18] In response to the achievements of the initial project, which ended in June 2011, including the *kaizen* dissemination plan, in October 2011 the Ethiopian Government established the world's first governmental institute named *kaizen*, called the Ethiopian *Kaizen* Institute (EKI), under the Ministry of Industry. The Ethiopian Government and JICA began the Phase 2 *Kaizen* Project in November 2011 for capacity building of EKI and related organizations in order to disseminate *kaizen* throughout the country. This project is expected to contribute to establishing a system to disseminate *kaizen* in Ethiopia in a sustainable manner.

		(financial management, human resource management etc.) - Competent to prepare case materials for training exercise - Experience of consultancy services for at least 5 companies by him/herself in 2-years' service			
2	Competent to guide *kaizen* activities	- 2 years' experience - Acquired advanced and applied knowledge and skills on TQM/QCC/5S/QC 7 tools - Competent to present at least 5 case studies of *kaizen* for training purpose	Assistant Consultant		3
1	Competent to conduct *kaizen* activities for yourself	- Acquired person with no experience - Acquired basic knowledge and skill on TQM/QCC/5S/QC 7 tools - Competent to make at least two cases analysis	Junior Consultant		
0	No experience			9	

Source: JICA, 2011a

Note: TQM: Total Quality Management; QCC: Quality Control Circle; 5S: Sort, Set in Order, Shine, Standardize, and Sustain; QC: Quality Control.

As we have seen with the Ethiopian case, learning managerial knowledge improved performance of private firms. The quality and productivity project focuses, among various aspects of managerial

capital, on strategic business administration and manufacturing floor management. Policy learning also contributed to the improvement, expanding the policy scope of the government to help private sector development. Selective policy learning from successes and failures of East Asian countries enables the Ethiopian Government to expand its policy scope. The clear policy direction catalyzed learning on the ground. The coordination mechanism among Ministries and government agencies made the approach to MSE development more comprehensive rather than fragmented. The government agency has obtained practical knowledge on *kaizen* through learning by doing, and has disseminated its knowledge to private sectors to improve their productivity and quality.

4. CONCLUSIONS

This paper examined the learning aspect of industrial policy, disaggregating the elements of learning, which mainly consist of policy-level and private company-level learning. Earlier literature focused mainly on introducing skills and technology into private companies. Recently, there is growing interest in managerial capability learning. This paper explored the possibilities of a comprehensive approach, since policy learning and managerial capability learning are inseparable, and used a case in Ethiopia to study the impacts.

The results of the Ethiopian case imply that learning on various levels will strengthen Africa's private sector for industrial development, allowing it to become competitive. This comprehensive approach of learning is still new to the development partners. The approach will enable African countries to sustain their economic growth, diversifying their economies and securing more jobs for the younger generations.

As mentioned, there is certain limitation set on this case study due to lack of data. The ongoing empirical study for the phase 2 should provide a more thorough analysis.

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