
desarrollo productivo

Theory and Practice
of Industrial Policy.
Evidence from the
Latin American Experience

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Introduction

“Et à l'aurore, armés d'une ardente patience, nous entrerons aux splendides villes.”

Rimbaud

“...there are those, who by liberty of trade mean two things: an absolute license for manufacturers to work without regulations of measurements, of weights, of forms, of colors, etc., and one no less absolute for merchants to circulate, export, and import everything which they like, without any restriction, without excises, without tariffs, without customs duties. But this liberty, except among adventurous people on the Moon, does not exist in any country on earth: on the contrary you will find it nowhere less than in those nations that best understand trade.”

Antonio Genovesi (1757)¹

The literature on the economics of the public sector (and the role of the State in the economy) concentrates on how the government affects the performance of economic sectors, what activities and services should be managed by the State and which by the private sector, and what schemes of incentives the State can use to influence the decisions of private economic agents. However, manuals covering this area generally focus on macroeconomic policy and on policies that affect issues such as education, health and pension systems, and do not, generally, deal directly with industrial policy. Industrial policy

¹ Antonio Genovesi, *Storia del commercio della Gran Bretagna*, Naples, 1757-8, vol. 1, p. 249, cited in Reinert (2007).

has always been controversial in the economic literature, as in political debates. Not only is it ignored in the majority of the courses on the economics of the public sector, but the very term “industrial policy” is absent from the *New Palgrave Dictionary of Economics*, unlike terms and concepts such as monetary and fiscal policy (Chang, 1994).

To the extent that the economic literature has addressed industrial policy, it has focused on the policy practices and experiences of particular countries at given times. The theoretical side of the discussion about industrial policy has focused on its rationale and on justifications for State intervention in the economy —i.e., on the question “What do we need industrial policy for” rather than on a normative analysis of which policies, based on national development objectives, are appropriate in individual cases. Basically, there are two different stances: (i) the neoliberal position, which places trusts in the market’s adjustment mechanisms, leaving minimal leeway for the State to act to correct market failures; and (ii) an approach that synthesizes Schumpeterian, evolutionist and structuralist (traditionally promoted by ECLAC), views—which in this article will be referred to as the SES synthesis—, in which there is a room for private and public intervention in industrial development.

With the term SES synthesis we encompass the positions of a diverse group of economists and thinkers on development whose common denominator is their recognition of: (i) the intrinsic, qualitative and quantitative differences between sectors and among productive activities; (ii) the specificities of knowledge and technology, and their catalyzing role in development processes; (iii) the absence of automatic adjustment mechanisms, and (iv) the role of institutions in shaping the transition to higher levels of development associated with the transfer of human and financial resources to activities with increasing returns. From this perspective, structural change (i.e., the transformation of productive and organizational structures) implies costs and faces barriers that must be overcome through ad hoc State intervention, and involves the creation of asymmetries to favor activities considered “positive” for long-term growth, generally technology and knowledge intensive activities². In this approach, the State can be a promoter of development, which might be, according to the particular context, directly involved in production, financing it through tax credits and subsidies. At the same time, it can be the articulator of policy measures tailored to promote linkages between agents.

Notwithstanding common belief, industrial policy always played, and still plays, a role in public policy decisions, and influences the behavior of agents and, hence, the dynamics of the “real economy”, even when it is not explicitly recognized as “industrial policy”. As the definition of “industrial policy” by Evan Jones in the *Encyclopedia of Political Economy* (O’Hara, 1999) indicates, “governments will have an industrial policy regardless of libertarian beliefs or arguments.” Jones illustrates this with the case of post-World War II Germany, when the Ministry of Finance, clearly in a spirit of economic liberalism, implemented selective sectoral policies based on economic development priorities, although it had no formal industrial policy (Shonfield, 1965).

In this context, the present article attempts to define the concept of industrial policy, to review certain relevant historical experiences, and to examine the current state of the art of industrial policy in Latin America. Following the present introduction, a first section presents some introductory notes regarding the importance of manufacturing in the development process as addressed by the literature, as the necessary premise for the discourse on industrial policy. The second section defines the concept of industrial policy and its scope, as well as the institutional framework involved and its domains of implementation. The third section discusses industrial policy’s *raison d’être*, concentrating on two major positions. One is based on the idea of correcting

² The SES synthesis comprises the work of Latin American structuralists (Prebisch, Furtado, Pinto and Ocampo, among others), Schumpeterian developmentalists such as Chang, Reinert and Stiglitz, and evolutionists such as Nelson, Winter, Freeman, Dosi, Soete, Pérez, Arthur and Cimoli.

market failures, while the other is the SES synthesis. The fourth section provides an overview of the principal features of industrial policy at various historical times and places (in England, Germany, Japan, United States and the Republic of Korea). The fifth section focuses on industrial policy in Latin America, presenting a balance of progresses and obstacles, and examining measures to overcome implementation problems, while the sixth section concludes.

I. Industry in the development process

The debate on industrial policy and development is premised on the recognition of the relevance of the diversity and complementarities between production activities and their effects on economic growth, productivity and development. The importance of manufacturing as an engine of growth, as an enabler of capital accumulation and as a source of increasing returns, had been at the centre of various debates and controversies in the economic literature. While an in-depth analysis of this issue is beyond the scope of the present article, a summary of the pertinent literature is outlined below.

Some scholars (e.g., Datta, 1952; Kaldor, 1966) had identified two initial stylized facts that show the importance of the manufacturing sector for development, principally in its initial stages, namely: (i) the share of overall income generated by the industrial sector increases over time, and (ii) the share of workers employed in manufacturing tends to increase. The combination of these two factors leads to an increase in *per capita* income at the aggregate level, except in cases of temporary deviations from the pattern. However, it is by now largely acknowledged that as countries advance in the development process, these stylized facts become less pronounced. Nevertheless, even in later stages, technological efforts and innovations tend to concentrate in manufacturing. Furthermore, in complex production chains that articulate industry with the primary and the service sectors, the technological effort originates, most notably, in manufacturing, as it is the case, for example, of research and development in metal-mechanics and chemicals in the previous

paradigm and electronics and biotechnology (Freeman and Louça, 2001). In this context, industrialization promotes diversification and favors the increase in density of the economy's production structure (Fajnzylber, 1983).

The idea that economic development is a process that involves a qualitative change of the production structure is far from new. It was Schumpeter (1934) who most clearly associated development with the appearance and spread of innovation (principally technological innovation). The emergence of new technologies, markets and means of transport—a phenomenon identified, usually, with the introduction of new production functions—was the engine driving extended growth cycles. In general terms, the evolution of post-Schumpeterian thinking on structural change and growth can be divided into three phases.

The first one includes the decades from the end of the 1940s to the beginning of the 1960s. Krugman (1997) designates this as the period of the “high development theory”. The salient thinking in this period includes works by Prebisch (1950), Hirschman (1958), Myrdal (1956), Nurkse (1953) and Lewis (1954). Though these authors differ in various respects, they share the perception that developing economies differ in major structural ways from developed economies, mainly, in their dependence on exporting primary products, and in their technological backwardness. These authors view development as implying diversification of the production structure, and as involving a shift of labor from low-productivity agricultural activities to more productive industrial sectors. Development, in this view, meant the creation of backward and forward sectoral linkages, based on cumulative processes and incentives generated by recurrent imbalances between sectors (Hirschman, 1958).

The second phase runs from the mid-1960s to the beginning of the 1980s. During this period, the theoretical interest in technical change diminished, with a waning of Robert Solow's growth model, in which the source of technology was assumed to be exogenous, providing the basic analytical framework for growth studies—a framework which failed to explain the technological differences between countries and their effects on growth.

The third phase corresponds to the decade of the 1980s. Those years saw renewed interest in studying innovation and the dissemination of technological advances as endogenous processes in the economic competition. Pioneering works, such as that of Nelson and Winter (1982), led to a new generation of growth models of different theoretical matrixes, such as those by Dosi (1988a) and Dosi, Pavitt and Soete (1990), among the evolutionists, and those by Grossman and Helpman (1992) and Aghion and Howitt (1998) in the neoclassical stream.

Contemporarily, a literature emerged, with a greater focus on the “practice”—the how and what—of industrial policy. This more action-oriented literature also specifies the importance of the manufacturing sector for the development process. In this respect, it is worth to mention the studies on the US industry in the 1980s by such writers as Johnson (1984), Norton (1986), Cohen and Zysman (1987) and Thompson (1989). In that debate, Reich (1982) emphasized the fact that the allocation of capital to *specific* industries and sectors was a more important determinant of growth and productivity, than is the traditionally emphasized concept of capital accumulation.

In this article, we will follow the SES synthesis, which captures the advances both in the theoretical and in the “practice-oriented” literature, linking the literature on the importance of industrial activities to development and to the role of the State. The SES approach recognizes the *sectoral* nature and characteristics of knowledge, technology and production activities, and their effects on growth and development, concluding that innovation occurs in the context of the expansion or creation of specific sectors and activities. Thus, in this frame, innovation drives structural change, which in turn strengthens the incentives to innovation in a virtuous circle of growth. This process, however, is neither automatic nor spontaneous. All historical instances of

development and sustained growth, from the industrial revolution onward, have occurred in environments where there was a set of public and private institutions whose actions shaped the course of development (ECLAC, 2007; Cimoli, Dosi, Nelson and Stiglitz, 2006; Reinert, 2007).

Institutions and policies shape the processes of development and influence the direction and rate at which technical progress and growth occur. Building the production and technological capacities to sustain innovation in the long term is not an easy task. Industrial and technological activities are not spontaneously generated or disseminated. Indeed, there is a tendency for technological patterns to reinforce themselves in such a way that pioneering firms (and hence countries) tend to maintain their advantages over time (David, 1985; Arthur, 1989; Cimoli and Dosi, 1995). This framework recognizes the key role of industrial and technology policies in development, and allows identifying the different dynamics that characterize the transformation of socio-economic systems in the centre and in the periphery.

II. Industrial policy: definition and scope

The concept of economic policy refers to those actions resulting from public strategies implemented by the State in pursuing certain objectives and goals. There are two main categories of economic policy: the macroeconomic policies and the microeconomic ones. The former includes the fiscal and monetary policies that affect aggregate variables in the short term, while microeconomic policy affects individual actors (firms and consumers) in the medium and long term. Microeconomic policies address sectoral variables and include industrial policy, technology policy, competition policy, etc. Thus, macroeconomic policies shape the size of aggregate variables (production, employment and prices), while microeconomic policies determine the sectoral structure and quality of the industrial production and employment vectors (Chang, 1994).

The literature defines industrial policy in different ways, emphasizing various aspects of State intervention in support of industrialization. Reich (1982), who was a great defender of industrial policy in the United States, defined industrial policy as the set of governmental actions designed to support industries that have major export potential and job-creation capacity, as well as the potential to directly support the production of infrastructure. Pinder (1982) proposes a broader definition that includes all policies designed to support industry, including fiscal and monetary incentives for investment, direct public investment and public procurement programs, incentives for investment in research and development, major programs for the creation of “national champions” in strategic sectors, and policies to support small and medium enterprises. This

definition includes direct support for the creation and improvement of physical infrastructure and social infrastructure (institutions), trade policy, competition policy and measures to prevent the formation of cartels, and programs to directly support labor-intensive industrial activities.

Johnson (1984) defines industrial policy in a narrow sense, as those “government activities that aim to support the development of certain industries in a national economy to maintain international competitiveness”. Landesmann (1992) makes an original contribution to the definition by underlining the selective component of industrial policy. So, an industrial policy is one that discriminates and selects among industries, sectors and agents, and it is designed specifically for each chosen industry and sector within a given national territory. Chang (1994) describes industrial policies as governmental actions supporting the generation of production and technological capacity in industries considered strategic for national development. This implies that the discrimination among activities, sectors and agents is based on their potential to boost the overall economy. This approach frames the broader discussion of industrial policy in terms of the qualitative differences among economic activities (since not all sectors are equal in their ability to generate growth) and in terms of the impact of industrialization on the paths of development, as the SES view holds³.

The present article follows Chang (1994), and adopts a narrow definition of industrial policy, since a broader one like Pinder’s, although it does help to understand the scope of policies designed to support industrialization and their complementarities with other government’s actions, it makes it difficult to analyze the “why” and the “how to implement” industrial policy when designing, implementing and assessing policy at the national level.

In the framework of the SES synthesis, we identify the term “industrial policy” with the set of instruments (essentially incentives, regulations and forms of direct participation in economic activity) through which the State promotes the development of specific economic activities or economic agents (or a group thereof) based on national development priorities.

In industrial policy, as in other policy areas, the State might play different roles. There are four main types of State interventions in support of industrial development: (i) As regulator, e.g., by setting tariffs and production levels for certain activities, or by creating fiscal incentives or subsidies to support industrial sectors. (ii) As producer, participating directly in economic activity, as in the case of State-owned enterprises. (iii) As consumer, ensuring a market for strategic industries and economic activities through public procurement programs⁴. (iv) Finally, as a financial agent and investor, influencing the credit market and promoting the allocation of public and private financial resources to industrial projects considered strategic because of their impact on productivity, or because of their capacity to absorb labor.

Many countries that have no formal industrial policy in the form of an industrial development plan (with goals, instruments and explicit institutional responsibilities) do have de facto industrial policies that call for government action (regulation, subsidies, incentives) to develop or strengthen specific activities. In the United States, for example, where a free market posture dictates that the State play no more than a minimal role in development (making “industrial policy” a politically incorrect term), the government does take measures to support the nation’s industrial development within the definition of the term used here, though this action is not defined as industrial policy. For example, the Bayh-Dole legislation of 1980 regulates the intellectual property rights associated with innovations emerging from technological research and development activity at universities and research laboratories receiving federal funds. The legislation includes a

³ For an historical analysis of the qualitative and quantitative differences among economic activities, with a focus on the role of industry in development, see Reinert (2007).

⁴ The aeronautic industry is a typical example of an industrial activity that benefits, in all countries, from industrial policies in which the State is the primary purchaser.

clause giving preference to the (North) American industry, permitting exclusive licenses for patented innovations only when the innovation is to be manufactured in the United States (section 204). Selecting US firms as the beneficiaries of these exclusive licenses—an action in line with the national strategy to protect the competitiveness of the country’s industry—is clearly a *de facto* industrial policy, even though it takes the form of intellectual property rights management⁵.

In general terms, an industrial strategy is formulated and implemented in the framework of a broader national development policy. Normally, the institutional frame of reference for industrial policy is an integrated one that includes institutions such as the ministry of the economy, the ministry dealing with industrial activity, and public-private competitiveness councils, under systems and models that differ from country to country. For example, the newly launched (May 2008) industrial policy of Brazil, which represents the most advanced effort in Latin America in terms of industrial policy design and articulation, is under the general coordination of the Ministry of Development, Industry and Trade (MDIC). Above this Ministry, there is a consultative body responsible for identifying the policy’s main priorities (the National Industrial Development Council, CNDI)⁶. This well articulated, although complex, institutional design also considers an executive secretariat composed by the representatives of National Economic and Social Development Bank (BNDES), the Ministry of Finance (MF) and the Brazilian Industrial Development Agency (ABDI). The creation of the executive board responds to the will of reducing institutional bottlenecks that hamper the operation of even well-designed industrial policies, which usually tend to be managed by ministries which are less powerful than institutions in charge of disbursing the financial resources (Suzigan and Furtado, 2006).

Like other microeconomic policies, industrial policy operates at different territorial levels (national, regional, local) depending on the country’s degree of decentralization. In large, federal countries like Mexico and Brazil, there is a significant local component in industrial policy, responding to the objectives of moving toward more homogeneous territorial development. Thus, in the former, sectors that have direct territorial impact (e.g., tourism and energy) are favored, through the creation of specific decentralized agencies to promote local competitiveness (Mexico’s National Development Plan, 2007-2012). In the latter, the 2008 industrial policy also includes the territorial deconcentration of production as one of its strategic focuses⁷.

In summary, there are four key elements relevant to industrial policy design: priorities, objectives, instruments and institutional responsibilities (Table 1 presents brief definitions of these concepts).

⁵ For a more detailed analysis of the relationship between the management of intellectual property and industrial policy, see Cimoli, Coriat and Primi (2009).

⁶ The CNDI was created in 2004 and is chaired by the Ministry of Development, Industry and Trade and is composed by 13 sectoral ministries, the President of the Brazilian National Economic and Social Development Bank (BNDES), and 14 stakeholders, representatives of business associations, key industrial sectors and trade unions. A summary of the policy is presented in Government of Brazil (2008).

⁷ Recognizing the lack of coordination and integration between the national industrial policy and the various regional and local industrial development plans, and considering the territorial asymmetry in the capabilities of firms to benefit from existing public support mechanisms, the new strategy points to increase the amount of outlays to targeted areas, to create a regional network of industrial policy makers, and to develop territorial development plans based on cluster and networks of firms, responding to the objective of valorizing territorial production capabilities (Government of Brazil, 2008).

TABLE 1
KEY ELEMENTS OF INDUSTRIAL POLICY

Priorities	Objectives	Instruments	Institutional responsibility
A function of the general goals and objectives of the government's development strategy.	Identifying what public policy hopes to achieve.	Mechanisms for executing the policy.	Ministries or <i>ad hoc</i> agencies responsible for the coordination and implementation of each line of action.
Generated through consensus building.	Each policy has general objectives (the achievement of which depends in part upon the measures implemented) and specific objectives (results achieved by the measures adopted).	Mechanisms that create the conditions for achieving the specific objectives. There must be a correspondence between the objectives and the instruments selected.	The institution responsible for the execution manages the budget and the financial resources.

Source: Authors.

The policy process has three phases, linked by a feedback mechanism: conception and design, implementation, and assessment. The first phase is based on prior work to create consensus on priorities. This is essential if the policy is to produce action and results. Although each phase is important in itself, it is the interlinked whole of the three that ensures that plans will translate into action and induce changes in production and social structures.

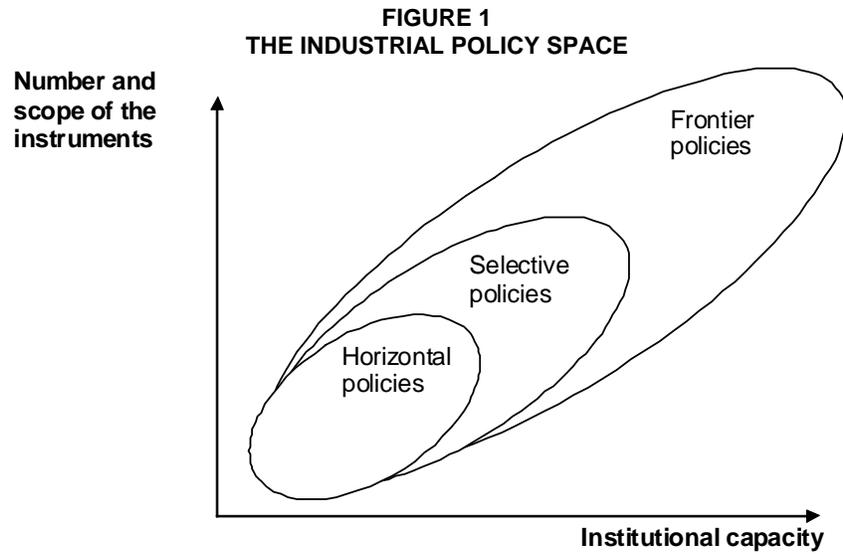
The scope within which policy operates depends on two dimensions: (i) policy making capacity, which in turn relies on a set of factors including institutional capacity for design, implementation and assessment; and (ii) the number and scope of the instruments used, which depends on the development strategy and its specific objectives. These two dimensions define a policy space, where we can identify a sequence of three types of policies: horizontal, selective (sectoral) and frontier, each characterized by different sets of instruments, targeting and institutional arrangements (See Figure 1). Countries with only the most basic capabilities can carry out just horizontal policies; as their institutional capacities increase overtime they may include firstly selective policies and eventually also frontier policies.

Horizontal policies are typically the least demanding in terms of institutional infrastructure, and generally employ a relatively reduced number of instruments. They include measures to support human capital formation, and generic measures in support of production activities such as certifications, quality control, and guides for standards setting, among others. They also comprise incentives for infrastructure and business environment development.

Selective (sectoral) policies require greater institutional capacity, since they involve specific sectors or special interest areas. Their implementation calls for a broad set of instruments. Examples of selective policies are: targeted attraction of foreign direct investment, sector-specific international trade negotiations, incentives and subsidies for specific sectors or production activities, and programs in support of the competitiveness of given industrial activities. They might include also direct production by State-owned enterprises and the implementation of public procurement contracts, among other measures.

Frontier policies respond to a broader national development vision, and aim at creating capabilities in key strategic technological and science areas. These policies are the expression of more complex strategies and require stronger institutional management capacities and effective coordination of different stakeholders. National programs in biotechnology, nanotechnology, and

defense are usually grouped under this category, together with national programs to develop scientific, technological and production capacities in selected areas through technology parks, research consortia and other kinds of instruments.



Source: Authors.

III. The rationale for industrial policy

There are a number of issues on which there is no consensus among different schools of economic thought, and many of these issues relate to industrial policy. Differing views of the behavior of socioeconomic systems, and their corresponding normative statements shape the debate on the *raison d'être* of industrial policy. One of the main areas of disagreement in economics regards the degree of efficiency in production systems. Standard textbooks assume that markets operate under conditions of perfect competition, which means that there are no barriers to entry, that agents are price takers, that there is perfect information, etc. A simple glance at how economics functions shows the fallacy of these assumptions. These hypotheses do not reflect the real world. Actually, there are substantial differences in the degree of efficiency between sectors and economic activities. Although the intrinsic value of any economic model rests in its capacity to offer a simplified portray of reality, the simplification must not be achieved at the cost of adopting unrealistic hypotheses —despite what is defended in Friedman (1953)—, which, in their turn affect the predictive capacity of the model itself. Economists also tend to disagree on the different ways in which economic agents react to incentives, and, especially, on the intensity of those reactions. These disagreements affect the discussion of whether industrial policy is necessary or not, a debate in which there are three basic positions (see Table 2).

From the free-market or *laissez-faire* point of view that inspired a good deal of the policies known as the Washington Consensus (Williamson, 1990), the “invisible hand” of the market automatically selects sectors and firms, guaranteeing the efficient allocation of the factors of production (capital and labor). In this view there is no need

for industrial policy. Industrial policy distorts market mechanisms, and hence provides less than optimal allocation of the factors of production, in contrast to the purportedly optimal allocation achieved by free market mechanisms⁸. This framework advocates for a minimalist State that, as Friedman (1962) maintains, does only what the market cannot do by itself: “namely, to determine, arbitrate and enforce the rules of the game.”

At present, however, the view of capitalism as a system that tends to an efficient equilibrium and that it is exposed only to exogenous shocks has become the object of scrutiny. In the present post-Washington Consensus era, a more pragmatic view prevails regarding what a mixed economy is and how it operates. The dichotomist view of the State versus the market in the development process has lost ground. The current debate on promoting industrial development emphasizes seeking a certain balance between the public sector and private agents, since there is consensus that even in modern capitalism development depends on an interaction of market and non-market mechanisms.

TABLE 2
DIFFERENT APPROACHES TO INDUSTRIAL POLICY

Is industrial policy necessary?	Type of approach	Reasons for State intervention/non-intervention in the economy
NO	Liberal or laissez-faire.	The market automatically selects sectors and firms so as to ensure the efficient allocation of resources.
YES	Correction for failures of the market.	Public action is needed to correct market failures (concentration, absence of perfect competition, externalities) and to guarantee the provision of public goods. A balance must be found between market and government failures.
YES	Schumpeterian, evolutionist, structuralist, synthesis (SES).	Public action introduces asymmetries and makes it possible to explore technological opportunities. It takes account of sectoral differences and aims to promote the accumulation of capacities and knowledge.

Source: Authors.

Leaving aside the view that there is no need for industrial policy, the discussion of “What do we need industrial policy for?” turns on two different positions: the standard theory, in which the basic government function is to correct market failures, and the SES synthesis, within which the *raison d’être* of State intervention in the economy derives on the recognition of both the State and the market as different and necessary institutions affecting production and distribution processes in socio-economic systems.

According to the standard theory, the need and opportunity for State intervention arise from the fact that “market failures” occur —generally associated with the behavior of economic agents and the specific features of knowledge and technology. This literature focuses primarily on the market’s inability to generate efficient solutions. Usually, this approach justifies State intervention due to three main “market failures”: the existence of public goods, the absence of competitive conditions, and the presence of externalities⁹.

Public goods are both non-rival and non-excludable in consumption. Since a public good may be consumed by an economic agent that has not paid for it (a “free rider”), its supply tends to

⁸ For a contemporaneous view of liberalism and the thesis that industrial policy is unnecessary (or counterproductive), see Bhagwati (1988) and Krueger (1990).

⁹ Another argument in support of State intervention is ethical, as per the concept of “merit goods”, whose consumption is promoted or prohibited by the State, not recognizing the sovereignty of the consumer. Despite its importance, this point of view does not play a role in the debate on industrial policy. For a detailed examination, see Nozick (1974).

be less than optimal¹⁰. In such cases, individual rationality generates collective inefficiency, and State intervention is needed ensure optimal supply. However, even within mainstream analyses, this position provides no universal rationale for State intervention, since in small groups, public goods may be provided without State intervention, due to the marginal benefit that accrues from individuals' offering them unilaterally (Olson, 1965).

In the presence of non-competitive markets where individual agents' decisions affect the prices and quantities of goods and services traded, there is a need for State intervention to ensure efficiency. This is particularly important under conditions of "natural monopoly", i.e., technologies which result in non-decreasing returns to scale. In this context, policies should guarantee the optimal provision of goods and services, establishing equilibrium situations as close as possible to those of competitive markets. Again, Lipsey and Lancaster (1956) criticize this argument, arguing that eliminating some price distortions does not always increase the efficiency of markets, if all distortions are not corrected.

When individual utility or cost functions are not independent of those of other agents, such that one individual's action has spillover effects —not transmitted through prices—, affecting others who have no control over the initial action, we are in the presence of an externality. As private and social cost and utility functions differ, optimal individual behavior may lead to suboptimal collective situations. In these cases, the definition of property rights and the introduction of compensation mechanisms should reduce the gap between individual costs (or benefits) and social costs (or benefits). However, defining the optimum level of the ownership rights and the compensation mechanisms is complex, and sometimes impossible, due to high transaction costs, the difficulty of obtaining relevant information and the costs of enforcing contracts (Coase, 1960; Stigler, 1975; Dahlman, 1979). In such cases —as for example, in order to guarantee the investment in the generation of scientific and technological capacities— direct State intervention or subsidies might be required (public research and development laboratories, direct State subsidies for research and development, etc.).

In the framework of the market failure approach, a new issue emerged in the early 1970s: government failures. The argument that the market fails in allocating resources led to study the experiences of State intervention over the preceding decades. Those analyses showed that the State was no more exempt from making mistakes than it was the market, originating a whole literature on government failures. Within that framework, the discussion first focused on the State's difficulty to obtain and process the information needed for its decision making. It was also noted that uncertainty about the future undermined the rationality of planning (Richardson 1960; Williamson 1975).

Beyond the lack of information, the literature commonly cites other reasons for government failures, including: (i) a limited ability to foresee the consequences of public policy; (ii) the State's limited control over the consequences of its actions, especially in democratic systems where it is not the only *locus* of decision making; (iii) the separation of policy design from policy implementation; and (iv) the existence of incentives that favor veiled and captured interests. North (1990) explores the role of institutions as safeguard mechanisms that make it possible to preserve the "policies of the State" (*ragion di stato*) despite pressure from special interests. In the specific case of industrial policy, one might include a fifth point relating to the problems created by the fact that political cycles do not coincide in time with the cycles of the real variables that policy aims to affect. Building production and technological capacity is a long-range process that goes beyond the horizons of democratically elected administrations. The system creates incentives that tend to prevent the adoption of costly selective measures that can be expected to yield results only on a time horizon beyond that of the administration implementing them.

¹⁰ In standard economics textbooks, the free rider argument is also used to defend the rationality of technology policy.

The SES synthesis responds to the government failure argument with the observation that although it is true that nothing can guarantee, *ex ante*, that a government's decisions will prove optimal, it is equally true that no one can guarantee that the market's decisions will be optimal, or better than those of the State.

The SES synthesis rejects the hypothesis of automatic adjustment, and recognizes the qualitative differences among different activities, and the key role that technical change plays in development —factors that create room for action by the State in capitalist systems. The market does not necessarily guarantee the allocation of resources to the activities with the highest increasing returns. Moreover, where production and technological capacities are asymmetrically distributed among agents, market mechanisms may create conditions where patterns of specialization based on static rather than dynamic advantages are self-reinforcing¹¹. The production specialization of Latin American countries resulting from the economic reforms that led to a new economic model in the region might be seen as an example of this tendency¹².

The SES synthesis is based on different premises. The works in the SES stream criticize the lack of realism of the market failure approach. Supposing that the presence of market failures can be attributed to the absence of complete information, the presence of perfect competition, and the possibility that rents can be totally appropriated by given agents sounds unrealistic. If this were the case, the entire world could be considered one great market failure, as Cimoli, Dosi, Nelson and Stiglitz (2006) note ironically. According to the SES synthesis, State intervention is necessary in order to introduce asymmetries and to generate the incentives that make it possible to explore technological possibilities, create and strengthen private-sector actors, and support the accumulation of capacities and knowledge, based on an appreciation of the differences between production sectors. The SES synthesis creates the concept of national systems of innovation as a way of understanding the systemic nature of innovation, a process in which a diversity of public and private agents interact through various networks and coordination mechanisms, both formal and informal (Freeman, 1987; Nelson, 1994)¹³.

Evolutionists and institutionalists hold that a network of connections, both formal and informal, constitutes the national system of innovation and interconnects the transformation of the industrial structure, the accumulation of technological capacity and the evolution of policies to support knowledge accumulation and structural change. This literature recognizes that the generation of new knowledge and the adaptation of existing techniques are part of a dynamic process of interaction through networks that involve actors with both market and non-market motivations, and that this process requires an organizing force.

Therefore, in the framework of the SES approach, public policy appears as an *ex ante* coordination mechanism that, given the uncertainty of future scenarios and the non-deterministic nature of technical change, calls for efficacy rather than efficiency in public policy action. Because of the difficulty (or impossibility) of foreseeing the dynamics of innovation and predicting the existence of windows of opportunity (Pérez and Soete, 1988), and because State intervention must take account of the fact that current and future developments are dependent on past experiences, and that building production and technological capacities is a cumulative process, efficacy (the ability to achieve strategic national development objectives) must trump efficiency (a positive and

¹¹ Reinert (2007) offers an interesting taxonomy of economic activities that are “positive” or “negative” in terms of long-range development, and analyses the role of policy in promoting specialization.

¹² Basically, labor-intensive assembly activities aimed at the North American market in Mexico, Central America and the Caribbean, and natural-resource exploitation and processing in South America (Stallings and Peres, 2000).

¹³ Metcalfe (1995) defines an innovation system as “that set of distinct institutions which jointly and individually contributes to the development and diffusion of new technology and which provides the framework within which governments form and implement policies to influence the innovation process”. An analysis of the factors that explain the dynamics of development (and underdevelopment) must include an examination of the strengths and weaknesses (or even absence) of national innovation systems (Cimoli, 2000).

exact balance of benefits and costs). Thus, some duplication of efforts might be a cost that, to paraphrase Nelson, must be accepted to avoid the risk of depending on “a single mind for innovation”. Supporting the existence of different knowledge providers and managing different mechanisms to support accumulation of scientific and technological capabilities (as for example, direct incentives and subsidies to technological research and development) entirely fall within the priority functions of the State.

One of the principal features of the SES approach is the importance that its authors assign to the dynamics of the “actual economy,” i.e., to how economic systems function in reality. In the evolutionist framework, the existence of a superior technique does not imply its automatic dissemination among all agents (David, 1985; Arthur, 1989). Thus, the rationale for State intervention is not based on market failures, but rather on the features of the economic system itself, and on the recognition of the absence of automatic adjustment mechanisms. The rationality of State intervention derives from the impossibility of what Karl Polanyi called a “disembedded economy”, i.e., an economy where self-interest and the self-regulating market are respectively the only motive and mechanism. The development of production and technological capacities depends on interaction between market and non-market mechanisms, through a trial and error process with continuous feedback. Development is the result of the diversities, complementarities and synergies among different economic agents and activities.

The SES synthesis recognizes that systems (and individuals) are resistant to change, and that technical change is localized (Atkinson and Stiglitz, 1969). Certain structural changes are conditions *sine qua non* for other changes¹⁴. Hence, industrial policies must be selective and should prioritize sectors with high technological and production potential linkages effects.

In a similar vein, the analyses of product life cycles (Vernon, 1987) and the research on the dynamics of knowledge generation (Nelson, 1959; Arrow, 1962) provide a rationale for protecting infant industries by recognizing the importance of rent management. Protectionist measures should be fine-tuned as an industry moves out of the experimentation phase, to generate conditions of competition that promote the diversification of processes and products. At the same time, the institutional infrastructure supporting development must evolve, along with the capacity to manage externalities generated by the new industry (Nelson and Soete 1988)¹⁵.

In this context, Table 3 presents an evolutionary taxonomy of industrial policies that may be implemented in the SES framework. It identifies eight potential areas of intervention and types of variables affected by industrial policy (policy actions and instruments).

¹⁴ For example, Abramovitz (1986), based on an analysis of the United States economy, shows the interrelations between the semiconductor industry and electronic hardware.

¹⁵ The theoretical recognition that knowledge has a tacit component implies, in terms of policy measures, that it is important to complement technology transfers with an exchange of management experience and practice, transfer of human capital, and expert missions designed to provide exposure to, and promote assimilation of, different realities and contexts. One example is Korea's policies to attract entrepreneurs and specialized technical workers during the years in which it was closing its technology gap.

TABLE 3
AN EVOLUTIONARY TAXONOMY OF INDUSTRIAL POLICIES

Areas for policy intervention	Actions and instruments
Capacities of the production and technological system.	Support for the physical and institutional infrastructure of industrial development (transportation, information and communication technologies, creation of ad hoc institutions – industry groups, technical training centers, universities).
Basic human resource capacities, business environment, learning.	Formation of human capital (scholarships, exchange programs, university-business linkages, etc.).
Scientific and technological opportunities.	Science policy, training of human resources for science, R&D projects on the technological frontier.
Market organization and structure (private firms, State enterprises, business management models, etc.).	Corporate governance policies, competitiveness policy, nationalization of firms, industrial policy to support “national champions”.
Cooperation and interaction between agents.	Mechanisms to manage competition and cooperation in industrial development; research consortia; public-private partnerships; technology parks.
Production capacities and market incentives.	Policy to protect nascent industries (management of tariffs and duties, public procurement), selective campaigns to attract foreign direct investment by creating appropriate conditions, subsidies for investment, fiscal incentives in priority sectors (e.g., machinery, electronics, biotechnology, nanotechnology) and for priority agents (e.g., SMEs as job creators).
Technological capacities of production agents.	Technology policy to support R&D, direct subsidies, funds, business incubators, support for modernization, technology transfer, etc.
Institutional infrastructure.	Development banks, industrial and technology policy institutions, and arrangements for sharing between the scientific community, businesses and policy makers. The system should include mechanisms for reform and institutional adjustment as the process of industrial development proceeds.

Source: Authors, based on Dosi (1988b) and Cimoli, Dosi, Nelson and Stiglitz (2006).

IV. Historical experiences

Despite the “invisibility” of industrial policy in the standard texts on the economics of the public sector, industrial policy has —either explicitly or *de facto*, in different forms and with varying scope— been a decisive factor in the industrialization of various countries, independent of governments’ formal policy orientations. In fact, a strong State able to select activities and implement policies that support specialization in technology-intensive activities with increasing returns has been common to all development processes in certain stages (Amsden, 1989; Wade, 1990; Cimoli, Holland et al., 2006; Reinert, 2007).

Thus, England deployed industrial policy in the fourteenth and fifteenth centuries, as did the United States, Japan and Germany during the nineteenth and first half of the twentieth centuries – and even, in the United States, during the Reagan administration and today. Similarly, the most dynamic Asian countries had active industrial policies during the period in which they narrowed their technological and production gap with the industrialized countries, and Latin American countries did so during the import substitution industrialization period, as we shall see below. In general, industrialization, wherever and whenever it has occurred, has been accompanied and driven by different combinations of policies to promote and support the development of infant industries or sectors, and to promote the creation of strategic sectors and capabilities. Beyond the definitions of industrial policy adopted by successive governmental administrations, and despite the differences between the corresponding combinations of instruments and priority sectors, all

industrial policy has involved State support for manufacturing as a sector strategic for development (Reinert, 2007).

In analyzing the development of the rich countries and the reasons for the poor countries' failure to close the gap that separates them from the industrialized nations, Reinert (2007) identifies three types of rents that have historically guaranteed the transition to a superior and sustained pattern of development: manufacturing, monopoly on the raw material that serves as the basic input for such manufacturing, and rents deriving from international trade. Below, we shall examine the basic features of industrial policy in different geographic areas and historical contexts, beginning with England's experience of the fourteenth and fifteenth centuries. We then review the principles set forth by Friedrich List, which influenced Germany's industrial policy in the nineteenth century and, subsequently, the Japan's industrialization effort. Following this, we examine de facto United States industrial policy in the post-World War II period. Finally, we briefly review the experience of the Republic of Korea from the sixties onward.

1. England in the fourteenth and fifteenth centuries

Already in the fourteenth century, England's policy making recognized the importance of technical progress as a driving factor in national development, even if localized in a particular geographic area or sector. Reinert (2007) shows how, during the reign of Henry VII (1457-1509), policies were designed and implemented to support the development of the country's textile industry. Industrial policy at that time included tariffs and duties to hinder the exportation of unprocessed raw material, and to increase the cost of that raw material for manufacturing firms located abroad; fiscal incentives for the creation of new wool-processing firms (measures that, in modern terms, would qualify as protectionist measures for a nascent industry); programs to attract specialized craftsmen and businesspeople from abroad, especially from the Flanders and Italy, in order to enhance domestic learning and create endogenous technological and production capacities.

Approximately one century later, still in the context of protecting what today would be termed the competitiveness of domestic industry, Queen Elizabeth I placed an embargo on unprocessed wool. The success factors in the effort to create capacities in the textile industry included the ability to temporarily manage rents and monopolies. Privileges were not seen as permanent concessions, since, as the country's technical and production capacities developed, the quotas, tariffs and fiscal incentives were modified.

In the eighteenth century, England adopted policies to support the export capacity of the domestic textile industry. Subsidies were offered for exportation, and incentives were put in place to promote the imports of raw materials needed for the exporting industry. Prime Minister Robert Walpole, in 1721, summarized the rationale for the industrial policies of the time, saying that it was "clear that nothing contributes more to a country's welfare than the exportation of manufactured goods and the importation of raw materials." (as cited in Reinert, 2007)

2. Germany and Japan: applying the ideas of Friedrich List

The industrialization of Germany in the nineteenth century, with the consequent closing of the gap that had placed it at a disadvantage vis-à-vis England, was shaped by policies inspired by Friedrich List's *The National System of Political Economy* (1841). List's approach was based on the thesis that the processes of learning to use, produce and improve new technologies are the fundamental elements of the development process. A review of these principles appears in Reinert (2007), and can be summarized by the following ten prescriptions:

- i) Identifying manufacturing as the principal determinant in increasing output and productivity, as a sector with the capacity to absorb labor, and as a sector with the potential to alleviate balance of payment problems, while recognizing that industrialization can also reduce the elite's ability to control the interests concentrated in raw materials production.
- ii) Selecting activities and sectors characterized by increasing returns.
- iii) Creating temporary monopolies to protect advances in certain key areas (patent systems, etc.).
- iv) Implementing fiscal incentives for priority activities.
- v) Setting quotas, tariffs and duties to penalize the exportation of raw materials.
- vi) Recognizing the need for the formation of human capital.
- vii) Providing financial support at non-market rates for investment in production (development banks).
- viii) Recognizing the importance of synergistic mechanisms in development, and support the division of labor.
- ix) Providing direct support to the agricultural sector.
- x) Attracting skilled workers from abroad to facilitate technology transfer and the development of know-how.

In Japan, the Listian vision of the Ministry of International Trade and Industry (MITI) led to the creation of production and technological capacities in capital and technology-intensive sectors—initially steel, and later electronics— thus creating the conditions for the country's industrial transformation. In addition to the selective sectoral component, the Japanese model prioritized the training of skilled human resources. Freeman (1987), in his analysis of that country's experience, demonstrates the strategic importance of targeting knowledge intensive sectors with strong world demand through programs of direct State support.

3. De facto industrial policy in the United States

Contrary to common perception, the United States, in the late eighteenth century, implemented measures similar to those carried out in England during its initial phase of industrial development, and in line with List's principles of State intervention. The distinctive nature of the United States model lied in the central role of the defense industry as a catalyst for development, and in an explicit recognition of the importance of investment in education and in science and technology infrastructure. Over time, the United States has handled industrial policy with a degree of explicitness that varied according to the policy orientation of the administration in office, but without ever abandoning it. In addition, the US measures to promote industrial development had always been supported by international diplomacy efforts to defend economic interests in strategic sectors, thus associating industrial policy with a trade policy that actively defends industry.

The sustained growth of output, the absence of inflation and the nearly full employment that characterized the golden age of world growth in the three decades following the Second World War, constituted the foundations for implementing Keynesian development policies. According to this approach a viable capitalistic system required a mixed economy in which the State and the market coexisted in managing and implementing economic activities. The crises of the 1970s, followed by the Reagan administration in the United States (and the Thatcher era in England), reversed the theoretical direction of policy, which then tended to minimize the role of the State in

the economy. However, neoliberal pressures rapidly diminished as reductions of domestic industrial capacity loomed on the horizon with the reconfiguration of the world industrial map, as the Asian countries developed, and as global financial crises unfolded.

In the renewed debate on industrial policy in the United States in the early 1980s, Reich (1982) maintained that economies do not dispose of automatic adjustment mechanisms to ensure the reallocation of financial and human resources between industries. Since, in situations of crisis or reduced output growth, the rate at which new industries are created and the replacement of old processes and products with new ones follows neither automatic nor linear processes. State protection was crucial to the development of new production activities that, in the absence of market incentives, would not emerge. In the United States, the steel industry has enjoyed protection since the late 1960s, and the textile and shoe industries have benefited similarly. Reich caustically observes that even the Reagan administration, with its free-market vision of a minimal (or no) role for the State in the economy, implemented policies (*de facto* industrial policies) to protect the competitiveness of the nation's industry. Actually, the Reagan administration negotiated an agreement with the Japanese Government according to which Japan would "voluntarily" restrict automobile exports to the United States; its obvious goal was to protect the United States automobile industry from foreign competition.

In the same years, despite the formal rhetoric against industrial policy, the European nations also implemented a range of measures to protect domestic industries in sectors such as steel, textiles and automobiles. In response to the demands arising from the production sectors, public support mechanisms included tariffs and quotas, as well as direct subsidies to firms. The paradox is that while the countries on the technological frontier implemented *de facto* industrial policies to protect their national champions, neoliberal policies to minimize the role of the State, accompanied by faith in market mechanisms, continued to exert strong influence in developing countries¹⁶, especially in Latin America, where economic reforms were in clear conflict with the import substitution policies that had been implemented starting in the decade of 1950s (Stallings and Peres, 2000).

4. Korea: miracle or policy?

Looking beyond the "Asian miracle" approach (World Bank, 1993), there is growing consensus in the literature that development and the closing of the technological gap in recently industrialized economies—especially in East Asian countries such as the Republic of Korea, Singapore and Taiwan (China)—have been based largely on a set of industrial policies that actively supported strategic sectors and agents, thus driving growth, productivity and capital accumulation, as well as the generation of domestic innovation capabilities¹⁷.

The growth of productivity in the Korean manufacturing industry has been the object of numerous studies that point to capital accumulation or technical change as the principal determinants of the phenomenon. In fact, policy measures designed to create competitive advantages, rather than to exploit the existing competitive advantages, were implemented since the early 1960s. Korea's development strategy pushed the country towards a virtuous circle of industrialization. The strategy relied on a set of measures to foster the creation and accumulation of

¹⁶ Regarding asymmetry, in the management of industrial policy, between developed countries and developing countries, see Chang (1994) and Reinert (2007). The double standard of *de facto* industrial policy accompanied by the defense of the free markets persists in theory, and also is present in the debate on intellectual property and development (Cimoli, Coriat and Primi, 2008).

¹⁷ Although the debate on the effect of industrial policies in Asia is very wide-ranging and has not yet concluded, the 1997 crisis significantly diverted attention away from the "Asian Miracle." For arguments in favor of such policies, see Amsden (1989), Wade (1990), Kim (1996) and Rodrik (2004); for the opposite view, see World Bank (1993), and, more recently, Noland and Pack (2002).

technical skills, as well as to promote specialization in increasingly dynamic and knowledge- and technology-intensive sectors.

One of the characteristics of the Korean industrialization has been the gradual approach to sectoral priorities (i.e. priority sectors shifted from those with low technological capabilities, textiles, to those with higher knowledge content, as electronics, as long as capabilities were accumulated in the system), and the coordination of the measures targeted to train human resources according with the evolution of the production structure. Korea's first national five-year development plan (1962-1966) aimed at creating technical capacities in basic industries, with an emphasis on the textile industry. The 1967-1971 Plan emphasized the chemicals, steel and machinery sectors. Between 1972 and 1981, the priority sectors were metals, maritime transportation and electronics. Starting in 1982, the five-year plans have focused on technology-intensive sectors that are harbingers of the new paradigms (biotechnology and nanotechnology). In all of the plans, the State used a combination of instruments to promote the creation and maintenance of technological and production capacities. Different policy measures have been implemented, such as capital control mechanisms, export and import controls, direct support for R&D, fiscal incentives for investment in priority sectors, quality control measures and standards, direct State support for business management and administration, and financial and logistical support for technology transfer and for the transfer of skilled human resources.

Between 1960 and 1990, Korea restructured and reoriented its production structure toward technology-intensive sectors, achieving sharp increases in productivity and employment. The structural change did not derive from a strategy of "getting the prices right." Rather, the country's development was the result of calibrated and planned price distortions, introduced in order to channel industrialization to sectors that the government had identified as being of strategic importance. The industrial policy aimed at creating advantages in sectors with increasing returns and in activities with dynamic expected demand.

It can be said that the Korean structural change was a consequence of the various measures and interventions (subsidies, trade restrictions, credits) implemented by the government since the 1960s, aimed at reshaping the country's advantages, first by focusing on textiles, then on heavy chemicals, and subsequently on more technology-intensive sectors (Amsden, 1989). At the same time, Korea's success was the result of a capacity to manage rents, privileges and policies in a gradual way, based on the production and technological capacities created —as Khan (2000) relates in connection with industrial policy in Asia generally. Starting from the 1980s, Korea gradually introduced market liberalization, flexibilization and deregulation. For example, fast track and slow track programs were implemented to reduce the protection of domestic industries, regulating their exposure to international competition in accordance with their technological capacities and their productivity dynamics. While already internationally competitive industries were liberalized, protectionist measures were maintained for those sectors which were not yet competitive¹⁸.

The Korean policy favored a gradual and selective process of technological learning. The country did not adopt a rigid policy model, but modified its mix of policies as technological capacities were acquired, recognizing also the complementarities gained from inter-firm mobility of technical personnel and the assimilation of production and organizational techniques from abroad.

The literature provides extensive evidence regarding the Korean technological catch up (Amsden, 1990; Kim, 1997; Lall, 2004). For example, in the transportation equipment (automobile) sector, the Korean industry moved from assembly in 1960 to a position as one of the industry's world leaders, in a learning process of 25 years (Amsden, 1993). During that time, a captive

¹⁸ The speed at which countries opened to international trade is one of the great differences between industrial policy in Korea and in Latin America, having been much slower in the former.

demand was created for the domestic products, while imports of foreign automobiles and exports of Korean products were prohibited¹⁹. The synergy between industrial policies, public support to targeted human capital formation and the set of mechanisms to promote the assimilation and adaptation of foreign knowledge, along with the strength of the country's industrial players, were the basis for Korea's success in the semiconductor sector²⁰. The Korean case shows that under certain conditions the implementation of selective industrial policies can create competitive advantages —not merely exploit existing ones.

¹⁹ The case of Hyundai is paramount. This company moved into the manufacturing sector in 1964 and, being one of the largest local conglomerates (*chaebols*), it benefited, as did other *chaebols*, from access to subsidized capital. In line with this interventionist approach, the government obliged the nation's refineries to transport oil in Korean tankers, thus guaranteeing the demand for the local transport industry.

²⁰ Samsung is a clear example in this sense. In the production of DRAM (dynamic random access memory), the action of the large local conglomerates, which were enabled and developed as a result of close ties with governmental power, moved the country into a leading position in the world market. Korea's share of the world memory chip market was null in 1984, and 10% a decade later (Bae, 1995).

V. Industrial policies in Latin America

1. Industrial policies under the import substitution industrialization (ISI) model

As seen above, industrial policies seek to change the production vector of goods and services, which necessarily implies the creation of new activities. And in Latin America, the ISI model prioritized the creation of new sectors. The aim of the ISI was to foster the diversification of the production structure of the countries, with the objective of changing the prevalent specialization pattern and increasing the weight of technology intensive activities in the production structure. The ISI also responded to the need of endogenizing the effects of domestic demand growth, channeling it to productive investments and avoiding increasing imports, which would have deteriorated the trade balance.

In the 1970s most industry analysts highlighted that investment had two complementary effects on the economy. On the one side, a supply effect through the creation of production capacities (capital accumulation). On the other hand, a demand effect on the production of capital goods. Given that the domestic supply of capital goods was insufficient, the demand effect was mostly transferred abroad through increasing imports. Such process generated stop and go cycles derived from recurring trade imbalances. This, together with the recognition of potential knowledge and productivity spillovers from technical progress embedded in capital goods production, were the rationale behind programs to foster the domestic production of such goods in

the largest countries of the region, mainly Mexico and Brazil (Fajnzylber, 1983).

During the ISI, the industrial policy combined trade protection with investment promotion (both State and foreign investments were supported) and national development banks were the main financing agents. Two of the most notable examples of industrial policies in the region during the 1970s were the Second National Development Plan of Brazil, and the National Industrial Development Program 1979-1982 of Mexico, which coincided with this country's boom in oil exports.

Those plans organized the expansion of domestic supply in an effort to change the prevailing specialization pattern of the production structure. Three inter-related factors were at the basis of the strength of those plans: (i) the organization of the public-sector development apparatus according to sectoral and even subsectoral structures²¹; (ii) the existence of sectoral chambers representing the interests of private enterprises, which were the principal defenders of trade protection, and (iii) the existence of negative or positive sectoral preference lists in international trade negotiations, such as those carried through under the Latin American Integration Association (LAIA), the Central American Common Market (CACM), the Caribbean Community (CARICOM) or the Andean Pact. Although policies tended to focus both on the agricultural and the manufacturing sectors, the weight of the latter was such that the term "sectoral policy" was often associated with policy for the manufacturing industry.

However, during the debt crisis and the "lost decade" of the 1980s industrial policies lost their leading role, and the ISI model was object of serious critiques. In that decade, industrial policy became a sort of "bad word" not to be pronounced in "correct" political discourses. Hence, industrial policy, at least in its more strict formulation, ended up to be practically excluded from the new economic model that was established by the economic reforms²². There were several reasons for this: (i) public enterprises that had traditionally invested directly in new sectors were either privatized or closed, reflecting the new view that the State should play only a subsidiary role in economic growth; (ii) the need to balance public finances meant eliminating subsidies, particularly fiscal ones, and the subsidy components of credit operations, and (iii) there was a (sometimes controversial) perception that many investments suffered from bad planning, poor project management and corruption, and in some cases implied high inefficiencies —the so-called "white elephants." This loss of legitimacy of industrial policy, however, did not occur homogeneously in all the regions of the world. It was much more pronounced in Latin America. For example, as mentioned before in several countries of East and Southeast Asia, active sectoral policies, sometimes even with targeting at the firm level, remained in force until the mid 1990s; fading gradually, and at different rates, as domestic production and technological capabilities were gaining competitiveness.

Apart from the orthodox economic arguments against industrial policy, political opposition to the new economic model came from agents who supported the previous paradigm, thereby consolidating the "developmentalist vs. neoliberal" stereotype. Agents in favor of the economic reforms portrayed sectoral industrial policies as distortions in resource allocation and accused them of being at the origin of recurrent fiscal deficits that fuelled inflationary pressures, and trade imbalances. Although most governments in the region shared this critical attitude towards

²¹ For example, ministries of industry, agriculture, mining and others, and the corresponding general directorates for food, metal manufactures and machinery, chemicals, capital goods and so forth.

²² The analysis of the impact of the economic reforms (trade, financial and capital account liberalization, privatization and tax reform) and macroeconomic policies that materialized the new economic model in Latin America on industrial dynamics is beyond the scope of this article. However, it should be noted that reforms such as trade liberalization and privatization, as well as monetary policy and exchange rate measures, have often heavily influenced these dynamics, which has led to their being considered instances of "implicit industrial policy". Such policies are often made without adequate knowledge of the region's microeconomic conditions, i.e., the specific dynamics of its firms and markets (see Stallings and Peres, 2000). For a comparative analysis of structural change before and after the reforms, see Cimoli, Holland, Porcile, Primi and Vergara (2006).

industrial policy²³, such an extreme view did not always coincide with the de facto political measures. Even strongly reformist governments, such as those of Menem in Argentina, Collor de Melo in Brazil, and Salinas de Gortari in Mexico, maintained certain sectoral policies, in particular for the automotive industry, beyond their plain support of the market-led economic model.

2. Industrial policies under the new economic model

2.1. The 1990s: policies for competitiveness

Much of the region's experience in industrial policy during the Washington consensus era is encapsulated in the term "competitiveness policies" (Peres, 1997). Actually, the mid-nineties saw a renewed interest in sectoral policies, which, however was biased in favor of the so called "competitiveness policies". Almost all the countries of the region embraced the effort of designing programs to support the competitiveness of the national economy. In this respect we can identify three groups of countries. Firstly, countries such as Brazil, Mexico and some of the English-speaking Caribbean, elaborated policy documents specifically targeted to the industrial sector, analyzing its role in national competitiveness and highlighting its linkages with technological development and with a virtuous participation in international trade²⁴. These documents constituted working agendas elaborated by the Government together with the private sector, but did have neither the form nor the contents of former industrial development plans. Critics accused them of being "programs without targets" and, what was even worst, "without resources."

The focus on competitiveness pervaded also the Andean and the Central American countries. In this second group, the predominant approach was to enhance competitiveness of the economy as a whole, without explicitly targeting the manufacturing industry. The national competitiveness strategies were based on the cluster methodology, albeit under a variety of names, e.g., industrial agglomerations²⁵. From the policy-implementation standpoint, those activities resulted in the negotiation and implementation of agreements between private agents and the Government for specific value chains, where the latter played the role of catalyst or "facilitator".

The third group of countries includes those that did not implement any formal industrial policy or selective national competitiveness strategy, focusing basically on horizontal interventions²⁶. Argentina, Chile and Uruguay privileged neutral interventions that did not discriminate between production sectors and which were basically oriented by firms' demand (contrary to the previous supply side oriented model). However, those countries managed their horizontal programs in a pragmatic way, introducing a sectoral preference every time that there was a "sectoral" need. Thus, in Chile the supposed neutral character of the policies did not prevent the government from directly supporting the forestry and the mining sectors and some key export activities for a long time (Moguillansky, 2000).

²³ In the early 1990s, it was frequent to hear high-ranking macroeconomic policy officials propounding the view that "the best industrial policy is no industrial policy." Although simplistic, that phrase aptly reflected their position on the subject.

²⁴ Pérez Caltendey (2003) highlights the intensity of sectoral incentives in the Caribbean economies, particularly in member countries of the Association of Eastern Caribbean States, and in Barbados and Guyana, the latter having the broadest package of incentives in the region. Those incentives basically targeted the manufacturing and service sectors, particularly hotels and tourism.

²⁵ This approach was developed on the basis of Porter (1990), and was materialized in policy proposals by *Monitor Company* in the Andean countries in the early 1990s, and in the project "Central America in the twenty-first century: An agenda for competitiveness and sustainable development," coordinated by INCAE/CLADS (Costa Rica) in the middle of that decade.

²⁶ The term "neutral" or "horizontal" policy, which is widely used in the region, conceals the fact that any policy is bound to favor some sectors more than others *ex-post*. This is because such policies aim to enhance the operating efficiency of markets for factors of production which are used with varying intensity according to the sector or product in question. In some cases, policies are presented as neutral to gain greater legitimacy, despite being aimed at specific sectors from the outset. This frequently happens with technological development policies.

2.2. A typology of industrial strategies

Nowadays, beyond the focus on competitiveness there has been a “slow” return of industrial policies in the region (Peres, 2006). Ongoing policies can be organized in four broad groups. Firstly, there are policies following the line developed under the ISI model which aim at expanding specific sectors and strengthening their technological and production capabilities by integrating new segments, through a combination of some trade protection, and tax and financial incentives. The regimes covering the automotive sector in Mexico and in the MERCOSUR countries (Argentina, Brazil, Paraguay and Uruguay), which aimed at organizing and expanding the investments of producers of transport equipments and their components, are an example of this type of policies (ECLAC, 2004, boxes III.3 and III.4). A high number of the countries of the region have provided sporadic support for targeted sectors (i.e. sectors that needed direct support to increase their competitiveness) such as textiles, clothing, footwear, electronic products and toys. There were also numerous policies to stimulate agricultural and mining production. These policies, even though they varied extensively from country to country, have generally been much more stable than the incentives given to manufacturing. Even in sectors showing clear comparative advantages, it has frequently been necessary to design support policy schemes in response to short-term crises, or to meet challenges arising from loss of competitiveness²⁷.

Secondly, a number of measures originally targeted to specific sectors tended to lose their sector-specific character and turned into more horizontal policies. This is the case of policies for the electronics and computer industry, which began as ISI policies targeting the creation of a hardware industry and which later shifted to support software, before being subsumed under the general policies for the development of the information society and the diffusion of information and communication technologies (ICT) in the region (Peres and Hilbert, 2009). The prevailing discourse is that general purpose technologies have a cross-sector impact on the economy and should be treated as “neutral”. One shortcoming of this approach is the lack of definition of precise production activities to be supported.

A third category identifies the policies in support of highly concentrated activities that show strong economies of scale and network, such as electricity, telecommunications, oil and natural gas, among others. Those sectors have been largely privatized, and public support basically focused on developing efficient regulatory frameworks, including the creation and strengthening of enforcement agencies, adaptation of the legal framework and efforts to increase the coordination with local suppliers; the intensity of these measures varied from case to case, but was common to all countries. In this field, the outstanding experience in the region is the creation of sectoral technology funds in Brazil at the end of the 1990s aimed at supporting scientific and technological development activities in highly profitable privatized sectors, such as electricity, telecommunication, defense, aeronautics, oil and gas. According to the law, these funds are financed by private rents generated by the firms of the sector. These resources also contribute to the creation of transversal funds which finance activities in less profitable activities, such as support for poor or isolated territories, modernization of research laboratories and infrastructure, etc.²⁸.

A fourth group consists of policies to support clusters, particularly of small and medium-sized enterprises, or activities in which a high number of small firms operate under the leadership of larger firms. The cluster approach gained increased acceptance in the region, especially in Andean and Central American countries. As other kinds of industrial policies, these initiatives

²⁷ Some examples are “sun-and-sand” tourism in much of the English-speaking Caribbean (Hendrickson, 2003) and actions aimed at increasing crops of higher value-added and market potential, as a goal of the “Alianza para el Campo” in Mexico (Villagómez, 2003).

²⁸ Similarly, in Chile rents from copper mining are channeled to support innovation through R&D as an instrument of the National Innovation Strategy for Competitiveness released in February 2007. In May 2008 the Government announced actions in support of technological development in the first two of six clusters (agrifood and mining). For a detailed analysis of the systems of the sectoral technology funds in Brazil see Cimoli, Ferraz and Primi (2005).

focused on increasing the competitiveness of existing sectors rather than creating new activities. Policies in support of clusters had been extensively implemented also at the subnational level, and countries such as Mexico and Brazil developed a strong expertise in local development support. Incentives for the footwear cluster in the state of Guanajuato or the electronics industry in the state of Jalisco (Mexico) are two relevant examples (Unger, 2003; Dussel, 1999). In Brazil we can recall the activity of the Brazilian Service of Support for Micro and Small Enterprises (SEBRAE), which implements programs throughout the country; one of its most successful programs is the one to develop local clusters (*arranjos produtivos locais*, APL)²⁹. The legitimacy enjoyed by cluster policies, especially among international financial organizations, has facilitated their acceptance by governments. At the same time, the general consensus on cluster policies led to include under this category a mixed series of public support programs which indeed do have neither a production-chain nor a geographic-conglomerate scope³⁰.

Beyond this taxonomy of industrial policy strategies, countries in general differ in the degree with which they target specific production sectors. As seen before, some countries have maintained or even revived sectoral policies; other countries implement de facto sectoral policies through cluster promotion, while others reject sectoral targeting and privilege horizontal policies³¹. Nevertheless, there are countries which adopt the three stances simultaneously, recognizing that each of them responds to a specific development objective —e.g., the 2008 Brazilian industrial policy. However, with few exceptions, even targeted measures do not prioritize industry as during the ISI. Whereas manufacturing was privileged during the previous model, nowadays it is one of the sectors of least weight. The most favored activities have been primary sectors such as oil, mining and forestry; and various services (ranging from infrastructure to tourism and cinema).

In addition, in the countries of the region there are different degrees of coordination of the industrial policy measures within a broader national development strategy³². Here again countries fall into three categories: those with continuous efforts to support industrial sectors framed within explicit public-intervention strategies, generally expressed through official national plans or programs (e.g. Brazil, Colombia, El Salvador and Mexico); those with almost continuous actions, but with no explicit national development strategy (Argentina, Chile and Costa Rica); and countries that sporadically implement measures to solve emerging production crisis, but with no development plan (the vast majority).

However, changes of government, even when there entailed a sudden break with the countries' past political orientation, such as in Mexico in 2000 or Uruguay in 2005, have not produced major changes in attitudes towards industrial policies. The countries' belonging to the three above mentioned categories is sticky. Two examples, albeit in different directions, are the constant marginal relevance of sectoral policies in Chile, and the continuity of sectoral agreements to support export competitiveness in Colombia during the Administrations of Presidents Samper, Pastrana and Uribe (1994-2008)³³. This progress in institutional development should not be

²⁹ In an APL, a large number of firms operate around a productive activity that is predominant in a given location; those firms share cooperation and governance mechanisms. Measures to support APLs are implemented locally, reflecting the Brazilian experience that state-level policies tend to have a substantial sectoral component.

³⁰ See Velasco (2003) on sectoral agreements in Colombia.

³¹ It has to be recognized that even when countries follow a horizontal strategy, they tend to target certain sectors in more or less explicit ways according to different national interests and power groups.

³² Countries also differ in terms of the number of policy measures to support production activities. Some countries implement a wide range of measures (e.g. Argentina, Brazil, Colombia, Guyana, Mexico, Uruguay and Venezuela); others only make use of few instruments (Bolivia, Chile, the Dominican Republic and Peru, among others); and many other countries do not implement any kind of measure (Haiti, Paraguay and Suriname, among others).

³³ Such agreements encompassed 41 production chains and sectors accounting for 86% of all non-traditional exports. Of these, 31 are national and 10 regional; 29 correspond to goods and 12 to services. Not all of them are programs for cluster strictly speaking; some target specific sectors (potatoes, farmed shrimp, tuna, trawled shrimp, flowers, coffee and bananas). The relatively loose application of the productive-chain concept reflects the fact that most of the agreements were signed for pragmatic reasons aimed at mobilising entrepreneurs (Velasco, 2003).

overstated, because cases of stop and go policies are still frequent³⁴. Even in Brazil, the policy for the automotive industry in the 1990 contained elements that pointed more to the rescue of a sector in crisis (unable to face external competition) than to a long-term oriented policy for supporting a leading sector (Bonelli and Motta Veiga, 2003).

2.3. Policy lines and instruments

In terms of policy acceptance, we can identify four groups of industrial policies, which led to different lines of action in the countries of the region: winning, losing, emerging and controversial policies (Peres, 1997).

Winning policies include those that are generally accepted by Governments, i.e. they enjoy strong legitimacy. In addition to the policies for export promotion and FDI attraction, this group also includes policies to promote technological upgrading, training of human resources, small firms and microenterprises support —generally through establishment or consolidation of networks or clusters— and local development, the latter two being closely linked. Acceptance of these policies stems from their assumed neutrality since they act on factor markets (technology and training), or because of their (also supposed) positive impact on job creation, basically at the subnational or local level³⁵.

Losing policies, in contrast, are clearly contrary to the prevailing free market approach. They include direct fiscal subsidies, targeted credits with subsidized interest rates, foreign trade tariffs, and government procurement. In terms of the latter, the situation varies from one country to another: while some use it nationally or subnationally, such as Mexico and Brazil, in others it is out of the policy agenda because its use is deemed contrary to the goals of expenditure efficiency and transparency. Given that financial and fiscal subsidies are necessary for the implementation of the winning policies, a sharp contradiction arises. Policy implementation suffers from the fact that governments that want to support industrial development through the winning policies are seldom able to implement them because of the lack of effective action in the fiscal and financial fields.

Emerging policies —which, among other, encompass competition policy, improvement of corporate governance regimes, regulation of infrastructure sectors where markets do not operate efficiently, or corporate social responsibility —enjoy increasing legitimacy, but did not yet reach consensus. Some countries have modern legislation and relatively strong institutions to enforce them; whereas in others, they are still at the discussion and decision stages; usually such policies are not a significant item on the policy agenda.

Lastly, there are some **controversial policies**, which basically encompass sectoral policies. Unlike the other policies, which are generally considered winning, losing or emerging in almost all the countries of the region, there is no consensus on sectoral policies. Whereas some countries have a discourse that clearly rejects such policies, despite providing some *ad hoc* sectoral support in practice, other countries recognize the validity of targeted policies for increasing the competitiveness of activities with strong growth or export potential, or that are facing strong competition from imports. There is a double standard with respect to sectoral policies: some countries deny their usefulness, especially when they support the manufacturing sector, but when it comes to the support of agriculture and services (e.g. tourism) the same countries use them openly, without facing any pressure to legitimize them.

The region's policies, even those with a basically sectoral scope, have focused much more on enhancing the efficiency of existing sectors than on creating new ones (IADB, 2001; Melo, 2001;

³⁴ See Scarone (2003) on policies in Uruguay; Villagómez (2003) on the 2002-2010 electronics industry program in Mexico.

³⁵ In last decade, policies to foster innovation were increasingly accepted throughout the region, as it is shown by the number of science and technology plans released, even in some of the smallest countries. Some examples are the 2006-2010 National Science, Technology and Innovation Plan in Panama issued in 2006, the 15-year Chilean National Innovation Strategy for Competitiveness and the Colombian National Science, Technological Development and Innovation Plan, both released by early 2007.

Peres, 1997). This is consistent with the search for greater penetration in international markets, grounded essentially on the pursuit of static comparative advantages (unskilled labor and natural resources). This has been the case both in countries with a diversified production structure, such as Brazil and Mexico, as well as in those whose production structures are concentrated in few activities. In the more diversified countries, it could be argued that there are few non-existent sectors, so a sectoral policy could only be detected at the level of specific products. Although this might be true, the evidence, especially in Mexico and to a lesser extent in Brazil, suggests that sectoral measures have focused on strengthening and expanding pre-existing sectors; the clearest example being the automobile industry³⁶.

The return of sectoral industrial policies has been a slow process. For example, after the 2001 crisis, Argentina selected nine production chains to be supported by the National Forum for Industrial Competitiveness and Production Chains; the sectors are: wood and furniture, leather and leather products, textiles and apparel, agricultural machinery, building materials, software, biotechnology, natural gas for automobiles, and cultural industries³⁷. Other countries, such as Costa Rica, Peru and Uruguay, targeted development actions in even greater detail, supporting individual projects in given firms. Examples include investment incentives in megaprojects in the Peruvian mining sector³⁸, measures taken by the Government of Costa Rica to encourage INTEL to establish operations in the country³⁹, or tax exemptions in support of projects declared to be in national interest in Uruguay⁴⁰.

Beyond these cases, the comeback of sectoral policies is best exemplified by Brazil. In November 2003, the Government announced the Guidelines for an Industrial, Technology and Foreign-Trade Policy (PITCE), which focuses on four knowledge-intensive activities: semiconductors, software, pharmaceuticals and medicines, and capital goods⁴¹. This policy was accompanied by the creation of a new institution in charge of the coordination and implementation of that policy, the Brazilian Industrial Development Agency (ABDI). The PITCE marked the return of industrial policies to the country's development agenda.

In 2008, Brazil launched a new industrial policy which has an even stronger sectoral focus. Beyond horizontal, basically fiscal, measures and six strategic technological programs under the

³⁶ The creation of new activities appeared sporadically as a policy objective, mainly related to international trade negotiations aimed at increasing market access and to the attraction of foreign direct investment (FDI). Policy initiatives resulted in the expansion of Mexico's export platform in the framework of the North American Free Trade Agreement between this country, Canada and the US (NAFTA) (automobiles and transport equipment components, electronics and clothing); promotion of the basic assembly activities (maquila) in a number of Central American and Caribbean countries (clothing); and investments in privatized firms in the services and primary sectors in South American countries. Different combinations of sectoral policies and transnational corporations' strategies induced a certain level of production diversification. Nonetheless, this strategy had limitations, such as low value-added in the assembly activities, weak linkages to the domestic economy, and the consequent scant generation of endogenous technological capabilities (Mortimore 2002; Peres and Reinhardt, 2000).

³⁷ See Subsecretaría de Industria, <http://www.industria.gov.ar/foros/institucional.htm>.

³⁸ In Peru, the main policies implemented in support of the mining sector in the 1990s were as follows: promotion and guarantees for foreign direct investment; privatization of State-owned enterprises; approval of a framework law guaranteeing free enterprise and private investments; tax, exchange-rate and administrative stability; modernization of the mining concessions process; tax benefits (reinvested profits are exempt from income tax); tax incentives for investment in megaprojects (income-tax exemptions and advance drawback of the general sales tax). See Fairlie (2003).

³⁹ See Alonso (2003).

⁴⁰ The 1998 Investments Act allows the Government to promote specific investments by declaring a project to be in the national interest. Benefits can be general or specific to a given project (e.g. tax exemption for real estate property). General benefits can be automatic (e.g. exemption from the wealth tax on movable property destined for the productive cycle), or discretionary (not regulated as of mid-2003). See Scarone (2003).

⁴¹ Those sectors were selected because (i) they display sustained and increasing dynamism; (ii) they account for significant proportions of international investments in research and development; (iii) they open up new business opportunities; (iv) they are directly related to innovations in processes, products and modes of use; (v) they increase the density of the productive fabric; and (vi) they are important for the future of the country and have potential for the development of dynamic comparative advantages (MDIC, 2003, p. 16). These guidelines were strengthened by the Growth Acceleration Program, enacted in February 2007, which relies mainly on fiscal incentives.

control of the Ministry of Science and Technology (MCT)⁴², this policy includes seven programs targeted to leading sectors, under the control of the National Economic and Social Development Bank (BNDES): aeronautics, oil, natural gas and petrochemicals, bioethanol, mining, steel, pulp and paper, meat, and twelve industrial competitiveness programs, under the direct control of the Ministry for Development, Industry and Trade (MDIC): automobiles, capital goods, textiles and garments, wood and furniture, cosmetics, civil construction, services, shipbuilding, leather, footwear and leather goods, agribusiness, biodiesel, plastics and other sectoral programs (Government of Brazil, 2008).

In summary, beyond the different approaches to sectoral policies, the region displays a strong convergence in terms of policy design over the last decade, centered around four basic elements: (i) emphasis on increasing international trade competitiveness; (ii) generalization of the legitimacy of horizontal or neutral instruments, which, as mentioned above, are not horizontal or neutral *ex post*; (iii) support for small businesses and microenterprises, basically for reasons linked to their job-creation capacity, and (iv) the focus of attention on subnational or local economic areas. The boom of cluster support programs provides the clearest example of the combination of these elements; the already mentioned SEBRAE program to support APL in Brazil being the most important in the region.

2.4. Policy implementation and impact evaluation

While the Latin American countries have made significant progress regarding policy design, implementation and impact evaluation are still weak. While there are some data on the funding allocated to certain policies (actually programs or projects), the information is insufficient to evaluate implementation overall. Despite this, it has been shown that, with some exceptions, the degree of policy implementation in the region is low, as indicated in Peres (1997). Particularly clear results are provided by Alonso (2003) concerning the situation of the five Central American countries; Fairbanks and Lindsay (1997) regarding the Andean countries that designed competitiveness strategies based on clusters, and Dini and Stumpo (2004) and CEPAL (2000), with reference to policies to promote the development of SME networks and natural resource-based clusters, respectively.

The situation in terms of policy evaluation is also unsatisfactory. Although there are assessments of a number of specific programs, such as those supporting SME in Chile⁴³, together with general assessments of what happened *after* policy implementation, these studies generally do not analyze cause-consequence mechanisms. Lack of information frequently hampers policy evaluation; in addition, the instruments seldom explicitly establish the criteria and mechanisms for follow up and evaluation. Also, there is a lack of consensus on how to evaluate policies with multiple targets, objectives and lines of action.

Even though the discussion usually focuses on the lack of evaluation of past and ongoing programs, policies seldom reach the stage in which they need to be evaluated. Countries dispose of policies which have been formulated, approved and announced, but which are not always implemented. Various factors are responsible for widespread implementation failures and for the consequent shortfall between design and implementation; among them we recall the following.

Non-operational or unachievable goals. Objectives specified through declarative statements without setting clear, measurable goals, and without effective mechanisms for financial resource allocation, hamper policy evaluation. An evaluation of success factors in the 41 Colombian sectoral agreements shows that: (a) those with well-structured, quantifiable

⁴² The technological programs (health, ICT, defense, nuclear energy, bio and nanotechnologies) prioritize areas of strategic importance for the medium and long term, and actually point, in some cases to the very *creation of a sector* (e.g., nanotechnology) and not just to its strengthening.

⁴³ For that country, see the evaluations of development programs in Silva and Sandoval (2003).

commitments and specific time horizons were easier to monitor and fulfill; (b) agreements with few and simple commitments tended to be more successful; (c) the leadership and decision-making power of the individuals who negotiated the agreements played a fundamental role, and (d) production chains which have already been supported by public programs prior to the agreements achieved better results⁴⁴. Given that practice in the region often makes no attempt to take these success factors into account, policy documents tend to be shopping lists of needs and objectives. Although the multiplicity of goals may reflect the involvement of many stakeholders in complex societies, it also indicates an inability to choose priorities and build consensus around a small number of implementable goals.

Lack of human and financial resources. This issue is particularly relevant in small and poor countries which often depend on external aid (loans or grants) to design and implement their programs. In addition to a lack of resources, policies are usually announced without considering their cost and the corresponding needed financing, assuming once again that “first we decide and then we see what can be done and with what resources.”

Nearly all of the countries of the region lack institutional capacity for policy management and implementation. This shortcoming is greater when policies aim to replicate international best practices, rather than responding to the needs of the countries interested in applying them. This tendency results in policy designs that are disconnected from reality, often promoted by institutions of scant political weight in the structure of Governments, or by business associations that are unrepresentative and have little economic and political clout. The problem is further aggravated by the tendency to separate the design from the implementation. Although countries can increase their institutional capacity over time, and some have done so in the region, institution building requires stability of objectives for longer periods than the time horizon of a government (between four and six years). Besides, widely different government revenue to GDP ratios across countries, which vary from less than 10% to over 30%, introduce differences in terms of resources available to support policies.

Weak commitments between public and private actors. There is a proliferation of plans and programs designed merely to respond to political pressures from economic stakeholders, to comply with conditionality to access international funding or to fulfill legal or constitutional provisions. The will and strength the private sector showed to support the ISI is not present anymore. Business associations have scantily supported most of the recent efforts to diversify the production structure beyond competitiveness programs⁴⁵. Actually, tariff protection used during the ISI was a powerful economic signal (“invest in a new sector and get rich”); nowadays many policies must be disguised under a “market friendly” non discriminatory approach; at best, the entrepreneur is offered a package that is complex to conceptualize and operate, and whose impact on profitability is uncertain and far from clear. It is hardly surprising that there is such a perception that “policies do not work.”

Despite the problems outlined above, in the last decade the countries increased, in general, their capacity to create room for debate between public authorities and business chambers for policy design and, in fewer cases, for implementation. Significant progress has been made in developing public-private dialogue. The process reached a stage in which the leadership of policy proposals has often been exercised by business associations⁴⁶. Business chambers have participated actively in consultative forums discussing measures in support of competitiveness, such as the National Competitiveness Council in Colombia, the

⁴⁴ Velasco (2003).

⁴⁵ Moreover, differences of goals and strategies between the government and the private sector, although less than before, are far from having disappeared, as shown by Alonso (2003) for Guatemala and Scarone (2003) for Uruguay.

⁴⁶ Examples include the Asociación Nacional de Industriales (ANDI) of Colombia, the Confederación de Cámaras de la Industria de Transformación (CANACINTRA) in Mexico, the Asociación de Industriales in the Dominican Republic, the Cámara de Industrias in Costa Rica, or the Federación de Cámaras Industriales de Centroamérica (FECAICA), which promoted an Industrial Modernization Agenda in Central America. In these countries and elsewhere, it is even possible to speak of public-private co-responsibility in policy formulation, rather than policy consensus (Peres, 1997).

Production Development Forum in Chile, or the “sectoral chambers” in Brazil⁴⁷. In some cases, long-term proposals have even been made to stabilize policy design beyond the political cycle, as it happened, for example, with the “Vision 2020” promoted by the Mexican Confederation of Industrial Chambers (CONCAMIN) in the 1990s.

On the contrary, policy coordination with other civil-society organizations has been much weaker. Although labor unions have participated in discussion forums, in general their presence has not been decisive. An exception, however, is the role played by unions in Brazil, especially in the “sectoral chamber” of the automotive industry. Other stakeholders played a marginal role, with the exception of the academic sector, which was directly involved in the efforts of the National Competitiveness Council in Colombia and which participated in the design and management of the sectoral technology funds in Brazil.

Implementation failures and the perception that “policies do not work” undermine their legitimacy and their acceptance, especially among their main beneficiaries: the entrepreneurs. This gives rise to the paradox that business people bemoan the lack of resources available for policies, while at the same time they fail to make full use of what is available. Overcoming these implementation failures and making sure that instruments designed actually function, is one of the key challenges for industrial policies nowadays. What can be done to close the gap between what is decided and announced, and what is actually done and evaluated? Three lines of action, which are not mutually exclusive, look promising and should be followed up.

Firstly, policy design should be accompanied, not followed, by explicit consideration of the institutions that will have to implement them. This means involving industrial policy stakeholders and creating institutions which allow this participation on a continuous basis. Although reform of the State and organizational development are not issues that are close to the industrial organization specialist, they need to be addressed to reduce implementation failures.

Secondly, there is a need to increase the amount and the quality of human resources specialized in policy design and implementation, prioritizing the latter, even through transfer of qualified personnel.

A third line of action is to develop and strengthen the institutions and the individuals that link policy design and implementation. Three courses of action are available for that purpose: strengthen public institutions; search for leaders in the private sector; and strengthen intermediate implementation agents, such as business associations.

The countries of the region accumulated significant experience in terms of policy management in the areas of macroeconomic policy and central banks; such experience could and should be replicated in areas linked to industrial development. Private leadership of policies has been efficient in some cases (e.g. in the development of local clusters), and should be used whenever possible; but experience shows that this approach is hard to replicate and it is not distributed according to implementation needs. Thus, economically weak areas that need major efforts from policy operators tend also to have weak private leaderships. The strengthening of intermediate implementation bodies has been a successful strategy in countries such as Chile, where it has been used to carry through programs to promote SME networking (PROFO), although they suffer from the predictable problems of adverse selection and moral hazard. Different arrangements are possible. None of them is a panacea, or easy to implement; but they do open up alternatives and deserve to be explored from perspectives that combine the economic, institutional and management dimensions.

⁴⁷ In Brazil, the expression “sectoral chamber” (câmara sectorial) refers to a tripartite Government-entrepreneurs-workers negotiation space.

VI. Conclusions

Industrial policies are at the core of specialization or diversification strategies. There are five key points in elaborating an industrial development strategy: the criteria for targeting production sectors; the mix of policy instruments associated to each objective; the constraints imposed by endogenous capabilities; the political will and the institutional capabilities to manage that strategy, and the amount and continuity of financial resources available for implementation. Regarding targeting production activities and sectors, the policy should recognize that, while there are no blueprints for prioritizing sectors, history shows that countries have in fact chosen and continue to choose sectors; and they do so, on the basis of a few more or less precise criteria. The knowledge-intensity of the activities in question, their dynamism in the international market as a result of high elasticity with respect to world income, and their potential for productivity growth, are some of the general criteria used since ever by countries to identify sectors to promote structural change.

These criteria are supported by others related to the strategic nature of certain activities, which basically reflect their importance in output, exports, or employment, usually at the national level, but also with a local or subnational dimension.

As from the 1980s, the technological “dimension” has increasingly been used to define the scope of industrial policies. Although we can define industries or production sectors as sets of goods with high cross-price elasticity of demand, it is possible to define as sectors also sets of activities which share a technological path (Robinson, 1953; Dosi, 1988a). One can therefore speak of the aerospace, biotechnology, or ICT sectors. To promote activities encompassed by a given technology, there are as many experiences

centered on horizontal policies as others involving direct intervention at the level of firms, market segments or knowledge networks. In practice, policies to promote clusters are frequently inseparable of innovation or technological development policies.

As policies acquire systemic scope, their impact on competitiveness in the economy at large requires special attention. The higher costs associated with the initial stages of learning curves should not be so high that they endanger the competitiveness of firms that use the new goods or services that are being incorporated into the basket, particularly when those firms have a strong foreign-trade orientation. The balance between supporting the diversification of the domestic production structure and taking advantage of opportunities to import cheaper capital goods or better technology is not easy to strike; it can only be found through experimentation and trial and error — i.e. we need pragmatic rather than ideological policies. As pragmatic policies are frequently of a reactive type, a major challenge for the region is to combine pragmatism with much more proactive policies.

In Latin American and Caribbean, the tools available to implement industrial policies are well-known and present in the policy discourse. The big difference with respect to past experience in the region and elsewhere stems from the current open-economy scenario, in which it is impossible to use instruments involving widespread and permanent trade protection. This constraint weakens the economic signal (expected profitability) sent to potential investors in new activities, and causes a significant portion of the cost of development activities to fall on the fiscal area. This leads to problems, both in setting priorities for the allocation of budgetary resources, and for the stability of those resources at times of fiscal constraint.

The sustaining of long-term development instruments, possibly spanning more than one government term, remains a challenge that most countries of the region have so far been unable to tackle successfully. Another powerful tool of sectoral policy, direct investment by the State, is off the policy agenda in most countries; but the degrees of freedom in this subject are large, as shown by various experiences, particularly at the local level. Experience in the region suggests that the policy packages applied thus far have not had the force to induce the specific investment behaviour that protection had in the past, although the cumulative effects remain to be evaluated.

In the case of small economies, apart from these constraints, it has been argued that they not only should not develop sectoral policies, but in fact cannot do so. Without ignoring the importance of the domestic market to achieve economies of scale and learning, it should be remembered that the issue is less important in open economies, as shown by numerous small countries that operate as highly competitive export platforms. Although institutional capacity can also be a major constraint, especially in the short run, this does not mean that it is impossible to implement industrial policies, rather that their scope should be in accordance with those capacities. In other words, the alternative is to focus efforts down rather than shooting wildly into the air.

Despite these considerations, from the standpoint of political will, sectoral measures face ambivalence in the region —enjoying high levels of legitimacy in some countries, although always less than during the ISI period, but very low levels in others. Nonetheless, even in countries that do not consider them legitimate, actual practice is far more ad hoc, and often specific measures are implemented to support sectors in crisis. Given the need for these policies to move development forward in the region, it is worth asking what needs to be done to increase their legitimacy.

There are two priority areas of action. Firstly, implementation capacity needs to be improved, to narrow the gap between policy design and institutional capacity for effective implementation, the persistence of which undermines the credibility of policy makers and hence the policies themselves. Secondly, significant progress also needs to be made in evaluating the impact of the initiatives implemented in terms of their ultimate objectives: economic growth, technological

progress, increased productivity. When public resources are scarce, only sound evaluations can create space to divert resources from other policy areas to these ones.

Although these points are not new, they are crucial. Some progress has been made on this issue, examples being Mexico's "Business Development Program 2001-2006" or Brazil's 2008 industrial policy, which explicitly mention quantitative targets, improving previous practice⁴⁸. Nonetheless, progress in the region as a whole is insufficient. This is very serious for policies that have to justify their own *raison d'être* and compete for fiscal resources with others that enjoy greater legitimacy, such as basic education, public health or citizen safety. As industrial policies are crucial for diversifying the production structure and accelerating productivity growth, they need to regain their legitimacy by demonstrating their impact.

From a broader perspective, some crucial questions remain unanswered. If, in the late 1990s, an analyst who advocated industrial policies had been asked to design an ideal political scenario for their acceptance and implementation in the region, he or she hardly could have hoped for a better environment than that which exists today. At present, political parties or coalitions of parties that based much of their long-term platforms on the rejection of "economic neoliberalism" are in power in Argentina, Brazil, Bolivia, Chile, Ecuador, Nicaragua, Uruguay and Venezuela. Industrial policies had frequently been mentioned by these parties as a substantive part of their strategic guidelines for achieving sustainable development with greater social justice.

Reality appears not to have fulfilled those expectations. Even in the most advanced example of policy development and actions (Brazil), the perception is that much more has to be done to change the production structure of the country. In short, there has been no significant action in most of the countries mentioned above to change the current production specialization through the application of industrial policies.

Two explanations may be attempted. The first would be that the discourse of the opposition was rapidly constrained, upon its rise to power, by the pressure of global financial markets and the existing consensus as to what constitutes a "responsible" macroeconomic policy, and that, as part of the same move toward international acceptance, the discourse of structural change was relegated to second or third place. The fact that structural change measures were correctly assumed to be expensive, and to produce results that could only be achieved in the long term, could not but speed their decline, even within the official discourse.

Another explanation might be that, without denying the significance of the factors mentioned above, the structural-change or industrialist discourse lacked the strength to show that it could be translated into specific operational proposals, capable of yielding at least a few results that were attainable within the space of a single administration. If this second explanation is correct, one might conclude that one of the main concerns of structural policy analysis should be to pay attention to the situation of governments that wish to carry out such policies, do not know how to do so and, if they did, would scarcely have the time needed for those policies to yield results that strengthen their position and allow them to remain in office.

Even if policies to diversify the production structure can technically demonstrate their capacity to generate positive impacts, it is by no means clear which stakeholders would be interested in generalizing them in the countries of the region. In other words, which social actors are likely to put their economic and political resources behind initiatives that go beyond support for cluster development, the great majority of which are in any case far from well-funded? Industrial policies have been making a (slow) return in Latin America and have been able to operate, albeit on a small scale, in open economies and within orthodox macroeconomic policies—contrary to the previous conventional wisdom that they were incompatible. Enhancing their, if not minimal, at

⁴⁸ See Secretaría de Economía (2001) and Government of Brazil (2008).

least marginal status, requires significant players, including the State, to take ownership of them and commit their power and resources behind them. And therein lays the rub: in many Latin American countries, just a few, rather weak stakeholders are interested, or likely to be interested, in supporting proactive industrial policies to change the current pattern of specialization. The open question is how much, and in which direction, this setting will change during and mainly after the world economic recession that began in 2008.

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