

UNTANGLING INDUSTRIAL POLICY:

ideas and
coordination
between state
and business

MOISÉS BALESTRO - FLAVIO GAITÁN
(organizers)

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Preface

Renato Raul Boschi¹

The German sociologist Karl Mannheim claimed that interests are socially fashioned and mirror the *Weltanschauung* of a specific group. For Mannheim, a political point of view, we could also add a policy idea, implies more than the support or rejection of an uncontested set of facts. It also implies a comprehensive *Weltanschauung*. When stressing the role of ideas and their intertwining with interests, this book attempts to bring Mannheim's intellectual contribution to the field of political economy.

In comparison to other works on industrial policy, there are three significant contributions. Ideas and *Weltanschauung* matter and they have strong implications in the success of industrial policies. By and large, the ideational contestedness over industrial policies or a manufacturing strategy resulted from the absence of a development ideology in the different epistemic communities within the government and the business community. Either in business or government, the political strength of those standing for innovation as a critical component of the state action in the economic development was never strong enough to influence the prevailing *Weltanschauung*.

In this sense, by scrutinizing the ideas and policy paradigms both in the government and in the private sector, the book allows us to understand that many of the coordination failures derive from opposing normative and cognitive frames from the different state and business actors.

The purpose is to unveil the dilemmas of the coordination between state and business actors in the industrial strategy between 2003 and 2014. Adopting a

manufacturing strategy has been a critical mechanism to promote economic development actively. Untangling industrial policy suggests an unveiling of the relations between business and the state as lessons for the future industrial policies. After the resumption of the debate from industrial development in Brazil as well as in Argentina, the weak results from industrial policies dampened the prospects for a widespread backing of a development strategy.

Untangling implies solving something confusing. By scrutinizing the historical process of the policy ideas and actors' interests and preferences, the book sheds light upon the frailties of the political coalitions underpinning the industrial policies between 2003 and 2013 in Brazil. It allows the reader to follow the ideational convergences and dissents from business and state actors. It helps us to realize how industrial policies moved from a widely accepted state action in the public sphere at the beginning of the Workers' Party government to a demoralized public policy in 2014.

Grounded on rich empirical research with in-depth interviews, a survey, media analysis, documents and reports, the book well accomplishes the purpose of providing us with the nuances and intricacies from the trajectory of the industrial policies. In particular, what were the different interests and ideas in the three industrial policies: *Política Industrial Tecnológica de Comércio Exterior* (PITCE), *Programa de Desenvolvimento Produtivo* (PDP), and *Plano Brasil Maior* (PBM).

From a macroeconomic perspective, the recent Brazilian experience faced two deleterious processes for manufacturing; the persistent high-interest rates and an overvalued Real. On the one hand, they are the result of an economic policy where stability is dependent on foreign savings. On the other hand, the persisting overvalued real benefited from trade balance economic surpluses stemming from the commodity boom cycle. With a chiefly non-innovative population of manufacturing firms, advanced and more value-added exports of high-technological intensity were not the choice. The alternative from price competition also had severe difficulties due to an overvalued real.

Maintaining the adverse macroeconomic model helps to understand the reason why, despite the substantial increase in the state support to innovation, the rate of innovative firms barely increased from 33.3% in 2003 to 36% in

2014.

An often neglected source of the explanation lies upon the weaknesses of the political coalitions underpinning industrial development. A major weakness was the fragmentation from political parties organized in the 'pork and barrel' politics. Also, the most influential political interest groups in Parliament had little to do with the agenda from technological development in manufacturing or even the issues discussed in the arenas of manufacturing competitiveness. These groups stood for the agenda from banks and big institutional investors, the agrarian elites and the large economic groups usually associated with decidedly low-tech manufacturing and extractive industries. Exceptions were the automobile and the oil and gas industries.

One failure concerning the goals and policy design had to do with the pressure to make the PDP and PBM a non-selective industrial policy by including no less than 19 different types of industry compromised the fiscal feasibility from these policies and led to the consequent loss of legitimacy.

The fiscal crisis became associated with the tax breaks given to large and medium-sized firms as an overextended countercyclical policy. Despite not being part of the industrial policy, the tax breaks became harshly criticized in the media as part of the policy.

From a broader political perspective, tax exemptions fall into the type of regressive income policies not differing from other exemptions conducive to income concentration such as exemptions from financial revenues, subsidized loans to agribusiness, and tax breaks for special export zones.

The expectations from the economic growth stemming from the fiscal stimulus failed. However, the financial benefits became a substantial burden, and the general government debt increased from 61.35% of the GDP in 2010 to 78.93% in 2017. This burden is due to the difference between the higher interest rates for the Treasury loans and the subsidized interest rates for loans to the private sector such as the credit from BNDES and other forms of subsidized credits.

Another detrimental consequence from the higher interest rates, among the

highest in the world, is a macroeconomic and institutional environment providing the wrong incentives. As a consequence, many manufacturing and non-financial firms are dragged to financial operations at the expense of productive investment projects. Upper middle classes also accommodate their political preference to a rentist regime with the illusion of a short-term enrichment and strong consumerism.

Industrial policy acquires a different meaning in the developmentalism in the era of globalization with enormous competitiveness coming from China and a deindustrialization trend in Brazil with the latter becoming an exporter of commodities essentially. What could be the place for industrial policies in Brazil under this new division of labor where China stands out as the ‘world factory’ and Brazil as the ‘world farm’. Also, what would be the place of industrial policies in the transition to knowledge-intensive economies.

One important lesson from this book is that industrial policies must be a government choice because only the government has the long-term rationality. However, the agency power from government depends on the political system and its supporting coalitions. For Latin American countries, industrial policies are far more embedded in institutional and ideational contexts. That means the political hegemony of a developmental elite, a favorable macroeconomic policy and the state capacities needed for strategic planning of public policies.

Those are some of the many challenges demanding an interdisciplinary approach towards the industrial policies in developing countries, especially in Latin America.

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Summary

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Health and pharmaceutical industry, a positive sum game, and the dilemmas of Brazilian industrial policy

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Conclusion

Roberto dos Reis Alvarez

Flavio Gaitán
Moisés Balestro

This book seeks to unveil and grasp the dilemmas of coordination among actors around industrial policies the period between 2003 and 2014. The adoption of industrial policies has been one of the primary mechanisms of States that have actively sought to promote development. Despite having emerged during the nineteenth century with List's claim to support infant industry, its use spread massively during the postwar period, appealing to different mechanisms, such as subsidies, use of tariff as well as non-tariff regulations, financing, planning and selection of strategic sectors. Different economic theories have supported the use of active industrial policies with the aim of boosting development (Nurske, 1953; Kaldor, 1960; Prebisch, 1949; Schumpeter, 1942; Cimoli *et al.*, 2010; Rodrik, 2008; Peres, 2006; Suzigan & Furtado, 2006; Hirschman, 1958; Johnson, 1982; Rosenstein-Rodan, 1943; Fajnzylber, 1990) stressing its power as a driver of growth, its relationship with innovation and the generation of skilled jobs, particularly in contexts of structural transformation of economies. Its use has been one of the pivotal tools of national-developmental projects in semi-peripheral countries. From the countries of Southeast Asia to the economies of Latin America, the different states have deployed a series of promotion mechanisms, aware of the importance of the industry to create forward and backward linkages, promote innovation and create employment. Like other developing countries, the three largest economies (Brazil, Mexico and Argentina) went through state-led industrialization due to a detrimental division of labor dependent on the exploitation of natural resources and to the shortage of domestic private capital accumulation.

Besides the loss of momentum in the technological development and productivity to other latecomers such as the East Asian countries, there were political and macroeconomic elements contributing to its decline:

- a. the unilateral rise of interest by the United States Central Bank in the early 1980s spurring the Latin American debt crisis;
- b. the arrival of the "new" right to power in central countries (the United Kingdom in 1979 and the United States in 1980) and the greater receptivity of these governments to neoliberal ideology and;

- c. the move towards market fundamentalism from international financial organizations such as World Bank, the IMF, and the IDB. The latter, as financiers of the Latin American states in crisis, had a significant sway on the adoption of fiscal adjustment and restrictive macroeconomic policies (Ezcurra, 2000; Anderson, 1999; Vilas, 1999; Gaitán, 2014).

In fact, between the early 1970s and the late 1990s, all countries in the region, from Mexico to Argentina, implemented reform programs with detrimental consequences to industrial policies and state support to industrial development in general.

These adjustment policies came up in several ways regarding pace, intensity, and scope, according to the historical trajectories of the countries. The debt crisis and the decline of the development projects made room for the retreat of the state as a pivotal actor in the development process. In fact, during the 1980s, there was a difficulty and application of sectorial policies. The 1990s saw a strong legitimacy from neoliberal ideas within epistemic communities. Industrial development was not an agenda anymore with institutional convergence and the search for comparative advantages taking its place. What remained of industrial policies was mostly the result of business groups lobbies regarding import taxes. Sectorial policies tended to compensate for the harmful effects of economic opening, deregulation and lower margins of state protection over industrial firms. In particular, the problems of financing and the difficulties of competing on equal terms with transnational companies.

The wearing out of neoliberal ideas and the political change with the new center-left governments made possible a revival in the state role where the boundaries of the state versus market blurred. At different paces and path-dependent to the varying depth of the neoliberal reforms, industrial policies were recovered by different governments of Latin America, especially in Argentina and Brazil. Stability and economic growth have to match with development and its contribution to innovation as a central element of the economic growth cycle.

The discussion about the fourth industrial revolution and the knowledge economy brought innovation and technological learning to the stage. This

economic landscape demands new tools and goals from industrial policies. Movements inherent to the capitalist dynamics as well as constraints to the role of the state add complexity to the governance of industrial policies. Finally, rethinking the state involves a comprehension of the nature of capitalism in the globalization and endowment of the necessary tools to respond to various challenges derived from new techno-economic paradigms and the technological rise from latecomers. The elements of the new developmentalism on the role of the State refer to their ability to meet specific conditions stemming from necessities facing challenges of capitalist production in different contexts. It is remarkable that a debate about the role of the state recast in times of financial globalization. Authors diverge on the analysis of the state power towards globalization. The literature brings forth two concurrent processes in a post-Fordist regime of accumulation.

On the one hand, there is the financialization defined as an increase in the power of the finance capital detrimental to the real economy (Epstein, 2005; Sawyer, 2014). In other words, the rise of global value chains, which tend to fragment the production of goods in different companies geographically dispersed (Prochnik, 2010; World Bank, 2015; Minian, 2009) and the power of multinational companies. A third element, which permeates both dynamics, is a technological revolution, defined by the speeding of technical progress, particularly in areas such as biotechnology, computing, and microelectronics (Rodriguez, 2006).

The entanglement of issues in industrial policies include various topics such as sources of financing, public policies, the profile and positioning of the actors involved. In the policy cycle, coordination among strategic actors, the institutional environment, changes and continuities between different institutional regimes, innovation systems, the relationship between national and foreign firms and the relationship between firms.

In this volume, we focus on the dilemmas of coordination of industrial policies. The volume is the product of a research project funded by the CNPq that aimed to investigate the role of ideas and interests from strategic actors (bureaucrats and political leaders, business associations, trade unions, representative of the financial system, and the manufacturing firms themselves) in the institutional change from industrial policies from 2003 to

2014. One may claim that the recast and re-creation of the role of the state in the economy constituted a milieu to the return of industrial policies. By describing this return of the state, Peters (1995) claims that it will not be a pure and simple return to the old statist configuration but to new arrangements in the relationship between state and society. Globalization usually requires a new type of political economy, where contracts and governance become more relevant to the new enabling role of the state replacing its former interventionist nature.

Coordination between State and business grew in importance and became a component of the industrial policy (Chang, 2003; Rodrik, 2004; Altenburg, 2011; Devlin, 2013; Schneider, 2013; Cornick, 2013). As of Chang (2003), industrial policy is an ex-ante co-ordination mechanism. In this sense, resorting to industrial policies means recognizing ex-post market failures.

In the first chapter Eduardo Rodrigues Gomes and Carlos Pinho analyses the impacts of Brazil's export-promotion policies of manufactures on the country's business sector, from the late 1960s to the late 1980s. The authors highlights that an array of tax incentives and credit subsidies were implemented by the Finances Minister Delfim Netto, as part of a heterodox shock to the Brazilian economy that resulted in an average GDP growth of 10.2%, from 1967 to 1973, during the period labeled as economic miracle, with low rates of inflation and unemployment.

The study focuses mainly on the textile sector to explain the export-promotion policies and the international expansion of their sector, the industrialists' political actions, and efforts to engage in collective actions. The authors highlight that entrepreneurs reacted positively to the export-oriented incentives implemented by the Brazilian government. Nonetheless, the political reactions from business found were characterized mainly by short-term, narrowly-focused demands, usually presented in a dispersed way through Statecentered corporatist organizations, by and large as they used to do during ISI when they were focused only on the protected domestic market and subsidies to support their performance on a national basis. That is why, even recognizing the need for investment to become competitive abroad to reduce the price, Gomes & Pinho states that there was no engagement in taking actions to improve local productivity. By the practices of State

corporatism, the only solution sought by these and of other problems was, by and large, the expansion of State support on a case-by-case basis.

In a dialogue with the literature on the manufacturing, the author considers that organized state intervention may not be an absolute condition for organized business, as initially suggested by Peter Evans' concept of autonomy embeddedness (1992). According to the authors, the study of the textile and auto industries, with their organizational outcomes, suggests that the market can also stimulate business to organize around long-term, large-scale goals. Additionally, again in contrast to Evans' thought, it should also be stressed that an embedded relation between the private and the public sector is not necessarily conducive to any related politico-economic outcome, as the failure in implementing these proposals indicate. They were turned into actual governmental policies but never implemented.

The article fits into the significant number of comparative research on Brazil, and the NICs have tried to explain the divergence of trajectories between those economies. Gomes & Pinho suggest that Brazil has not taken the South-east Asian path due to problems of the dominant political coalition of ISI that prevented the country from facing the costs of such a transition vis-à-vis unfavourable structural conditions for this transformation, such as the country's large protected domestic market, and the lack of a favorable international context. The attempts to launch an exported-driven textile manufacturing in the 70s and the 80s were not sustainable because competitiveness was primarily based on fiscal incentives and currency devaluation. Policies related to industrial restructuring and technological development were spasmodic. In a way, this resulted from a rent-seeking mindset from this business sector where tax exemptions were the source of profit rate and an incentive to more investment on industrial rationalization.

In the next chapter, Godinho discusses the connections between the health care system and the pharmaceutical industry, highlighting the Brazilian path and the industrial policies implemented during the PT (Worker's Party) administrations of Luis Inácio Lula da Silva and Dilma Rousseff, considered by the author the starting point of industrial healthcare policies. The chapter analyses the dynamics of innovation in the healthcare sector introduces the basic types of health care systems, including a vibrant discussion about

conditions of success of industrial policies and the trajectories followed by industrial countries, such as Germany, the United Kingdom, and the USA.

The article focuses mainly on the Brazilian case, stemming from the analysis of the Healthcare system and the development of the pharmaceutical industry. According to Godinho, “three conditions have been set out for the success of industrial policies”:

- i. the presence of agencies with strong political support and a high capacity to coordinate the actions to be implemented;
- ii. the constitution of articulation mechanisms between the state and the business community which ensure goal setting, mutual collaboration and trust and;
- iii. the maintaining of a stable institutional environment and a regulatory framework that favors private investment, in addition to the presence of a pro-investment macroeconomic environment.

At the moment of applying the discussion on industrial policies to the Brazilian case, Godinho highlights the hybrid character of the Brazilian state and the problems of the different mechanisms of dialogue between State and business. Nonetheless, the author states that “obstacles to the effective operation of mechanisms that favor dialogue with the business sector and the implementation of industrial policy are found, however, outside of the institutional design of such policies.” As regards the different industrial policies implemented since 2004, it is possible to identify dilemmas deriving from their connection with the macroeconomic policy, in addition to those associated with the discontinuity, design, and instruments of the policies themselves.

The author analyses the problem of the high-interest rates and the initiatives deployed by President Rousseff to overcome it. There was a currency devaluation of the real between 2011 and 2012, while at the same time the basic interest rates dropped. The public banks exerted pressure on private banks to reduce their spreads. In this demarche, Godinho explains the role of different social actors in the abrupt final to a period of State intervention and

attempts of reindustrialization.

In the fourth chapter, Andreas Nölke, Christian May and Michael Schedelik begin by presenting the discussion based on comparative capitalisms approach, highlighting commonalities and differences of economic institutions in the global south. The authors the comparative capitalist approach applied to emerging economies must take into consideration:

- i. type of insertion into the global economy. The extent to which emerging economies are open towards foreign capital (foreign direct investments by transnational corporations (TNCs) as well as global financial flows) has a significant influence on how much they can achieve through economic policy;
- ii. the analysis of the function of the state (“an autonomous industrial development policy is difficult to achieve if the state neither owns the bulk of industrially relevant firms nor has large amounts of capital at its disposal in order to support domestic firms”). A core problem of many developing countries is usually the low level of investment. That is why the state is so important, and the basis of economic coordination;
- iii. the authors claim that the CC framework for the study of industrial policies in emerging economies has some advantages over conventional approaches. First, it aptly connects the macro and micro level by linking institutions directly to the company level and their strategic decisions. Second, it pins down how institutions interactively codetermine the investment decisions of firms via complementarities; third, in that sense, it can be used for policy guidance for similar countries in similar circumstances.

In this analytical framework, the article analyses the Brazilian case. It presents the Brazilian development finance in historical context, and the period the authors labeled state-permeated capitalism, under Labour party governments. The authors state, in the first place, that informal cooperation between Brazilian business and government works better than cooperation between better-organized business associations and the state in other Latin American countries, as stated by Schneider (2013).

That is to say that the state is better equipped to effectively shape firms preferences and interpersonal relations help to make direct and indirect involvement in industrial finance more effective. The article analyzes the role of the state, which is thought to play a role in seeking growth and competitiveness. In Brazil, the industrial strategy under the banner of new developmentalism entailed not only the build-up of national champions but also a focus on job creation and an increase in domestic demand. For the authors, the basis for the diversified structure of Brazilian industry was already in place during the ISI-phase, including policies for national content that have supported technology transfer into Brazil. Massive state financial support for companies in selected sectors (oil and gas, large-scale agriculture, small aircraft) over many decades has led to the development of “pockets of efficiency” in Brazilian capitalism.

In the next chapter, Matías Kulfas analyzes the industrial policy of Argentina, a country that considers intermediate industrial development, being part of a distinguished group of industrial countries despite having a relatively minor relevance. Although this is not a chapter on Brazil, it brings relevant insights to grasp better problems related to Brazilian industrial development.

The specificity of the Argentine case is a broad period of deindustrialization and an attempt to reindustrialization by the hand of a conservative coalition. The article presents a historical periodization, beginning with the period of industrialization associated with the primary goods exporting phase (1870-1929), import substitution industrialization (1930-1975), the period called sectoral restructuring with deindustrialization (1976-1990) and, finally, the period of consolidation of a new open and flexible industrial model (1991-2016).

The article stops in the last two stages, which have shaped the current situation of the Argentine industrial system. Concerning the stage of dismantling the industrial fabric inherited from the interventionist period, Kulfas recognizes that at the beginning of the 1970s, the process of industrialization led by the State faced challenges of a certain complexity, but also showed laborious progress to avoid. It presents the debate between heterodox and orthodox and makes an interesting question about the causes of the thesis on the “black legend” according to which industrialization

represented a period of economic and social backwardness. In his vision, the answer must be sought in the difficulties resulting from an unstable sociopolitical context and social contradictions in a period characterized by political instability, the recurrent appearance of authoritarian experiences and social conflict.

On the period of consolidation of the new open and flexible industrial model, it analyzes, in particular, the performance of the manufacturing industry in a stage of heterodox reforms. Kulfas affirms that the manufacturing industry ended up adhering to the opening of the international market and the pro-market reforms implemented since 1989. Pro-market reforms resulted in constraining competitive large domestic firms to natural resources industry formerly developed in the stage of the state-led industrialization (iron and steel, aluminum, petrochemical) and medium-sized domestic firms as assemblers in the automotive supply chain.

Considered as a whole, the author considers that Argentina has followed an erratic historical trajectory, changing and plagued by conflicting and contradictory projects. In these more than 130 years of industrial history, there were compelling development experiences, but which never managed to generate a critical mass that would give a profile of technological leadership to the country. He points out, in that sense, that the country had some business nuclei with Schumpeterian behavior but lacked a Schumpeterian economic elite, capable of decisively influencing public policies in the medium and long-term.

The chapter recovers the limitations and difficulties, including policy weaknesses. In this sense, Kulfas affirms that the policy has a high content and superposition of programs by geological layers, where instruments created in different periods coexist, some to face crises, others with a sectoral profile, most of them horizontal and coincide. In general in the lack of a strategic look with specific objectives. The government also had a very skewed axis towards the expansion of consumption as the engine of growth and industrialization. However, under the parameters of the OFIM, once the high real exchange rate phase ended, the option for imports (both final goods and inputs to assemble in the country) occupied a significant space among industrialists, not just the CTs but also national groups and many small and

medium-sized firms. Macroeconomic uncertainty and the lack of a clear and coherent strategy, beyond the many initiatives implemented, strengthened a short-term focus on the different business segments. The government tried to refound a new “national bourgeoisie,” but there was not an entirely coherent action also hampered by the organizational weakness from business. In this regard, it should be noted that there is a strong fragmentation in the representation of small and medium-sized companies, where there are no less than five business associations with a relatively weak weight, plus the Argentinean Industrial Union (UIA), split into two, those devoted to exporting and those concentrating on the domestic market.

For Kulfas, the government made some innovations during the period but lacked prospective capacity and a more far-reaching view. In that sense, the history of the Kirchner government shows the great contradiction between the long-term political planning that allowed it to have the period of greatest political continuity since the democratic restoration of 1983, only exceeded in the Twentieth century by the cycle of radical governments from 1916 to 1930. However, the Kirchner era did not have the strength and legitimacy to spur long-term changes, partly due to skepticism on long-term planning. In 2005, sectors of the UIA asked the government to re-found a Development Bank, receiving in response that many of those who requested it were responsible for the capital losses from the National Development Bank (BANADE), which will operate from the 1970s, when he inherited the functions and capital of the Industrial Bank of 1944, until its dissolution in the 1990s. The government did not create a development bank but multiplied financial policy actions around the Banco Nación, BICE, the regulation of the Central Bank and other programs. However, the lack of a development bank meant, fundamentally, the lack of a prospective instrument that could guide a new productive profile, rather than reproducing the demands from actors at OFIM. At this point, the lack of a strategic vision to promote structural change and change the OFIM towards policies which would safeguard productive spaces that provide higher learning and capacity building for the firms in this chapter, what happened from 2002/2003 represented a different version to the previous period, but without altering the essential aspects of the OFIM. For that reason, speak of a version II of said model, but without having a structural change. In 2011, there was a new peak in industrialization, but six years later there was a considerable decline.

On chapter 6, Jackson De Toni and Flavio Gaitán present the theoretical debate about industrial policy between orthodox and heterodox scholars and policy-makers and discuss mainly the role of ideas and discourses in public policies, presenting the contributions from discursive institutionalism. Using this theoretical approach, the authors analyze the different industrial policies under Labour party governments: PITCE, PDD, and Greatest Brazil, in a chronological sequence they labeled as the transit from ideas without support to support without ideas.

The authors conclude that “the resumption of industrial policy as a State policy was in itself meritorious and broke off a period in which policies to support manufacturing were deliberately confused with clientelist and inefficient practices. However, it was not enough to stop the regressive specialization of the Brazilian economy”. PDP and PBM, short-termism was not only a problem for the business but also a problem for policymakers. Both industrial policies included other topics such as skills development and internationalization from large firms in those industries where Brazil has a competitive edge. At the same, the macroeconomic environment improved with lower interest rates, despite the maintenance of an overvalued Real. Nonetheless, according to the authors, “without a selection of key industries and a clear focus on innovation, the PDP and PBM turned out to be more like a compensation for the persistence of a macroeconomic policy hostile to the industrial development.”

Finally, the authors state that the continuity of industrial policy will depend on the combination of four factors:

- a. the leadership capacity and political hegemony of a developmental elite;
- b. conducting a non-hostile macroeconomic policy towards productive development policies;
- c. the effectiveness of public-private strategic planning of public policy; And, finally, the performance of a governance arrangement by setting the appropriate arenas, bureaucracies and decision-making mechanisms in the direction of effectiveness.

In the last chapter, Balestro and Gaitán discuss the ideational failures in the coordination of industrial policies. Drawing on contributions from the literature on state and business coordination and institutionalism (especially the historical and the discursive), the chapter presents results related to the role of ideas in the formation of interests and the logic of action of strategic actors in the changes occurring in Brazilian industrial policies from 2003 to 2014. The analysis brings the notion of ideational power with the discursive struggles over policy ideas not only among actors placed at the top of the hierarchy, but also those actors more directly involved in the policy implementation process. The authors present the main distinctive features of industrial policies.

Two critical variables for the institutional environment and little examined in economic studies on innovation and industrial policy have to do with the political system. One is the problem of the fragmentation of the political system with the difficulties it creates for long-term public policies and another is the problem of the low representation of industrial firms in the Parliament.

Concerning the role of ideas in the coordination of industrial policies, the ideational failures help to explain the diminishing support from business to industrial policies as recently seen in the political shift in Brazil. Political variables as the level of fragmentation from parties and representatives encourage policy short-termism and undermine the collective action from business. With a political system conducive to “pork and barrel” politics, it is extremely difficult to reach consensus on less electorally sensitive issues such as industrial policies.

All the chapters contribute to understanding the conditions of success from industrial policies in countries with persistent institutional drawbacks and failures in the coordination between the state bureaucracy and business which is necessary to a deliberate catching-up strategy.

The ideas and positioning of strategic actors have been fundamental for the institutional change of industrial policies. Analyzing the interrelation of ideas, epistemic communities and institutional environments demand to know the complex structure-agency relationship, particularly in incremental

institutional contexts.

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Brazil's Export-Oriented Growth and the Politics of Reforms

The current analysis considers the political impacts of the export-oriented growth of Brazil's textile manufacturing industry on that country's entrepreneurs, from the late 1960s to the late 1980s. The outward expansion of Brazil's industry is an important element of early reorientation of the country's import-substitution model, and it also must have also been influential in the political shaping of strategic actors for Brazil's development. The political effects of this industrial export drive on local capitalists have not been under close attention, and our interest is how the first redefinitions of Import Substitution Industrialization (ISI) influenced business groups in gaining better insights on the politics of transition toward open economies.

The literature on neoliberal reforms in developing countries has mostly relied on generic structural cleavages for figuring the collective actions of these and other social actors, and this is hardly sufficient for an adequate understanding of those changes. The transitions of authoritarian, newly-industrializing countries to democratic and market-oriented societies have involved various political redefinitions, usually under troublesome economic performance, making them a complex unfolding, processes that are difficult to understand based on bipolar social differentiation, as they have been commonly approached (Geddes, 1995).

Blanca Heredia, for example, confirmed the previous limitations: after acknowledging that "analysts have increasingly turned their attention to the political, institutional dimensions of economic policy change", she points out that they have also tended to rely on "economic cleavages as the main determinant of political action and, therefore, the single most important variable in accounting for policy outcomes" (Heredia, 1994: 65). Along the same lines, Garretón has specifically referred to this problem. Focusing on the Chilean economic and political reforms, he asks if was there any "space for the reconstruction of social and political actors without which societies

are unable to reform and transform themselves” (Garretón, 1994: 217). Besides, by arguing in favor of a theory that “assigns to actors and subjects the historical capacity to create and mold dynamics and structures,” Garretón sets aside the political economy approach since it “always refers to structural forces that conform to structural logic from which actors operate and within which they enjoy little autonomy” (Garretón, 1994: 217).

Few more nuanced accounts on this issue came into the debate. Considering the variety of vested interests in the options after ISI, for example, Kaufman suggested that export promotion of manufactured goods “probably involves the widest number of potential coalitions and cleavages, since so much would depend on the types of products exported and whether sold in a world or regional markets” (Kaufman, 1979: 211). More than that, in a review article, published more than thirty years ago, Haggard suggested that the “ability to shift policy toward an outward-looking growth strategy rests on a certain political autonomy from short-term interests of the protected private sector” (Haggard, 1986: 357).

They have enriched the discussion, but none were developed into a systematic concern, as we are doing here. To this extent, some of the most critical questions for dealing with the influence of an export growth of manufactures on the politics of long existing inwardly-oriented industrialists are: How the export-oriented expansion of industrialized goods affected previous patterns of State corporatist politics of the industrial bourgeoisie? Has the outward expansion reinforced or stimulated change in the existing State corporatist practices? Why? What accounts for continuities and transformations in the patterns of the political behavior of the Brazilian industrialists as they got engaged in international markets? What are the most important implications of these transformations of business politics for Brazil’s post Neoliberal development challenges?

The chapter is a deepening of earlier versions of a chapter of Gomes dissertation (1988), now updated in coauthorship.2016. This study therefore explicitly takes the textile manufacturing industry as a paradigmatic example of the of Brazil’s ISI, common roots, challenges and expansion in the domestic market. Since its beginning, this sector went through the whole ISI process, and it is a fruitful case for assessing the political impacts of the

export-oriented growth on local businessmen politics (Cason, 1982; Gomes, 1988). In order to reach the concluding part, we firstly characterize industrialists' politics during ISI in the second and following sections. The third part comprises our account of the Brazil's export-oriented growth of textile manufacturing. This allows us to describe its impacts on business politics from this textile sector in the fourth part followed by conclusion...

Business Politics in Brazil's Import-Substitution

As other in the case of other Latin American countries, Brazil's ISI targeted only the domestic market, based on protectionism, on an overvalued exchange rate, on a variety of incentives for foreign direct investment, and extensive economic State interventionism (Tavares, 1972; Hirschman, 1968).

During the process of the collective organization along with the industrial development, capitalists had to rely on the corporatist institutions built by the State in the 1930s, after their first efforts of an autonomous organization until then. Not being business peak organizations particular industries, these corporatist structures had a significant fragmenting impact on the patterns of business collective actions at the same time legislative channels closed. Besides, as the state intervention was commonly carried out through a variety of agencies poorly articulated, the state ended up not only producing but also reinforcing fragmented business interest.

The state corporatism imposed most of the same rules for the working classes, except without having its organizational voice heard. As O'Donnell indicates, Latin America's corporatism had a double and distinct façade: one for workers, based on repression and control, and another one for business, by and large, fragmented incorporation, something seen by Diniz in the Brazilian case, as "dual corporatism" (O'Donnell, 1977; Diniz & Boschi, 1991).

Therefore, during Brazil's industrialization, entrepreneurs have mainly worked to influence the process of policymaking and to get specific incentives from the State through various channels of interaction with public

spheres, such as bureaucratic rings, policy networks, by and large, with short-term demands, in a narrow and dispersed way. In the 1930s, the corporatist structures remained practically untouched throughout democratic and authoritarian regimes, until the post-1988 democracy when it began to face modifications (Diniz & Lima Jr., 1986; Leopoldi, 1984; Gomes, 1988; Schmitter, 1971; Abranches, 1978). Since the 1950s, however, capitalists autonomously began to form other industry associations outside the constraints of the state corporatist structure, firstly rooted in the industrial sectors of durable and intermediate goods that were emerging in the country at that point. Given their voluntary basis, these associations could control free-riders, and they became more representative of the members' interests. However, as these organizations have also been built to influence particular policy arenas, they ended up generating political-organizational impacts similar to those of the formal structure. Understood as business "dual representation," they also became partially narrowly focused in their agenda (Diniz & Boschi, 1977; Abranches, 1978).

Beginning in the mid-1960s, however, Brazil's government tried to modify the country's inward-oriented industrialization and set up a series of export-promotion policies for the manufacturing industry which were successful in stimulating its outward expansion, as convincingly shown in Table 1.

Table 1: Brazil's total exports and manufacturing exports (US\$ million) and share of manufacturing exports in total exports, selected years (1965-1990).

Year	Total Exports	Manufacturing Exports	Ratio of Manufacturing Exports/Total Exports
1965	1,596	121	7.6
1970	2,379	360	13.1
1975	8,670	2,222	29.8
1980	20,132	7,489	44.8
1985	25,639	11,255	43.9
1990	31,390	17,013	54.2

Source: CACEX Yearbooks, 1965-1990.

To this extent, the involvement with international markets is critical to understand the outline of business politics after ISI – and before Neoliberalism – and an important political issue that emerges is the impact of this outward expansion of the manufacturing industry in the 1970s and 1980s. In particular on their previous dispersed and fragmented pattern of “state corporatist politics” of the industrial entrepreneurs, formed during the country’s ISI.

As will be indicated in the next section, the export-promotion model has a particularly intriguing influence to grasp the role of business in Brazil’s recent development challenges, given that, for the very first time, long protected entrepreneurs got exposed to international competition. The domestic market was kept closed to foreign competitors, and these policies were composed of a variety of subsidies from different governmental agencies, with little – if any – coordination, in a downwards “polycentric” decision-making arena, which had an complimentary bottom up alternate façade appropriately framed as a “polycentric access” by Lima Jr. and Lima (Lima JR. & Lima, 1987).

Brazil’s Export Promotion Policies and Brazil’s Adjustment

Brazil began to carry out a set of policies targeted explicitly at promoting exports of manufactured goods since the mid-1960s, primarily as an effort for overcoming some difficulties related to the import-substitution model of industrialization, long followed by the country.

Nonetheless, most governments since World War II had no actual concern with improving Brazil’s terms of trade, and, as time went by, the value of country’s exports, based mainly on coffee, stagnated. In order to keep sustained growth, Brazil continuously ran into balance of payment deficits, which resulted in increasingly unmanageable public budgets and into a chronic and rising inflation (Tavares, 1972; Hirschman, 1968; Skidmore,

1977). In the early 1960s, these economic difficulties merged with socio-political unrest critical of a redistributive orientation of a populist regime, resulting into a deep politico-institutional crisis, provoking the installation of an authoritarian regime through a military-led coup, backed by some civilian groups, including business sectors. The new regime dismantled the country's democracy through waves of strict, repressive policies, and it also implemented a couple of economic reforms (Skidmore, 1967; Stepan, 1973).

Within the new authoritarian regimes of Latin America of the 1960s and 1970s that followed a Neoliberal orientation to solve the problems of National Developmentalism, Brazil engaged into an approach based on a resumption of a strategy of state-led development and specific policies for stimulating an overseas expansion of local manufacturing industry. After an orthodox short period of fighting inflation, Brazil implemented the export-promotion policies of manufactured goods, as a way of improving the balance of payments, the need of paying the country's massive foreign debt, among other problems (Kaufman, 1979; Serra, 1979).

The export-oriented growth of Brazil's manufacturing industry began in the second half of the 1960s with the application of various export incentives and subsidies, that were quickly and autonomously carried out by the new authoritarian regime, generating an entirely positive response from business (Clements & McClain, 1990). We take 1968 as the starting point of this policy first phase, as it was the moment when the government introduced the crawling-peg system of devaluation. This policy was decisive for preventing the erosion of export revenues due to inflation and, therefore, for building business confidence in foreign sales. A result of this policy was the sizeable increasing rate of subsidy offered in Table 2.

Table 2: Brazil's subsidy rates for manufactured exports (%), 1965/1985 (selected years).

Year	Subsidy Rate
1965	5.0
1967	21.3
1969	42.67
1971	53.14

1973	52.27
1975	56.00
1977	67.87
1979	62.08
1981	61.57
1983	53.57
1985	43.38

Source: Cason, 1993; Clements & McClain, 1990.

The initial steps toward promoting exports took place in a favorable international environment, and thus this period can be thought of as an “easy phase of export-oriented growth”, if we can rely on the periodization of ISI for figuring what comes after, as Cason insightfully did (Cason, 1993; Lago, 1992). In the 1970s, however, Brazil’s exports faced the hard impacts of the first oil shock, and this initiated what can be seen as the second and “difficult” period of the outward-oriented expansion (1974-1979), keeping the previous analogy with the phases of import-substitution. International demand declined, and Brazil also had to deal with growing protectionism abroad. On the domestic front, Brazil had chosen an expansionary response to the oil crisis and, if this provided for high growth rates, it also resulted in problematic foreign indebtedness, as well as growing inflation and high-interest rates. The II National Plan was the dividing lines between a positive view of State interventionism by heterodox economists, and a negative one from the orthodox economists. During the 1980s, because of previous policy options and of the second oil shock, Brazil faced even more difficult challenges, particularly a larger foreign debt and yearly inflation rates skyrocketing from three to four digits rates. Export expansion in general declined, and Brazil’s economic policies lacked coherence, as they were pressed by many conflicting forces, as the need for producing trade surpluses and the need for stabilizing inflation carried out through many heterodox shocks. The transition to democracy, starting in 1985, brought out a concern with redistribution. With all these economic difficulties both at home and abroad, this period is the “critical” and the last phase of export-oriented growth, as shown in Table 3 (Frieden, 1991; Modiano, 1992).

Table 3: Brazil, GDP and inflation rates (%), selected years, 1968/1988.

Year	GDP Growth Rate	Consumer Price Index
1968	9.8	22.0
1970	10.4	22.3
1972	12.1	16.6
1974	9.0	27.6
1976	9.8	41.9
1978	4.8	38.8
1980	9.1	82.8
1982	1.1	98.0
1984	5.7	196.7
1986	8.0	143.7
1988	-0.1	682.3

Source: Abreu, 1992.

More specifically, in 1999, the inflation rate reached the fourdigit mark indicating the entrance of Brazil into hyperinflation, and of a complex process of deregulation, privatization and trade liberalization, leaving no room for any specific active policy of export-promotion as before, bringing to a close the period covered by this research. As insightfully summarized by one analyst, any industrial policy had to wait until 1988. We now turn to the economic and political reactions of the textile businessmen, that will, later on, take us to the fifth section of this article focusing on the concluding considerations of this study (Modiano, 1992; Castro, 1985).

The Textile Industrialists in the Export-Oriented Growth

Brazil's textile industry is a paradigmatic example of the light-consumer goods industry, and it consolidated in the early and "easy" stage of ISI, after 1929. By and large, this is an output of Brazil's agro exporting economy. This provided the necessary ingredients for its development: locally produced

raw material, a consumption market formed at emerging cities in the fringes of the plantation economy, local capital for investment resulting from declining profits from coffee exports, and workforce formed by African slaves, up to 1888, and later on by and large by European immigrants.

After independence from Portugal was proclaimed in 1822, the textile industry was affected in different ways, by various crises of foreign trade. After the installation of the very first factories in the 19th century, close to cotton growers of the Northeast, the hub of the sector moved South to Rio de Janeiro, the federal capital of the country, attracted by emerging other poles in the neighboring states of Minas Gerais and São Paulo. From the late 19th century to the early 20th century, European immigrants set up many leading textile companies (Stein, 1979).

1929 was one (crisis) of a kind, but it also opened the way to more sustained growth, expanding approximately 50% until 1938, and much more during World War II, and its aftermath. Having grown along Brazil's general expansion of approximately 10% for three decades since the 1930s, it underwent a downturn in the late 1950s/early 1960 but reacted positively to the export-oriented policies. Before that, it benefited from the general incentives for ISI, and Stein (1979) is very positive about the decisive role protectionism had played after World War II, when the sector had experienced a short outward growth due to the decline of British and North American exports to Latin America. According to this author, textile industry of the more technologically developed countries would have eliminated the Brazilian industry from the world market, and it could also displace it from the domestic market without protectionist barriers. However, the relative importance of the textile industry in the manufacturing sector as a whole declined, as more modern sectors began to produce larger shares of the country's GDP. The participation of the textile industry in Brazil's GDP went down from 22.2% in 1939 to 10.1% in 1969 (Baer & Villela, 1985).

As indicated, Brazil's textile industry is a paradigmatic example of the light-consumer goods industry consolidated in the early and "easy" stage of ISI. After a couple of factories established within the agro-exporting economy, the textile industry targeted the domestic market formed in the fringes of this economy, based on local capital reacting to attractive opportunities for

investment and the disruption of the supply of textile products from abroad since World War I (Stein, 1979). This sector grew along with the country's ISI, and corresponding urbanization, but the relative importance of the textile industry in the manufacturing sector as a whole declined, as more modern sectors began to produce larger shares of the country's GDP. The participation of the textile industry in Brazil's GDP went down from 22,2% in 1939 to 10.1% in 1969 (Baer & Villela, 1985: 299, 302).

Since its early stages, the textile industry consisted of small, and medium-sized businesses and a small number of large companies. The latter are the most active members in the leading business association, the association of the most developed state of the country, the Syndicate of the Textile and Weaving Industry of the State of São Paulo (SINDITEXTIL). Despite being a state corporatist organization, SINDITEXTIL connected to a parallel business association in the state of São Paulo; the São Paulo Association of the Textile Industry (ATESP). Later ATESP transformed into a national scale association, the Brazilian Association of the Textile Industry (ABIT). Both organizations formed a dual representation of business in Brazil since the 1950s. The peak association of the corporatist structure made of local associations and state federations is the National Council of the Textile Industry (CNIT) (Diniz & Boschi, 1991; Braga, 1988).

Up to the beginning of the export take-off in 1968, the textile sector had dealt with problems of the credit squeeze, high interest rates, "excessive taxation," and reduced consumption, all related to the stabilization policies implemented by the authoritarian regime of 1964. For instance, when Luis Antonio Medeiros was president of SINDITEXTIL, he straightforwardly condemned the government economic policies, by saying that the "monetary policy is simplistic and exaggerated," therefore affecting the "productive and distributive activities" (CL, Aug. 24, 1966).

Interestingly enough, the sector did not present any concern with exports until mid-1968, when the minutes from the VII National Convention of the Textile Industry announced that the government had already provided the conditions for an international expansion of the sector. It was also stated that it was time for the textile industry to demonstrate its capacity of conquering foreign markets through its international competitiveness (CT, Jun. 17, 1968). By the

end of the year, Medeiros came to the fore to reveal that the “first positive signs” resulting from the export incentives were at sight, expressing his confidence in the capacity of the textile industry to engage into a significant overseas expansion (CT, Dec. 24, 1968). Despite its deep roots in ISI, a labor-intensive industry, and one that stood behind its modernization needs, the textile industry got engaged in export activities shortly after economic incentives. Its outward-oriented drive has been quite impressive as indicated by Table 4.

Table 4: Brazil, textile industry exports (in US\$ million) and growth rate (%),1968/1988, selected years.

Year	Exports	Growth Rate
1968	22,7	-
1970	41,8	46.7
1972	145,4	131.9
1974	444,8	37.9
1976	397,0	4.7
1978	568,2	13.6
1980	828,3	9.8
1982	658,1	-23.9
1984	1130,9	38.3
1986	837,7	-5.0
1988	1219,6	21.3

Source: CACEX Yearbooks.

The initial “easy” period of export-promotion witnessed a significant expansion of textile exports, after an erratic evolution between 1964 and 1967. The average yearly growth rate for the period 1968-1973 was approximately 75%, and the total output grew more than times, from US\$ 22,7 in 1968 to US\$ 324,8 million in 1973 (Table 4). During this early stage, the textile industrialists expressed their adherence to the export activities through increased foreign sales, and open support to the export-promotion

policies. They have also constantly demanded an expansion of existing incentives and subsidies for their engagement in foreign sales, usually through short-term and narrowly focused requests.

These difficulties and related demands formed the agenda from business for a couple of years after 1964. These entrepreneurs expressed practically no concern with exports up to 1968 when export incentives were already available and employed. For example, the closing statements requests arising from the National Convention of the Textile Industry of 1966 did not mention anything about exports. On that occasion, textile businessmen showed themselves so much hurt by the orthodox economic orientation of the first administration of the new regime that they dramatized their problems and the lack of attention from the part of the government by launching a “Manifest to the Nation.” They declared themselves in “permanent assembly” after the end of the convention, in order to have their demands heard by the government (CT Oct. 10, 1966). The government finally dealt with their requests, but they found it insufficient. In any case, they became pleased later on, when the second military administration changed the economic orientation towards an expansionary direction, through the hands of the finance minister Delfim Netto (CT Oct. 19, 1966, CT May 10, 1967, CT May 17, 1967).

Little by little, therefore, textile entrepreneurs became interested in exporting. In mid-1968, the conclusions of the VII National Convention of the Textile industry acknowledged that the government had already provided the conditions for an international expansion of the manufacturing industry, and that was then time for the textile industry to demonstrate its capacity of conquering foreign markets by being competitive abroad (CT Jun. 17, 1968). At the very end of 1968, Medeiros pointed out to the first positive signs resulting from the export-promotion policies and expressed confidence on the capacity of the textile industry to engage in a significant overseas expansion (CT Dec. 24, 1968).

However, the subsidies were never enough. In 1972, for example, Edmundo Kehdi, president of the Textile Association of the State of São Paulo (ATESP), demanded an expansion of subsidized credit for exports to reflect what he saw as a significant rise in exports from the textile sector in that year. He qualified subsidized credit as an extremely decisive factor in the bid to

reduce the final price of exported goods (GL Dec. 1, 1972). Surprisingly enough, he also considered the price reduction allowed by the subsidies as their primary justification: “It is precisely at that initial phase, he said, that the businessmen lack technical assets and other resources, and he depends very much on his price to be able to compete in international markets.” Besides, Kehdi argued the case for export incentives in general as an essential ingredient in the drive to conquer new markets, and he tried to make his point by recalling that Japan had resorted to the same strategy for similar reasons, by and large echoing the economic arguments for “infant industry” (GL Dec. 1, 1972).

By no means, Kehdi was alone in his efforts. In many occasions throughout this phase, SINDITEXTIL and other entrepreneurs tried to enhance this and other subsidies, mostly, with positive results. In sum, the late 1960s and the early 1970s were a period of fine-tuning of the main incentives. This adjustment involved frequent negotiations on subsidies such as exemptions from Sales Tax and from Industrial Products Tax with different authorities and agencies, both at state and federal levels, indicating how the previously mentioned, polycentric arena of decision made a polycentric arena for business access (CT Mar. 12, Sep. 29, 1969, Jul. 22, 1970; Apr. 28, 1971; Mar. 8, 1972, Jul. 5, 1972, Aug. 16, 1972).

There were non-financial policies for promoting exports that were supported by entrepreneurs. The same Edmund Kehdi invested in a trading company emphasizing that this kind of initiative could maximize the export potential of small business. By and large, as the government portrayed it: “This company will not only buy large lots to resell abroad, but will also attempt to develop small business by offering technical assistance, by recommending which products they should concentrate on, and by offering low-cost raw materials. It will be the outcome of setting up buying centers throughout the country” (GL, Dec 1, 1972). This policy did not work out under this perspective, by and large, attracting significant exporters.

In mid-1971, when exports to the United States resumed after an interruption of four months, a prominent businessman involved in foreign sales blamed the domestic price of cotton for Brazil’s lack of competitiveness in North America. After acknowledging that this market had been re-conquered by

Asian producers, the industrialist announced – somewhat proudly – that the American buyers were finally “forced to accept (...) Brazilian prices,” given the exhaustion of export quotas of those suppliers from the Far East (JB Jun. 12, 1971).

By and large, entrepreneurs assumed that there was an adequate process of modernization taking place in the textile industry. They occasionally complained against the lack of conditions for buying foreign capital goods, given the stringent clauses of the law of “national similarity” that prohibited imports of capital goods that could be locally manufactured (CT Sep. 9, 1970). In any case, as this first period of export-oriented growth was coming to an end, business/State relations in the textile industry was one of mutual understanding and mutual satisfaction. At the closing of the IX National Convention of the Textile Industry, in mid-1973, the General-Secretary of the finances Ministry, José E. Pécora, said that the government was very pleased with the export performance of the textile industry, and Medeiros retributed the compliments by acknowledging the government’s contribution to the outward expansion of the industry (CT Jun. 1973).

Good news, however, would soon turn into bad ones, as the oil shock echoed in Brazil. In the early 1970s, the trade performance of the textile significantly felt for two years after 1974. Only in 1977, exports resumed an upward tendency, but at lower rates than before. From an average yearly growth rate of 75% of exports in the “easy” period, this second half of the 1970s registered an average increase of only 16% per year (Table 4). In its efforts to sustain the country’s high growth rates in an adverse international domestic and international environment, the new Geisel administration expanded economic interventionism in energy bottlenecks, substituting gasoline consumption for an alternative fuel made of sugar cane. Through the II National Development Plan, there were industries not previously included in ISI (aviation, paper, and pulp). Inflation, however, resumed an upward tendency, affecting the performance of the sector at home as well, with high interest rates, declining sales and growing unemployment (Castro, 1985).

The government also began to perceive a couple of shortcomings of the export performance of the textile industry and all these problems turned the second half of the 1970s indeed a “difficult” period. For the time being,

textile industrialists were not challenged either by the critiques from public authorities. This group, however, kept on demanding new and expansion of existing export subsidies.

The domestic front was also being affected, and in March 1975, Medeiros diagnoses a liquidity squeeze in the economy, that induced him to demand an expansion of local credit, bringing this sectorial problem out again. Nonetheless, Medeiros recognized that this option could hardly be a solution because, if conditions of the foreign markets “were not the most favorable, we have to improve internal consumption” (JB Mar. 21, 1975).

The effects of the economic crisis of the mid-1970s were extensive, affecting both the less developed Northeastern and the more developed Southern regions of the country with 25,000 unemployed workers. Antonio Carlos Brito Maciel, president of the Syndicate of the Textile and the Weaving Industries from the State of Pernambuco in Brazil’s Northeast, singled out the three most influential factors for the crisis in the industry. Those were the high domestic price of cotton, high costs of capital with domestic financing when compared with competitors’ costs abroad, and excess capacity of the textile manufacturing base (GL Feb. 17 and 18, 1975).

Brito Maciel went on to recall that, in the long run, expensive credit inhibits modernization of the industry. However, this concern was never given significant consideration by the business environment up to the second half of the 1980s (GL Feb. 17, 1975). As they had long done before, businessmen from Pernambuco, from the Northeastern region, simply demanded action to the high-level National Monetary Council (CMN), requesting new subsidies for the purchase of machines and raw materials, with subsidized credit both in short and long-term for export operations, but they were not successful in these claims (GL Feb. 17, 1975).

Actually, in an official message to the Bank of Brazil through the State governor, those same businessmen came to the fore to show acceptance of the minimum domestic price for cotton “to avoid the collapse of the sector and resulting paralysis of purchasing power and rising unemployment.” In exchange, however, they called for better financial conditions for the purchase of this raw material, considering the negative impact of that subsidy

on the industry's ability to compete internationally (GL Feb. 17, 1975).

At that point, export-oriented growth had also put this industry in touch with a tightly regulated international market, and Brazil's economic, foreign policy became a genuinely new arena for the politics of the textile industrialists. In 1977, for example, the European Economic Commission decided to include two more textile products in the quotas for exports from Brazil: cotton shirts sold to England and unisex underwear sent to France. Trade restrictions from Europe stemmed from protests by European nations against the severe impact of Brazilian exports on their home market (JB Sep. 16, 1977). As in other occasions, representatives from Brazil's textile industry reacted with various inconclusive speculations about this scenario, but they did not express a genuine fear. Surprisingly, or not, the Ministry of Foreign Affairs classified the restriction from Europe as a "routine procedure" (JB Sep. 17, 1977, and Sep. 18, 1977).

Aristides Rache, vice president of the Federation of the Manufacturing Industry of the State of Minas Gerais (FEMIG), and a textile entrepreneur protested against the new European restriction, given that Europe represented 70% of Brazil's sales abroad. Showing himself surprised by the changes, he argued his case by stating that he also had "a promise to keep with the government to export a determined quantity of goods." In his opinion, his company could double its sales, but this would be impossible due to the quotas imposed.

He merely demanded that the government should "improve its bargaining position over imports" (JB Sep. 17, 1977).

Brazil finally negotiated a new trade agreement with the European Economic Community, but the president of SINDITEXTIL saw this new accord for the next five years as unsatisfactory, given the small increases it included. The Ministry of Foreign Affairs, nevertheless, held the opposite view (JB Dec. 23, 1977; CT Dec. 29, 1977). Government had an additional reason for not adopting a more aggressive position abroad: Brazil's trade partners would continuously point out that the textile sector had rarely fulfilled its quotas in the agreements and, to this extent, there was no particular reason for enlarging the allotments in the international trade accords (CT Feb. 3, 1977;

CT Sep. 14, 1978).

The textile industry was the target of another retaliatory measure at the closing of 1978, now taken by the United States, though that country had already imposed pressures against the import of textile products from Brazil before that (EX Mar. 23, 1977 and JB Nov. 7, 1978). The North American reaction to increasing consumption of imported textile products from Brazil took concrete form with the opening of a legal process in the United States demanding surtaxes for men's and children's clothes coming from Brazil. The allegation, made on November 7, 1977, was that the competition was unfair due to the subsidies involved in the country's exports (JB Nov. 2, 1978).

After a year of complex negotiations, Brazil reached an agreement with the United States by which there would be an export duty on textile, plastic, leather and rubber clothes and shoes. In return, the American government would not charge countervailing duties on those products. This measure was to take effect once the waivers of compensatory rights on such products expired in January 1979 (JB Nov. 7, 1978, and GL Nov. 8, 1978).

Named after the top negotiators from the two countries, the Bergstein-Simonsen Agreement established an export duty of 37.2%, corresponding to the total subsidies available for the textile exports, according to the United States Finance Department. Both sides agreed that this percentage should be applied gradually and that it could be diminished through a corresponding reduction in subsidies or by another mutually-accepted strategy (JB Nov. 12, 1978, and Dec. 8, 1978; CT Oct. 19, 1978).

The Finance Minister, Mario H. Simonsen defended the adoption of surtaxes for textiles because it was bureaucratically challenging to eliminate the premium credits of State Sales Tax and Industrial Products Tax on a single type of product type exported to a single country. He closed his comments by forecasting that the American retaliation would not set a precedent for other importer countries, that lacked legislation such as the United States Trade Act (JB Nov. 7, 1978).

In an implicit demand for more subsidies, the export director for the large

company Indústrias Têxteis Santista from São Paulo, Armando Vivianni, expressed his hopes that Brazilian authorities would find “another formula” to make the country’s products competitive in the United States. He was implicitly demanding subsidies, and he was joined in this assessment by Edgar Arp, president of the textile syndicate of Rio de Janeiro (GL Nov. 8, 1978).

Textile exports grew at a yearly average rate of 5.3% from 1980 to 1988, and they even presented negative growth rates in three of those years (Table n. 4, above). This weak performance was part of the story of the “critical 1980s” when the textile sector faced even more challenging difficulties at the international level.

On the domestic front, entrepreneurs had to deal with shifting orientations of the economic policies derived from a deteriorating economic situation. Due to massive foreign debt and to escalating inflation that hit Brazil after the second oil shock, government zigzagged in the economic sphere, shifting from debt payment with the recession, to growth policies with stabilization, to other arrangements.

Mostly, businesspeople kept on demanding more subsidies for dealing with these and other problems, along with the State corporatist pattern, amidst growing criticism from the government that was pressing hard for increased exports. Nonetheless, for the very first time, SINDITEXTIL also autonomously tried to enhance exports by improving the resources for textile industrialists to get involved with foreign trade, through the creation of an office explicitly responsible for these goals.

In late 1981, after exports had grown at the level of 7% to 8% in the new decade, the textile syndicate tried to create a specific organization for supporting textile exporters, the Bureau for Fomenting the Exports from the Textile Industry, undoubtedly representing a new initiative. The outline of the new undertaking appears on the first issue of its bulletin where the primary goal of the Bureau would be to provide information on “matters connected to the export of manufactured textiles in all aspects.” This support included information on the procedures for selling abroad and on opportunities to access “the model of an effective commercial exchange through direct

contact with an importer” (BL Jan. 1982). The bureau did not last long: it was, in fact, a redundant initiative given that the “additional” incentives it was offering were already available at SINDITEXTIL or CACEX (Brazil’s Foreign Trade Office) (BL, 1982-1985). It ended up making no difference for the scenario of the export activities of the textile industry: practically the same diagnosis that motivated the creation of the bureau was repeated a couple of times later, including early 1988, by the president of the Brazilian Association of the Clothing Industry (FL Jan. 22, 1988; CT Jan. 21, 1988).

As the industry entered 1983, businessmen and government representatives grew increasingly enthusiastic with another subsidy known as the “green and yellow drawback” (a reference to the colors of the Brazilian national flag) which took effect from the end of March. This mechanism was aimed to subject the inputs of export products produced in Brazil to the same subsidies as those bought abroad. With this strategy, the director of CACEX, Carlos Viacava, expressed hopes that the textile industry could reach US\$ 1.5 billion in exports, almost twice the figure for the previous year (JB Feb. 7 and Mar. 29, 1983). The green-and-yellow drawback was an old request of the textile sector. As early as 1971, industry leaders defended the extension of the drawback incentive to cotton locally produced as a way of equalizing the domestic and international prices of this input (CT Aug. 18, 1971; Mar 10, 1977).

With the collapse of the authoritarian regime in 1984/1985, trade and economic policies had to meet demands toward redistribution, stabilization, and resumption of growth on a more sustained basis. This change made itself clear since 1986 when the first of the three “heterodox shocks” with price and wages freeze took place, aimed at “complete” elimination of “chronic” inflation and at the same time reestablishing growth.

Even before the first of the three heterodox “shocks” of the second half of the 1980s, SINDITEXTIL president, Luis Américo Medeiros rose up to voice the concerns of the textile exporters along this scenario. In February 1985, he said that: “Given that the likely anti-inflationary policy to be pursued by the Tancredo Neves administration [the first civilian president scheduled to be empowered a few weeks later], exports will gain little through devaluation of the Cruzeiro [Brazil’s currency]” (JB Feb. 8, 1985). Not surprisingly, he

added that it would be necessary to consider some subsidy for helping export activities, showing a lack of considerations of policies out of their traditional political behavior (JB Feb. 8, 1985).

Rabinovitch, member of the SINDITEXTIL board of directors, could see dilemma between the domestic and international markets faced by the textile industry at that point. He pointed out that this sector “as producer of consumer goods, is dampened by the application of a restrictive policy; as an exporter and wage payer, it has in the devaluation a source of improving its competitiveness (EX May 2, 1984).

The first heterodox stabilization plan based on wage and prices freeze, named after the new currency that it introduced, the Cruzado, was implemented in February 1986, resulting in the dilemma anticipated. Shortly after the first of the heterodox plan was set up, the director of the Brazilian Association of Jeans Manufacturers (ABRAJEANS), Ricardo de Castro, declared that the overheated consumption resulting from the wage and price freezes had triggered a series of problems for the textile sector. Such problems included overpricing, lack of raw material, canceling of buying orders, along with others (JB Mar. 23, 1986; EX Mar. 31, 1986). Later in the year, Ivah Pacheco, a superintendent of a large textile company went further and said that “the Brazilian textile industry was not prepared to the increased demand, reaching the production of 1.1 million tons of fabrics, after having produced only 800.000 tons” (JB Sep. 23, 1986, Nov. 27, 1986, Oct. 10, 1986; GL Dec. 1, 1986).

This plan and later ones had only temporary success, given that they all lacked complementary policies for fiscal soundness, enhanced domestic competition, along with other initiatives. All of them caused similar problems for textile and other exports: the increased domestic demand harmed the foreign sales, and the fast heating of the economic activity generated many conflicts among suppliers, industrialists, wholesalers, retailers, and, of course, consumers (ORDEM PROGRESSO / AQUARELLA).

Actually, in 1985, export revenues had a negative growth rate of 22% concerning 1984, whereas, in 1986, the yearly growth level was minus 6%. Exports resumed a positive growth only in 1987 (EX Mar. 31, 1986; Table 4,

above). In the eve of the second one in mid-1987, SINDITEXTIL focused on a particular but revealing problem and complained to the government against the price increase it had allowed for some types artificial fibers for the industry, right before the new price freeze. Textile leaders then said that the industry weakened because of the lack of coordination of policies related to the raw material. They requested this price increase to be revoked at the same time they demanded a price freeze for cotton (CT Jun. 16, 1987). They were partially successful in their requests as the increase allowed for fibers was lowered from 25 to 18%, but cotton prices continued to rise out of governmental control (CT Jul. 9, 1987; Sep. 4, 1987).

Earlier than that, limitations for supplying increased domestic consumption derived from the Cruzado Plan enhanced an existing concern with the technological backwardness of the textile industry, and this preoccupation was at the root of the call for a comprehensive modernization plan heralded by SINDITEXTIL in May 1986. At this moment, the syndicate president, Medeiros urged the members of the industry to make a joint effort for an in-depth analysis of the sector and plan solutions for long-term growth, at least, up to the year 2000. Accordingly, the plan resulting from these efforts became known as “Plan 2000”, and it was mainly intended at expanding Brazil’s exports twice or more in the following fourteen years, with increased participation of finished textile products (JB May 29, 1986; FL Jul. 17, 1986).

The small share of elaborated products in Brazil’s export profile of textile goods was one of the major determinants for the drafting of this plan, according to a technical assistant involved in this effort (SIMAS, 1996, Interview). This perception echoed a critique made by CACEX representatives in the early years of the decade. Scheduled to be finished in a few months, the formulation of the plan involved all industries relevant to the textile industry ranging from capital goods industry to the National Bank for Economic and Social Development (BNDES) as well as the Technological Center of the Chemical and Textile Industry. Also, there were representatives from the textile and clothing industries from all over the country (CNIT, 1986). According to the same Simas, the latter institution was chosen by the entrepreneurs to organize the plan because it was a “neutral institution,” a suggestion of how much was at stake at that point (SIMAS, 1996, Interview).

In order to define its claims, the plan referred to the previous comprehensive support provided to the auto industry in 1968 as an inspiration for the project prepared for the textile sector. The Plan 2000, however, actually centered itself on presenting “specific policies based on the improvement of existing provisions” instead of advancing generic goal or unrealistic instruments (CNIT, 1986). The central problem addressed by the Plan 2000 was indeed the technological backwardness of the textile industry, and it recognized the need for a thorough renovation of all subsectors of this industry (CNIT, 1986). To this extent, the Plan recommended a mix of different tax reduction for imports of capital goods, and the reactivation of the “Plans for Nationalization of Textile Machinery” involving substantial subsidies for the local capital goods industry (CNIT, 1986: 13).

In actual terms, the Plan 2000 projected investments of US\$ 6.6 billion, from which US\$ 2.6 billion would go to equipment made in Brazil and US\$ 4.0 billion to imported machines, in an expansion of 80% of the capital goods for the sector in fourteen years (CNIT, 1986). With such planning, the textile industry was overcoming the decision-making polycentrism and the access polycentrism and possibly the practices of State corporatism, but not without conflicts (Lima Jr. & Lima, 1987).

By opening itself to cross-industrial negotiations, the textile industry tried to include the local capital goods industry in the Plan 2000 without causing any significant difficulty in this sector. Armando Vivianni, a member of SINDITEXTIL board of directors, pictured the negotiations with the capital goods sector in very pragmatic terms: “The Brazilian textile industry needs imports now to gain time. However, as the textile reaches a better definition of its long-term goals, the machinery industry will also be able to invest with more confidence. It is decisive that, once the needed imports finish, the domestic machinery industry does not get impoverished”. Despite this attitude, the capital goods industry constantly opposed the propositions from the textile sector for partially exempting imports of machines (FL Jul. 17, 1986; JB Jul. 10, 1986; EX Jul. 9, 1986).

In late 1987, the situation of the jeans industry echoed the plan’s diagnosis. A leading businessman from this particular branch, Andre Ranschburg, observed that the factors that favored Brazil’s textile exports, such as the low

cost of the labor force and the undervalued exchange rate, were hardly compensating the low productivity of the sector derived from its technological backwardness (IE/SR Dec. 1, 1987).

Despite the changes observed during the 1980s, the practice of requesting state protectionism through specific subsidies continued. As late as 1987, Luis A. Medeiros demanded the Finance Minister Maílson da Nobrega the reenactment of the exemption from income tax over the profits on exports. According to the textile leader, without this subsidy, there will “certainly be a noticeable reduction on the volume of textile exports next year, since the profits made by some enterprises derive from this fiscal incentive.” He went on and indicated that not only the firms could suffer losses, but also Brazil’s trade balance. In order to justify the request, he stressed that the textile industry was facing a difficult situation abroad, a “highly competitive” market, with declining growth rates (CT, Dec. 30, 1987).

Last, but not least, it must be added that, in the last decade, textile entrepreneurs improved their gains through their participation in the trade conventions. Brazil negotiated some trade agreements with various nations and, in most of them, the textile businessmen got actively involved in setting the parameters with fewer conflicts with the government, and in better conditions for the Brazilian industrialists involved in export activities.

It is worth mentioning that this plan was never implemented. It turned into a new – and more ambitious – proposal for an official multi-sectorial policy under the so-called “New Industrial Policy” of 1988. However, even under this framework, there was nothing done along the lines the industry had worked for (Cheibub, 1988).

Conclusions

It is clear that the textile businessmen, in economic terms, reacted positively to the export-oriented incentives implemented by the Brazilian government. Over the period dealt with in this chapter, their exports grew in a competitive, and tightly regulated market. However, it is also fair to infer that, on some

occasions, when facing difficulties in the domestic or the international markets, their foreign sales declined with the 1980s as a convincing example.

Concerning the politics of textile businesspeople reacting to export-promotion policies and the international expansion of their sector, we were specifically interested in investigating the industrialists' political actions, and efforts to engage in collective actions. The political business reactions found were primarily characterized by short-term, narrowly-focused demands, usually presented in a dispersed way through State-centered corporatist organizations, by and plentiful as they used to do during ISI when they were focused only on the protected domestic market and subsidies to support their performance on a national basis. Up to the early 1980s, the engagement into export activities had also enhanced the concerns of the businessmen with the productive industry conditions (supplying, financing, external and internal performance, along with others), but these considerations have never evolved into new collective actions.

For instance, even when business had widespread concerns, as Kehdi's argument virtually defending protection because of Brazil's situation, but his actual requests generally framed as spot demands. Even recognizing the need for investment to become competitive abroad to reduce the price, there was no engagement in taking actions to improve local productivity. Following the practices of State corporatism, the only solution sought for these and of other problems was, by and large, the expansion of State support on a case-by-case basis. Therefore, it is fair to conclude this previous pattern of interest politics during ISI persisted, even after this group began to interact with more dynamic, and more competitive markets from the international arena.

Although exporters of textile manufacturing autonomously and occasionally tried to improve their performance abroad, through new policies for the sector as a whole in a long-term perspective. Since the very beginning of their export activities, they showed consciousness of the problems that dependence on state support represented. These and other reactions to international reactions against domestic subsidies suggest how far the textile sector was from the realpolitik of international, actually also presented in the difficult political relations with the Ministry of Foreign Relations.

At least two initiatives of the exporting textile sector stand out: the Bureau for Fomenting the Exports of the Textile Industry in 1981, and the Plan 2000, launched in 1984. Even though none worked out, they involved a significant tour de force of the industry leaders that had to negotiate with other industries (in the latter case), and with state agencies, far beyond their more traditional narrow, short-term demands. The tour de force meant that the international challenges the sector faced in both cases must have been influential enough for stimulating business to overcome the “access polycentrism” and the “decision-making polycentrism” that characterized Brazil’s trade policies until the late 1970s, and to engage in those new collective initiatives. Regardless of being a valuable political resource for state corporatist practices – and partially taken as such – these dispersed policy-making arenas did not appear as an obstacle for these innovative collective actions of the industrial exporters, possibly approaching “sectoral corporatist” practices.

However given the outcomes found in the textile industry, an organized state intervention may not be a sufficient condition for organized business, as originally suggested by Peter Evans’ concept of autonomy embeddedness (1992). Differently, from his view, this study of the textile and auto industries, with their organizational outcomes, suggests that the market can also stimulate business to organize around long-term, large-scale goals. Also, again in contrast to Evans’ thought, it should also be stressed that an embedded relation between the private and the public sector is not necessarily conducive to any related politico-economic outcome, as the failure in implementing these proposals indicate. They were turned into actual governmental policies but never implemented

We have, therefore, to ask why there was no policy implemented if the state agencies and the private sector were willing to engage in a long-term, large-scale collaboration toward promoting specific industries of the economy? Moreover, looking at the Brazilian situation at that economic and political situation, one might infer the lack of political will from the part of the Presidency and the unstable macroeconomic conditions the country faced.

Those are outside intervening variables certainly not included in Evans’ reasoning, but it seems that they may play a role in triggering a successful embedded interaction. In other words, as of Amsden “what accounts for the

differences in rates of growth of industrial output and productivity among late industrializing countries is not the degree to which the State has disciplined labor but the degree to which it has been willing and able to discipline capital” (Amsden, 1992: 61).

One can conclude that the Brazilian governments apparently failed to do so, and possibly not because of the lack of interested business partners. Now the centralized state, with a robust economic policy-making machinery, is being replaced by a minimum state, with de-centralized authority, providing ample room for market self-regulation. It is not the end of history because Mahrukh Doctor has insightfully shown the room for corporatism in the de-regulated, open economy through its influence on the formation of policy networks (Doctor, 2018; Mancuso, 2004), In short, business politics had the corporatist structure as a live reference, but with declining importance.

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Ignacio Godinho Delgado³

Introduction

This chapter discusses the connections between the healthcare system and the pharmaceutical industry, highlighting the Brazilian path and the industrial policies carried out in the governments of Luis Inácio Lula da Silva and Dilma Rousseff, when these policies started to be conducted by the governmental healthcare area.⁴ In addition, it makes a brief assessment of the industrial policies carried out by the Workers' Party (PT) governments, which included policies aimed at the pharmaceutical sector.

The experience of central capitalist countries, that have innovative pharmaceutical industries, indicates that for different reasons such an institutional location came about in the presence of liberal or universal healthcare systems, not appearing where corporatist healthcare systems prevailed. We argue here that such state of affairs, as made possible in Brazil by the presence of the Brazilian Unified Healthcare System (*Sistema Único de Saúde* – SUS, in its Portuguese acronym), opened a window of opportunity for the construction of a coalition that was able to reinforce both the public dimension of the Brazilian healthcare system and the affirmation of a *national* industry with an innovative profile. Besides the resistances between the two main and decisive actors in the operationalization of the coalition (the sanitariat movement and the pharmaceutical industry), the limits or coalition effectiveness are rooted in the hybrid character of the Brazilian healthcare system, due to budgetary constraints and private sector's dependence in relation to the public structure, associated with the coexistence of public and private provision. The recent liberalization as the current government strategy contributed to make it even harder to materialize this perspective, due to the rise of a government that is contrary to the expansion of inclusive public policies and the even more drastic containment of government expenditures, as provide for in Constitutional Amendment n° 95, which established strict limits on the expansion of public spending.

Still, as we shall see, with SUS not entirely dismantled, the requirements for its functioning and the affirmation of the pharmaceutical industry as a

prominent sector have given support to the preservation, to a certain extent, of the policies that were developed during the administrations of both Lula and Rousseff, even though the coalition that could have given them support, and thus favor the universal expansion of our institutional hybrid, was not even effectively rehearsed.

Apart from the introduction, this paper presents five more sections, in addition to the final remarks. In the second section we briefly discuss the dynamics of innovation in the healthcare area, as a way to understand the requirements that are posed for industrial and innovation policies in the healthcare area. Besides the focus on the pharmaceutical industry, we also make brief reference to the dynamics of innovation in healthcare in the segments of medical equipment and health services so as to provide a broader view of the innovation process in the area. In the third section, we examine the relationship between healthcare systems and policies aimed at innovation in the pharmaceutical industry in the USA, the UK and Germany in order to elucidate the different institutional locations and instruments of such policies, deriving from the presence, respectively, of liberal, universal and corporatist healthcare systems. In the fourth section we focus on the healthcare system and the pharmaceutical industry in Brazil, with emphasis on the policies implemented in the current century, before the 2016 coup, considering the limits and possibilities of preserving, expanding and deepening such policies. In the fifth section, we make a brief survey of the industrial policies carried out by the PT governments. Finally, in the final remarks we examine the conditions that made industrial entrepreneurs to back away from the Rousseff government, even though at the beginning of Rousseff's first term they had adhered to the industrial policy then in force. In addition, we highlight the difficulties faced in the conduction of the industrial policies proposed by the PT governments, related as they were to the structure of the policies themselves and the contexts in which they operated.

Dynamics of innovation in healthcare

Studies on medical innovation (equipment and medicines production) emphasize their distance from the “linear model” used to analyze the

phenomena of technological innovation, which takes it as a natural unfolding of scientific discoveries and development (Gelijns & Rosenberg, 1995; Nelson, R., 2008).⁵ Although many breakthroughs in the medical and related disciplines matter to the innovations that arise for the treatment of disease, most times this occurs in very long intervals, while multiple inventions are anchored in discoveries outside the field of medicine.

Besides, such studies emphasize the practical dimension of the medical innovation process, given the uncertainty surrounding the knowledge on the etiology of diseases, the importance of clinical practice as feedback for therapeutic procedures coming from the industry and the importance of practical knowledge to identify the more effective forms of treatment. Mokyr (1998) emphasizes the role of useful knowledge, “that contains, but is not confined to scientific knowledge” involving techniques that are forged in tradition, which do not necessarily elucidate why certain things occur but are capable of responding as they occur. Brown and Duguid (1991) highlight communities that are built around practice, providing continuous learning and problem-solving skills, challenging the inertia of institutional routines. Thus, they point to large organizations as communities of communities that, if reflexively structured, can operate positively in stimulating innovation, thus dealing with the discontinuities that accompany it.

However, in the area of medical innovation the weight and status of such a practical dimension are branch up in the two large segments. Pharmaceutical production is more clearly *science based* and depends directly on findings generated in the academic environment, involving different disciplines that connect to medical science, especially chemistry and biology (Achiladelis & Antonakis, 2001). However, there is a considerable gap between the discovery of the mechanisms of certain diseases, and the elements potentially capable of dealing with them, and the production of a drug with a component capable of therapeutically operating in the body based on those discoveries. In addition, the rules governing the approval of a new drug are demanding in terms of clinical trials, while its effective use in clinical practice can identify side effects that were not noticed in previous stages, as well as evidence of other therapeutic uses. In other words, if drug production involves building articulation spaces between universities and companies as a central element of the innovative dynamics, it also connects to clinical practice, especially in

the recording of feedbacks related to the use of drugs.

On the other hand, the production of medical equipment is associated less with discoveries in medical science than with engineering, with the use of knowledge from other fields of knowledge and with discoveries that originate in clinical practice. Such discoveries sometimes circumvent the uncertainties stemming from insufficient knowledge of the human organism or the etiology of diseases. In a study on the hybridity common to the operation of certain equipment, Barberá-Tomás & Consoli (2011) observed that in artifacts used in the treatment of some diseases hybridity is not associated with the parallelism of two operational principles, nor with its articulation for the operation of a dominant principle in the artifact, but with the combination of two principles directed to different therapeutic objectives, due to the uncertainty regarding the factors that cause the diseases.

Empirical studies anchored on bibliometric research and on the sequence of steps leading to medical innovation have also highlighted the paths and networks that are established, not always formally, as a result of the identification of a problem and the different and successive collaborations leading to the final product (Mina *et al.*, 2007; Consoli & Mina, 2009). Medical innovation is, therefore, the result of a complex articulation that develops diachronically with the participation of multiple collaborators and synchronically through the interaction of research and regulatory institutions, healthcare services, industry, users and different agents that work in the different spheres of the healthcare market.

The uncertainty involved in healthcare innovation is therefore very pronounced. Thus, the presence of the state assumes a singular importance for it to happen. In addition to the state's role in the regulatory sphere and its relevance as a source of resources for corporate investment (in cases in which government-owned banks play a central role in development policies), it acts to reduce uncertainty on two fundamental fronts: (i) the provision of grants for research aimed at innovation in the healthcare area, which can be used by companies, and (ii) the sustainability and stabilization of the healthcare market through public procurement. The weight and institutional location of these two sets of policies are directly linked to the types of healthcare systems prevailing in each national setting (Delgado, 2015a, 2016a, 2017), as

we shall see below. In addition, the state can also articulate the interaction between the different institutions that integrate healthcare innovation systems, such as consortia among companies, universities and various public bodies, as for example the policy for endogenous innovation in China or the public-private partnership programs run by the National Institute of Health (NIH) in the United States.

Hence the complexity of innovation in the healthcare area. (Albuquerque & Cassiolato, 2000; Albuquerque, Souza & Baessa, 2004). On the one hand, the two productive segments that comprise it have different sectoral systems of innovation (Malerba, 2002). On the other hand, it involves a complex network of institutions for the generation of knowledge (universities and research centers), production of goods and services (productive segments and healthcare units) and regulatory agencies. The institutional arrangement in the healthcare system defines national demand patterns for the segments of medicines production, equipment and services. The notion of an economic and industrial complex in healthcare captures this dynamic, identifying the

(...) productive activities that maintain intersectoral relations of purchase and sale of goods and services (...) and/or around knowledge and technologies (...) **inserted in a rather particular political and institutional context, involving the provision of services as the economic space to which all healthcare production flows.** Thus, this activity is completely inserted in the complex, both by increasingly organizing itself on a business bases and by configuring the healthcare market as a political and institutional construction (Gadelha, 2006: 15-16). (emphasis added).

Finally, it is worth noting that the healthcare economic and industrial complexes, as well as the healthcare innovation systems, appear and are marked in national contexts by the presence of different national systems of innovation. These national systems of innovation define how institutions are linked to each other, as well as their different roles, capacities and knowledge, as established within specific paths and articulations in the national space. In addition, they have established a significant field from the

experience of firms, from diverse national paths of development (Nelson, 1993). Mature innovation systems (Albuquerque & Cassiolato, 2000) are typical of countries located the center of the capitalist economy, boasting high innovation indicators. They can coexist with different national health systems, which, in turn, affect the power lines and key areas of the innovation activity.⁶ In developing countries, innovation systems are to a large extent national learning systems, associated with the prevalence of a passive or active pattern of absorption of technologies generated primarily in central countries.⁷ In passive systems, foreign investment prevails and the search for licensing for the use of technologies, sometimes with the acquisition of complete technological packages and technical assistance guaranteed by foreign suppliers. In active systems, investment projects tend to remain under the control of domestic firms, which seek to master absorbed technologies through imitation and reverse engineering (Viotti, 2002).

In the pharmaceutical industry paths associated with biotechnology have been identified as the main trend in technological development, especially due to the increased possibilities of manipulation of complex biological molecules (Tigre & Nascimento, 2015). In passing, it should be noted the prevalence of two “large groups of biological macromolecules with potential for therapeutic application”. Most prominent in research and industrial applications are the “protein structures, produced through recombinant DNA technology”, involving enzymes, hormones and monoclonal antibodies. With still reduced clinical exploration one will find the nucleic acids and molecular mechanisms linked to the DNA and RNA properties. Tigre & Nascimento (2015) note that the development of monoclonal antibodies accounts for about half of the largest investments in research among large pharmaceutical corporations, on three fronts: search for more stable structures, constitution of structures capable of simultaneously achieving two therapeutic targets and conjugated structures based on chemical synthesis.

The development of biotechnology is a possible unfolding of the possible end of the chemical synthesis paradigm and has been pointed out as an important element in determining changes in the structure of firms in the pharmaceutical industry. The sector has been treated as a differentiated oligopoly, with a small group of companies dominating the market, but within different therapeutic classes, with intensive use of R&D and marketing

(Reekie, 1975; McKintyre, 1999; Gadelha, Quental & Fialho, 2003). Specialization in therapeutic classes is a rational behavior for companies trying to increase market share, in order to minimize failed efforts in disputes for the registry of innovations that make expenditures in research useless. Thus, innovative pharmaceutical companies have tended to organize themselves as large corporations with vertical structures, seen as positively related to R&D efforts, which control all stages of product research and development (Cockburn, 2004). Mergers and incorporations come as complementary elements of the market domination strategy within the therapeutic classes. In turn, alongside the core large companies, there is an impressive number of firms, of varying sizes, focused on the production of similar and generic drugs, not protected by patents. It should be noted that large companies have sought to expand their activities for the production of generics, sometimes with the acquisition of smaller firms.

Since the 1980s, with the development of biotechnology and the expansion of entrepreneurial possibilities for researchers and university groups, there has been an increase, first in the United States and later on in other countries, in the creation of technologically advanced small enterprises within the segment of biological medicines, favored by funding arrangements based on venture capital (Cockburn, 2004; Cockburn & Henderson, 2001; Cockburn, 2004; Kaitin, 2010; Matlin, 2008; Baum & Silverman, 2004). In this new scenario, efforts to acquire such enterprises by large pharmaceutical companies were carried out, alongside partnerships with the new segment. According to Cockburn (2004), this could increase transactions costs involved in the relationship between universities and companies.

Finally, there has been a significant change in the structure of large companies, regardless of their focus (Cockburn, 2004; Cockburn & Henderson, 2001; Kaitin, 2010 & Matlin, 2008). The set back in the success rate of effectively producing innovative drugs and the increase in the cost of research have led companies to focus on their core competencies, outsourcing clinical trials, along with the development of partnerships with public agencies in projects aimed at identifying disease indicators and finding solutions for the treatment of ailments such as Alzheimer's disease. Thus, in a much more diverse landscape, in which contract research organizations appear and public-private partnerships are intensified, it remains to be seen

whether research on disease indicators is no more than a new frontier towards nothing, with the creation of new symptoms for new diseases, while real and preventable diseases remain absent from the focus of public research and the actions of large companies.

The segment producing medical, dental and hospital equipment and supplies has a very heterogeneous composition. It involves an impressive variety of products and technologies, ranging from simpler items like gloves and syringes to electro medical equipment. This last subsector is already quite diversified, as it encompasses both scalpels and hemodialysis equipment, endoscopes, CT scanners and magnetic resonance imaging (Maldonado *et al.*, 2012, 2015; Cunha *et al.*, 2009; ABDI, 2008; Porto *et al.*, 2010) The Brazilian Association of Industries of Medical, Dental, Hospital and Laboratory Equipment (ABIMO, in its Portuguese acronym) have as associates in Brazil companies producing medical and hospital equipment (furniture, surgical instruments, hotels), implants (orthopedic, neurological, cardiac and others), laboratory (equipment, reagents and consumer products), consumer materials (hypodermic, textiles, adhesives and others), dentistry (equipment, consumables, instruments), radiology (equipment, consumer materials and accessories) (ABIMO, 2016).

It is, therefore, a segment with diverse patterns of technological development, and also diverse structure and competition strategy of the firms operating in the segment (Porto, Moreli, Figlioli & Oliveira, 2010). In the most complex groups, the most prominent activities are those related to bioinformatics, nanotechnology, embedded electronics and engineering of cells and materials, with large companies acting according to the logic of differentiated oligopoly. In the groups producing simpler consumer articles there is room for small and medium-sized companies in which price, within the minimum quality standards defined by regulatory agencies in the healthcare area, appears as a key element in the firms' competitive strategy. Contrary to what is common in the pharmaceutical industry, large producers do not always have the production of medical and hospital equipment as specific products in their portfolio, turning to a diversified demand for electronic products. Interaction with universities, research centers and the services network is a fundamental part of innovation dynamics. In turn, patent protection is of lesser importance to stimulate innovation and appropriate results than in the

pharmaceutical industry. Other mechanisms standing out are industrial secrecy and market leadership.

The main trends in the search for innovation in the sector are associated with the development of products that reduce hospital stay and trauma and make procedures less invasive (Porto, Moreli, Figlioli & Oliveira, 2010). In the medical and hospital equipment segment, efforts are made to reduce the requirements of blood transfusion and to improve analysis; to create new endoscopy devices, catheterization and laparoscopy; to improve diagnostic imaging techniques; to develop telemedicine apparatus. In the field of dental equipment, the most relevant trends are those related to the development of techniques and devices that reduce radioactive processes in the performance of clinical tests.

Only briefly is it worth mentioning the impact of innovations in services carried out in the productive segments of the healthcare economic-industrial complex (HEIC). New discoveries in the pharmaceutical and medical equipment industries affect healthcare by reinforcing or reducing hospital admission requirements, which imply adaptations in the services structure (Tigre & Nascimento, 2015; Windrum & García-Goñi, 2008). On one side, the development of information and telecommunications technologies (ICTs) has affected healthcare organizations both in their direct relationship with users and in the management of the internal flow of services. However, as already mentioned, innovations in healthcare services are far from being the result of adaptations to the impacts of the technological changes that emerge in the productive sectors that make up the HEIC. The nature of organizations (public, community/philanthropic, private); the differential weight and the interaction between the various stakeholders involved in the provision and use of healthcare services; the rules and directives of regulatory agencies (affecting, among other aspects, decisions on the adoption of technologies); the pressure on costs derived from increasingly expensive equipment and medicines; the weight of the environment and of cultural dispositions prevailing in different spaces; and the power and the perspective of the service unit administrations, all appear among the multiple factors that interfere in the innovation dynamics in services, in a more direct way than the influence they exert on the productive segments of the HEIC (Costa, Bahia, Cesário, Madonado & Gadelha, 2015). Hence the complexity of research on

services innovation and the emphasis that certain approaches put on a demarcation criterion, in order to avoid mere assimilation of concepts and procedures typical of analyses on innovation in productive activities.

Healthcare systems and the pharmaceutical industry

Basic types of healthcare systems

As pointed out in the previous section, the “rather peculiar political and institutional context involved in the provision of services”, which defines the “economic space to which all healthcare production flows”, in the ambit of the healthcare industrial complex (as pointed out in the previous section) and of the healthcare innovation systems, is crucially circumscribed by the different national healthcare systems. The structure and composition of demand for medicines and medical equipment are strongly associated with the prevalence of either public or private provision of healthcare services, different access patterns, the structure of distribution networks and, in the case of pharmaceuticals, even with tasks performed by doctors and pharmacists in prescribing and dispensing medicines. Likewise, different healthcare systems involve different coordination dilemmas and different forms of confrontations, which interfere in the possibilities and patterns of participation of the healthcare sector in the support of research, fundamental to the generation of the knowledge made available to companies in the productive segments of the healthcare industrial complex. Finally, different healthcare systems define the modalities of interaction between the industry and the services network, highlighting certain components in innovation activities, especially hospitals.

The literature on the typologies of national healthcare systems is vast and controversial and it is not within the limits of this article to discuss it (Marmor & Wendt, 2012).⁸ A valid option to characterize such systems, however, although limited, is to consider how qualification/eligibility for access and the structure of the provision/supply of healthcare services are defined, based on different patterns of articulation between the public and private realms. Thus, based on patterns the definition of which was pioneered

in central countries it is possible to point out the following paradigms:

- the liberal systems paradigm with private access and provision, with public services directed to specific groups through means tests;
- the public systems paradigm characterized by universal access and public provision (the UK, Scandinavia); the universal systems with generalized access, but private provision (Canada);
- the corporatist paradigm systems with access defined fundamentally by occupational/professional criteria and diversified public and private provision (Albuquerque & Cassiolato, 2000; Almeida 2008; Lobato & Giovanella, 2008; Delgado, 2012, 2013).⁹

There are no records of the presence of the pharmaceutical industry as a relevant actor in the implementation of modern national healthcare systems, unlike doctors, businessmen, workers and the state (Swaan 1988; Hacker, 1998; Freddi & Bjorkman, 1989). The nature of healthcare systems, in turn, does not seem to be a determining factor for the pharmaceutical industry's participation, as in countries with liberal (USA), universal (the UK) and corporatist (Germany) healthcare systems. Invariably, however, the industry becomes an object of regulations by the healthcare authorities, which set standards for research, production, quality, marketing and access to medicines. Finally, given that the healthcare area is at the tip of national agendas, notably in central countries, the healthcare system determines the ways in which the state supports research, the same research on which the innovative pharmaceutical industry relies.

General aspects of the relationship between the healthcare system and the pharmaceutical industry in the USA, the United Kingdom and Germany

In the United States, the presence of healthcare as a central item on the public agenda has been a fact since World War II, simultaneously with the affirmation of the large pharmaceutical corporations, recruited by the state for

the production of medicines needed in the war effort (Younkin, 2008; Achilladelis & Antonakis, 2001; Cockburn & Henderson, 2001). In the decades that followed, public investment in healthcare research, through the National Institute of Health (NIH), linked to the US Department of Health and Human Services (HHS), was the most important item in government spending on research in the United States, being decisive for most of the innovations developed at the level of companies (Rosenberg & Nelson, 1994; Toole, 2008). More recently, programs involving HHS agencies, universities and businesses have also become more prominent, such as the US Food and Drug Administration's Critical Path Initiative, or the NIH Roadmap for Medical Research, notably the Accelerating Medicines Partnership and the Clinical and Transnational Science Award (CTSA) Program (Delgado, 2015a)

In the United States, the price for medicines is not regulated, the market being geared primarily by private demand. In 2012, Medicaid and Medicare, programs for the elderly and the needy, covered less than 30% of the United States population (Rice, Roseneau, Unruh & Barnes, 2013: 91). Public funding through HHS agencies and public-private partnerships are the main instruments for stimulating innovation. Public procurement is relevant only when associated with the fight against pandemics and/or connected to military purposes, as in the case of contracts signed by the Biomedical Advanced Research and Development Authority (BARDA), under the Office of the Assistant Secretary for Preparedness and Response of the HHS; or by the Defense Advanced Research Programs Agency (DARPA), of the Department of Defense (Delgado, 2015a; Lundvall, Bokholm, Marcusson, Jespersen & Birkeland, 2009).

In the United Kingdom, public procurement plays a decisive role in stimulating innovation. Only 12% of the population is covered by private insurance (Boyle, 2013). The domestic market for the productive segments of the healthcare industrial complex is thus almost a monopsony of the National Health System (NHS). As in the United States, World War II helped to boost the pharmaceutical industry, but it was the Pharmaceutical Price Regulation Scheme (PPRS), created in 1957, that ensured (according to the Association of the British Pharmaceutical Industry – ABPI), a “favorable commercial environment” for innovation, ensuring positive profit margins for the

industry, while at the same time achieving reasonable costs for the NHS (Delgado, 2012; Corley, 2003). In addition, NHS also plays a leading role in research funding through the National Innovation Center (NIC) and also through the National Institute for Health Research (NIHR). The NIHR was established in 2006 as part of the Best Research for Best Health strategy, which aimed to affirm the “NHS as an internationally recognized research center,” strengthening a pro-research culture and clinical research, facts that highlights the role of hospitals as the cornerstone of the British healthcare innovation system (Delgado, 2015a; Lundvall, Bokholm, Marcusson, Jespersen & Birkeland, 2009; Hicks & Katz, 1996).

British pharmaceutical companies have lobbied for more flexible medical prescriptions in the context of the NHS in order to increase the domestic absorption of the industry’s output, which far exceeds domestic demand. Similarly, efforts to step up partnership with the NHS in the field of research persist, since research is understood as a comparative advantage in international competition. Since the creation of the Pharmaceutical Industry Task Force, in 1999, such perspectives have been discussed with the British government, particularly with the Ministerial Industry Strategy Group (MISG), which is co-chaired by the Department of Health (DH). As a result of such discussions, in 2005, the government launched the Long-Term Leadership Strategy, which span-off in initiatives such as the MISG (Ministerial Industry Strategy Group) Clinical Research Workgroup, the Early Access Working Group and the Vision for the UK-based Bioscience Industry. Other results were the creation of tax incentives to support industry, the Innovation Pass (for early incorporation of new medicines in the NHS) and the establishment of the Office for Life Sciences. Companies have also suggested using Connecting for Health, a program that recorded therapeutic procedures underwent by NHS patients, seeking an additional advantage for British industry in international competition (Delgado, 2012).

In Germany, the so-called Statutory Health Insurance (SHI) is the most important part of the healthcare system, bringing together 131 funds for employees and their dependents, covering 85% of the population. The remainder is covered by the Private Health Insurance (PHI) and special arrangements. Long-term care is guaranteed by Long Term Care Insurance (LTCI). Regarding the availability of hospital beds, 48% are in public

hospitals (most of them municipal), 34% in non-profit units and 18% in profit-oriented entities. The federal states control university hospitals (Busse & Blümel, 2014; Blümel, 2013). With such fragmentation, the health system, while decisive in the demand for medicines, does not play a significant role in the definition and conduct of policies to support innovation, concentrated as they are in the Federal Ministry of Education and Research (BMBF). Purchases of medicines by the funds are decentralized and do not follow a comprehensive strategy to support innovation. Since 2010, purchases at prices above reference prices (usually the lowest of equivalent formulations) have been limited. Negotiations for medicines that prove to have effective therapeutic gains are possible, in which case it is possible to set higher prices for a period of two years (Ognyanova, Zentner & Busse, 2011; Vadoros, Irwin, Nicod, & Casson, 2009).

German industry took the lead in innovation, production and in the world pharmaceutical market from the mid-19th century to the World War II. From the war period onwards, it was surpassed by the United States, and has since remained among the five most important industries in the international scenario (Achilladelis & Antonakis, 2001). Several leading universities and research institutes participate in collaborative projects with the pharmaceutical industry (Lacasa, 2003; Germany Trade & Inves, 2011; VFA, 2008). In innovation policy for the industry, outstanding projects include those of the BMBF such as the Pharmaceuticals Initiative for Germany, launched in 2007, and the Health Research Framework Programme, launched in 2010 (Delgado, 2015a). Other programs are spin-offs of global initiatives, such as the European Union's HighTech Strategy, namely the BioPharma Competition and the Leading Edge Cluster Competition (Delgado, 2015a).

The German case suggests that corporatist systems have limited capacity to coordinate the governmental area in charge of healthcare when it comes to the formulation and implementation of innovation policies, such policies being carried out in a framework of relative disconnection between the operation of the healthcare system and industry. The United Kingdom's universal public healthcare system is considered to be the least expensive (taking into account total and public spending *per capita* in healthcare), but it has a positive impact on the health conditions of people. At the same time, it plays a decisive role in stimulating innovation (despite coordination

dilemmas stemming from the management of the broad service network), connecting to industry through public procurement and direct research support. The public provision of healthcare services turns hospitals into important links between science and technology institutions and industry through basic and applied research, clinical trials and information collection on the therapeutic effectiveness of medicines and medical equipment. Except for university hospitals, predominantly private hospitals are less likely to play such a role in liberal systems. In liberal systems, more so than government purchases, public funding for research operates as the main mechanism connecting industry and the health system, run as they are by entities that are largely unburdened by the management of the healthcare service network. In all cases, public-private partnerships are relevant for research.

The Unified Healthcare System and the pharmaceutical industry: paths and perspectives

The path of the Brazilian healthcare system and the domestic pharmaceutical industry

The current healthcare system in Brazil is the result of a long trajectory, inaugurated in 1923 with creation of the “retirement and pension funds” (*caixas de aposentadoria e pensão*), then with the inception of of the “pension and retirement institutes” (*institutos e aposentadoria e pensões*) in the 1930s, both with a corporatist profile. With the publication of the Organic Law of Social Security (LOPS, in it’s Portuguese acronym), of 1960, the unification of the several institutes under the National Institute of Social Security (INPS, in it’s Portuguese acronym), in 1966, and the extension of social security coverage and medical care to self-employed workers and rural workers in the beginning of the 1970s, the bases were established for the creation of the Unified Healthcare System (*Sistema Único de Saúde – SUS*), in 1988. The newly-created SUS encompassed a scope of universal coverage that surpassed the corporatist standard, at a time of international retrenchment in this particular kind of coverage. At the time, Brazil was experiencing a transition to democracy, with a strong presence of workers in the political

arena and fierce action by the healthcare movement, in the face of scattered opponents. The transition to democracy favored the implementation of SUS, which overlapped, however, with a largely private healthcare provision network, as handed-down from the impulse given to the medical business segments by the military regime (Bahia, 2005; Teixeira & Oliveira, 1986; Menicuci, 2007; Delgado, 2001, 2012).

As provided for under the Brazilian Constitution of 1988, the contributions of workers and employers and other financial sources were to fund social security, bringing together healthcare, general retirement and pension scheme and social assistance under the same institutional umbrella. However, the management of the system remained with the Ministry of Health – with the formal endorse of the National Health Council (*Conselho Nacional de Saúde*) and the Health Conferences (*Conferências de Saúde*) – which assigned the federal states and municipalities with the management of resources and the services network, according to accreditation criteria defined nationally. The private health plans and hospital network were defined as components of the so-called “supplementary health” (*saúde suplementar*). However, given the public sector’s minority participation in the provision of hospital beds, SUS relies crucially on services provided by the private network, which is targeted primarily at the middle and high income segments, through healthcare insurance plans or private direct expenditures.

Social security fiscal difficulties, restrictive macroeconomic policies and ambiguities in the definition of sources to cover day to day costs contributed to erode the perspective for a unified social security budget, thus favoring the increasingly segmented operation of the public, private and supplementary health systems (Ugá & Marques, 2005; Bahia, 2005; Menicucci, 2007). The creation of the National Health Agency (ANS, in its Portuguese acronym), in 1998, enshrined such segmentation by setting up a regulatory arena distinct from that of the National Health Council (Menicucci, 2007). In addition, the cost of the public system presented an uncertain path: in 1997, the creation of a specific source of funding for the system with the establishment of a fiscal charge on financial transactions (*Contribuição Provisória sobre Movimentação Financeira – CPMF*); in 2000, the approval of Constitutional Amendment n° 29 that defined that 10% of federal taxes and 12% of state taxes should be earmarked for healthcare. However, the CPMF was repealed

in 2008 and the Constitutional Amendment went through a long and tortuous voting procedure in the Brazilian Congress.

Nevertheless, the creation of SUS worked positively in improving the health conditions of the Brazilian population, expanding primary care and universalizing access to secondary and tertiary care, despite the bottlenecks derived from the predominance of private beds and laboratory tests. In addition, SUS has guaranteed free access to medicines and more complex treatments, these with positive disposition of the private network, since in the quaternary attention the remuneration of the hospitals reaches high values. As a result, healthcare indicators in Brazil improved considerably.¹⁰

Finally, the existence of SUS affected the trajectory of the Brazilian pharmaceutical industry in a crucial way. Until the 1940s and 1950s, the domestic industry, involving public laboratories and a small private sector, stood out in the manufacture of biological products like vaccines and serums, but did not follow the changes associated with the development of chemical synthesis. Thus, it expanded until the 1990s in a protected domestic environment, permissive patent legislation and easy acquisition of inputs and technology in the international market, in a framework in which multinationals companies had (as in 1970s) a share of sales larger than 80% (Furtado & Urias, 2010). The creation of the Medicines Central (*Central de Medicamentos*) (1971), the Technological Development Company (*Comanhia de Desenvolvimento Tecnológico*) (1976) and the Pharmaceutical Project (*Projeto FÁrmaco*) to support endogenous production of pharmaceutical inputs put in motion a policy dealing with verticalization and training in the R&D segment, targeting the production of active principles. However, the impact was less than expected, given the small receptivity of the business community and the fiscal constraints that marked the path of Brazilian developmentalism in the 1980s.

Constitutional requirements and the programs defined for healthcare under SUS have all showed in a dramatic way the limitations existing for medicines production in Brazil. It was precisely in response to such a mismatch that there emerged policies to prevent trade liberalization (and an almost unconditional adherence to the Agreement on Trade-Related Aspects of Intellectual Property Rights – TRIPS, in the 1990s) from contributing for the

collapse of the fragile national drug industry, and also to mitigate the negative impact of the liberalization of drug prices on the functioning of Brazil's healthcare system. Trade liberalization, as it unfolded between 1988 and 1992, favored an increase of 1,304% in imports of finished drugs and of 204% in active ingredients of medicines in the 1990s (Furtado & Urias, 2010: 20). With the approval of the Brazilian Patents Law, in 1997 (during the first term of president Fernando Henrique Cardoso: 1995-1998), Brazil adhered to the TRIPS agreement without taking advantage of the transition period granted to developing countries, in addition to recognizing the patent's pipeline mechanism (absent from the provisions of the Agreement).¹¹ Price liberalization allowed for a certain recovery in the profit margin of companies, but led to an average increase of 30% between 1995 and 1998 in the prices (in dollar terms) of medicines (González García *et al.*, 1999), making it difficult to sustain drug distribution policies, especially those linked to the fight against AIDS (Homedes & Ugalde, 2006).

In the second term of Fernando Henrique Cardoso (1999-2002), the reversal of such policies begins, with positive effects for the pharmaceutical industry. Mention should be made to the establishment of the National Agency for Sanitary Vigilance (ANVISA, in its Portuguese acronym) and the "prior license" mechanism (which made ANVISA a part in the analysis process of drug patents, although with reduced effectiveness); the Law on Generic Medicines; the threat of use of compulsory licensing for price bargaining; the production of AIDS drugs in public laboratories based on Article 68 of the Patents Law; the creation of the so-called sectoral funds (*fundos setoriais*) (Shadlen, 2009, 2012; Shadlen & Fonseca, 2013).

In the course of Lula's first term (2003-2006), the pharmaceutical industry was targeted as a "strategic sector" in the Industrial, Technological and Foreign Trade Policy (PITCE, in its Portuguese acronym).¹² The administration created the PROFARMA, a financing line extended by the Brazilian Bank for Economic and Social Development (BNDES, in its Portuguese acronym) to support the creation of bioequivalence laboratories (that conferred substance to the generics policy). The Lula administration also created competitiveness forums for the pharmaceutical industry chain (Delgado, 2015b, 2012). During Lula's second term, industrial policy for the sector was more directly linked to healthcare policy. The *Mais Saúde* (More

Health) program, as part of the Productive Development Policy¹³ (the country's new industrial policy), encompassed actions directed at the healthcare industrial complex and established a Permanent Forum of Articulation with Civil Society. In addition, changes to government's procurement legislation were announced as feasible in order to guarantee support to the national industry and stimulate technological innovation (Delgado, 2012, 2015b). In this scenario, partnerships for productive development were born, amidst efforts to reduce SUS vulnerabilities, dependent on imports of several medicines provided by the system, aiming to internalize and develop strategic technologies with high value added (Costa, Metten & Delgado, 2016). These involved the articulation of three basic actors – a public laboratory, a private laboratory and a producer of the inputs needed to produce the drugs –, “for the development, transfer and absorption of technology, production, as demanded by SUS” (Ministry of Health, SD).

During the first term of Dilma Rousseff's government (2010-2014), the *Brasil Maior* program (the country's newest industrial policy) expanded public procurement policy through the *Saúde Não Tem Preço* Program (Health is Priceless Program). It also defined margins of preference to stimulate domestic production of innovative content. The “productive development partnerships” (PDPs) – which were part of the National Health Plan of 2012-2015 – were also highlighted, and health budgets were strengthened (Delgado, 2015b). By 2013, the Ministry of Health recorded 104 formal partnerships, 97 in finished products (66 drugs, 7 vaccines, 19 health products and 5 R & D), with 76 partners involved, of which 19 were public and 57 were private. With the PDPs, public purchases under SUS reached R\$ 8.9 billion/year, resulting in an estimated average savings of R\$ 4.1 billion/ year, projecting foreign exchange savings at the end of the projects of US\$ 3.9 billion (Chioro, 2014).

All these actions together favored a significant recovery of the domestic pharmaceutical industry (Furtado & Urias, 2010; Vargas, 2009). Its share of domestic sales rose from 28.2% in 2000 to 41% in 2005 (Capanema & Palmeira Filho, 2007). In 2013, the National Industrial Development Council (CNDI) pointed to a share of more than 50% of domestic industry in domestic sales (Brazil-CNDI, 2013: 17). A large part of this market share was due to the presence of generic medicines, with a majority of national

production, which accounted for 27.3% of unit sales in 2010 (Progenericos, *s/d.*). In 2013, of the 10 largest pharmaceutical companies, four were national, compared to only one in 1998 (Interfarma, 2013).¹⁴ There was, however, no change in the growth pattern of the sector's trade deficit. In 1998 it reached US\$ 1 billion; in 2011, the deficit had expanded to US\$ 5 billion (BRASIL-MDIC, AliceWeb Platform). Brazil's dependence on active ingredients of medicines imports remained severe, as they increasingly imported from Asian countries. Imports of finished innovative drugs were also significant, despite intensified innovation efforts by the industry (mostly incremental in nature) and an increase in the participation of the healthcare area in innovation expenditures in Brazil, from 30%, in 2010, to 36%, in 2013 (Nassif, 2014).

Finally, the policies and limits for capacity-building in the production of biological medicines must be recorded (Brazil-Abdi, 2013). During the lifespan of PITCE, launched in 2004, biotechnology was identified as a "bearer of the future" area. The National Biotechnology Policy, the Competitiveness Forum in Biotechnology and the National Biotechnology Committee were defined, as well as the creation of the Amazon Biotechnology Center. In the PDP launched in 2008 biotechnology was included as part of the mobilizing programs in strategic areas, aiming to increase access, increase Brazilian output of products and processes, and expand and strengthen the country's scientific and technological base, with the establishment of several targets for 2010. Biotechnology was also given prominence in the 2007-2010 Action Plan for Science, Technology, Innovation and Development (PACTI), by the Ministry of Science and Technology, and also in the National Science, Technology and Innovation Strategy – 2011-2014 (ENCTI). The Economic Subsidy Program, of FINEP, the Sectoral Funds, the CRIATEC Fund of BNDES, for innovative companies, as well as the Technological Fund (FUNTEC) and the PROFARMA innovation financing line all stand out among the policy instruments directed to the sector. PDPs were also establishment between public laboratories and national innovative companies for product development. By 2013, there were 31 biotechnology firms in Brazil focused on human healthcare, 22 of them using public support. However, production was still in its infancy. In 2010, more than 30% of the funds used to acquire medicines were geared to biopharmaceuticals, while growth in imports of

biopharmaceutical products expended at an annual rate of 37% between 2005 and 2010. Although the pharmaceutical products and chemical medicines still accounted for 2/3 of the sectoral trade balance, 8 out of 10 of the medicines (of higher value) imported were associated to the biological sector.

In its recent history, the Brazilian pharmaceutical industry developed connections with the healthcare system through government purchases and productive development partnerships, and benefited from other measures, within the scope of industrial policy. Since 2008, the Ministry of Health plays a central role in the conduction of industrial policy (for the healthcare segment). Thus, the potential open for industrial development is evident from its articulation with SUS. The limits to such articulation derive from the segmentation of the Brazilian universal system, given the majority presence of the private sector and actors that operate in a direction contrary to the provisions for expanding SUS scope. Thus, collaboration around research, that lies at the heart of universal access and provision systems, is not fully realized.

Healthcare and the pharmaceutical industry: assessment and perspectives

Brazil is the paradigm of a developing country with a national passive learning system, in terms of innovation activities in the business world. The fundamental purpose of the Brazilian catching up effort has always been to meet the demand of the middle and upper income segments for consumer goods from the central capitalist nations. Such segments, it should be said, being well aware of their origins and belonging to European civilization and its North American extension (Furtado, 1979). Thus, the incorporation of multinationals into the Brazilian economy took place early on, with faint demands of local content counterparts in the relationship with suppliers and without technology transfer requirements. In addition, the almost exclusive prevalence of the import substitution strategy, the control of much of the top or frontier activities by multinationals, and the ease of acquiring capital goods and manufacturing licenses for goods with technological content in the international market, efforts to innovate Brazilian companies were faint (Silveira, 1999). The establishment of a science and technology system in

Brazil was not articulated, therefore, to the competition strategies of companies. The few nuclei oriented towards innovation in the Brazilian productive web were located in state-owned enterprises, but insufficient to disseminate the provision of innovation in the industrial production as a whole (Albuquerque, 1995; Dalhman & Frischtak, 1993).

The neoliberal policies developed during the 1990s strengthened the heteronomous characteristics of the Brazilian national innovation system. On the whole, this scenario did not fundamentally change in the current century, but sectoral policies, such as those directed at the healthcare industrial complex, have shown to be promising. In this sense, preservation of such policies is fundamental for the consolidation and deepening of the mutually beneficial articulation between the health system and an innovative industry in Brazil. In addition, institutional arrangements should be devised with a focus on the articulation between the governmental health area, the industry and the public agencies that support research, so as to define and manage the national health research agenda. In the United States, with a liberal healthcare system, the NIH focuses healthcare financing on activities that impact the innovative performance of companies. It also coordinates by means of comprehensive programs different institutions that take part in the healthcare innovation system. In Brazil, with a healthcare system that is markedly liberal (since the private sector is involved in the provision of services), funding instruments are scattered, which makes it difficult to focus on objectives that can generate results that can be appropriated by companies. Besides, broader initiatives to coordinate the institutions that participate in the healthcare innovation system are few. On the other hand, the Brazilian healthcare system has a universal dimension that can be found fundamentally in the constitutional provision that guarantees a “right to healthcare”. This feature relates to existing institutional arrangements for the management of services, such arrangements having greater coordination capacity than those found in liberal and corporatist systems (Delgado, 2012). The growing presence of the Ministry of Health in the management of industrial policy directed at the healthcare industrial complex is a result of such an attribute. However, in the absence of a broad public network for the delivery of services, the possibility to increase participation of hospitals in innovation activities (of the productive segments of the healthcare industrial complex) is reduced (as happens to be the case in universal publicly funded systems). Therefore, the

consolidation of the universal dimension of the Brazilian healthcare system (with the expansion of the public service network) may be of interest to segments of the industry that are open to innovation-oriented action. This opens the opportunity for the construction of an unprecedented coalition, bringing together actors with often adversarial positions, in order to strengthen both the universal dimension of the healthcare system and the willingness of the national pharmaceutical industry to innovate.

A crucial limit to the implementation of these two strands of policies to support innovation in the healthcare area, coupled with the hybrid nature of the Brazilian healthcare system, can be found in the reduced participation of state funding directed to the segment, a situation that contributes to diminish the importance of conventional care and favors actions by the sectors that try to do away with its public dimension. The table below presents data from the Brazilian healthcare system, in contrast with the countries focused above, besides Japan, China and India (countries that in different ways engage in catching up policies aiming to attain center stage in the world economy, including in the pharmaceutical industry). The table intends to show the hybrid nature of the Brazilian healthcare system and the limits to the affirmation of its public dimension and also to its role as articulator of the different actors that participate in the healthcare innovation system. While total healthcare spending in relation to GDP is close to that of central capitalist countries, in Brazil (despite the presence of SUS and its use by more than 70% of the population) the share of public spending in total healthcare expenditures is lower than that of the United States (the paradigm of a liberal system), and even China, which at the end of the 1970s had practically discontinued its public healthcare system (the reconstruction of which began at the end of the last decade of the 20th century). We are far from India, whose public healthcare system is extremely residual (and therefore seeks to boost its pharmaceutical industry for exports, in niches like the production of generics and active principles). With the current participation of public spending, the capacity to guarantee the basic operational functions of SUS and to increase its effectiveness as an instrument to stimulate innovation in the health area remains reduced.

Table 1: Selected data on healthcare systems.

Country	Year of creation of the present system	Entitlement	Hospital network	Physicians (main occupation)	Healthcare expenditure / GDP (*)	Public expenditure / total healthcare expenditure (*)	Total per capital expenditure on healthcare (*) US\$	Per capita government expenditure on healthcare (*) US\$
Germany	1883	Insurance	Around 2/3 public (mostly municipal)	Liberal, public service	11,3	76,5	4474	3420
Brazil	1988	Universal/Segmented	Public and private (majority)	Liberal	8,9	45,7	1035	474
China	1998	Insurance	Public (majority) and private	Public service (dispense medicines)	5,1	55,9	423	236
USA	1965	Means Test	Predominantly private	Liberal	17,7	47,8	8467	4047
India	1983	Residual	Public and private	Liberal	3,9	30,5	146	44
Japan	1961	Insurance	Around 50% Public	Public service/ liberal (dispense medicines)	10,0	82,1	3415	2804
UK	1948	Universal	Public	Public service	9,4	82,8	3364	2787

Prepared by the author. Sources: World Health Statistics. Part III – 2014. WHO. Data for the year 2012.

Such a configuration reinforces the presence of actors and positions contrary to the expansion of the public system, given the overwhelming presence of private healthcare plans, private hospitals, liberal medicine practice, laboratories and commercial pharmacies in the Brazilian landscape. Measures such as the opening of healthcare services to foreign capital, carried out in the first Rouseff's term, and a recurrent threat of launching popular healthcare plans by the government since 2016 aggravate this scenario. They not only reduce the public dimension of the Brazilian healthcare system and its bases of support, but weaken its relevance as a tool to stimulate innovation in healthcare.

However, such a scenario, with the specific characteristics of the 1980s, was not enough to prevent the creation of SUS. At the time, the sanitariat movement, the fundamental actor in the conquest of the universal right to healthcare and in the creation of SUS, did not even have fundamental actors, such as workers, despite the official proclamations of union centrals, like the CUT, in favor of SUS, since they had been already captured by private healthcare arrangements, in their employers healthcare corporate plans

and of those of the trade unions themselves.

The success of sanitarians has shown in fact how in critical situations combative minorities when facing scattered opponents can achieve success, especially when their victory does not mean the defeat of anyone, in the case in question the preservation of the private sector as a provider of supplementary healthcare. Still, the historical significance of the SUS' creation was tremendous. In fact, in addition to the significant improvement in healthcare indicators, it created an environment that allowed us to envisage a scenario of increasing opportunities for virtuous interaction between the healthcare system and innovative development, in the presence of adequate stimulus policies.

While in the 1980s the Brazilian health reform movement achieved success because of its specific performance in a favorable environment, the scenario opened by industrial policies directed at the healthcare industrial complex in recent years creates new opportunities, with the possibility of building a new coalition in favor of healthcare and development. The year of 2016 pointed towards retrenchment, putting in perspective the discontinuation of policies that were adopted since the generics legislation was passed. So far, however, this has not yet come to pass. Will the domestic pharmaceutical industry, which has managed to assert itself in recent years, stand as a residue and only to sustain some survival prospects of an effectively national industry or will it also be swallowed up by the new cycle of denationalization inaugurated in 2016?

A brief assessment of Brazilian industrial policy under the PT governments

In recent years, policies aimed at the pharmaceutical sector in Brazil were connected to a broader resumption of industrial policy on the agenda of the federal government. In the 1990s, the idea of industrial policy lost prominence in the discourse and practice of several Brazilian presidents given the prevailing expectation that trade liberalization, privatization and deregulation of several markets would attract foreign capital and modernize

the industrial structure. Although the expression industrial policy was present in the title of government documents and occasional support measures were directed at different sectors, there was a predominant belief in the allocative virtues of the market and distrust in the role of the state in promoting development (Delgado, 2005, 2016b).

With the crises of Russia, Korea and Brazil, and the Argentine collapse, core narratives and policies started showing weaknesses thus making room for industrial policy to be reconsidered, even if at first not explicitly, in actions taken during the second term of president Fernando Henrique Cardoso (creation of Sectoral Funds and Competitiveness Forums), besides gaining the support of industrial entrepreneurs (Delgado, 2005). In the Workers' Party (PT in its Portuguese acronym) governments, the idea of industrial policy gained central stage in government actions.

Chang defines industrial policy as the set of initiatives aimed at specific groups of industries to achieve results that are perceived by the state as efficient for the economy as a whole (Chang, 1994: 60). Although this definition does not deny the validity of policies aimed at correcting market failures (public goods, information asymmetry, externalities) and of policies of a horizontal nature (directed at all economic sectors, such as education and research support), it sees industrial policy as fundamentally selective, with the purpose of reinforcing certain activities that may contribute to structural changes in the economy. The mere correction of market failures can reestablish situations of low-level equilibrium, while the exclusive adoption of horizontal policies may not be consistent with the myriad of problems and demands arising from the different sectors in the productive structure. On the other hand, the adoption of industrial policies is anchored in the understanding that objections to state action – as contained in formulations that emphasize the presence of government failures (the capture of public agencies by private interests, asymmetry of information between principal and agent, self interested behavior of public agents) – are based on a unilateral perception of the motivations and rationality of individuals. Further, such formulations disdain the role of institutional arrangements to deal with the problems that they themselves bring to the fore (Chang, 1994, 2002; Evans, 1998).¹⁵

Three conditions have been set out for the success of industrial policies. The first is the presence of agencies with strong political support and a high capacity to coordinate the actions to be carried out (Wade, 2004, 2010), agencies that are secured a fair distance from the interests of the business sector in order to reduce the risk of their being captured (Evans, 1993; Rodrik, 2004). It is vital that such agencies are not totally insulated though, a situation that could lead to the formulation of unrealistic policies, detached from the effective needs of the business community. In this sense, the constitution of articulation mechanisms between the state and the business community – which ensure goal setting, mutual collaboration and trust – appears as another fundamental element for the proper conduct of industrial policies (Evans, 1993). Finally, it is important to maintain a stable institutional environment and a regulatory frameworks that favors private investment, in addition to the presence of a pro-investment macroeconomic environment. The aim is to forge institutional and macroeconomic conditions that can ensure investment incentives, the adhesion of the actors involved and the broader support of society. It should also be in place mechanisms to secure a degree of protection to the national economy in the face of fluctuations resulting from the intense international mobility of capital (Delgado, 2010).

Under the PT governments, the formulation of industrial policies managed to take into account such guidelines, thus achieving partial success in several areas. However, they were not able to consolidate the presence of industrial policies as a permanent policy feature of the Brazilian state.

In Lula's first term (2003-2007), the 2004-2007 Pluriannual Plan defined as “a long-term strategy” the establishment of

“a growth process by the expansion of mass consumption market and based on the **progressive incorporation of working families to the consumer market served by modern companies**” (Brazil, 2003a: 17). (emphasis added).

At the same time, the emphasis was on exports, investment (including through public investment in infrastructure) and productivity and efficiency

of enterprises, from the conquest of foreign markets, learning and innovation. Lastly, the importance of an environment conducive to private investment with the maintenance of stability, the establishment of public-private partnerships and the granting of financing by public financial institutions were underlined.

In such a strategy, industrial policy gained centrality. In 2004, the government announced the Industrial, Technological and Foreign Trade Policy (PITCE in its Portuguese acronym) (Brazil, 2004). The new industrial policy targeted horizontal actions aimed at technological innovation and development, increasing international insertion, industrial modernization and expansion of capacity and scale of Brazilian companies. It also included strategic options associated with the capital goods industry, pharmaceuticals and medicines production, software and semiconductors, and the promotion of forward-thinking activities such as biotechnology, nanotechnology, biomass and other renewable energy sources (ABDI, 2005). The articulation with the business community would be carried out by means of competitiveness forums, and more broadly by the National Industrial Development Council (CNDI in its Portuguese acronym).

Despite its favorable reception by entrepreneurs, the PITCE was faced with macroeconomic options (based on inflation targets as defined during Cardoso's second term) whereby exchange rate fluctuations and interest rates were key to inflation control (Delgado, 2005; Suzigan & Furtado, 2005; De Toni, 2013). The explosion of commodity exports favored the appreciation of the exchange rate, which, in part, undermined support measures. Further, the political crisis of 2005, stemming from a set of charges that were eventually nicknamed "Mensalão" (supposed monthly payments to lawmakers to guarantee their support in votes favoring the government in Congress), heightened uncertainties and thus contributed to slow down industrial growth. Industrial activity expansion went from 7.89%, in 2004 (above that of GDP) to only 2.08% and 2.21%, in 2005 and 2006, recovering only in 2007 and 2008 (5.27% and 4.07% respectively) during Lula's second term (Delgado, 2016c). Finally, the Brazilian Industrial Development Agency (ABDI in its Portuguese acronym) and the CNDI both failed to crystallize as instruments of coordination and articulation with of the business community. ABDI had little weight as compared to other government bodies and entities

involved in industrial policy, such as BNDES, Petrobras and the Ministry of Development, Industry and Foreign Trade (MDIC). On the other hand, the functioning of CNDI depended heavily on the entrepreneurial characteristic of the individual who was at the helm (De Toni, 2013).

In Lula's second term (2007-2011), the Productive Development Policy (PDP in its Portuguese acronym) was launched in 2008. The new industrial policy put aside the selection of priority sector and covered all industrial segments in three structural programs for the productive sector: programs to mobilize strategic areas, programs to strengthen competitiveness and programs to consolidate and expand leadership (ABDI, 2008). Coordination and monitoring mechanisms were set up, pointing to the requirement of "private sector counterparts and [the setting of] contractual responsibility", although without definition of the instruments to achieve such objectives. For the articulation government-business sector the instruments selected were the CNDI, the competitiveness forums linked to MDIC, the sectoral and thematic chambers of the Ministry of Agriculture and special ad-hoc working groups. ABDI, after being the main coordinator of PITCE, had its role reduced under the PDP, being responsible for conducting a specific program (Brazil, 2008: 26-28, 37). The conduct of the policy was distributed among different entities, with the general coordination assigned to the Ministry of Development, Industry and Foreign Trade (MDIC).

The 2008 crisis prevents a clearer assessment of the effectiveness of PDP, since it contributed to narrow the achievements of the policy's proposed goals. Within the government, the inception of the Investment Support Program (PIS) – launched by BNDES in July 2009 as part of a package to counter the financial crisis – is pointed out as a fundamental tool to ease the impact of the crisis in Brazil and the reason for the "v-shaped recovery" that took place in 2010 (ABDI, 2011).¹⁶ Critics argued that PDP objectives did not match the effective actions that were taken, particularly in relation to BNDES, which at the time allegedly favored sectors of low technological density, in contrast to the purpose to strengthen innovation and modern industry (Almeida Júnior, 2009).

The Brazil Maior Plan (*Plano Brasil Maior*, or "Greater Brazil Plan"; PBM in its Portuguese acronym), launched in August 2011, during Rousseff's

firm term in office, aimed at “sustaining inclusive economic growth in an adverse economic context.” The policy focused on “innovation and on the expansion of the productive density of the Brazilian industrial base” (Brazil, 2011). Like PDP, PBM set short-term targets (1914) to expand: the share of investment in GDP; the participation of companies in R&D expenditures; training of human resources; and the value-added in industry. The policy also envisaged fostering micro and small enterprises (SMEs), cleaner production, export diversification, energy and broadband access. PBM defined both sectoral and systemic actions. Sectoral guidelines targeted to strengthen productive chains; to expand and create new technological and business skills; to develop energy supply chains; to diversify exports (markets and products) and the internationalization of companies; and to consolidate skills in the natural knowledge economy. The measures adopted aimed at different productive sectors, divided in four blocks (systems capable of transforming the productive structure and promoting the diffusion of innovation; scale intensive productive systems; work intensive productive; agribusiness productive systems). The systemic actions involved “horizontal and cross-cutting” measures to reduce costs, increase productivity, promote a level playing field between Brazilian and foreign companies, and to consolidate the “national innovation system”.¹⁷ Together with several programs and other government initiatives, such as the Growth Acceleration Program (PAC), main features of PBM were: the BNDES financing lines, the tax relief measures and the use of the government purchasing power to stimulate innovations. Finally, PBM changed once again the governance structure of industrial policy by providing for three operational levels (articulation and formulation; management and decision making; and highlevel advisory). Participation of the business community took place in the sectoral competitiveness councils, that replicated the competitiveness forums, and in the CNDI. The Executive Group of PBM (GEPBM) included representatives from different public agencies under the direction of the Ministry of Development, Industry and Foreign Trade (MDIC).

Business entities received PBM positively and were particularly pleased with the tax exemption measures (CNI, 2012). However, the Brazilian economy and the industrial sector both lost momentum in the years following PBM’s announcement.¹⁸ A glimpse at the reasons for such an economic set back goes beyond the bounds of this article. In 2012, the effects of the fiscal

constraints adopted early in 2011, with amounted to restrictions on credit and public investment, the presence of high installed capacity arising from the sharp growth of 2010 (Delgado, 2016c), the delayed effects of corporate indebtedness incurred in the period of high growth (Feijó, Lemos & Correa, 2017, Almeida, Novais & Rocha, 2016), the uncertainty environment (sometimes associated with the multiplicity of incentives, or with an interventionist profile attributed to the government, given the pressures to reduce interest through public banks and complaints of breach of contract in the review of concessions in the electric sector), the presence of an exchange rate still uncompetitive (despite the devaluation of the real in course since 2012), exogenous factors such as the end of the cycle of high commodity prices, the water shortage crisis of 2013-2015, and the impact of Operation “Lava Jato” have all been pointed out as facts that explain the loss of dynamism in Brazilian economy since 2010, with a significant impact on the industrial sector.¹⁹

In this scenario, there was a progressive erosion of corporate adherence to the pact proposed in the 2004-2007 Pluriannual Plan. The expectation of a long-term strategy that, by expanding the mass consumer market with increased labor income, would induce firms to raise productivity and innovation, supported by innovation and industrial policies, explicitly ceased to be shared by business entities. Until then, the business sector response to the policies put in place had been timid. Although between 1999 and 2009 the technical efficiency of Brazilian companies expanded at a faster pace than in the 1990s (Bahia, 2014), and labor productivity growth (between 2003 and 2013) had doubled in comparison to the period ranging from 1993 to 2002 (Bonelli, 2014), the share innovation spending in the Brazilian GDP showed modest growth: from 2003 to 2010, it rose from 0.96% to 1.16% and the weight of companies in such expenditures varied only slightly from only 43.8% to 45.4%.²⁰ It was exactly in this scenario that emerged complaints on the wage appreciation policy in place, which made salaries grow at levels higher than those of productivity, while at the same time deploring the declining profit rate. Labor cost was again a theme to be discussed, since in the 1990s it was considered one of the components of the so-called “Brazil Cost” (or, a set of situations that increase the cost of doing business in Brazil) and as such had to be reduced in order to increase the competitiveness of companies (Delgado, 2016b).

Final remarks

In the unorthodox developmental field (*desenvolvimentistas*), the criticisms of the industrial policies of the PT governments point to their main limit being the attachment to orthodox formulas in the conduct of macroeconomic policy (Bresser, 2012).²¹ If the preservation of high interest rates was partially offset by BNDES financing lines, the appreciated exchange rate accentuated the companies' vulnerability to imports. The Rousseff administration tackled this dilemma by promoting a slight depreciation of the real between 2011 and 2012, while at the same time lowering the basic interest rate and directing public banks to pressure private banks to reducing their spreads. At the same time, the administration rejected initiatives to reduce the cost of labor, vetoing legislation voted in Congress to eliminate the FGTS (*Fundo de Garantia do Tempo de Serviço*) 10% fine in case of lay-offs.

This set of measures favored a growing corporate realignment against the government. Actions to reduce interest rates were heavily bombarded by the media, identified as they were as voluntaristic and interventionist. If exchange rate depreciation, on the one hand, meant increased protection against imported goods, it also had different impacts on different groups of companies. Also, it occurred after a vigorous cycle of external indebtedness verified in previous years (in which the Brazilian currency was more appreciated), thus increasing the financial difficulties of companies and making it more difficult for them to buy equipment abroad. In addition, given the marked levels of financialization of the Brazilian economy, many non-financial corporations sought to sustain their profitability by investing in financial assets (Feijó, Lemos & Corrêa, 2017), reducing their opposition by means of rents. Thus, the reduction of labor costs appeared as the only adjustment alternative that could unify the different fractions of the Brazilian bourgeoisie. Alongside it, other elements of the recipe forged in the 1990s have also gained prominence. It is possible that sectors favored by the resumption of public investment, such as contractors, or those that benefitted from specific policies (such as the pharmaceutical industry or the segments of the oil and gas sector), did not align with the opposition, but the former (contractors) were stuck with allegations of corruption and other business sectors did not express themselves differently from the new

consensus that emerged.

It is not possible at this time to make a complete assessment of the role and weight of the different social forces that have led the country to a permanently unstable situation since 2013, culminating in the parliamentary coup of 2016. The Brazilian media has maintained a permanently hostile stance against the governments of PT and made this clear as from 2013, reinforcing some kind of malaise in the business environment and the resentment of sectors of the middle class that, although not having lost income, perceived a reduction in the gap that separated them from the poorest sections of society. Segments of the Federal Police, the Public Prosecutor's Office and the Judiciary also adopted positions contrary to those of the PT's government, with the so-called "Lava Jato" (a police operation designed to investigate a corruption scheme involving Petrobras) involving politicians from practically all Brazilian parties, but that focused mainly on PT's members, as a result of information gathered from plea bargaining, with strong repercussion in the media. In turn, there is evidence of effective participation of United States business and governmental sectors in the process of destabilizing both PT's governments, especially unhappy in relation to the conduction of the Brazilian foreign policy and interested in securing greater participation in the gains from the Pre-Sal, an immense oil field discovered in 2007 (Nassif, 2016). Having *Pre-Sal* as background, the Brazilian government defined an exploration regime that gave Petrobras central stage, guaranteed resources for education and healthcare, and designed, with the oil company at the fore, the crossing over to development and control of new energies, heralding the future occupation by Brazil of a solid position in the world economy (Delgado, 2016c).

Future research will shed light on what happened in Brazil during this period, when the support for the PT government rapidly deteriorated. Lula left the presidency with 83% approval and Dilma reached 77% in 2012. In any case, the turbulences that have marked Brazilian life since 2013 contributed to end the only experience of resumption of active development policies since the 1970s. To what extent do the design and legacies of the Brazilian path explain their decline?

As regards the different industrial policies implemented since 2004, it is

possible to identify dilemmas deriving from their connection with macroeconomic policy, in addition to those associated with the discontinuity, design and instruments of the policies themselves. In the first case, one can point out the negative effects of the exchange rate appreciation that spread to imports the strengthening of the internal market. The commitment to control inflation was essential to preserve popular support for the government and inhibited more incisive actions for currency adjustment (which, however, if carried out gradually, would have mitigated prices and would not have an abrupt impact on the indebtedness of companies). In turn, it is important to note that in three periods of the PT's administrations, three different policies with different governance structures were launched. Created to operate as a comprehensive agency, ABDI (the industrial development agency) was never able to gather institutional power and was not replaced by another agency. In addition, since the second Lula government, CNDI had lost ground, although it had played a central role in PITCE. It is true that after decades without the effective operation of industrial policies at the level of the Brazilian government, experimentation to find adequate policy formats was to be expected. However, the failure to consolidate strong institutions to carry out industrial policy, and permanent intermediation mechanisms with the business sector, reduced the effectiveness of industrial policies and their ability to attain public recognition. Finally, in recent years, Brazilian industrial policy involved basically the use of regulatory measures, public financing, subsidies and public procurement. Public procurement is the most effective instrument, since it not only reduces uncertainty for economic agents in their investment decisions, but also allows for a more definite guidance by the state of the direction of private investments. Regulatory provisions have a significant impact on the creation of environments that may induce business action in certain directions, but their impact is differentiated in time according to the sector impacted. Public funding and subsidies reduce the cost of investment, but do not guarantee investments themselves. In the Brazilian case, since such public funding and subsidies are unaccompanied by clearcut requirements in terms of counterparts (technological improvement, job creation, exports or other), they do not produce the expected effects. The consolidation of Brazilian leadership in the production and marketing of meat was part of the objectives of PDP and PBM, but the large resources made available to Friboi, for example, did not prevent this company from moving its headquarters abroad. On the other hand, the tax

exemptions policy (*política de desonerações*) – which aimed to reduce the cost of investments by replacing taxes that accrued on the payroll with taxes on the company’s turnover – likewise unaccompanied by counterparts, made available resources that were largely directed to investments in financial assets, with a reduced impact on investments, in addition to the negative effects on public accounts.

Finally, there are legacies of the Brazilian path that affect the impact of industrial policies as a development strategy. The closing of the Brazilian economy that took place during the old developmentalism era favored the consolidation of a tax structure marked by the presence of many taxes on production, since such costs could be transferred to consumers in general (Delgado, 2001). More than the tax burden, the great Brazilian dilemma, in this case, is to revise such a structure, stressing the weight of taxes on income, property and consumption and reducing taxes that increase the cost of production. This, of course, is not part of the agenda and scope of industrial policy, but has a direct impact on its effectiveness and the competitiveness of Brazilian companies.

Infrastructure deficiencies are also a negative legacy from the old developmentalism for the same reasons as stated above. When impact of such deficiencies on the price of products could be absorbed by consumers in a closed economy their relevance to business was minimal. In a more open economy they affect the companies’ competitiveness. On the other hand, they open a window of opportunity for public investments that stimulate demand and strengthen the position of Brazilian companies in certain segments.

The horizon pursued by the policies to support industrialization in Brazil has always been marked by the priority perspective of ensuring the production of goods that replicate the consumption patterns of developed countries (Furtado, 1978), an expression of the reduced sense of belonging to Brazil in sectors of higher income. Therefore, unlike the Asian countries, “early on” it was admitted the incorporation and eventual domination of multinationals in the most dynamic segments of the Brazilian economy, without the demand of counterparts in terms of technology transfer, with negative impacts on the willingness of domestic companies to innovate since they could acquire closed packages on the international market. Further, domestic companies

were not geared into reverse engineering to develop technological and innovative endogenous capacity (Delgado, 2016c). This framework can not be reversed, of course, but Brazilian industrial policy will necessarily have to define policies to root multinationals' R&D activity in Brazil, a move that can stimulate domestic companies to develop endogenous innovations and that put in perspective national control on forward-looking activities, with the aim to reverse present technological dependence with respect to the central countries in the capitalist order. Strictly speaking, if such actions are not taken, there is no way to imagine any prospect of sovereign development, which combines innovation and social well-being. There is no country with large territorial base and medium or large population where such a combination has taken place without the presence of a significant number of large national innovative companies. Therefore, a new cycle of denationalization of the Brazilian economy has substantially reduced the scope for reaching a national development project.

The making choices and eventually implementing them as a national project involve the creation of permanent mechanisms of interaction between the main agents and the construction of a consensus to support the initiatives to be carried out. These are perhaps the major challenges faced by industrial policy in Brazil. From the old developmentalism on, no forums (able to create mutual confidence and to establish effective commitments) were put in place or consolidated to articulate the relationship between the state and the business community. However, the ones that came to life sometimes had a mere formal status, sometimes serving only as an expression of reiterated sectoral interests (with notable exceptions), such expressions at times derived from the actions of political actors, or from the political and business universe, such as Vargas and Roberto Simonsen, in Federal Council of Foreign Trade (*Conselho Federal de Comércio Exterior*) in the 1930s and 1940s, or by Lula and Luiz Furlan, more recently in the ambit of the CNDI (Diniz, 1978; Leopoldi, 2000, Delgado, 2001; De Toni, 2013). The reduced level of continuity present in the various institutional architectures built under each industrial policy project, in addition to the low capacity of regimentation of the business entities, contributed further for this situation. In fact, the structure for the representation of the interests of the entrepreneurial sector became deeply diversified since the 1950s, thus adding to the corporate structure parallel sector entities, associations linked to specific themes and

think tanks (Boschi & Diniz, 1991, 1993, 2001; Bresser-Pereira & Diniz, 2009; Leopoldi, 2000; Delgado, 2001, 2005, 2010; Mancuso, 2004; Schneider, 1998). In addition, the instruments through which the business sector places its demands have multiplied, ranging from acting in corporate channels, personal contacts, lobbying, acting in Congress, etc. However, representative entities are not able to guarantee the loyalty of its members to commitments agreed upon in the forum for the formulation of industrial policy. There are no ready-made recipes for this, but the experience of successful cases, such as that of Germany, reveals that the empowerment of entities to directly engage with companies in vocational training and wage bargaining activities tends to increase their ability bring actors together (Hall & Soskice, 2001; Delgado *et al.*, 2010). Given the size of Brazilian corporate entities, this is a goal to be considered.

In addition, the establishment of more permanent coordination entities – relatively immune to the fluctuations proper to the political cycle, while endowed with accountability mechanisms – favors the continuity of the formulation and implementation of industrial policy. ABDI's experience suggests that such an entity, if it is to have effective weight, should anchor itself in more robust agencies of industrial policy implementation – in the Brazilian tradition, BNDES and Petrobras – or to be closer to the top of the state apparatus. Obstacles to the effective operation of mechanisms that favor dialogue with the business sector and the implementation of industrial policy are found, however, outside of the institutional design of such policies. In the Brazilian case, the weight of multinationals and the untrammelled performance and high gains of financial capital (despite the significant regulation of risk operations), and the fact that industrial entrepreneurs at times recur to financial assets to overcome difficulties in their conventional activities, tend to attach great influence on the communication system (one of the most concentrated in the world) and to positions contrary to the adoption of active industrial policies. Instead, they favor neoliberal approaches, even if this discourse contrasts with the actual practice of Brazilian industrial entrepreneurs. For this reason, it is important to communicate the goals and projects of industrial policy to the widest audiences, with the creation of more effective instruments of dialogue with society that reduce the influence of conventional media. This is a challenge to be faced and overcome in the conduction of Brazilian industrial policy if the goal is to build a national

development project.

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Comparative Capitalism analysis of emerging economies²⁵

Over the first decade of the new millennium, large emerging markets, in particular, Brazil, India, and China have shown remarkable economic dynamics. How can we account for this long-term trend? Recently, the study of capitalisms in these countries has grown in comparative political economy scholarship. Based on analytical concepts derived from Comparative Capitalisms (CC) approaches, scholars have started to highlight the commonalities and differences of economic institutions in the Global South (e.g., Becker, 2013; Schneider, 2013; Witt & Redding, 2014; Nölke *et al.*, 2015). While recent studies have very much contributed to our knowledge about the nature of capitalist institutions in emerging economies, we still see significant shortcomings which require further conceptual development. In particular, CC scholarship on emerging markets does not pay sufficient attention to the specific international conditions under which economic institutions in these countries have developed. More specifically, we emphasize the integration into international financial markets as a crucial but often neglected factor in existing CC scholarship.

Most CC scholarship departs from the canonical ‘Varieties of Capitalism’ (VoC)-approach (Hall & Soskice, 2001). In a nutshell, the VoC-approach identifies two ideal types: liberal market economies (LME) and coordinated market economies (CME), based on the distinction of five central institutional spheres in capitalist economies and the notion of mutually supportive institutional complementarities. Its fundamental distinction between LMEs (as exemplified by the US) and CMEs (illustrated with Germany) proved to be an extremely parsimonious approach for ordering the vast diversity within contemporary capitalism. Instead of broad notions of macroeconomic aggregates and public policies, it went down to the company level in order to study how capitalism works on a day-to-day level. Despite considerable theorydriven critiques, especially from a historical materialist perspective (Ebenau *et al.*, 2015; Bruff, 2010; Bruff, 2011), the institutionalist CC research program has expanded both content-wise as well as geographically (Nölke, 2016: 145-7).

One of the first attempts to systematically apply the CC approach to Latin America has been made by Ben Ross Schneider (Schneider, 2009; Schneider & Soskice, 2009; Schneider, 2013). Over the last couple of years, he has developed the model of Hierarchical Market Economies (HME) as another variety of capitalism. In contrast to markets (LME) and negotiations (CME), he identifies hierarchies as the central coordination mechanism in Latin American capitalism. While sticking to the analytical instruments of VoC, he has modified the purpose of this research program. In contrast to the traditional preoccupation with the success of coordinated and liberal capitalism, he uses the approach in order to explain the muted economic development in Latin America. His model highlights the importance of diversified business groups, multinational corporations, low skill levels, and atomistic labor relations. In a nutshell, the model highlights the importance of a ‘low-skill trap,’ i.e., low levels of investments in skills and training, based on various negative institutional complementarities (see Schneider, 2013). Policy recommendations, therefore, center on both overcoming the HME status and driving institutional change towards the CME or LME model.

Besides its very pessimistic outlook and a perceived affinity to traditional modernization theories, critics argue that the HME model is too strongly focused on the national institutional context and does not take the strategies of multinational corporations within global markets sufficiently into account (Ebenau, 2013; Fishwick, 2013). The role of the state is another main point of contention between Schneider and his critics, with the latter assuming the ability of the state to overcome the deficits highlighted by Schneider within a national development project of inclusive development (Ebenau *et al.*, 2013: 223). Moreover, critical institutional spheres identified within the CC framework (such as the sources of investment finance) are neglected, which in turn limits the explanatory power of his argument about complementarity. These shortcomings may be of limited relevance for medium-size Latin American economies but are important for the case of Brazil, arguably the most dynamic economy in the region. Schneider himself highlights the possibility that Brazil breaks out of the low skill trap, based on its large domestic market, an increasing demand for higher skills and on state intervention (Schneider, 2013: 168-74).

Concerning emerging economies, we see the need to complement the CC

framework in three significant fields. First, we need to study the specific form of the insertion into the global economy. To what extent does a government of an emerging economy have to meet the demands of transnational actors? Second, we need to clarify the function of the state. Given that the state plays a central role in the development of emerging markets, does it resemble the well-known East Asian developmental state, or does it carry different features? Third, what is the basis of economic coordination in emerging markets and in which ways does it differ from Western modes?

The extent to which emerging economies are open towards foreign capital (foreign direct investments by transnational corporations as well as global financial flows) has a significant influence on how much they can achieve through economic policy. In the age of financialization, the question of whether domestic companies have to rely on unstable global financial markets for financing investments is of particular importance. Many development projects have been victims of external shocks and ruptures, most dramatically through many currency and fiscal crises and thus the relation between domestic and international institutions has to be studied accordingly. The same holds true for the role of the state in emerging market capitalism. Historically, the state has been a central element in the development processes of industrializing countries, ranging from a first wave of state capitalism in the 19th and early 20th century (Germany, parts of Scandinavia, the US, and later Japan) based on state subsidies and protective tariffs to a second wave in the 20th century (war economies in Europe, the military industrial complex in the US and decolonized countries in the South). While earlier state activity merely manipulated the background conditions in which firms operated (through, e.g., tariffs), state actors in the second wave also strove to influence the final investment decision of firms. State instruments thus shifted from the indirect influence to direct manipulation of investment strategies. Today, the state usually has a wide range of measures at its disposal, including direct ownership of firms and whole strategic sectors, legal limitations, and options for particular groups of actors and a high degree of discretion about who is to benefit from policy measures. However, we need to assume that state capacities in large emerging economies are somewhat fragmented and decentralized. For this reason, the particular mechanisms of economic coordination are of crucial importance to understand the stability of capitalist systems. We already

referred to markets, negotiations, and hierarchies as dominant forms of coordination in LMEs, CMEs, and HMEs respectively, but what about, what we may call, state-permeated market economies (SMEs) (Nölke *et al.*, 2015), especially in large emerging economies, in which central state actors often have limited capacities or incentives to dominate economic relations? Successful cases of developmental states such as the Japanese one, for instance, relied primarily on efficient bureaucracies integrated into a range of informal networks that provided internal coherency and connected the state with business elites (Evans, 1989: 573). The embeddedness of the developmental state contradicts the conventional view of the state as an authoritative allocator of resources in developing countries. Instead, it indicates that economies with a high degree of state activity in economic affairs are regularly coordinated through close state-business relationships supporting national development projects.

Returning to the classical categories of Comparative Capitalism, the issues highlighted above are of particular relevance for corporate governance and corporate finance. Most emerging economies pursue long-term industrial and developmental strategies. Since the industry is often not entirely in state hands, such strategies have to meet the interests of private business. There is a contentious issue when the long-term perspective of the state collides with short-term profit interests by private firms. This tension is less a problem for developed economies of the liberal (LME) and coordinated kind (CME), which have no major developmental ambitions. It is a particular problem for developing countries that underwent liberalization and privatization programs: semi-state-permeated market economies, which arguably are the majority in the developing world. In such countries, private (and often foreign) investors usually gained the upper hand through the acquisition of privatized firms as well as acting as “classic” private investors through bonds and equities. While in the 1950s or 1960s, when industrial capitalism was in full bloom, there has been a convergence of long-term strategies by the state (development) and companies (steady increase of productivity through capital upgrading; Evans, 1998: 198), the logic of shareholder value gained more and more dominance in the realm of corporate governance by the 1990s. Also, for this reason, the sources of investment depended more and more on conditions on global financial markets which became in turn ever more short-term oriented. Through the fiscal dependence on private funds,

states were less able to implement effective development policies even if they wished to – not least because of the burden of international debt. One of the main challenges for developing countries then is to regain autonomy over the development process by acquiring control over the sources of investment finance. Public development banks may serve as an essential instrument in order to provide access to stable sources of corporate finance, while also assisting in transferring public development priorities on the private sector.

Translating the issues raised above into the CC framework, we can pin down virtuous institutional complementarities supportive of industrial development in (semi-) state-permeated capitalism:

- i. In the realm of *corporate governance*, the major companies are typically dominated by large domestic blockholders such as the state or entrepreneurial families. Concentrated ownership ensures a certain degree of autonomy vis-à-vis transnational financial investors and facilitates long-term investment projects via patient capital. As a result, timeconsuming and risky upgrading and internationalization strategies can be pursued and are even actively supported by (public) stakeholders;
- ii. Long-term strategies are complemented by a *financial system* that is heavily controlled by public banks, especially development banks, which provide large companies with reliable sources of funding independent from global financial markets. The banks act as one of the main channels for industrial policies, supplying subsidized credit on certain conditionalities such as investments in technological upgrading and internationalization;
- iii. These institutions are further enhanced by a *coordination mechanism* that is based on dense state-business relations through inter-personal networks. These networks provide the trust and reliability needed for long-term investment projects. Furthermore, friendship, loyalty, and a shared national development strategy serve as a shared ‘mission’ for coordinating industrial policies in several state agencies and institutions;
- iv. Together, the institutions outlined above have a decisive impact on the *transfer of innovations* within the economy. Through patient capital and reliable sources of cheap credit, companies in selected sectors have the

time and the means to pursue upgrading strategies. Investments in technology and new products and processes are encouraged and facilitated by broader industrial policies and an overall national development strategy.

Brazil provides a good example of how the state can effectively exert industrial policies in the corporate sector by the strategic use of national development banks, in particular, the Banco Nacional de Desenvolvimento Econômico e Social (BNDES), pension funds, and other state-connected institutions of finance. Brazil managed to release itself out of a debt-inflation-circle without too much manipulation of the national balance and to consolidate the domestic economy. From 2000 through 2010, this pattern of state-permeated finance for industrial policy proved very successful and might serve as an example for other emerging economies which are, equally, less equipped with capital and other resources to fund an independent development strategy.

Brazilian development finance in historical context

A core problem of many developing countries is a usually low level of investment. It takes massive investments in infrastructure and capital goods to create substantial economic growth, but since savings are usually low, genuine funds are scarce. Credit then can be a remedy: if estimated growth rates exceed interest payments, using credit for investments seems a logical solution. Indeed, this is what many developing countries did during the late 1960s and 1970s: as developing, economies grew strongly, the acquisition of private (mainly foreign) credit was not a problem (Frieden, 1981). The first problem arose when interest rates rose at the end of the 1970s (the infamous “Volcker-shock”). A second, more structural, problem with the turn to credit finance is the assessment of the creditworthiness of industrial firms. Local firms have no record of successful industrial projects, so banks face uncertainty whether their loans are well-used. Thirdly, investing in industrial capital goods is a long-term investment, but inflation and interest rates develop in short terms. As a consequence, firms have been reluctant to invest if they are not sure that these investments will still pay off in ten years or

later. These problems occur less if foreign firms are to take over the tasks of industrial development. Again, this has happened many times since the 1970s. Foreign multinationals can undertake large industrial projects and take the associated risks (Evans, 1998; 1989), but it has been shown that profits tend not to remain in the host countries but to flow back into the headquarters. Furthermore, the developmental effects were limited since those parts of the production which require “development” (including capital, skills, and the organization of the production process) are also often done in other countries.

Brazil experienced all of those problems in an emblematic kind. Facing a relatively modest savings rate (as compared to, e.g., East Asian economies, see Edwards, 1996), it would have to borrow abroad in order to create investments that are developmentally effective. Domestic (private) firms were either not strong enough to carry the load of massive investments or reluctant to invest under uncertain conditions. In any case, domestic firms could not deliver the number of investments that were macro-economically needed. As a consequence, foreign multinationals entered the Brazilian economy in order to compensate for the lack of investments by domestic firms, which in turn became local ‘junior partners’ of multinational companies (MNCs) (Evans, 1979). However, with MNCs having a strong hold on the actual process of investing, the state had limited grip on its developmental effects. At the same time, it was not powerful enough to impose its developmental goals onto private firms. At least, local content requirements did not amount to a thorough integration of domestic firms into the circuits of accumulation by MNCs in Brazil (Evans, 1995). ‘Emancipating’ from the grip of MNCs could only work by increasing the fiscal space through foreign credit. However, this usually came with a high-interest rate tag, eventually straining the fiscal budget substantially by interest payments (Schmalz, 2015: 267).

Hence, an autonomous industrial development policy is difficult to achieve if the state neither owns the bulk of industrially relevant firms nor has large amounts of capital at its disposal in order to support domestic firms. At the end of the 1990s, ‘development’ played only a limited role in Brazilian economic policy. For one, because developmentalism had gone out of fashion, for another, because financial liberalization and privatization further

fragmented the private business landscape. Not least because of this, state support for domestic industry focused on a small number of large firms, effectively representing a ‘national champions’ strategy (Hochstetler & Montero, 2013).

The period of state-permeated capitalism: Brazil in the first decade of the millennium

Divergent industrial strategies imply that efficiency cannot be the sole criterion for the allocation of credit. Hence, the state has to acknowledge that funding in favor of long-term development comes at a cost for the public budget. However, as firms are legally independent of the state in Brazil, the state has to shape their incentive structure (to put it in a rational choice-terminology) in a way that aligns with development goals. Though being constrained by developments in the public and corporate sector in the past, it still has some leeway concerning the instruments it uses to support domestic industrial policy.

The history of development finance shows that broad but non-targeted instruments did not provide the expected effects. For instance, merely reducing the overall price of credit through interest rates, money supply, and other macroeconomic operations might only provide incentives for a particular group of investors that are in turn potentially able to deleverage the strategic goals of development policy (Schmalz, 2015). For this reason, developmentally relevant finance policies have to be selective concerning its beneficiaries, especially when the composition of the domestic economy is cleaved into sectors with different strategic interests such as, e.g., industry and agribusiness in Brazil. An alternative way to reduce costs for financing for development is to circumvent intermediaries and lend to firms directly. Apart from banks as traditional intermediaries, investment funds and other bondholders are not influential. While the major banks in Brazil are still state-owned, the primary objective would be to discourage the issuance of corporate bonds and equity which would potentially increase the power of private shareholders.

As seen in the Brazilian economy of the early 2000s, foreign banks could not penetrate the Brazilian financial market which is why four Brazilian banks dominate the banking industry: Banco do Brasil, Bradesco, Itaú, and Caixa Econômica Federal. Hence, domestic banks faced no significant competition by foreign banks which would be more active in global securities markets. For another, interest rates were usually very high at approx. 14% to 15%, leading to bank lending rates of 18% and beyond. On the one hand, this tightens the credit base, and, as a consequence, the investment rate. However, on the other hand, it greatly supported the bank-based financial system in Brazil because it discouraged the establishment of more riskier (but potentially higher yielding) products that would be traded on financial markets. Figuratively spoken: unlike investors in LMEs and also CMEs who would seek for higher-yielding investments on financial markets, investors in Brazil would gladly put their capital into domestic banks. High-interest rates, therefore, can also be interpreted as a ‘premium’ to maintain a bank-centered financial system which otherwise (as other emerging economies showed) would be crushed by the expansion of liberal financial markets. Even what appears as market-based financial institutions, such as investment and private equity funds, acted very conservatively in Brazil, as most of their business consisted of the purchase of government bonds (Ferreira, 2015). Such behavior effectively crowded out both foreign and market-based sources for investment credit, leaving only Brazilian banks as the main creditors. As a consequence, tight control over the domestic investment structure by the state is facilitated. Still, there is the question of how banks can assess the credibility of targeted firms. Here, interpersonal relations between companies and state agencies help to reduce substantial uncertainty and the risk of “mis-targeting” public credit. The importance of such informal relations has been shown by Lazzarini (2011). His analysis of over 800 enterprises in 1996, 2003 and 2009 shows that these informal networks are not only a product of the established ties between the old oligarchy and the state but also intensified during the privatizations of the 1990s. The privatization auctions usually favored investor consortia active in several companies and linked to several investment sources, including the state bank BNDES and the pension funds of state-controlled enterprises. Correspondingly, privatizations intensified the dense connections between state representatives and domestic capitalists, and as a consequence, uncertainty has been minimized.

These connections have essential functions for Brazilian capitalism (Busch, 2010: 117-43). Similar to the “Deutschland AG” of German post-war capitalism, they make sure that the state can support business, if necessary. Of particular importance is the role of the state as the minority shareholder, supported by the holdings of BNDES and pension funds (see below). In contrast to the Deutschland AG, where large banks coordinated the German catch-up process, BNDES and the pension funds provide some of these functions in Brazil. The state-business networks also provide an important guarantee for the long-term stability of Brazilian capitalism. The powerful role of the state serves to prevent sudden decisions by individual companies that may harm the long-term development of the whole economy, whereas proximity to business prevents sudden public decisions that may be harmful to the operations of companies. Reciprocity and continuity in decision-making between state and business provide a basic atmosphere of trust. It is an important factor for long-term investment in an ambiguous regulatory environment, and a factor that was already important for the establishment of the mining industry in the mid-20th century. Personal friendships matter a lot for long-term cooperation (interview with an economist, Rio de Janeiro, 1 March 2013; see also Nováis, 2012). The two Lula administrations in particular further cultivated the building of consensus and gradual reformism (Casanova & Kassum, 2014: 32). Strikingly, the informal individual cooperation between Brazilian business and government works better than cooperation between better-organized business associations and the state in other Latin American countries (Schneider, 2015b: 48-50). Under these circumstances, the state is better equipped to effectively shape firms preferences than if it were “external” to the business circles. Interpersonal relations help to make the direct and indirect involvement in industrial finance more effective. These direct and indirect channels become visible in the dual character of state influence in the private sector in the contemporary Brazilian economy: through ownership and lending.

The state as a stakeholder in corporate governance

A mixture of ownership forms characterizes Brazilian firms. This is rather typical for semi-liberalized economies which are neither in general control of

the state (like China) nor entirely liberal like most of the corporate sector in Central Eastern Europe (Nölke & Vliegthart, 2009). Some crucial firms are in full state ownership, and again others are in full control by a founding family or business group (Aguilera *et al.*, 2012). In many firms, however, families own a substantial share, the state does as well, and another part is in the hands of equity owners. This can produce tensions about corporate strategy across the board, and inasmuch such firms are developmentally relevant, the challenge is how to reconcile these potential conflicts. In short, by increasing the public share in a firm's equity, the state can push back demands by liberally oriented minority shareholders.

During the 2000s, owning families were increasingly supplemented as the largest shareholders by domestic banks and institutional investors such as pension funds (Aguilera *et al.*, 2012: 322-6). Also, the Brazilian state keeps substantial shareholdings or golden shares, particularly in the case of former public enterprises that have been privatized such as Embraer, Vale, Oi, and CSN. This way, the state can not only prevent the sell-out of these strategically essential companies but also ease the utilization of these companies for industrial policy initiatives. Ironically, privatization and the transformation of corporate governance towards a shareholder model in the past enables the state to acquire shares in strategic companies and acts as a minority shareholder in the first place. The acquisition of minority shares followed immediately after these companies were privatized (Musacchio & Lazzarini, 2014: 97). BNDES had been instrumental in selling parts of state companies to investors and, through its holding branch BNDESPAR, in turn, bought shares of these just privatized firms. In common liberal wisdom, privatization aims at easing budget deficits as well as modernizing the corporate sector by introducing shareholder value principles that are solely oriented towards capital efficiency. The Brazilian government shares the first goal but not the second. If markets do welcome the turn towards liberal corporate governance (visible in rising equity prices), having a minority position in privatized firms ensures that parts of the increasing value flow into the public budget as well. Another state lever for long-term investments in Brazil is large pension funds, particularly those linked to the Bank of Brazil (Banco do Brasil), Petrobras, and the National Savings Bank (Caixa Econômica Federal) with funds such as Previ, Petros, and Funcef. The role of these private funds, with domestic assets under management of nearly 20% of

GDP, has become so massive that observers often refer to “pension fund developmentalism” in Brazil (Datz, 2013).

Through today, three out of the 14 non-foreign firms among the top 20 companies are owned by the state. Other seven have strong positions by BNDES or social security pension funds, most prominently the employee pension fund of the Banco do Brasil (PREVI) and of Petrobras (Petros). The four other Brazilian firms which have no significant involvement of the state are under family control. Thus, all of the most prominent Brazilian firms feature crucial blockholders with long-term strategic interests (Table 1).

Table 1: The 20 biggest companies of Brazil, by turnover, 2013.

Company	Origin of owners	Type of business	Family control	Public holdings		Majority state-owned
				BNDES	Social security funds	
Petrobras	BRA	Petroleum & Gas				x
Vale	BRA	Mining		x	x	x
JBS	BRA	Foods	x	x	x	
Ultra	BRA	Retail, Petroleum & Gas, Logistics	x		x	
Pao de Acucar	BRA, FR	Retail, Finance	x			
Bunge Alimentos	NED	Foods				
Gerdau	BRA	Metals, Steel	x	x		
Braskem	BRA	(Petro-) Chemicals	x			
Eletrobras	BRA	Electricity				x
Telefonica Brasil	ES	Telecom				
AmBev	BRA, BEL	Beverages and tobacco				
Cosan	BRA	Sugar and alcohol, Ethanol	x			
Odebrecht	BRA	Construction and engineering	x			
BRF (Brazil Foods)	BRA	Foods			x	
Carrefour	FRA	Retail				
Volkswagen	GER	Vehicles & Parts				
Oi	BRA	Telecom		x	x	
Cargill	US	Foods				
Fiat Automoveis	ITA	Vehicles & Parts				
Marfrig	BRA	Foods	x	x		

Source: Valor, 2013a, b; Company websites.

Since the mid-1990s, the number of firms in which the state engages directly or indirectly (through pension funds and other ‘intermediate firms’) increased steadily (Musacchio & Lazzarini, 2014: 98). In all firms where the state is involved through these measures, it controls more than 10% of total equity. Still, the state does not necessarily remain a passive shareholder. BNDES and pension funds indeed use their shareholdings to prevent major company decisions that are not in line with state preferences (Schneider, 2013: 172). In particular, it can prevent decisions about ownership restructuring and corporate finance that would counter the long-term objectives of the state.

In this new form of state capitalism, the state is interested in constant growth and competitiveness. However, its strategic goals are different from usual shareholders: the state keeps a long-term position in a company and therefore, maximizing equity prices is not its first objective. Still, it cannot ignore the preferences and pressures from financial markets as a whole. Investments have to be sound, and high leverage through external credit helps to boost further industrialization and job creation. Here, the second pillar of a state-led finance strategy comes into play: the ‘traditional’ role as a lender for development.

The state as lender

Developing economies always have tried to support the industrial sector employing preferential lending – if fiscal conditions permit. Very often, however, state bank lending has been ‘not enough’ to boost industrial development. Nevertheless, it can alter the incentive structure for firms in order to influence the options for different kinds of non-bank funding. The Brazilian development bank BNDES played a central role: it was responsible for almost three-quarters of all Brazilian long-term credit (BNDES, 2012). It lent approximately 7.5% of Brazilian GDP and disbursed four times as many loans than the World Bank (Lazzarini *et al.*, 2012: 32). BNDES and other public institutions increased their loan volume massively (by 50% between September 2008 and January 2010) in order to compensate for the decrease in private credit supply in the wake of the global financial crisis (Arnold, 2011: 20-1). According to the OECD, it does not seem to crowd out private banks because “it is doubtful that private long-term financial markets

would have developed much more fully in the absence of BNDES in the past” (Arnold, 2011: 22). BNDES was able to subsidize long-term credits mainly through two sources of funding heavily. First, it receives contributions from the national treasury for specific industrial policy purposes. Second, it received 40% of the revenues from the Fundo de Amparo ao Trabalhador (Workers Assistance Fund, FAT), as mandated in article 239 of the Federal Constitution until 2017. The FAT, in turn, has been funded through the collection of a small tax on the revenues of private companies, non-profit institutions, and public administration entities. This is a very stable source of funding (BNDES, 2014). Between 70 and 80% of BNDES loans go to large enterprises (BNDES, 2012: 35).

There is a long debate about the proper role of BNDES and development banks in general. In the liberal view, state funding through development banks is only effective when the market “fails” to provide sufficient credit. This position has been most recently formulated by Musacchio & Lazzarini (2014). Others see the role of development banks in exactly the opposite way: its mandate is to add leverage to those firms and sectors that are profitable in order to multiply its effects for growth and development. This is the position taken on by BNDES itself. Its mission, as former vice-president of BNDES, pointed out, “is to leverage investment, which must grow more quickly than GDP so that jobs are created, and productive capacity expands ahead of demand” (Ferraz, 2014). This is part of an ongoing ‘national champions’ strategy aimed at creating Brazilian multinationals with substantial world market positions. As the infamous Marcelo Odebrecht, head of the Odebrecht conglomerate sums it up: “to be competitive, you have to take those BNDES loans into consideration” (quoted in Leahy, 2015).

This issue allows us to exemplify the difference between old and new state capitalism: in old state capitalism, such as, e.g., in 1970s India, the state compensated the ill effects of the economy. It inserted credit into sectors that were not profitable for political reasons, up to the point where it nationalized companies that were performing poorly. It predominantly ‘bailed out’ those firms and sectors that did not bring about growth and development and thereby putting a heavy burden on the public budget. Quite differently (from the past and what liberal observers generally think of the role of the state in the economy), contemporary state capitalist strategies channel credit into

profitable firms and sectors, preferably large ones in order to amplify the growth effect downwards the production chain. Projects that are eligible for BNDES lending are funded by about 60%, so any rise in BNDES lending increases other funds of investment, too (Hochstetler & Montero, 2013: 1489). According to BNDES own account, it is aimed to make large companies even bigger and more efficient, up to the point where those firms would be internationally competitive, too (Musacchio & Lazzarini, 2014: 210). Following the first strategy (compensating for bad performance) would be foolish from a bank's perspective because giving credit to those firms which are risky and inefficient would waste much-needed resources for development. Insofar, BNDES is not so much a *state* bank but a *state bank* – a rational and profit-oriented enterprise (Coutinho & Ferraz, 2017).

It follows that large and well-established firms face lower risks for bad utilization of credit and therefore receive more funds because interpersonal connections provide channels for information which affects the productive use of credit but should not become public. As a bank, BNDES take the 'speed' out of investment and corporate finance where otherwise short-term demands by the financial industry would have to be met. Thus, apart from its role as an investor and a traditional lender, BNDES also acts as a 'barrier' against the intrusion of short-term capital, especially from global financial markets. It does so by lending below market rates and lower credit requirements. Both lower the costs of capital for firms which can enjoy BNDES funding. Again, BNDES has been outspoken about its *Ordnungspolitik* role as a counter-institution against liberal finance strategies that have been previously in place (Musacchio & Lazzarini, 2014: 212).

In addition to BNDES, both public banks Banco do Brasil, and Caixa Econômica Federal are essential funders for domestic companies including the crucial businesses in Table 1. Firms that use bank loans therefore effectively receive credit from the state, at usually favorable rates. Even private commercial banks provide a substantial share of their credit as "earmarked," i.e., subsidized and focused for specific purposes such as long-term investments for private companies or specific credit for rural areas and housing (López & Garralda, 2014: 18-24). This leads to a segmentation of the credit market, with a large gap between highly subsidized earmarked credit for public purposes and somewhat penalized non-earmarked and entirely

private credit. Combined with a low domestic savings rate (IMF, 2013: 17-9), this segmentation has considerable implications for investments by Brazilian companies. While it supports the investments of large companies with access to BNDES and other subsidized funding, it is a significant constraint for small companies without access to this funding (Arnold, 2011: 12).

Lending below market rates implies several things: first, as market rates are higher in Brazil than in, e.g., G7 countries, domestic firms face a competitive disadvantage *vis-à-vis* foreign firms that have access to cheap credit at home. Insofar favorable lending “corrects” the undervaluation of the Brazilian economy on global markets. Secondly, lending by state-controlled banks gives borrowing companies a strategic advantage due to lower interest rates, longer credit maturities, and fewer conditions for creditworthiness in contrast to global credit markets (Masiero & Caseiro, 2012). It does (whether intended or not) provide incentives not to seek credit on international financial markets. Given the overall promising outlook of the Brazilian economy at the beginning of the century and the strong record of industrial projects, Brazilian firms would have had little problem to raise funds by placing corporate bonds on the international market. Instead, BNDES provides “patient capital” at competitive conditions, which is what firms prefer. This matches its strategy to fund incremental rather than radically innovation by firms (Hochstetler & Montero, 2013: 1495), emphasizing ‘improving’ rather than ‘inventing.’ Here, we can observe the institutional effects of patient, long-term capital, as it supports a model of competitiveness that is complementary to Brazil’s industrial strategy. Increased lending by BNDES (along with its investment activities through BNDESPAR) and other state-controlled financial institutions increase the incentives by large firms to seek fortune in a particular non-liberal form of capitalism in which the state acts as a beneficiary of large corporations.

Industrial strategy and BNDES independence

The Lula government formulated its industrial strategy quite soon in 2003. In its short industrial policy program (PITCE), it outlined the main goals of a renewed industrial policy (MDIC, 2003; ABDI, 2005). PITCE put BNDES

central in between policy and implementation in the corporate sector: It embraced the need to build defenses against international markets, but also stressed an offensive strategy: expanding exports and paying down debt, as well as “stimulating the sectors where Brazil has a larger capacity or necessity to develop comparative advantages.” The document gave BNDES the role of linking and facilitating the infrastructure projects that lay the foundation for industrial growth. (Hochstetler & Montero, 2013: 1490). The primary beneficiaries were multinationals with low technological intensity, such as meat-packing (Masiero *et al.*, 2014: 136-41). A famous example is the company JBS, which became a world leader in beef production in a reasonably short period with massive support from BNDES (Schneider, 2013: 64).

From afar, it looks as if the Lula administration put the sleeping giant BNDES awake, which then merely exercised the commands of the PT government. However, given the record of BNDES activity, there are good reasons to assume rather that both BNDES’ and PT’s visions on industrial development have been merely congruent. These common objectives helped to make industrial financing through BNDES relatively successful. The increase in lending volumes provided by the central government helped as well. However, BNDES lending has not been exclusive to the large conglomerates and not exclusively to domestic firms. In order to fulfill its self-proclaimed objectives, BNDES would fund any firm with a good perspective for the creation of jobs and further growth. These might as well be found in small/medium firms as well as in foreign companies which enjoyed BNDES credit, too. In large parts, BNDES acts as an autonomous bureaucracy in the best Weberian sense (Boschi, 2013: 131). In line with earlier research, this might be part of the explanation why its lending policies have been relatively successful (see Coutinho & Ferraz, 2017).

Let us be clear: the current crisis of the Brazilian economy did not stem from ineffective operations from BNDES investment finance. By and large, the current form of finance through BNDES and related channels has not been subject to the liberal putsch, although the active role of BNDES has become increasingly undermined. Although lending expanded through both Lula and Dilma administrations, newly-appointed governments would have to remove BNDES from investing in Brazil actively. We do not see this coming. First,

BNDES has been an active lender (and investor) throughout the past decades and not just since 2003. Any center-right or liberal government that formulates national industrial strategies (this is crucial) will continue BNDES support, although to a more moderate degree than the PT governments. Given the lack of financing alternatives in Brazil, not doing so will result in a massive assets shortage for investment. Secondly, BNDES is a relatively independent bureaucracy in its own right and not a puppet for particularistic policies. For Brazilian standards, it is relatively independent, although its top ranks are changed with any major shift in government. However, if access to external credit becomes liberalized by the new government(s), the incentives for Brazilian firms to stick to domestic state bank funding decreases, especially if BNDES faces a decrease in current lending capital due to fiscal stress.

Implications: finance for industrial investment in (semi-) state-permeated capitalism

In state-permeated capitalism, it is essential that finance remains in public hands. If, like in China or India, finance rests almost entirely within closed business groups and families, the long-term interests of the state and domestic firms match each other well. In countries with lower financial autonomy, where state-controlled finance exists alongside liberal finance (such as in 1990s Brazil), firms face mixed incentives. Though higher leverage and lower costs of credit are attractive options, the fluctuations associated with market-based finance are detrimental for industrial strategies of emerging economies – especially if companies, such as in Brazil, suffered from volatilities of interest rates and currency rates in the near past. However, it is difficult to change the institutional setup of semi-liberalized economies by policy means. Correspondingly, expanding a public development bank such as BNDES can compensate for these deficits in the institutional setup, in order to pursue industrialization strategies hinged on large enterprises. Institutions such as BNDES allow for the ability to pursue a long-term economic development strategy even if state-permeated capitalism is not thoroughly entrenched. Stable corporate governance based on family capitalism as well as the state as a minority shareholder combined with

BNDES credits has enabled a group of Brazilian multinationals to become global (and even more often: regional) leaders in their fields. The basis for the diversified structure of Brazilian industry was already in place during the ISI-phase, including policies for national content that have supported technology transfer into Brazil. Massive state financial support for companies in selected sectors (oil and gas, large-scale agriculture, small aircraft) over many decades has led to the development of “pockets of efficiency” in Brazilian capitalism.

In the light of the recent economic history of Brazil (and other emerging economies), such forms of direct and indirect financing of developmentally relevant firms through lending and shareholding dramatically increases the autonomy of the state to pursue industrial strategies. In the case of Brazil, the industrial strategy under the banner of new developmentalism (Bresser-Pereira, 2011) entailed not only the build-up of national champions but also a focus on job creation and the increase of domestic demand. Since its financing strategically kept securitized credit and foreign investors to a minimum, it proved much less vulnerable to external, sudden shocks which had disastrous effects in the past. This particular form of finance has been effective not least because intimate relations between the state and business significantly reduced the uncertainty about investment decisions in a fragmented corporate landscape.

To sum up, we have shown that the basic institutional complementarities regarding semi-state-permeated finance can be applied to the Brazilian industrial policies under PT rule in the first decade of the 2000s. Using such a CC framework for the study of industrial policies in emerging economies has some advantages over conventional approaches. First, it aptly connects the macro and micro level by linking institutions directly to the company level and their strategic decisions. Second, it pins down how institutions interactively codetermine the investment decisions of firms via complementarities. And in this sense, it can be used for policy guidance for similar countries in similar circumstances.

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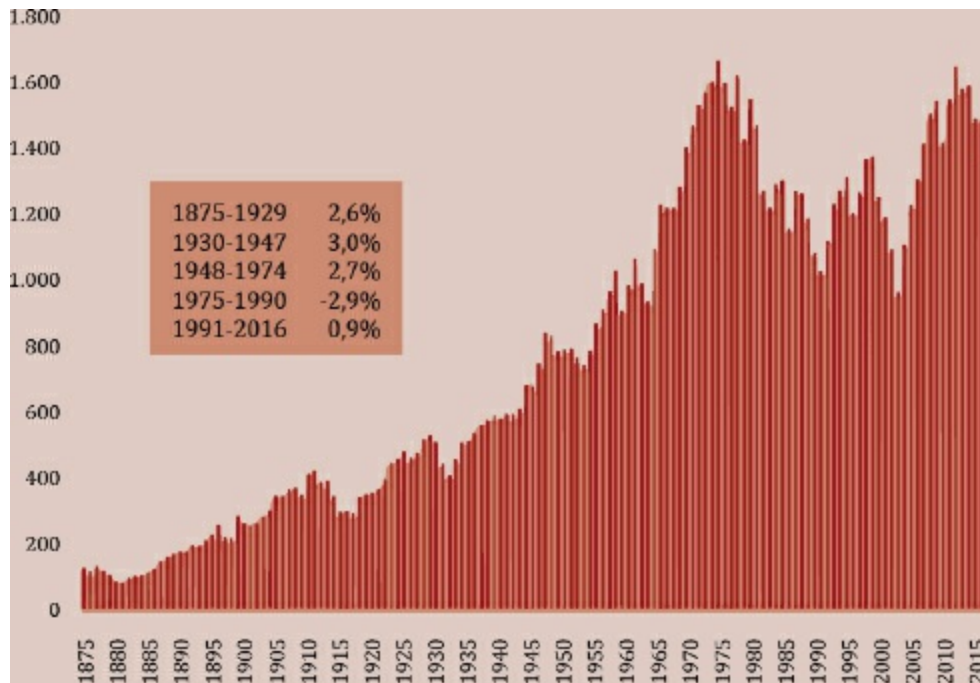
Introduction: the Argentine industry in the long term

With an industrial product of US\$ 68 billion and US\$ 1,615 *per capita*, Argentina is a country of intermediate industrial development, ranked 26th among the economies with the highest industrial production in the world and 45 in *per capita* terms. Although Argentina's positioning in manufacturing terms may seem irrelevant, it is important to note that, out of 217 countries in the world, the top 10 account for 71% of global industrial production and the top 30 for 90%. In other words, world industrial production is highly concentrated in a few countries, and Argentina is part of that map, although in a place of less relative importance.

Contemporary Argentine industrial development has five major stages:

- i. **The period of industrialization associated with the primary exporting phase (PEP), (1875-1929).** In this period, the steady growth of the agricultural sector, in a context of high international prices and a relationship of strong complementarity with Great Britain, and the expansion of the domestic market due to the effect of immigration flows, promoted the growth of manufacturing production associated with the production of food and activities related to agriculture and urban services. With fiscal purposes, some involuntary protection policies contributed to this direction which increased the tariffs on some final consumer goods (Arceo, 2005). Despite this, the share of imports in the final consumption of industrial goods was very high (Díaz Alejandro, 1975; Arceo, 2005; Dorfman, 1970) and the industrialization levels of the country were lower than those of other developing countries of an agro-export profile (Arceo, 1998; Dorfman, 1970). The growth was interrupted in 1911, and the sector was affected by the effects of the First World War, restarting an expansive period after its completion, which ended in 1929.

Figure 1: Industrial product *per capita*, Argentina, 1875-2016 at constant weights and prices (1993).



Source: INDEC and Orlando Ferreres and Associates.

ii. The period of import substitution industrialization (ISI), (1930-1947).

After the outbreak of the 1930 world crisis, the external shock reduced exports and foreign investments. The conservative governments implemented defensive measures and virtually a framework of protection that fed the growth of the industrial base developed in the previous period and stimulated the expansion and diversification of the sector. It was a period of very significant growth that transformed the social structure. However, the conservative governments did not have an industrial project. Instead, they tended to characterize the crisis as temporary, foreseeing the resumption of a “normal” phase that would allow them to resume the growth of an agro-export base (Arceo, 2005; Llach, 1984).

iii. The period of industrialization directed by the State (IDS), (1948-1974).

In this stage, the State undertook a vital role in directing the manufacturing development process. First under the governments of Juan Perón (1945-1955), with five-year plans and the beginning of the state industrial projects (steel, military manufactures). Then under the influence of developmentalism, complementing new state projects (petrochemical, aluminum) with the attraction of foreign investments in some durable goods (automobiles) and many of their inputs. It was a period of intense

growth, not without difficulties and bottlenecks in the external sector (Braun & Joy, 1981) and high social conflict and political authoritarianism.

- iv. **The period of sectoral restructuring with deindustrialization (RSD), (1975-1990).** This phase was marked by the policies of abrupt commercial and financial opening introduced by the last military government, particularly between 1976 and 1981, which led to the closure of about 14% of industrial firms and industrial employment experienced 27 consecutive quarters of decline. Although the general scenario showed a notable shrinkage of manufacturing, this took place at different paces for different sectors. Specific sectors could escape the general trend and even showed expansive growth such as the sector associated with large suppliers of industrial inputs that were reoriented to export (as in the case of aluminum and steel). As well as business groups, those of greater importance linked to economic groups and transnational firms with higher levels of diversification and integration (Azpiazu, Basualdo & Khavisse, 1986).
- v. **The consolidation period of a new open and flexible industrial model (OFIM), (1991-2016).** In this stage, the manufacturing industry ended up assimilating to the new scheme of opening to the international market and the pro-market reforms implemented since 1989. The profile of manufacturing became associated with traditional branches and based on natural resources while advancing towards export commoditization of the of the inputs manufacturers developed in the stage of industrialization directed by the State (iron and steel, aluminum, petrochemical). Moreover, new flexible production models were created with a more significant presence of assembly activities in the automotive sector. This period can be, in turn, subdivided into two sub-stages. In the first one (1991-2001), the sector starts its flexible production phase in the automotive industry and expands its industries more linked to the processing of natural resources. Towards 1998, it reaches its limit and suffers the effects of the macroeconomic crisis that markedly affected its performance until 2002. It is an industry that operates with much less employment than in the past and greater flexibility in the development of suppliers and replacement by imports. In the year 2000, the industry had a production level similar to

that of 1975, although it was noticeably lower regarding population, as shown in Figure 1. Second phase. At the end of 2002, the sector resumed growth based, first, on a heterodox macroeconomic policy, which maintained a real exchange rate in very competitive terms until 2008, and then with a combination of a robust fiscal impulse that stimulated the market internal and some renewed attempts at industrial, commercial and technological policy. This allowed a very intense growth that managed to recover in 2011 the same level of industrial product per inhabitant of 1974, that is, the peak of the Argentine industrialization process. However, this expansion did not change the structural basis of the open and flexible model and, added to the end of the external slack, and the macroeconomic restrictions imposed limits on the growth of the sector, which began a phase of decline from 2012.

Conflicting and contradictory projects erratically plague the industrial development path. In more than 130 years of industrial history, there have been relevant development experiences, some of them were cutting-edge, but which never managed to generate a critical mass that would give a profile of greater technological leadership to the country. As of Nochteff (1993), Argentina had some business groups with Schumpeterian behavior but lacked a Schumpeterian economic elite, capable of decisively influencing public policies in the medium and long-term. During the PEP, industrialization was an involuntary byproduct of agricultural development for export, arousing little interest in the elite and public policies, where the few development initiatives received no government support. In this sense, the ISI had continuity features, only in a radically different world context that led to a development with a strong market-oriented bias, and to the emergence of new business sectors resulting from this new scenario and the expansion of the labor sector. Conservative governments reacted late to the change of world scenario and were displaced by a political coalition led by Perón that expressed the new actors of the scene: industrial entrepreneurs and trade unions, which accentuated the political conflict with traditional sectors. For its part, the ISI will add, in the developmental phase, the emergence of transnational industrial firms with a renewed prominence and the emergence of new contradictions. After the ISI, many sectors of the national industrial capital goods disappeared. Others have turned towards diversified business, financialization and greater national insertion. Also, other sectors were

acquired by external capital, particularly in the 1990s. The central feature is then an economy with a high degree of transnationalization and a relatively weak weight of national industrial entrepreneurship.

This chapter has four sections and a conclusion. After this introduction, in Section II we will present the central features of the process of productive restructuring initiated after the commercial and financial opening experiments (1976-1981) and the consolidation of pro-market reforms in the 1990s. The discussion on the “exhaustion” of the ISI and characterization of the OFIM (Open and Flexible Industrial Model) is presented. For its part, in Section III we will present the central characteristics of industrial performance in the most recent phase of the IAF model, under the heterodox policies of the period 2002-2015, while Section IV will analyze the industrial policies of that period. Finally, the conclusions will be presented.

The productive restructuring after the interruption of the industrialization phase and the establishment of pro-market reforms (1976-2000)

Between the “black legend” and the “exhaustion”: the debates on the interruption of the process of industrialization directed by the State

In the early 1970s, the state-led industrialization process faced challenges of a certain complexity but also showed progress not to be ruled out. From the economic mainstream perspective, protectionist excesses had shaped distorted markets that fed inefficient industries without genuine development capabilities. For its part, the heterodox view, notably ECLAC structuralism, criticized industrialization very focused on the internal market that did not end up solving the bottlenecks coming from the external sector. Both approaches had arguments and evidence to support their criticisms but also omitted some burgeoning advances.

Braun & Joy (1981), in a paper originally published in the late 1960s, analyzed the problem of external restraint whose effect was the occurrence of cyclical crises, where the growth of imports required by the process of industrialization carried with it the germ of the next external crisis, which had to be resolved with devaluations and consequent recessive processes. This fall in GDP was what allowed to reduce the level of imports and thereby restore the external balance. The paper concluded that the country should increase its volume of exports, but was not optimistic about the possibilities of the manufacturing industry, recommending new policies for the agricultural sector. However, this diagnosis, which was adequate to characterize economic cycles between the end of the 1950s and the first half of the 1960s, was no longer the case in 1970. Many investments started during the first years of the FDI, both under the Peronist influence, as well as developmentalism, matured, ingraining the profile of industrialization.

The industrial product had been reduced as a result of the cyclical crises of 1959 and 1962-63, but after that enjoyed an uninterrupted cycle of growth up to 1974, at an average annual rate of 7% which gave renewed impetus to all the economy. Moreover, for the first time in history, industrial exports stopped being irrelevant, going from 5% of the total exported in 1965, to 12% in the 1970s and 22% in 1975. Katz and Ablin (1978) studied 30 cases of turnkey plant exports, showing an incipient export capacity, even in industries with high technological content.

Amico (2011) analyzed the reasons for this sudden export development, even though the country did not have an “outward” development strategy, and attributed it to the accumulated learning processes and the maturing of investments. We see then that the main criticism, both orthodox and heterodox, regarding the low competitiveness of the sector, expressed in an extreme bias in the market, had some points of disconnection concerning the reality of the period. Diamand (1972) emphasized the particularities of a productive structure that he defined as unbalanced, and that would later be characterized under the Dutch disease problem approach. However, these problems could well have been addressed, both from the exchange policy and specific sectoral policy tools that could benefit, simultaneously, the primary sector and the industrial sector, as did other countries with abundant natural resources, among which Norway stands out from the rest. 1970s

Where does this thesis come from, then, that industrialization led by the State reached a stage of exhaustion that made its completion inevitable? Moreover, how was it that this “black legend” was woven according to which industrialization was a historical period of economic and social backwardness. The answer is in the difficulties resulting from an unstable sociopolitical context and social contradictions, without this meaning denying the limitations that Argentine industrialization had, difficulties that, as has been shown, were being approached gradually with certain achievements.

It is a period characterized by political instability, the recurrent appearance of authoritarian experiences and social conflict. From sociology, the idea of a social tie was proposed (Portantiero, 1977; O’Donnell, 1977) according to which that agricultural oligarchy starred politically during the period of agro-export boom, and continued to hold the political power in the dawn of the ISI. This oligarchy had to give in and alternate in power without losing its ability to maneuver. The formation of a social alliance of subaltern sectors, embodied by Peronism, as an expression of the conjunction between trade unionism and national industrial sectors, suffered from greater strength in the business sector. The social tie expressed in the possibility of veto to the action of the other sector, but in difficulties to maintain the lasting way the project of some or others. Likewise, the opening to foreign investment at the end of the 1950s incorporated new vital players that added greater difficulties to the creation of an industrial block strongly committed to the IDE project.

The first experiment of market reforms, implemented during the last military government (1976-1983), was instrumented with the aim of disciplining and restructuring the material bases of operation of Argentine society. As of Canitrot (1981), the opening would generate the market disciplining effect once the period of political repression ended.

Restructuring, and loss of productive density in the stage of market reforms

After more than four decades of a protected economy, a program of reduction of import tariffs was initiated (Sourrouille & Lucángeli, 1983), together with

a financial reform that generated a substantial influx of capital and a considerable appreciation of the exchange rate. As a result of this process, some 17,000 industrial establishments were closed, with the loss of 143,000 formal jobs, which represented 13.5% of manufacturing establishments and 9.4% of formal industrial employment registered in the Census. Industrial 1974. However, the impact of this process was not homogeneous. As Azpiazu, Basualdo & Khavisse (1986) showed, some economic actors did not suffer from this critical scenario, and may even expand and diversify their activities.

The Argentine industry would go through the last quarter of the 20th century in this double movement that included a strong initial adjustment, between 1976 and 1990, and the formation of the new open and flexible industrial model. In this period, industrial GDP remained stagnant and industrial GDP *per capita* fell by 25%. A combination of three factors considerably reduced employment in the sector:

- a. a restructuring that favored less labor-intensive branches;
- b. the worldwide trend towards greater subcontracting of service activities that were previously carried out by the companies themselves (transport, logistics, repairs, maintenance, and personnel services) and the focus on core business;
- c. the characteristics of this open and flexible production model, with a higher incidence of intermediate inputs and imported technologies. The effects of this transition and adjustment stage can be visualized in the comparison of intercensus data: in 1993 it was possible to find 20% fewer manufacturing establishments than in 1974 and a 31% drop in manufacturing employment.

As Kosacoff & Ramos (2001) point out, in the 1990s a more flexible industrial model consolidates and faces the challenges of competitiveness by adjusting costs by replacing domestic suppliers with imports. In the end, some industrial firms end up closing production lines to become marketers of the imported goods that they previously produced in the country. If the dominant note of the adjustment period was the massive closure of productive units, at this stage pragmatic flexibility predominates that tries to adapt to the different phases of the economic cycle and the structure of

relative prices of the economy. That diversification and versatility that had characterized the emerging economic groups after the adjustment had extended to other segments of industrial activity. In this way, the old contradiction between industrialists and importers became obsolete: in this new model, it could be both at the same time, alternating the mix according to the conjunctures of relative prices and public policies.

This change of model was expressed strongly in the automotive complex. The signing of the regional trade and investment agreement of MERCOSUR in 1991 allowed generating an expanded market that benefited some industrial sectors. One of the few industrial policy initiatives implemented in the period was the regime for the automotive industry, which sought to generate a process of intra-regional specialization that would increase production, avoiding trade imbalances within the region, and constitute a regional export platform of vehicles with cutting-edge technology. It is worth remembering that the Argentine automotive model of the 1960s and 1970s operated with production lines lagging behind the technological frontier, but with high coefficients of national integration of the auto parts chain. Under the new open and flexible model, state-of-the-art technologies are embedded, but with low levels of local integration, so that Argentina began to take 4-5 times more cars than in 1970, but practically with the same added value (Kulfas, 2016). Also, the export platform to other regions of the planet never prospered.

Manufacturing performance in a stage of heterodox reforms (2002-2015)

The economic scenario after the Convertibility crisis

Towards the end of the 1990s, the Argentine economy began a long recessive process that would last for four years, when the country lost about 25% of its GDP. The macroeconomic regime of Convertibility had managed, in 1991, to overcome the scenario of instability and hyperinflation of the previous biennium. However, the rigidity of this exchange anchor regime ended up

accumulating numerous inconsistencies and macroeconomic imbalances, mainly in the external sector, which resulted in the process of over-indebtedness.

At the end of 2001, the economic crisis translated into a financial crash that ended with the forced restructuring of the banking portfolios, the suspension of debt payments abroad and a virtually paralyzed economy, which began to reorder in mid-2002. The end of the Convertibility led to a sharp devaluation of the currency that, in a context of virtual economic and financial paralysis, high unemployment and idle capacity, had a weak transfer to prices, setting a scenario of high real exchange rate (the type of nominal change grew by 250% in 2002, while retail inflation in that period was 40%).

After the most critical moment, the financial authorities were shaping a new macroeconomic policy regime based on three central aspects:

- a. the maintenance of a high and relatively stable exchange rate parity in real terms, through interventions by the Central Bank and the maintenance of a significant fiscal surplus (between 3 and 4% of GDP);
- b. the introduction of controls on speculative capital movements and some elements of exchange regulation;
- c. the implementation of taxes (withholdings) on exports of primary products. In this way, a macroeconomic scenario was created that generated signals of stimulus to the tradable sectors, offering a protective halo through the high exchange rate parity, with direct taxation on the primary producers of food, in order to avoid an increase in the domestic price of food. These products and provide more resources to the State, and capital controls as a means to prevent tendencies to appreciation and speculative shocks. This regime produced outstanding results, particularly up to the year 2008, when the acceleration of inflation began to appreciate the real exchange rate, and thus a central aspect of this regime lost momentum (Damill & Frenkel, 2015; Kulfas, 2016).

The economy began a process of accelerated economic growth that slowed down at the end of 2008, with the start of the international crisis, but that resumed its path at the end of 2009 and ended in late 2011. As of 2012, the

Argentine economy It entered a path of stagnation, alternating years of low growth with others of relatively light magnitude.

It was the years of the governments of Néstor and Cristina Kirchner (2003-2015), of unorthodox economic experiments that, although they maintained lines of continuity in the political arena, showed no minor nuances, as I have indicated in previous work (Kulfas, 2016). If the first Kirchnerism (2003-2007) went through a very favorable and consistent macroeconomy characterized by twin surpluses, high real exchange rate, strong restructuring of corporate profitability and continuous stimulation of domestic demand with a combination of fiscal policy and income. The second Kirchnerism (2008-2011) tried (with partial success and severe limitations) to compensate for the lower macroeconomic impulse with institutional responses and from the fiscal and productive policy. Likewise, the third Kirchnerism (2012-2015) marked the crisis of both approaches: with a deteriorating macroeconomic scenario and the accumulated limitations in the capacities of economic and productive policy, the Argentine economy plunged in the process of economic stagnation where the initial promise of “deepening the model” must have mutated into the less ambitious and epic “enduring model”.

The paradox was that at the moment when macroeconomics showed positive signs and gave room to think about long-term projects and new institutional arrangements, some contempt for medium – and long-term planning and the formation of a new institutionality was observed. Likewise, when the government realized that the era of the twin surpluses would be more compromised, and a more active role in productive matters was necessary, the same tools and institutions with little orientation to structural change were deployed. Finally, when some more profound innovations had been attempted, it turned out to be too late, and the implementation mechanisms were undoubtedly precarious and ineffective.

The result of this experiment in production was, as we shall see, a manufacturing sector that managed to grow considerably, as was not seen even from the 1970s, but on the existing techno-productive base, without fundamentally altering the features characteristic of the open and flexible model, in other words, without creating a structural change. As a result, the country achieved a new peak of industrial production per inhabitant in 2011,

similar to that of 1974, but, again, with this composition less integrated and more, assembler, so that once the fuel of international trade slack constraints on the ability to import limited the continuity of that growth.²⁷

Productive recovery and reindustrialization: scope and limitations

The manufacturing recovery began in the second half of 2002. Despite the sharp drop in demand in the domestic market, the devaluation had allowed a remarkable recovery in the profitability of the sector, to which three elements contributed: a) freezing of electricity and gas service tariffs; b) the high turnover of stocks in an economy that operated without financing; c) the low levels of wage indexation. Even in a scenario of low domestic demand, the rise in the exchange rate offered opportunities for domestic production by substituting imports, which reached 38% of industrial production in 2003 (CEP, 2003).

Until 2005, the recovery was supported by greater use of installed capacity. In that year, the country recovered the 1998 GDP level, that is, the one before the beginning of the protracted Convertibility crisis. Likewise, an essential recovery of exports took place. After 2005, the gradual recovery of the real wage and employment allowed a vigorous expansion of consumption that fed back the manufacturing growth.

The industrial performance of the period can be divided into three stages. The first extends until 2008, which was the most dynamic and virtuous, with simultaneous growth in production, employment, productivity, exports and the creation of new firms. Industrial employment increased by 52%, the number of industrial firms by 36% and sectoral GDP grew at an annual rate of 7.9%. There was also a gradual deterioration in the manufacturing trade balance, whose deficit was sixfold in that period, showing the limits of the open and flexible model, even with a high real exchange rate and the need for more specific sectoral actions. After the global crisis, the sector had a new period of accelerated growth in the 2010-2011 biennium, but in this case without creating new firms, with a weak expansion of the employment and few improvements in exports. Finally, between 2012 and 2016 a general

contractionary scenario is observed in the sector. A relevant note was the worsening of the foreign exchange balance, which, together with the energy sector, had a negative impact on aggregate performance (Kulfas, 2016).

Table 1: Argentine manufacturing sector: the average annual growth rate of the product, employment, number of companies, exports, imports, sector trade deficit, and productivity.

	1996-2000	2000-03	2003-08	2008-11	2011-15	2003-15
Product	-0,4%	-1,5%	7,9%	3,5%	-1,5%	3,6%
Employment	-1,1%	-2,9%	8,7%	1,4%	0,4%	4,0%
Number of firms	-1,9%	-1,6%	6,3%	0,2%	-0,2%	2,6%
Exports	6,2%	-0,7%	22,4%	9,3%	-11,1%	6,9%
Imports	1,4%	-18,1%	31,9%	6,5%	-4,7%	12,2%
Trade deficit	-0,7%	-31,0%	42,7%	4,4%	-0,3%	17,1%
Productivity	0,7%	1,4%	-0,8%	2,1%	-1,9%	-0,4%

Source: own elaboration based on data from INDEC and Observatory of Employment and Business Dynamics of the Ministry of Labor, Employment and Social Security.

The productivity of the sector had an erratic evolution, realizing that the investment process did not make substantive changes in production practices at the aggregate level. Gross investment in machinery and equipment showed a positive evolution until 2011, except for the period affected by the international crisis, but the average for the period (6.3% of GDP) reflects the limits of this process. It should be noted that this figure has a bias in that formal employment grew at a very high rate because many open jobs began to be declared to social security, which implies a higher growth of productivity than that presented in Table 1, but without altering the main conclusion in the essential.

It was a period of high dynamism with more support from the public sector based on greater resources in science and technology, but few results in aggregate terms. Table 2 shows that the GDP structure and industrial employment according to levels of technological intensity (Katz & Stumpo, 2001) did not show substantial changes throughout the period analyzed. No

substantial changes do not imply the absence of technological and productive improvement as in the cases of agricultural machinery (Lavarello & Goldstein, 2011), the pharmaceutical industry, software or some branches associated with an incipient reappearance of the state in nuclear power, satellite industry and defense (Lavarello & Sarabia, 2015). However, all these efforts did not generate enough input to change the aggregates.

Table 2: Argentine manufacturing GDP Structure and employment according to technological intensity in selected years.

Industries	2004		2008		2011		2015	
	GDP	Employment	GDP	Employment	GDP	Employment	GDP	Employment
Engineering intensive	13,1%	14,9%	15,2%	16,7%	15,9%	16,7%	14,8%	16,9%
Automobile	4,5%	5,9%	5,4%	7,7%	6,0%	7,9%	4,4%	7,3%
Food, tobacco and beverage	25,2%	30,9%	25,5%	27,9%	23,8%	28,9%	25,9%	29,9%
Other intensive in natural resources	31,8%	14,5%	28,2%	14,0%	27,6%	13,5%	29,1%	13,1%
Labor-intensive	25,4%	33,9%	25,8%	33,7%	26,6%	33,0%	25,8%	32,7%
Total	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Note: Industry classification followed Katz & Stumpo (2001).

Source: own elaboration based on data from INDEC and Observatory of Employment and Business Dynamics of the Ministry of Labor, Employment and Social Security.

In short, just as the FDI peaked in 1974, the IAF seemed to have reached it in 2011, combining a heterodox macroeconomic policy and some sectoral policy instruments that did not reach or even set out on the path of structural change.

The industrial policy

Institutional framework and instrumentation: between

the geological layers and the unfinished search for the new

The excellent performance registered up to 2011 had a sustained boost in the macroeconomic scenario of the period 2003-2008 rather than in specific sector policies. The great paradox is that institutional innovations began once the period of greatest dynamism ended, which opens a series of significant questions regarding their effectiveness and the relevance of the macroeconomic policy regime.

The industrial policy in Argentina has a high content of overlapping programs by geological layers, where instruments created in different periods coexist, some to face crises, others with a sectoral profile, most of them horizontal and generally coincide in the lack of a strategic look with specific objectives.

It is possible to differentiate five types of industrial policy initiatives in Argentina: a) competitiveness, sectoral and fiscal incentive regimes; b) external commercial policy (tariffs on imports, export refunds, quantitative restrictions on imports); c) policies to stimulate technological innovation; d) financial policy; e) State purchases and supplier development.

Table 3 presents a synthesis of instruments, the institutions involved and their levels of programmatic innovation and implementation. The initiatives in geological layers have predominated, while innovations have been gradually implemented since 2008. Among the latter, the following stand out:

- a. the creation of the Ministry of Science and Technology, at the end of 2007, which absorbed several pre-existing programs but adding new initiatives with greater sectorial diversification, the creation of technological clusters and depth in support of innovative firms;
- b. the reappearance of public banks in productive financing on a larger scale (mainly oriented to SMEs) starting in 2008 and of the Central Bank as credit regulator, after the modification of its charter in 2012, forcing a directing of credit towards productive investment at low rates in the leading banks;

- c. the reappearance of state initiatives in the satellite industry, the defense industries, atomic energy and the development of suppliers, particularly as of 2012; d) the implementation of inter-firm cooperation programs and cluster development in different areas (SMEs, science, and technology).

As can be seen, even in many innovative initiatives, the reappearance of instruments from other historical periods stands out, with innovation being limited, both institutional and instrumental. Also, it should be noted that many initiatives were not specifically industrial policy, particularly those of a financial nature, which in general tended to focus on investment in general and in SME actors in particular, rather than in sector or investment initiatives with structural change.

Foreign trade policy had multiple objectives with somewhat diffuse and difficult to measure results (Kulfas, 2016). Such objectives were more limited and selective in the initial period (between 2003 and 2011) because they tried to generate partial protection strategies through the use of non-automatic import licenses and other instruments regarded as “sensitive.” It was due to the weight of certain types of manufacturing in the generation of employment and to their strong exposure to international competition (textiles, footwear, and clothing, among others). However, between 2012 and 2015, the policy was generalized under a system of prior authorization for all imports. This instrument was used both as tools for negotiating and containing domestic prices, as well as for regulating foreign exchange outflows and, sometimes, as a tool to stimulate local production and import substitution, but with a short-term perspective and difficult support in the World Trade Organization (WTO).

In the field of science and technology policy and spaces of the state complex, the most fascinating and innovative experiences concerning industrial policy appeared. Under this umbrella, the country showed advances in the production of satellites, in nuclear energy, had a pharmaceutical sector with the most significant innovative efforts of the Argentine industry (MINCYT, 2015) and other particular experiences. There were attempts at greater sectoral and chain integration from different initiatives of cluster programs, but that ended up being a program within the range of public policy tools

offered, rather than a reorientation of productive policy.

Likewise, there has been frequent lack of inter-institutional coordination, the overlapping of objectives and the lack of a global development strategy. The objective of “reindustrialization” was very present in the official discourse throughout the period with great concern and interest in manufacturing which had been abandoned by former governments in previous decades. In this sense, the experience of Kirchner governments revealed strong initiative. However, because it was implemented in a fragmented way and without a coherent and previously defined time horizon, this initiative lost its effectiveness and was not able to change the fundamental patterns of an open and flexible model. In this way, the remarkable growth of the sector brought with it an exponential demand of imported goods within a macroeconomic context and sector policies that did not stimulate the necessary investments to meet the growing demand with more national production (Kulfas *et al.*, 2014).

Table 3: Industrial policy in Argentina: institutions, initiatives, actors and degrees of institutional innovation and implementation.

	Institutions	Initiatives	Beneficiaries	Level of innovation
Sectorial competitiveness and fiscal incentives	Ministry of Industry	Car industry regime	Large firms	“Geological layers”
		Assembler in Tierra del Fuego (electronics)	SMEs/ Large firms	New regime
	Software Act Bonus to capital goods	“Geological layers”		
	SMEs Secretary	Fiscal credit to vocational training in clusters	SMEs	“Geological layers” Novelty
Foreign Trade Policy	Ministry of Industry – Foreign Trade Secretary	Non-automatic licenses Constraints to imports (DJAI – declaración jurada anticipada de importación)	Less competitive industries (shoes and clothing) Several industries and firms	“Geological layers”
Technological Innovation	Ministry of Science and Technology	Technological Fund/ Associative Groups/ Credit to innovation	Several industries, SMEs and large firms	Innovative (but with little resources)
Financial Policy	Bank of Nation Bank of Investment and Foreign Trade	Subsidized credit, public bank and other public funds. Bicentennial credit with general guidelines.	SMEs/ Large firms	Innovative (but without strategic orientation)
	SMEs Secretary Central Bank	Financial regulation and credit orientation		
Public procurement and suppliers development	Ministry of Defense ARSAT	Development of the state defense complex , space activities, atomic energy and satellite industry.	SMEs and large firms from metal-mechanics and capital goods. INVAP.	Innovative
	CNEA / CONAE YPF		Oil and gas industry suppliers	
	Ministry of Health	Pharmaceutical public procurement	Pharmaceutical Industry	

Source: Author’s own elaboration.

Industrial policy, the actors of development and structural change

The contradictions within the business sectors in Argentina around a path of industrial development have been present since the late nineteenth century. We saw how the agricultural oligarchy forged a model of development outward, where the primary sector was conceived more like an appendage of the world food market than as a piece of domestic product development. This link was strongly complementary to foreign investment, mainly of English origin, in the field of railroads, refrigerators, and public services. Even so, the roots of the Argentine manufacturing sector date from that period, with a base strongly oriented towards food production and a substantial impact of imports on domestic consumption. This sector continued to have a proper specific weight in public policies until the mid-1940s, where, despite the exhaustion of the agro-export model, they did not seek to advance in an alternative industrialization plan oriented or directed by the State, but rather, address an adverse situation to which they considered temporary.

With the irruption of Peronism in the political scene, the newly emerging industrial bourgeoisie began to have a political expression, but this was far from consolidating a new economic elite. Instead, the aforementioned hegemonic staging scenario emerges, and tensions and conflict crossed the relationship between the industrial bourgeoisie and Peronism. From the perspective of Basualdo (2006), some mutations give rise to what he calls “diversified oligarchy”, where primary sectors expand into some industrial activities and services but still have strong weight in primary activity. The military coup of 1976 would be seen, with this perspective, as a “classist rematch” (Basualdo, 2006) aimed at disciplining the social bases of political conflict and returning to the diversified oligarchy the preponderant role that put into question for some time.

Periods of the IDE

After the last military government consolidates the weight of the diversified

oligarchy and in the 1990s there will be a steady inflow of foreign capital that will give a renewed presence to the Transnational Corporations (TCs) in the country. The CTs will be very important protagonists in the expansion of the OFIM, mainly in the automotive branch (which leads to a reduction in the weight of national auto parts), in food and other branches of mass consumption, and also in chemistry and petrochemicals.

Faced with this scenario, the heterodox experience of the Kirchner governments did not seem to take due note of the characteristics of the economic actors. Concerning foreign capital, they had an attitude similar to that of the developmentalism of the 1960s, pointing out that the central axis was not the origin of capital, but produced in the country. This discourse not only neglected some of the criticisms that IDE had in the 1960s when studies pointed out the problems for the development of the auto parts chain derived from the type of transnationalization in this industry (Cimillo *et al.*, 1973), but fundamentally neglected the changes introduced by the OFIM in the Argentine industrial structure. So, “producing in the country” stood for assembling imported parts and pieces, and where the discourse in pursuit of a “substitution” of imports “should in any case change to a” replacement of assemblers “based on the creation of new technological and productive capabilities.

The government also had a very skewed axis towards the expansion of consumption as the engine of growth and industrialization. However, under the parameters of the OFIM, once the high real exchange rate phase ended, the option for imports (both final goods and inputs to assemble in the country) occupied a significant space among industrialists, not just the CTs but also national groups and many small and medium-sized firms. Macroeconomic uncertainty and the lack of a clear and coherent strategy, beyond the many initiatives implemented, strengthened a short-term focus on the different business segments. The government tried, from the discursive, to refound a new “national bourgeoisie”, but in the facts, there was not an entirely coherent and articulated action, to which the organizational weakness of that sector was added. In this regard, it should be noted that there is a strong fragmentation in the representation of small and medium-sized companies, where there are no less than five business associations with a relatively weak weight, plus the Argentine Industrial Union (UIA),

fragmented into two sectors. A significant divergence stemmed from the transport industry where one association emphasized automotive production, neglecting the public transport policy as well as railways.

The study by Gaggero, Schorr & Wainer (2014) shows that this policy initially set out with the objective of recovering a national bourgeoisie did not yield the expected results. Instead, there was certain stability in the business leadership. The exception was in the construction sector and public services suppliers, where indeed some changes were recorded, although very far from Schumpeterian practices or the generation of new development actors. An interesting exception was the growth of some large national firms of pharmaceutical laboratories, where the system of public purchases and the operation of the market (driven by the growth of consumption) gave it a relevant boost.

The government made some innovations during the period but lacked prospective capacity and a more far-reaching view. As pointed out in previous work (Kulfas, 2016), the history of the Kirchner government shows the great contradiction between the long-term political planning that allowed it to have the most extended period of political continuity since the democratic restoration of 1983 and the missing long-term strategy in the economy. In 2005, sectors of the UIA asked the government to re-found a Development Bank, receiving in response that many of those who requested it were responsible for the divestment of the liquidated National Development Bank (BANADE), which will operate from the 1970s, when he inherited the functions and capital of the Industrial Bank of 1944, until its dissolution in the 1990s. The government did not create a development bank but multiplied financial policy actions around the Banco Nación, BICE, the regulation of the Central Bank and other programs. However, the lack of a development bank meant the lack of a policy tool which could spur new industries, rather than reproducing the demands of the actors of the OFIM. At this point, there is the lack of strategic vision to promote structural change and change the OFIM towards a model that, without losing its open character, could safeguard productive structures that incorporate greater learning and capacity building.

From a long-term perspective, the difficulties associated with volatility and macroeconomic instability repeated themselves. On the hand, entrepreneurs

do not invest because they disbelieve macroeconomic sustainability. On the other, as they become “entrepreneurs with industries” rather than “industrialists”, this undermines macroeconomic sustainability in the external sector. As it is often the case in this type of dilemma repeated over long periods, there is a bit of both phenomena. Towards the end of 2015, there was a change in presidential cabinet that implied an essential shift in the conception of economic policy and a return to the first version of the OFIM, that is, with less state interest in industrial development, a macroeconomic policy that gradually turns to orthodoxy and higher degrees of openness to international competition.

Conclusions

The industrial history of contemporary Argentina has shown substantial difficulties to consolidate a process of economic development based on the expansion of technological and productive capacities in the industrial sector. The difficulties in articulating a long-term strategy, macroeconomic volatility, social contradictions and among the different fractions of economic power are all elements that, combined, contribute to explain such limitations. The OFIM, which emerged after the process of restructuring and downsizing the sector after the interruption of the IDE, is the expression of a scenario that, like other Latin American experiences, shows the shrinking of the business space for the productive sector and the reduction of investment rates. It is the international context of the transnationalization of production processes and global value chains, emerging since the 1970s, where the spaces chosen for industrial activity are focused on Asian economies, leaving South America as a fundamentally destined area to the exploitation of natural resources and the use of domestic consumer markets, particularly in the case of middle-income economies. The national capital mostly accompanied this process in the Argentine case. Many economic groups were transnationalized and diversified, with a strong focus on finance. The withdrawal of the State from many productive projects also meant the disappearance or reconversion of many high technology suppliers, a fact that resulted in a lower technological intensity in the aggregates.

In this chapter, we argue that what happened from 2002/2003 represented a different version to the previous period, but without altering the essential aspects of the OFIM, for that reason, we speak of a version II of such model, but without having a structural change. In 2011, the Argentinean economy reached a new peak in industrialization, but six years later there was a considerable decline. Naturally, from an orthodox perspective, these results are used to criticize the level of Argentine industrialization and demand greater openness. These recipes would only worsen the situation regarding the foreign exchange balance, employment, and income distribution, but it is also true that industrial growth, under the parameters of the OFIM, faced severe limits in 2011. If no new policies come out and the challenges of political economy are coped with differently. Naturally, it is not about making radical changes concerning the conditions of an open model, but of generating the instruments and necessary incentives to promote productive structures of greater technological density and promote upgrading of traditional branches. The historical contradiction between actors in the primary sector and manufacturing can be addressed, in part, with policies that promote efficient linkages that incorporate capital goods and engineering services to the exploitation of natural resources and aggregation of value downstream. The achievements shown by Argentina in this regard are far from the successful cases of innovation in natural resources industries in Norway, Finland, Canada, and Australia.

The economic policy implemented between 2003 and 2015 had many voluntaristic features and political economy problems that resulted in a lack of selectivity and planning. In this sense, the industrial players continued to do their business under the parameters of the OFIM, taking advantage of the new short and medium-term opportunities in the manufacturing field, but without ceasing to combine them with businesses linked to the importation of final goods, assembly, financial sphere and weak proactivity in terms of technological innovation. Rethinking the OFIM implies, among many other things, a new relationship with the industrial players that allows, from a consistent and more stable macroeconomic regime, to stimulate a structural change in the manufacturing field with more selective and forceful policies.

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Introduction

During debt crisis' decade and the 1990's neoliberal turn out, industrial sectoral policies has gone through a period of retraction (WHO). The importance of public policies aiming industrialization was recovered after the electoral victory of the particular alliance led by Labour Party (PT) between 2003 and 2014, there were three different industrial policies in Brazil. The first was the Industrial, Technological and Foreign Trade Policy (*Política Industrial e Tecnológica de Comércio Exterior-PITCE*) in 2003 followed by the Productive Development Plan (*Plano de Desenvolvimento Produtivo-PDP*) and the Greater Brazil Program (*Plano Brasil Maior-PBM*). The latter started in 2011 under the government of Rousseff.

In its origins with PITCE, after a long discussion of *Diretrizes para uma Política Industrial*, the Brazilian industrial policy drew on the debate on innovation and effective coordination between State and business. The National Industrial Development Council (*Conselho Nacional de Desenvolvimento Industrial-CNDI*) was created in 2004 and became a concertation arena for the debate among business leaders, business associations and the policymakers on the design and implementation of industrial and technological policies. Some examples of successful policy results coming out of the CNDI were the Innovation Law in 2004, the National Network of Industrial Policy Agents, the Biotechnology Development Policy in 2007 and the Productive Development Policy in 2008.

With the purpose of improving the state action in the coordination with strategic actors, as well as intragovernmental coordination between different ministries and agencies, the Brazilian Industrial Development Agency (ABDI) was created in 2004.

The idea of a revival of the industrial policy in Brazil and its relative acceptance and legitimacy *vis-à-vis* the strategic actors was the result of several confluences such as:

- a. the relative erosion of discourse and neoliberal ideas about the role of the state in the economy;
- b. the resurgence of the idea of economic development beyond the concept of economic growth and increasing association between innovation and competitiveness;
- c. the greater proneness to dialogue from business leaders with a shift in the discourse of independence from the state to a discourse of collaboration with the state (Diniz & Boschi, 2007; 2011).

These confluences had a positive effect on the increase in coordination between state and business in the early years of the industrial policy that coincided with a period of relative economic growth.³⁰ However, public support in the form of programs and incentives has revealed signs of exhaustion due to a persistent macroeconomic policy based on overvalued exchange rates,³¹ high-interest rates and dependence on external savings for productive investment³² (Bresser-Pereira & Gala, 2015). So, industrial policy has again become an anathema and most of the efforts turned out to be deemed as exaggerated and even “irresponsible” tax exemptions by the public opinion.

Based on official documents, newspaper and media articles as well as in-depth interviews conducted with policy makers and representatives of business associations, the article proposes depicts the role of ideas and interests in the trajectory from industrial policies from 2003 to 2014. It is assumed that the ideas and interests of strategic actors can explain the problems of legitimacy and coordination in industrial policies, as well as the continuum between industrial policy as another rentist capture of public resources and industrial policy as a State action to contribute to innovation and technological learning.

The paper is divided into four sections. The first section presents a theoretical review of industrial policy. This review is followed by a discussion of the main concepts from discursive institutionalism. The third section describes and analyzes the trajectory of the three industrial policies between 2003 and 2013.

The theoretical debate about industrial policy

It is not easy to identify a single theoretical consensus in the Brazilian domestic debate about the industrial policy.³³ Even within the field of heterodox economics, the discussion assumes many formats, nuances and emphasis, being confused with generic measures to stimulate economic growth or, often, with occasional and topical aids to this or that industrial sector, specially in moments of crisis or external shocks. The reasons for this “conceptual polysemy”, according to Strachman (2000), are varied: deficiency of the theoretical foundations of the new approaches, if compared to the neoclassical theory; a certain predominance of empiricism based on successful cases (Asian, in particular), which led to disregard for the foundation and a more rigorous theoretical modeling (Chang, 1994); and perhaps most importantly, the absence, since the postwar period, of an “official industrial policy” on the agendas of industrialized countries, which has blocked the dissemination of research networks for years, the promotion of multilateral organizations, and even the absent debate on industrial policy in the media. In the bulge of the so called “New Developmentalism” new senses appeared based on different contributions. A more modern policy, that is, functional to the post-liberal period, supposes a fundamentally anticipatory, more proactive nature, beyond the mere reaction to the crisis of one or another sector or limited by policies of occasional macroeconomic adjustment (Bresser-Pereira & Gala, 2015; Chang, H-J. & Evans, 1999; Peres, W. & Primi, 2009; Cimoli, M. *et al.*, 2009). The ideal industrial policy is one that creates conditions for the structural transformation of the economy, acting in advance, *ex ante*, as Johnson (1982) explains:

In a positive, explicit sense, industrial policy means initiating and coordinating government activities to leverage the productivity and competitiveness of the entire economy and specific industries that are part of it. Above all, a positive industrial policy means the infusion of strategic, goal-oriented thinking into economic policy. It is the government’s attempt to move beyond (...) aggregate concerns (...) with monetary and fiscal policies (...) macro and micro industrial policies are both important, but the micro the setting of industrial goals has often been emphasized to the detriment of the former, although goal setting can not be successful without macro-favorable conditions and is better valued as a matter of surpassing means, not success

or absolute failures.

This argument runs in other ways to the traditional school of economic theory. It's advocates that the competitive market is the perfect or optimal allocator of the resources available in society. Agents endowed with a natural rationality would make choices that maximize their individual well-being and simultaneously that of the whole collective. Free movement of factors, atomization of the actors and perfect knowledge are fundamental presuppositions for the functioning of supply and demand mechanisms and the convergence of prices to their optimum point of satisfaction for producers and demanders (Pack & Saggi, 2006). These arguments have been questioned since the end of the liberal cycle of the 1990s. For Ferraz *et al.* (2002), the dynamic of the industrial policy debate in the 1990s can be attributed to three combined processes: (a) the successful development of asian countries in the previous decade, prompting economists to include the role of public institutions in the explanatory models; (b) the dissemination of the so called "new growth theory" by incorporating technological progress and learning as sources of economic efficiency; and (c) the inclusion in the debate several variables related to limited rationality, imperfect information and multiple interests with significant impacts on the quality of public action. The concept of Industrial Policy defended here is very objective:

(...) from a conceptual point of view, industrial policy must be understood as the set of incentives and regulations associated with public actions, which may affect the inter – and intra-industrial allocation of resources, influencing the productive and patrimonial structure, and the performance of economic agents in a given national space. (Ferraz *et al.*, 2002: 545).

The orthodox view of industrial policy assumes that information among political and economic actors is perfect and that economic decisions (investing, producing, selling, etc.) can be reversed without relevant costs, that rational agents will certainly have choices and preferences, which maximize their individual well-being, will also bring collective well-being to an optimal level. The equilibrium prices, as a result of the free mobility of capital and the atomization behavior of agents, will represent the "paretian

optimus”, where no individual agent can increase his satisfaction without reducing collective satisfaction (Stiglitz, J., 1981). In This case, what we know as industrial policy would not only be unnecessary but harmful and undesirable because state intervention, in any scale or nature, can affect the equilibrium of relative prices and artificially affect production costs and market prices through subsidies, and fiscal incentives or differentiated credit. Under this tenet, intervention yields a rentier and opportunistic behavior. From this perspective, industrial policy has only one plausible justification: when the price mechanism fails to capture and internalize the opportunity costs fully, it means, restricted to the known “market failures problems”. This situation occurs in very specific contexts, such as the production of pure public goods or the distortions caused by the emergence of economies of scale and externalities. Then, the corrective measures advocated by industrial policy in the classic view could work to correct, compensate or neutralize the costs generated by market failures. The remedies for this are the following:

- a. consolidation of companies involved in the problem. In this case, the negative or positive externality would be considered as cost or income by the decision-maker, be it the investor, the consumer or the government (competitive defense systems would act in this sense, for example);
- b. create taxes and subsidies to correct distorted prices, leading to a convergence between prices and production costs;
- c. assign property rights so that externalities are compensated in a market, pricing them (intellectual property systems, for example).

The neo-developmental debate proposed another agenda. This other way of industrial policy is related to the critical views of the neoclassical approach. According to Ferraz *et al.* (2002), the “new developmentalist school” in industrial policy must consider three different angles: (a) a specific context and the characteristics of each nation; (b) the historical time of the nation’s stage of development; and (c) the International context that can create the environment for legitimizing specific industrial policies and not others. For developers, State intervention is active and not just corrective or ex-post. For this approach the role of the State is well defined: it is an active, central element and protagonist of economic development, especially industrial policies. The concept of “Developmental State” is associated with the

competence of structural intervention of the State, the regulation of inter-capitalist competition systems and the realization of infrastructure investments and the definition of pro-manufacturing macroeconomic policy. The basic argument for State leadership is the protection of local industry from external competition and the encouragement of technological innovation. The idea of market protection is as old as that of laissez-faire itself; it was the classical economists as John Stuart Mill and Friedrich List who first established the idea that the “late industrialization” would require some state protection (conditioned by higher costs inherent in the early production process).

According to Gadelha (2002), the elements required for state action in the neo-development perspective to promote innovation policies deriving from the following factors:

- a. building dynamic skills, such as the setting up of structures for strategic orientation and the search for new forms of intervention, focused on the practice of exploration and the establishment of diverse and decentralized forms of connectivity with society;
- b. strengthening of selection mechanisms in public action, by building a culture of accountability, control and social evaluation (accountability);
- c. systemic action and preservation of the variety in the decision making of the private agents, guaranteeing competitive environments and mechanisms of reward and punishment proper of the market dynamics. This position fits well with the preservation of a mix of priority actions coordinated by the state, of universal interest of society;
- d. redefining the interaction pattern as a private sector, with the introduction of automatic and universal procedures in the activities of fostering innovation, mitigating risks and building technological capacities in priority sectors. In the recent Brazilian case, these requirements were partially met by the “Innovation Law” and by others legal instruments to booster innovation.

It is clear that the post-liberal context of the 21st century has created conjuncture elements (domestic and external) for the resumption of industrial policy issues on the government agenda, in particular, the problem of

competitiveness and technological innovation. However, industrial policies are still poorly evaluated, their instruments seldom explain mechanisms and criteria for monitoring and evaluation, there is no clarity of cause and effect mechanisms in multiple objectives, and there is a widespread implementation deficit. According to Peres & Primi (2009), the causes are summarized as follows:

- a. non-operational or unattainable goals with unclear and non-measurable goals;
- b. the disproportion between the necessary human and financial resources and the ambition of the objectives, especially in small countries;
- c. difficulty in building consensus and priorities in democratic and complex societies, so that IP tends to become a shopping list of local industry demands and needs. The problem becomes worse when weak or unrepresentative institutions attempt to coordinate the actors. In the post-war development context, the substitutive model of imports supported by subsidies or direct production by the state met expectations. In the current context, implementation depends very much on the spontaneous engagement of the industrial entrepreneurship.

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 political will and strength the private sector showed to support the ISI [Import Substitution Industrialization] are not present anymore. Business associations have scanty supported most of the recent efforts to diversify the production structure beyond competitiveness programs. Actually, tariff protection used during the ISI was a powerful economic signal (“invest in a new sector and get rich”); nowadays many policies disguise 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.” (Peres & Primi, 2009: 39).

The role of ideas and discourse in public policies:

contributions from discursive institutionalism

The literature recognizes the importance of cognitive mechanisms in the policy-making process (Schmidt, 2015; Hall, 1989; Erber, 2011; Gourevitch, 1986; Leftwich, 2010; Hoogan & Feeny, 2013). Ideas do not freely float without a context as well as they cease to be ideas when they stop to guide the actors' action. However, the link between ideas and collective action remains opaque as Schmidt (2015) reminds us. According to discursive institutionalism, the ideas guiding the actions are structured in discourse. That means the actors must be able to structure and communicate their ideas through discourse exchanges involving debates, deliberation, negotiation and contesting. In this sense, scrutinizing the ideas implies to identify and understand who talks, to whom, what and why. Ideational change builds upon the action of those actors promoting a particular idea and who form a coalition to support this very idea (Hogan & Feeney, 2013).

The discursive institutionalism approach is very concerned with interaction processes. Such interactions make up the bedrock from coordination between different actors such as the State and business. Beyond the formal and informal institutions, the power and position from actors are intertwined with ideas and discourses. Actors with different power resources also have different structural constraints to take their interests further. Ideas are not detached from material conditions, but there is instead a dialectical relation between both. Ideas strengthen actions whose purpose and interests are materially concerned at the same time material conditions to enhance the power of ideas.

Therefore, power is a crucial variable to grasp the dynamics of ideational change. Carstensen (2015) draws attention to the definition of ideational power. Such power can be defined as the capability of an individual or collective actors influence cognitive and normative beliefs from other actors through ideas. According to Hall, there are three forms of ideational power being relevant to understand the development of public policies paradigms (Hall, 1993). The first form of ideational power rests on the ability of actors to persuade others to accept and adopt visions of what to think and do through ideational elements. In other words, it is about persuading others to the very power of ideas. Persuasion is essential in this form of ideational

power. The second form of power refers to the actors' abilities to dominate and control the meaning of ideas. For instance, the meaning of 'development' becomes dominated and controlled by certain actors in such a way that alternative meanings of ideas become ruled out. One form of exercising such power is through resisting to alternative ideas by not even listening to them. The third form of power refers to the authority of specific ideas to structure thoughts in detriment to ideas. This has to do with the philosophies and public feelings behind the policymaking which sometimes are not made explicit.

Discourse interactions fall into two broad types in the public sphere (Schmidt, 2015). One type is the coordinative discourse in which actors get involved in creating, deliberating, arguing, bargaining and making agreements in the policymaking process and consultation. The other type is the communicative discourse which is the discourse present in the interaction process between political actors and their audiences. Communicative discourse is employed to deliberate, contest and provide legitimacy to ideas of public policies. One of the features of communicative action, as put forward by Habermas, is that this action assumes others will understand what is being said. It implies the existence of a shared understanding by society having the same norms and conventions (Edgar, 2006). When the actors do not share assumptions, the actors resort to daily language to explain the meanings of what is being communicated.

The actors with more agency in the change of the communicative discourse include politicians, policymakers, the press, interest groups, public intellectuals, and other opinion makers.

In a somewhat simplified way, one may say coordinative discourse performs its essential role in the policymaking process, and communicative discourse plays a role in the legitimation of the public policies by addressing public opinion in general or specific target audiences.

By empirically illustrating, Schmidt (2014) unveils the complexity of discursive interaction from European Union actors in the agenda of the financial crisis. On the one hand, European Union leaders interacted in order to achieve agreements in the policymaking process. They had to coordinate

discursively at the policymaking level. On the other hand, they had to communicate policies and arguments to two divergent groups, the market, and the population. The challenge was to satisfy markets and persuade the population at the same time. Getting the press support is critical to address both audiences.

Like other more recent institutionalist approaches, the discursive approach is primarily concerned with change. Accordingly, Hogan & Rourke (2015) suggest variable to identify ideational and general changes in the public policies. Such variables correspond to three different moments; crisis, ideational change, and change in the public policy. Ideational change is preceded by a crisis of the public policy shown in the inability of the policy to tackle the problems it should address. In general, a policy crisis reveals itself more clearly in a situation of an economic or political crisis. The second moment refers to the ideational change. The incapacity from existing policies to solve a crisis provides the opportunity to those actors interested in change to contest the viability of underlying policy paradigms (Hogan & Rourke, 2015).

The variables to verify a crisis or ideational collapse of existing public policy include:

- a. When the press raises the questions of policy effectiveness of the current policy model;
- b. Opposition parties criticize the current policy model and suggest alternative courses of action.

Bureaucrats, academicians, and economists criticize the policy model and suggest alternatives;

- a. Civil society organizations such as unions, employers' organizations, and consumer groups criticize the current model;
- b. There is a general dissatisfaction in the public opinion with the current paradigm which is seen by protests and opinion polls;
- c. International organizations criticize the current model and spread out alternative ideas.

The ideational change can be substantial or incremental when it is substantial, the political forces against the dominant policy paradigm search out for new ideas to correct the mistakes from the existing paradigm. Policy entrepreneurs grab the opportunity to pick up ideas of public policy and act in the frontline to introduce the ideas in the policymaking process.

Together with other external influences, policy entrepreneurs are responsible for these new ideas. They are also the brokers between those advocating new policies and the political institutions implementing them. Policy entrepreneurs are agenda setters by shaping the conditions of the political debate.

Donnelly & Hogan (2012) suggest two variables to indicate a new ideational coalition: **i)** a clear set of alternative ideas developed by the policy entrepreneurs; and **ii)** a political entrepreneur combining different interests to produce consensus around a new paradigm. A policy change follows ideational change. A change becomes substantial when the long-term perspective goes beyond a particular government term. Public policy changes can be identified when configurations in the tools of the public policy have changed beyond one government term, and new tools of the public policy have been introduced.

In a similar vein, Carstensen (2015) scrutinizes two fundamental aspects to grasp ideational change. The first one has to do with the definition of ideational novelty and the second refers to the mechanisms of ideational change.

Ideas are relationally structured and have three levels. The first level comprises the elements of meaning and the relationship between them. There are root elements of the ideas. The second level belongs to the relationship between ideas, and a third element includes a broader tradition in which ideas are embedded.

The relationship between the elements of meaning is an intrinsic feature of the ideational meaning. Elements of meaning vary along the time. Some elements formerly considered incidental may become more central. Actors' interpretations and interests also give the dynamics of the centrality from

these elements of meaning in strengthening certain elements detrimental to others.

At the second level, the meaning of an idea stems from the other ideas to which it is related. Once ideas are not insulated, but in association to each other, there is always the chance of combining them. Rival actors can change the meaning of an idea by gathering with others. At the third level, they are embedded in an intellectual tradition, and their organization derives from this tradition. The tradition here refers to ‘public philosophies’. Carstensen (2015) stresses that the use of the word tradition includes cognitive and normative issues. The cognitive issues justify a policy program by providing the advantages of this program in giving effective solutions to the current problems. The normative elements are useful to provide legitimacy to the policies so that they are following the cultural values of a country.

From ideas without support to a support without ideas: the trajectory of industrial policies in Brazil

Industrial Policy in the Lula Government

With the election of Lula in 2002, the picture has changed. The industrial policy explicitly entered the agenda in the first year of Lula’s first term, with the internal circulation of the first seminal paper (there was already an explicit reference in the 2002 electoral program). The loss of industrial dynamism was the primary case to relaunch industrial policy. However, contrary to common sense, industrial policy was seen as something which could compensate for the continuity of orthodox economic policy. During the beginnings of the policymaking, there were internal tensions between the Brazilian government think tank IPEA (*Institute of Applied Economics Research*) and the intermediate bureaucracy of the Ministry of Finance. Some officials in the Ministry of Finance were by principle against the very idea of industrial policy.

The guidelines of the industrial policy from Lula’s Government were

published in June of 2003 through the document “Roadmap to Development Agenda” which raised the main points of what should be such a policy. “Sustainable growth” was the first objective of the agenda, with diminishing interest rates and maintenance of economic stability. The second objective was to increase manufacturing exports. The third objective was to increase the efficiency of the productive structure and the capacity for innovation. There were significant differences in comparison with guidelines and public statements from Cardoso era.

The first industrial plan, The Industrial, Technological and Foreign Trade Policy (PITCE), was publicly announced only in March 2004 on a great event at the National Confederation of Industry in Brasília with the presence of the President of the Republic and several ministers of related areas. The document is simple and straightforward, presents a conceptual characterization of industrial policy, defines its essential characteristics and details the implementation of programs and actions. In addition to the common themes on the agenda of previous policies, the emphasis is placed on the themes of technology, innovation, and R&D, announcing what would be the permanent focus of such policies. In addition, PITCE was a selective industrial policy choosing the industries with higher and complex technological content. This selective nature of industrial policy, although rather frequent in other countries, was pioneering in Brazil.

Lula’s government also developed two other relevant actions related to the resumption of the national debate on industrial policy. The first was an initiative of the Economic and Social Development Council (CDES), which established a Task Force in 2003 entitled “Strategic Development Foundations.” The results discussed in the Council pointed to the need for a “National Development Agenda”, identifying a vision of the future, guiding values and problematic areas to be faced. The paper reinforced the principles of current industrial policy. The other initiative was the project called *Brasil em três tempos* (Brazil in three times) (a substantial public-private effort to construct scenarios based on foresight studies), prepared by the Committee of Strategic Studies (NAE), linked to the presidential cabinet. The project was simplified to identify the long-term national strategic objectives, to identify the solutions and to subsidize the social pact process (also called a social pact). Such initiatives, while still feeble about their objectives, have

contributed to fostering debate and dialogue among actors providing room to long-term thinking in the public and private sectors. The debates concerning an industrial development agenda also took place in the National Industrial Development Council (created in early 2005). These councils were crucial to galvanizing debates and information in order to provide the policy window to place the industrial policy agenda in the early years of the Lula period.

The PITCE guidelines initially established that the stabilization of macroeconomic variables, the reduction of interest rates, the resumption of domestic and foreign credit and the reduction of the “Brazil risk” (incorporating this dubious expression) would be the “central aspects for the resumption of private investment and economic growth”. Among the Government’s initiatives are:

- i. improvement of the various regulatory frameworks of the infrastructural sector;
- ii. “competitive parity” measures such as tax relief for exports, capital goods and the cost of credit;
- iii. the viability of the instruments for the expansion of foreign trade aiming at the reduction of the debt/export ratio as a way to reduce the external vulnerability.

The focus of Lula’s first industrial policy was to create conditions for increase systemic competitiveness, defined as to push economic efficiency and improved competition in international trade. Another sign was the link established between the infrastructure and regional development policies, the latter being a critical factor for the physical-economic integration of the territory, a particularly important aspect in a country that still concentrates almost half of its industrial GDP in less than 3% of its territory (São Paulo). In order to coordinate the set of actions, PITCE also envisaged the creation of a new agency and a permanent dialogue with civil society through councils under the coordination of the Ministry of Development, Industry and Foreign Commerce (MDIC).

A strong point of PITCE guidelines is that it unequivocally places the issue of innovation as a critical element in the growth of competitiveness. The main instruments of the policy met this assumption: the targeting of public funds

for projects with a technological innovation content (such as the S&T sector funds), the creation of appropriate regulatory frameworks (such as the “Innovation Law”) and the reorganization of credit lines of official banks (BNDES, the National Bank of Economic and Social Development). This was followed by repeated signals for the importance of stimulating new processes, in a global environment demanding low-cost, differentiated and quality products and the need to stimulate research and development. The guidelines pointed that the Brazilian industry did not modernize, nor did it increase its competitiveness in the 1990s, being unable to expand its export share in the world trade. This share fell from 1.39% to 0.79% over the nineties (Giambiagi, F. & Moreira, M., 1999)

The policy proposed to confront the phenomenon known as “regressive specialization” when the export agenda becomes overwhelmingly commodity-driven. The purpose was to yield a major shift in the export agenda from low-tech products, vulnerable to unstable prices and low dynamism of external demand, to sectors with greater potential for growth. According to the policy, these industries, dubbed as “strategic options”, were information technology, semiconductors, pharmaceuticals, capital goods, and software.

Other sectors, nominated “future bearers”, have been chosen because they represent medium and long-term “windows of opportunity” such as nanotechnology or biotechnology. It is important to note that the document noted the importance of forming large international groups with an international presence capable of leading the process of national industrial modernization. In addition, it recorded that the construction of permanent negotiation spaces with all the actors involved would be a requirement of the very nature of public policies that work with innovation, with permanent networks of cooperation and collective construction of knowledge. The resumption of industrial policy has, at the time, replaced the debate on an independent development project, as recently recalled by Luciano Coutinho, President of BNDES since 2007 until 2016:

We have rescued the ability to have a national development project, but this now presupposes a cooperative relationship between the public sector and

the private sector. In the case of large infrastructures, **which require long-term planning, it is fundamental to have private pro-investment modeling, with adequate incentive structures, BNDES has been the main support. Otherwise, financing in foreign currency will deplete and leave the entire infrastructure system vulnerable to currency risk.** (Interview with Luciano Coutinho, *Cadernos do Desenvolvimento*, 2011: 417). (emphasis added).

Although with major implementation failures, the broad lines of PITCE addressed critical elements of a more modern industrial policy such as:

- a. innovation and Technological Development: the proposal was to consolidate a “National Innovation System” capable of organically linking companies, universities, and research centers;
- b. export insertion: PITCE defended the sustained expansion of exports and the expansion of the export share by incorporating new products, companies, and businesses;
- c. industrial Modernization: this theme was treated from three combined approaches – the first one guided government action for productive capacity building. The second was the priority to increase supply chain density with local productive arrangements. The third was the orientation to avoid the business atomization, acting in a spatially concentrated way;
- d. capacity and productive scale: the objective here was to specifically address the problem of limiting installed capacity in the most capital-intensive sectors. For these industries, there is a time lag between the investment decision and the onset of production due to problems of funding sources, changes in the profile of guarantees, the promotion of consortia and new competitive arrangements and the encouragement of business mergers;
- e. strategic options: strategic options were chosen for the potential of dynamism, for the attractiveness of investments, for revealing new business opportunities, for being innovative intensive, for helping to increase the productive fabric and for presenting dynamic comparative

advantages.

PITCE was created with a different institutional arrangement. The policymaking process was rather collective within the Government and with the backing from officials and authorities linked to the presidential cabinet. Through an Interministerial Task Force within the Economic Policy Chamber (one of the several Chambers of the “Governing Council,” directly linked to the presidential cabinet) responsible to administrative staff contributed to avoiding internal power disputes within the government bureaucracy. It should be noted that the Ministry of Finance carried out the work of preparing an official document to obtain a commitment from other ministries. The Finance Minister, Antonio Palocci, three years later, thus referred to PITCE:

Another advance in the period was the adoption of a new industrial and technological policy (...). Despite all the difficulties, **including due to the very different views on the subject even within the government, we managed to reach a consensus and launch the document with the Industrial Policy and Foreign Trade Guidelines (PITCE)**, which began to guide the action of ministries. A National Industrial Policy Council was created, with the participation of government, business and workers, and gave impetus to an interesting agenda in the tax and science and technology areas. (Palocci, 2007: 171). (emphasis added).

Palocci’s assertion, in theory, confirms the idea that the Lula administration apparently had a greater approximation between the “fiscal bloc” led by the Ministry of Finance and the “developmentalist” bloc, led by MDIC, around basic principles of a more modern industrial policy (Diniz, 2013; Erber, 2011; Diniz, Boschi & Gaitán, 2012). This environment of internal collaboration was not viable in the Cardoso government if we considered cleavage between the Finance Minister and Industrial Development Minister as well as the sharp criticism from businesspeople to the economic policy of that time. Such internal collaboration was decisive for PITCE to get its legitimacy among the critical ministries of the political coalition in Lula’s

government. Initially, the concept that presided over the institutional construction of the proposal was the need to articulate and coordinate the various projects and actions proposed, knowing that the historical experience of dispersion and fragmentation of the various federal organizations explains, in part, most of all failures in this area. PITCE proposed an institutional solution to face the problem of bureaucratic fragmentation in the policy implementation process: The formation of a new quasi-public agency whose primary purpose was to promoting intragovernmental coordination and public-private coordination. It was the creation of the Brazilian Agency for Industrial Development.

The challenge and complexity of coordination also appear in very critical analysis of scholars, even those sectors theoretically aligned with Schumpeterian and evolutionary industrial policies, such as the economists Wilson Suzigan and João Furtado:

Our point of view is that the current institutions related to industrial policy do not act in a systemic or articulated way; are largely aging, marked by their past missions and therefore have difficulty responding to the challenges posed by the dynamics of economic growth driven by innovations. They constitute an extremely complex, fragmented body with a wide dispersion of instruments that sometimes generate conflicts of competence. They operate with technical staff who do not yet have all the skills required by more sophisticated missions of industrial and technological policy and create great difficulties for the combination of industrial policy with other policies and with the private sector, and, above all, they have a weak political command and a serious lack of coordination. (Suzigan & Furtado, 2007: 20).

Notwithstanding the efforts made by certain government actors to set a collaborative and more structured relationship with business, the Brazilian industrialists had been facing a long period of uncertainty over more than two decades, and this undermined the dialogue between state and business. In addition, the idea of selective industrial policy was far from consensus. The

Minister of Industrial Development himself believed the policy should include innovation of low-technology manufacturing as well as those regarded strategically. At the same time, the latter chief officer from ABDI considered that the conception of industrial policy could not repeat the past by providing a bunch of incentives and picking the winners in the supply chain (Valor Econômico Newspaper, April 6, 2005).

The industrial policy of the second Lula Government, *Política de Desenvolvimento Produtivo* (Productive Development Policy – PDP), appeared at the end of an extremely favorable situation, but on the eve of the world’s biggest financial crisis since 1929. Formally, it was almost a continuity of PITCE with some improvements. In May 2008, the government launched PDP when the country achieved an investment rate of almost 19%; a milestone reached only in 1995 in the first year of the macroeconomic stabilization plan (*Plano Real*). The optimistic economic context influenced the goals and the degree of ambition of the PDP. The country had continuous GDP growth rates for thirteen consecutive quarters, inflation was under control, credit was booming, and the Lula government with very high levels of popular approval. This explains, in part, the ambition of its objectives: to virtually double the Brazilian presence in the international flow of foreign trade or to achieve a rate of investment on GDP only compatible with the so-called “economic miracle” during the first half of the 1970s under the military regime. The PDP aimed at maintaining and sustaining the economic growth cycle through four combined strategies: (a) to expand the supply capacity of industrial products; (b) preserve the robustness of the balance of payments; (c) strengthen small and medium enterprises; and (d) raise the innovation capacity of the domestic industry.

The PDP was pursuing four quantitative macro-targets, expanding fixed investment to 21% of GDP (it was 17.6% in 2007), expanding Brazilian share in world exports to 1.25% (it was 1.18% in 2007), a rise in private R&D spending to 0.65% of the GDP (at 0.51% in 2005) and a rise of 10% in the number of exporting SMEs, some 1900 companies.

The PDP combined horizontal and vertical measures, according to the best-known models of industrial policy, with choice of priority sectors. The estimates of the Ministry of Finance in 2008 indicated a total of fiscal

incentives to the selected sectors at the value of R\$ 21 billion until 2011. The measures, both horizontal and vertical, were classified into large groups: (a) tax relief and exemption measures; (b) credit and financing measures; and (c) regulatory measures, according to the prevailing instruments used in each case. However, according to policymakers interviewed, much of the decision-making concerning tax relief was carried out by the Ministry of Finance and unrelated to any industrial policy.

The main policy tools included the credit of public banks, especially the BNDES, the regulatory norms (technical, sanitary, competition), technical support (such as certification, metrology, intellectual property, business and human resource training) and government purchasing power (procurement), which was only used years later in 2012 during the President Dilma Rousseff's government.

Systemic actions (transversal or horizontal) indicated the more traditional aspects of industrial policy, such as reducing bank spreads, expanding BNDES credit lines,³⁴ simplifying administrative procedures and integrating with other government policies. Synergies with other policies took place with the "Action Plan for Science, Technology and Innovation" from the Ministry of Science and Technology, the "National Education Plan" from the Ministry of Education, the "Mobilization Program for the National Oil and Natural Gas" from the Ministry of Mining and Energy, and the "National Qualification Plan" of the Ministry of Labour and Employment.

Intragovernmental coordination was still performing poorly. In Lula's second term, the Industrial Development Council had lost its momentum with low effectiveness, prevailing the bureaucratic insulation of the Government. It is noteworthy that the wide variety of programs treated as an industrial policy were rather formal with very few exceptions of pragmatic and effective coordination between different ministries.

The "structuring" programs of the PDP divided into three dimensions: "mobilizers", to advance in frontier areas of technology; to "strengthen competitiveness" in industries most threatened by external competition and generally labour-intensive (textiles, furniture, construction, shoes, etc.); and, finally, those to "expand leadership", where Brazil already had natural

comparative advantages such as companies related to commodities, mining, oil and food, and beverages. The latter was dubbed as the ‘national champions’ policy.

Unlike the PITCE, which focused on the articulation of the actors but without the scale of financial resources of the latter, PDP makes has a clearer purpose. The success of this Productive Development Policy depends on its capacity to mobilize the productive sector in the proposed directions. That is why pragmatism, translated into concrete measures of immediate implementation, and articulated in co-operation with the private sector, and addressing the main obstacles that affect its performance (...). This effort whose results are in the specific programs does not end with the implementation of this first set of measures, and it requires continuity, with the use of existing public-private spaces of communication or the creation of new mechanisms” (ABDI, 2010: 13).

“Structuring programs” by grouping different types of industry under common objectives (global leadership, market conquests, product differentiation, focus on technological density or increase access to mass consumption) would avoid the winner picking rationale from “national champions” policy. The result was the absolute lack of selectiveness in the PDP. One may argue the difficulty of defining the boundaries between different types of industry when considering the dynamics of technological change and the complexity of the Brazilian productive matrix, thus constituting a “policy of varied geometry”. For example, the “structuring” policy of “world leadership” would be applied to the metallurgy, steel, aeronautic and bioethanol sectors and would have the goal of positioning Brazilian companies among the five most significant players in the world by 2011. Politically the main reason was the ‘pork barrel’ politics with different industries by lobbying the government to become beneficiaries of the tax relief initiatives.

The Government’s assessment was optimistic, although without stronger evidence. While the damage caused by the financial crisis at the end of 2008 was recognized, the agency had favorable prospects for the future.

Thus, the international financial crisis was seen as an

opportunity to improve the strategic positioning of Brazilian companies, which reinforced the structuring bias of the PDP and the direction of the goals set. It was decided not to revise them, maintaining the positive references of expectations in the Brazilian economy, and the defined path. **PDP focused its efforts on recovering the upward rate of investment and exports, maintaining the pace of economic activity growth and strengthening R&D investments. Convergent measures were adopted with the purpose of contributing to accelerate the recovery of the Brazilian economy and ensure its competitiveness in the medium and long-term.** The PDP contributed to maintaining the dynamism of the economy in the period before the international crisis and articulated with the anti-crisis measures adopted by the Federal Government, was important to mitigate the negative impacts. The investment incentives adopted by the Policy helped to boost the growth momentum of investment ahead of GDP. (ABDI, 2010: 4). (emphasis added).

In 2009, gross fixed capital formation, an essential indicator to monitor the degree of sustaining industrial growth, was 15.7%, the lowest in recent history. The most striking measure was the “Investment Sustainability Program” (PSI), operated by the BNDES, with interest and interest rates reduction for innovation and acquisition of capital goods. In addition, tax exemptions (COFINS and IPI), tax incentives and accelerated depreciation contemplated the anti-crisis menu. Disbursements from the BNDES jumped from R\$ 92 billion in 2008 to R\$ 137 billion in 2009. One concerning exports – the only macro target close to being fulfilled, due to the global downturn – the measure adopted was to pay back the return of credits to exporters.

Despite a certain causal ambiguity in the outcomes of Lula’s industrial policies, it does not imply overlooking the advances of the period. In the field of science and technology, the number of PhD students enrolled in the policy priority areas (engineering, life sciences, and health sciences) increased by 33% between 2002 and 2008 to 32,800 in that year. The scientific papers

published by Brazilian scholars went from 1.62% to 2.63% of the world share. The number of scholarships abroad in priority areas jumped from 2,400 in 2002 to 3,700 in 2008. Although the international crisis has brought down the growth curve, there was a substantial increase in production in the period, 25.5% by 2008. Industrial production of high technology and medium-high technology, according to the OECD classification, rose by respectively 52.6% and 48% between 2003 and 2010 (Oliva, 2010).

Industrial Policy in Dilma Rouseff's Government

The *Plano Brasil Maior-PBM (Greater Brazil Plan)*, launched in August 2011 under the leadership of President Dilma Rousseff, continued the governmental coordination effort. However, due to a falling rate of growth and increasing fiscal problems,³⁵ the plan did not reach any of the ten fixed macro-targets. Unlike the export boom that began in 2004 and the PDP announced before the 2008 crisis, PBM came at a time of more international uncertainties. External instability only increased the negative potential of known problems: two decades of exchange appreciation, poor physical infrastructure, shortages of skilled labour force and slow technological progress of the manufacturing industry. Following the traditional industrial policy model, PBM included a vertical approach with specific measures for priority sectors (competitive above average or vulnerable), and a horizontal dimension with transversal and encompassing measures. At the horizontal dimension, measures such as increasing trade defence against unfair practices, increasing resources for innovation, vocational and training and credit measures from the public banks.

One group of specific industries being targeted were oil and gas, naval, health, automotive, aeronautics and space industry, capital goods, information and communication technologies and the defense. Such industries would have the largest spillover effect on the economic system for each Real invested. Other groups were scale-intensive manufacturing, labour-intensive and farm-related industry.

The new industrial policy presented several “structuring guidelines”: strengthening productive chains, expanding technological and business skills,

developing the energy supply chain, export diversification and internationalization, and sustainable growth. The wide range of goals to be achieved has severely hampered the policy management in its implementation process. Too many things simultaneously meant the inability to prioritize. Curiously, this was admitted by the National Conference of the Industry which pushed the government to include other sectors.³⁶

Both “structuring” measures and those of “systemic” or “horizontal” nature have led to the formulation of a wide array of initiatives with actions and projects that should be monitored and evaluated in order to yield measurable outcomes. Seven years after the launch of PITCE, good intentions were useless.

In practice, the PBM turned out to be, similarly to PDP, a more short-term countercyclical policy to keep up demand rather than an industrial policy capable of inducing structural changes in industrial organizations or altering the country’s share in Global Value Chains (GVCs). In reality, the share of income from Brazil in GVCs from electronics, machinery and chemicals dropped between 2008 and 2011.³⁷

The predominance of fiscal measures such as the payroll tax exemption, which generated a fiscal waiver of approximately R\$ 42 billion buttressed this claim.³⁸ Even *Inovar Auto* (fiscal incentives to automotive industry) which established a fiscal incentive mechanism conditioned to the increase of energy efficiency, expenditure of 0.5% in R&D and progressive nationalization of 65% – had limited effects and it was severely criticized by the World Trade Organization (WTO). In addition to the already known problems related to the conduct of economic policy, especially the deindustrializing process caused by an overvalued real and an investment inhibiting monetary policy with skyrocketing interest rates, the PBM had limited effectiveness. On the one hand, there was the persistence of known problems of intragovernmental coordination. On the other hand, the loss of focus on the targets of the policy as well as the weakening of the dialogue between State and business with too many forums and feeble public-private arenas with more decision power.³⁹

Conversely to the expectations, industrial policy was not able to curb the

decline of manufacturing share in the GDP, fell from 44.91% in 2006 to 34.96% in 2013.⁴⁰ In fact, there is an early deindustrialization process because there is no substitution of industrial employment for jobs in the services and trade with an equivalent generation of income. Another plausible conclusion is that the next industrial policies should incorporate the new industry (advanced manufacturing, for example), where the service component is increasingly significant (ICT, design, logistics and distribution, knowledge assets, etc.).⁴¹

For many years industrial policy was frowned upon by economists, governments and the media. Beyond being a liberal fundamentalism, it is historically false. Since 1970, Brazil's GDP has grown above 4% per year on 22 occasions, in 13 of them the industry was the engine of growth. Industry is the dynamic endogenous linchpin of technical progress. Its links yield positive impacts on infrastructure, skilled jobs, economies of scale and overflows in many other industries. Manufacturing leverages the overall productivity of the economy. Moreover, manufacturing accounts for almost 30% of the total tax burden.

Final considerations

The resumption of industrial policy as a State policy was in itself meritorious and broke off a period in which policies to support manufacturing were deliberately confused with clientelist and inefficient practices. However, it was not enough to stop the regressive specialization of the Brazilian economy. The continuity of industrial policy will depend on the combination of four factors:

- a. the leadership capacity and political hegemony of a developmental elite;
- b. a non-hostile macroeconomic policy towards productive development policies;
- c. the effectiveness of government strategic planning of public policy; And, finally, the performance of a governance arrangement by setting the appropriate arenas, bureaucracies and decision-making mechanisms in the direction of effectiveness.

Although the ideas for the policy paradigm from PITCE were based upon state of the art in tune with updated lessons from other countries, it missed the right instruments as well as a stronger interaction within the government and, in particular, with the private sector. Business associations and large economic groups were not bought into the idea of having innovation as the critical engine.

Within the government, BNDES as the most crucial actor providing credit to investment projects from industrial firms was more concerned with rescuing the national industry affected by the Chinese competition than placing innovation at the heart of the industrial policy.

When analyzing ideas communicated publicly or even the ideas debated between government officials from different ministries, it is remarkable that there was more contention than convergence, so that they were more fragmented than expected.

In a nutshell, PITCE followed an advanced policy paradigm in the Brazilian context but lacked broader political support within and outside the government. It had the ideas but did not the necessary tools and support. Also, during PITCE period, interest rates were very high and the Real currency overvalued.

It is true economic policy is a keystone to build an enabling environment for successful industrial policies. However, the lack of an ideational consensus from private and public actors was a significant obstacle to build an advocacy coalition around an innovation-centered and selective industrial policy.

As shown by both PDP and PBM, short-termism was not only a problem from business but also a problem from policymakers. One cannot avoid mentioning the existence of three different industrial policies throughout eleven years. Curiously, IPEA and Palocci had virtually no voice in the PDP and PBM. It was mostly the BNDES, the Ministry of Finance and, to a lesser extent, FINEP. As the focus of FINEP is essentially funding R&D projects, its policy paradigm was accordingly to the PITCE paradigm.

PDP and PBM included other topics such as skills development and

internationalization from large firms in those industries where Brazil has a competitive edge. At the same, the macroeconomic environment improved with lower interest rates, despite the maintenance of an overvalued Real.

However, without a selection of critical industries and a clear focus on innovation, the PDP and PBM turned out to be more like a compensation for the persistence of a macroeconomic policy hostile to the industrial development. As Brazil plunged into a fiscal and economic crisis with the end of the commodity boom and the spreading of the financial crisis to the global south, this compensation was not feasible anymore.

There began a growing criticism from the press, the various think-tanks and the industrial elites themselves. As a result, the coalition around the need of industrial policy as part of a broader strategy to improve the country's competitiveness became even weaker. Industrial became increasingly associated with inefficiency, clientelism and even protectionism.

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Introduction

The resumption of industrial policies in Brazil already has more than a decade. Since 2003, with the emergence of the Industrial, Technological and Foreign Trade Policy (PITCE), there have been two changes not only in the name, but also in the objectives and strategies of industrial policy implementation with the emergence of the Productive Development Plan (PDP), and, as of 2010, with the Greater Brazil Program (PBM). In its genesis with PITCE, industrial policy was linked to the debate on innovation and the idea of effective coordination between state and business, while taking into account the representation of workers. The tripartite governance (State, business, and workers) was in the role of the two central councils related to consultation and dialogue for the formulation of public development policies; the Economic and Social Development Council (CDES) and the National Industrial Development Council (CNDI). In order to guarantee or enable State action for coordination with strategic actors, as well as intragovernmental coordination between different ministries and agencies, the Brazilian Industrial Development Agency (ABDI) was created in 2004.

The idea of resumption of industrial policy and its relative acceptance and legitimacy *vis-à-vis* the strategic actors was the result of several confluences. The following should be highlighted:

- i. loss of industrial competitiveness and low innovation rates concerning late industrialized countries in East Asia;
- ii. relative wear of discourse and neoliberal ideas about the role of the state in the economy;
- iii. resurgence of the idea of economic development beyond the concept of economic growth and increasing association between innovation and competitiveness;
- iv. growing intellectual accumulation of economists, sociologists and political scientists organized in universities and think tanks around the theme of innovation and the role of the State in economic development

such as the Euvaldo Lodi Institute (IEDI) and the National Thought of Entrepreneurial Foundations;

- v. more willingness to dialogue with business leaders with a shift in the discourse of independence from the state to a discourse of collaboration (Diniz, 2011).

Drawing on contributions from the literature on state and business coordination and institutionalism (especially the historical and the discursive), the chapter aims to present results of the research project which aimed to understand the role of ideas in the formation of interests and the logic of action of strategic actors in the changes occurring in Brazilian industrial policies from 2003 to 2014. It is a sociological and political analysis of two essential elements of a development strategy lying at the heart of the debate on new developmentalism.

As of Gourevitch (1989), the actual situation to solve collective and economic problems are often unclear. This gives rise to a remarkable contestedness over the policies and the actions to be taken. In this context, ideology plays the role of a cognitive map as a way to reduce radical uncertainty and better frame the complex problems.

There is no rift between ideas and material interests and ideas go beyond a rhetorical device from actors to further their interests in a disguised way. As Gofas & Hay (2010) remind us, ideational and material factors unveil a complex interdependence. Ideas provide the discursive conditions of the possibility of a social or political event or behavior (Gofas & Hay, 2010). It can be seen in the claims for industrial policies at the beginning of the 2000s when these policies entered the public agenda coming from academia, business associations and different areas of the government. Ideas can be the cause of political and policy change because of their agentive capacities (Tonder, 2010). That is, ideas provide the capacities from policy-makers and other actors to grasp the context of action and to influence the context on which they operate. In this sense, the agency is the layered result of processes that flow through individuals (Tonder, 2010) as an ontological process in the very constitution of the social meaning from material interests. In other words, this agency encompasses the constitutive nature of ideas in the formation of preferences and interests with consequences for the coordination

between actors.

Interests and preferences, to a certain extent, overlap with cognitive frames and belief systems in such a way that it is difficult to analyze actors' decision-making without taking into ideas, discursively formed and communicated (Stiller, 2010).

In addition to preferences and interests, ideas also constitute the object of power relations. Carsten & Schmidt (2016) define ideational power as the power processes stemming from the ruling associated with a conception of power exerted through the constitution of intersubjective meaning structures by giving meaning to actors' material and social circumstances. Ideational power takes into account discursive struggles over policy ideas not only among actors placed at the top of the hierarchy, but also those actors more directly involved in the policy implementation process. Another feature of ideational power, particularly relevant for the results of this research, refers to the way these ideas translate into an accessible language to the public or the policy beneficiaries (Carsten & Schmidt, 2016). One crucial element of ideational power has to do with the agency power from actors to use ideas to attempt to influence other actors' normative and cognitive beliefs.

According to Carsten & Schmidt (2016), there are three types of ideational power; power through ideas, power over ideas and power in ideas. The first type is present in the persuasion process in which actors (experts, organized business, think tanks, public officials, and academia) engage in a "coordinative" discourse of ideational generation and contestation. This persuasion process also takes place in the political sphere in which government, parties, the press, and civil society organizations engage in the "communicative" discourse of translation, discussion, and contestation of policy ideas. The power through ideas is essential in the definition of the policy problem (rescuing the uncompetitive manufacturing or betting on the burgeoning industries with more innovative potential) as well as in the framing of the reality as a condition to adequately address the problem.

The power over ideas is the capacity of actors to control and dominate the meaning of ideas (Carsten & Schmidt, 2016). Such power can be exerted by the capacity to impose ideas or by the capacity to resist alternative ideas. As

for the power in ideas, it concerns the specific authority ideas enjoy in structuring and framing cognition at the expense of other ideas. The power in ideas lies at the founding of root ideas concerning the economy and the society and the institutional structures, which emerged from such ideas gaining recognition among elites and society in general. A measure of power in ideas is the extent actors standing for these ideas manage to depoliticize them so that they become widely accepted as if they were the only existing paradigm.

There are two underlying ideational assumptions in the resumption of the industrial policies in Brazil. On the one hand, industrial policies bring about much of the State's action in industrial transformation or industrial upgrading for the late industrialization countries. On the other hand, the making and implementation of industrial policies encouraged the construction of tripartite arenas, despite the weakening and risk of discontinuity. It starts from the assumption that the ideas and interests of strategic actors can explain governance problems in industrial policy as well as the swing between rentier behavior and industrial upgrading with innovation or technological learning.

Drawing on the survey results from the research project on the role of ideas in the coordination between state and business in industrial policies, the next sections present a brief conceptual review of industrial policies and an analysis of the ideational elements from business regarding these policies.

A brief discussion on industrial policies

In conceptual terms, industrial policy defines itself as the set of incentives and regulations associated with public actions affecting the inter – and intra-industrial allocation of resources by influencing the capital structure, conduct, and performance from economic agents. The discussion on industrial policies is very extensive and usually differentiates into different types of intervention.

Passive industrial policies seek to increase competitiveness by encouraging mechanisms to stimulate business competition through indirect public

instruments. These mechanisms seek to overcome market failures. According to this view, market failures occur when the free market is not efficient due to problems of scale, the presence of dominant firms or sectors (monopolies or oligopolies) or problems of information asymmetries. In sum, by addressing what might distort the market, this type of policy proposes the improvement of the business environment in order to boost entrepreneurial activities. On the other hand, active policies seek to act deliberately not only to solve specific problems arising from market failures, but also to strategically incentivize industrial development. The goal is to increase not only efficiency, but also competitiveness. In general, active intervention approaches usually set priority objectives, goals, and sectors, deploying a wide range of intervention mechanisms.

As of Schneider (2015), active industrial policies aim at changing firm behavior by using performance standards. The nature of this policy action requires not only appropriate incentives but also the ability to impose effective sanctions. However, effective sanctions imply less room of maneuver for business politics willing to circumvent the implementation of these sanctions. So being able to impose sanctions is extremely difficult in a highly fragmented political system such as the Brazilian.

Another way to classify industrial policies is to analyze the instruments and objectives sought. In this sense, horizontal policies seek to improve the performance of the industry integrally, without establishing priority sectors. It aims the improvement in the provision of public goods that would end up benefiting all sectors. In this approach, the environment in which entrepreneurs act must be given priority, privileging the efficiency of the institutions that affect the operation of the market.

On the other hand, vertical policies seek to encourage particular sectors or specific groups. Targeted selective sectors (*winners*), in general, due to its potential to generate innovation, income, and employment, increase the efficiency and productivity of the privileged sectors and the economy in general. The selection criteria usually take into account the real or potential impact of the sectors and can vary between privileging already developed industries with high impact on their added value, supporting industries with greater capacity for backward or forward linkages or promoting new

industries and with future potential. As for the instruments, they vary from different forms of regulation tending to the State acting as the arbitrator of the commercial competition process to different incentives, forms of promotion and protection (ECLAC, 2011).

Beyond its active or passive nature and its vertical or horizontal profile, the formulation and implementation of industrial policies (as with any sectorial policy) require the involvement of a variety of public and societal actors. In that sense, Rodrik (2007) raises industrial policies as a matter related to the circulation of information from the private sector about externalities and the potential ways to solve problems. He considers it necessary to promote a process of “self-discovery” in which entrepreneurs *vis-à-vis* agents of the public sector come to understand the nature of sector problems. Different theories (from the Rosenstein-Rodan big push to the selective investment of the new growth theories) consider that overcoming of specific or general problems of the different industrial sectors, the implementation of financing policies or the promotion of market demand the participation of a multiplicity of actors as necessary conditions for the industrial growth.

In that sense, industrial policy demands a high level of coordination between the state and firms. Rodrik (2007) himself presents a proposal to improve the quality of industrial policies which includes political leadership, the formation of discussion and coordination councils, and the deployment of different mechanisms of transparency and accountability.

The resumption of industrial policy in Latin America has taken place in the context of processes of reconfiguration of production regimes, which enhances the importance of intra and intergovernmental coordination. In the field of political science, the analysis of intergovernmental coordination tends to scrutinize the problems of coordination between the different government agencies (Weiss, 1987). In turn, the work on state capacities and policies has tended to highlight the importance of articulation between public and private decision-makers for the formulation and implementation of public policies (Gomide, 2014; Leftwich, 2009).

Table 1: Main distinctive features of industrial policies.

Active	Passive
Selective	Encompassing
More collaborative	'top down'
Productive transformation	Strengthening of current industrial structure
Horizontal	Vertical
Systemic	Specifically targeted
Public and private financing	Only public financing
Decentralized	Centralized
More intragovernmental coordination	More truncated
Strong Policy learning	Weak Policy learning
Use of knowledge infrastructure	Detached from knowledge infrastructure
Export-oriented	Domestic Market
Compliance with performance goals	Lack of performance goals
Strong building of organizational and technological capabilities	Limited building of organizational and technological capabilities

Source: Own authors' elaboration.

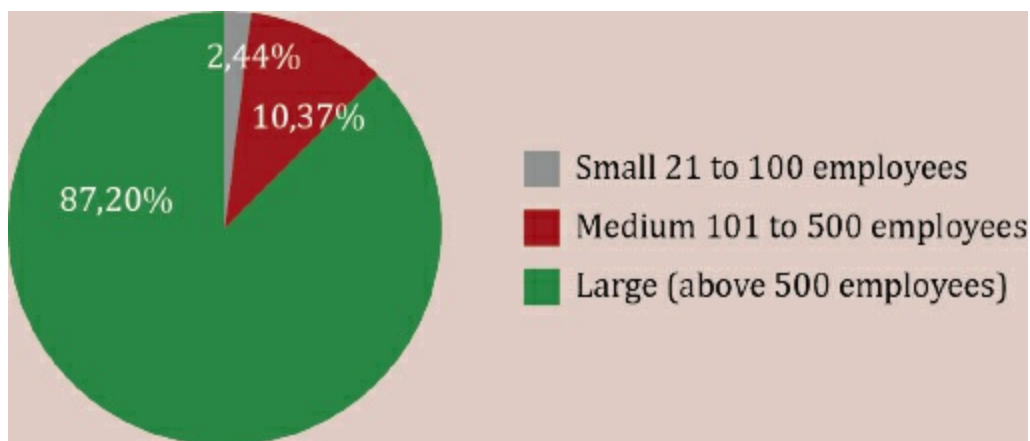
Ideational failures from the business side

The ideational failures consist of a lack of a coherent set of beliefs which undermine the support from business to an economic ideology (Bao, 1997) where innovation and catching-up are seen as the main engine of economic growth and development. Ideational failures curb the formation of the convention by which politicians, businesspeople, and the general public make sense of the economy and by which the economic actors form their expectations and preferences. As of Bao (1997), drawing on the Japanese experience, the paradigms of industrial policy and the state persuade the

economic actors to accept what the problem is and the following course of action. Of course, one could not expect a homogeneous shared understanding by businesspeople, but a minimum consensus towards the common problems that industrial policy should be addressing.

With the purpose of analyzing the ideational failures which undermine coordination in the industrial policies, there was a survey with several blocks of statements concerning normative values as well as statements defining what the problems are and how should they be addressed. The survey sample consisted of 164 firms. As for the profile of the sample, the year of the foundation of the sample firms varied from 1837 to 2010. The mode was the year 1972 with seven firms founded. As for the size of the firms, 2.4% were small, 10.4% medium-sized and 87.2% of large (Figure 1). It is important to highlight the prevalence of large enterprises as they tend to make more systematic use of instruments and programs related to industrial policies.

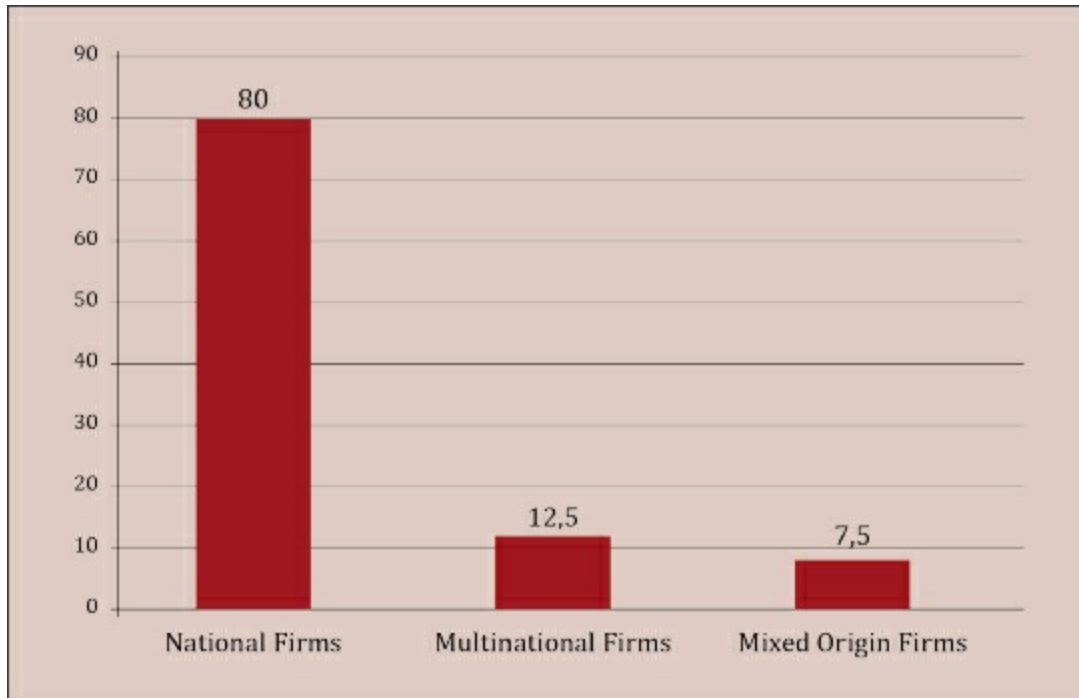
Figure 1: Firms size in the sample (%).



Source: Survey Research Grant 447.334/2014-0.

As shown in Figure 2, the vast majority of companies in the sample are national (80%). The second most frequent category is the foreign firms with 12.5% of the sample. The companies with national and foreign capital were 7.5% of the sample.

Figure 2: Origin of capital from firms in the sample (%).



Source: Survey Research Grant 447.334/2014-0.

The highest frequency for the product innovation of the sample companies are those that constitute a new product for the firm, but not new in the national or international market (48.2%). Firms that innovated in the national market account for 36% of the sample. In the case of innovations for the international market, 35.4% of the companies in the sample (Table 2). The intellectual property registry accounts for almost half of the companies in the sample (49.4%). The most frequent types of innovation were process innovations with 87% of firms have developed a new or acquired process. Next were the innovations related to the implementation of management tools and corporate strategies with 61% and 62.2% respectively.

Table 2: Types of innovation from firms in the sample (%).

Types of innovation	Yes	No	Do not Know
New product for the company	48,2	51,8	--
First in Brazil	36	51	4,9
First in the World	51,1	35,4	5,5
Register of Intellectual Property	49,4	45,1	5,5
New processes of production developed by the firm	87,2	12,8	--
New processes acquired by the firm	87,8	12,2	--
Occurrence of any substantial organizational change	60,4	39	0,6
Occurrence of any substantial marketing change	45,7	49,4	4,8
Implementation of new management tools such as CMM and ISO	61	37,2	1,8
Implementation of changes in the firm strategy	62,2	34,1	3,6

Source: Survey Research Grant 447.334/2014-0.

Macroeconomic policy and institutional environment

Tax burden comes as the most relevant macroeconomic variable with a mean

of 8.4, and it is regarded worse than the high-interest rates. According to the PwC Report “Paying taxes 2018”,⁴⁴ Brazil’s time the firms take to comply with tax regulations is 8.2 times the world average. Brazilian firms take, in average, 462 hours to deal with corporate income taxes and 1,161 hours to cope with consumption taxes. The costs for firms to develop new products and services are considered higher than in other countries with a mean of 8.1 on the agreement scale (Table 3).

Although, the shortage of finance to long-term industrial investment projects on a range of ten to twenty years is a structural limitation of Brazilian capitalism. The financial system is hugely concentrated in few private banks with very little competition. Of the twenty largest banks in Brazil, the first five largest banks account for 88% of the total assets, and the other fifteen remain with 12% of these assets (Valor 1000). These banks’ lending share to manufacturing firms is very low. However, the scarcity of funds for innovation due to low participation of private banks has a mean of 6.75 on a scale from ‘1’ to ‘10’, lower than the other variables.

Two critical variables for the institutional environment and little examined in economic studies on innovation and industrial policy have to do with the political system. With averages of agreement of 7.9 and 7.8, the interviewees highlight the problem of the fragmentation of the political system with the difficulties it creates for long-term public policies and the problem of the low representation of industrial firms in the Parliament (Table 3).

Table 3: Perception on the institutional environment and macroeconomic policy (mean).

	Mean
Tax burden is worse than high interest rates for manufacturing.	8.4
New product development costs are higher in Brazil than in other countries.	8.1
Brazilian political system with dozens of political parties provides incentives for the ‘pork-barrel’ politics blocking the long-term policies.	7.9
The interests from manufacturing are under-	7.8

represented in the Brazilian parliament.	
The main problem for the increase of productivity are the low investments in technology.	6.8
Credit money shortage is due to the weak presence of private banks with credit lines for manufacturing firms.	6.75
Strong Real is bad for manufacturing because it affects negatively the exports.	6.7
Interest rates fall when inflation is down in Brazil.	6.7
The cost of labour is worse than high interest rates for manufacturing.	6.6
The main problem for the increase of productivity are the labour costs.	6.6
Strong Real is good for manufacturing because it reduces the costs of inputs	5.8
Interest rates are high in Brazil because consumers' debts are high.	4.7
Exchange rate ups and downs is a minor problem for the Brazilian manufacturing competitiveness.	4.6

Source: Survey Research Grant 447.334/2014-0. Scale '1' disagree strongly and '10' 'agree strongly'.

The means below five concerning the statements on the interest rates reveal a slight disagreement with the economic mainstream argument that higher interest rates are due to a generalized risk problem. Also, exchange rate volatility is not considered a minor problem of Brazilian competitiveness. However, it is far from a strong disagreement. Tax burden, political system and the shortage of financing to industrial projects stand out as more relevant.

Based on a factor analysis of the items related to macroeconomic policy and the institutional environment, it was possible to identify five dimensions of this perception in the respondents' answers. Factor loadings above .500 separated the two key macroeconomic variables for manufacturing firms, the exchange rate, and the interest rate. The third dimension had only one

variable with a factor loading of .845 (Table 4). It refers precisely to the fragmented political system. The variables on the tax burden and the cost for the development of new products in Brazil came together with the variable on the political representation of industrial firms. One interpretation is the relation between themes of the state action and the institutional environment with the collective action of the business in parliament. Finally, two variables appear as problems for higher industrial performance. These are the cost of labour and the low investment in technology. The combination of both has a negative effect on industrial performance. The greater emphasis placed upon labour costs has probably to do with low productivity levels. Over the last fifteen years with changes since 2016, labour costs increase did match with stagnating and sometimes decreasing productivity levels.

Table 4: Factor analysis of the perception on the macroeconomic policy and institutional environment.

	Exchange rate	Interest rate	Political system	Taxes and political representation	Industrial performance
Interest rates are high in Brazil because consumers' debts are high.		.765			
Strong Real is good for manufacturing because it reduces the costs of inputs.	.615				
Interest rates fall when inflation is down in Brazil.		.790			
Exchange rate ups and downs is a minor problem for the Brazilian manufacturing competitiveness.	.767				
Brazilian political system with dozens of political parties provides incentives for the 'pork-barrel' politics blocking the long-term policies.			.845		
Tax burden is worse than high interest rates for manufacturing.				.700	
New product development costs are higher in Brazil than in other countries.				.646	
The interests from manufacturing are under-represented in the Brazilian parliament.				.785	
The cost of labour is worse than high interest rates for manufacturing.					.765
The main problem for the increase of productivity are the low investments in technology.					.608

Source: Survey Research Grant 447.334/2014-0. Scale '1' disagree strongly and '10' 'agree strongly'. KMO was .649 (adequate for an exploratory factor analysis) and significant at .000. Variance explained was 61.2%.

The role of the state as seen by the industrial firms

From Table 5, the three highest means of agreement belong to the operation of politics and its negative influence on the success of public policies. The interaction between government and private sector as essential for the success of industrial policies has a mean of 8.7. Then, the two variables with means of 8.3 and 8.2 are related to the perception that the public servants know little about the private world and inconsistent public policies which tend to be interrupted.

Although the recent period between 2003 and 2014 has experienced three industrial policies and numerous manufacturing support programs, discontinuity remains a theme. Even with a higher mean of agreement (8), the items include intragovernmental coordination and the need for a strategic economic development project. In the interviewees' perception of the companies in the sample, it is also worth noting something mentioned by Schneider (2015). That is, by using the fragmented political system with the direct relationship with parliament members, large economic groups make industrial entrepreneurs associated with clientelist relations.

Table 5: Role of the state and the industrial entrepreneurs (mean).

	Mean
Politicians who occupy government posts are more concerned in their own interests than in public interests.	9,0
The interaction between government and business is essential for the success of the industrial policies.	8,7
Financing from public banks is influenced by political and clientelist interests.	8,6
Government officials show little interest in getting to know the real needs of the private sector.	8,3
There is a lack of continuity in the government actions to support Brazilian industrial development.	8,2
Brazilian manufacturers are in need of a strategic project for the country's economic development.	8,1
Different government agencies have little interaction in	8,1

the implementation of actions and projects to support industrial development.	
Prioritizing private interests from large economic groups has a negative impact on manufacturing firms.	7,9
The increase of innovation in the country is not in the agenda from Parliament.	7,8
Financing from public banks creates distortions in the credit market for industrial projects.	7,6
Government procurement is seldom used to increase innovation in manufacturing firms.	7,6
The communication between the government and Brazilian manufacturers shows little willingness to dialogue.	6,8
Brazilian manufacturers are little organized to defend macroeconomic policies which contribute to a higher industrial competitiveness.	6,7
Brazilian manufacturers have a short-term view towards the investment projects.	6,6
Brazilian manufacturers are more concerned with the reduction of taxes than with technological development.	6,2
Brazilian manufacturers are more concerned with the reduction of labour costs than with technological development.	6,2
Financing from public banks needs to be replaced by private banks.	6,2
Brazilian manufacturers are too much dependent on the measures taken by the government.	6,1
Most of industrial firms seek to obtain fiscal incentives without raising the economic efficiency.	5,5
Brazilian manufacturers are not very innovative because they can make profit without innovation.	4,7

Source: Survey Research Grant 447.334/2014-0. Scale '1' disagree strongly and '10' 'agree strongly'.

In the interaction between business and the state, a fragmented political system has a negative impact upon the industrial councils because changes in government is usually consequential to the governance of the council by changing procedural rules and also the scope of the council public authority (Schneider, 2015). Also, the weak collective action from business parallel to a strong political influence from large economic groups in their individual action hollows out the power and legitimacy from industrial councils.

As in Table 6, there are four dimensions on the role of the state. The first is related to features of industrial firms that reveal the low propensity to innovate. The four variables in this dimension have factor loadings above .600. The highest factor loading refers to the emphasis on reducing the cost of labor at the expense of technological development. The second dimension related to state bureaucracy has three variables. The variable with the highest factor load relates to intragovernmental coordination. It is followed by the little embeddedness of the state bureaucracy with a factorial load of .720. The third dimension concerns financing. The three financing variables unveil a critique of the little presence of private banks in the financing. There is a tacit perception that the private financial system should and could do more to finance private manufacturing firms (Table 6).

Table 6: Factor analysis of the role of the state and industrial entrepreneurs.

	Firms attitude	Government procurement and bureaucracy	Financing	Time horizon
Brazilian manufacturers are not very innovative because they can make profit without innovation.	.673			
Brazilian manufacturers are more concerned with the reduction of labour costs than with technological development.	.780			
Brazilian manufacturers are more concerned with the reduction of taxes than with technological development.	.697			
Most of industrial firms seek to obtain fiscal incentives without raising the economic efficiency.	.677			
Brazilian manufacturers have a short-term view towards the investment projects.				.608
There is a lack of continuity in the government actions to support Brazilian industrial development.				.620
Government officials show little interest in getting to know the real needs of the private sector.		.720		
Different government agencies have little interaction in the implementation of actions and projects to support industrial development.		.745		
Government procurement is seldom used to increase innovation in manufacturing firms.		.676		
Financing from public banks is influenced by political and clientelist interests.			.663	
Financing from public banks creates distortions in the credit market for industrial projects.			.690	
Financing from public banks needs to be replaced by private banks.			.765	

Source: Survey Research Grant 447.334/2014-0. Scale ‘1’ disagree strongly and ‘10’ ‘agree strongly’. KMO was .818 and significant at .000. Variance explained was 53.6%.

Tools of Industrial policy

As it can be seen from Table 7, the industrial policy instruments with the highest percentages in the high importance response category are those related to tax incentives in general as well as fiscal incentives to research and development and investments on training and interest rates with the highest percentage (79.2%). Following this, the exchange rate policy enters with 69.2% and funding of basic research in universities (64.8%).

The fact that two macroeconomic variables (interest rates and exchange rates) stand out as highly important policy tools reveal what Herrera (2011) calls the problem of implicit policies. Latin American science and technology have a strong implicit component which is unstructured, informal, but express the real interests at play. With macroeconomic conditions unfavourable to manufacturing, the innovation policies formally designed, even when effectively implemented, tend to fail in their effectiveness.

This situation produces a paradox of innovation or industrial policies that are well designed and have the appropriate resources, but unable to foster innovation (Cassiolato & Lastres, 2014). The paradox is well explained by Erber (2011) when he mentions the contradictory co-existence of two development conventions during Lula's Government. One is a neoliberal or austerity convention in the macroeconomic policies, and the other is a neo-developmental convention in the industrial and social policies. It is worth reminding the conceptual interweaving between the concept of a convention as put forward by Erber (2004) and the role of ideas in policy. According to Erber (2004: 37), "the "view of development" may be profitably treated as a "convention", a set of beliefs shared by decision-makers and used to identify the main issues which a development strategy has to tackle and the appropriate means to address such issues.

The highest percentages of low importance are regulated prices (28.6%), equity participation through pension funds and investment funds (21.3%), increased regulatory requirements concerning products (20.6%).

Table 7: Degree of importance from policy tools.

	High	Medium	Low
Intellectual Property Rights.	58,4	37,9	3,7
Price regulation	32,9	38,5	28,6
Exchange rate policy	69,4	29,4	1,3
Interest rates	79,2	17,0	3,8
Fiscal incentive	78,9	16,8	4,3
Financing from basic research in the universities	64,8	32,1	3,1
Fiscal incentives for Research and Development	77	19,9	3,1
Fiscal incentives for investments in vocational training	75,9	19,8	4,3
Credit to export	48,4	41,6	9,9
Public Procurement Policy	33,1	47,1	19,7
Increase regulatory requirements to the products	27,5	51,9	20,6
Consulting arenas to increase interaction between government and business	41,9	47,5	10,6
Monitoring and evaluation to measure performance from those companies benefiting from industrial policies	63,1	33,8	3,1
Stock holding through pension and investment funds.	21,3	56,8	21,3

Source: Survey Research Grant 447.334/2014-0.

The most used organizations and financing instruments are BNDES (56.7%), Banco do Brasil (45.1%) and Caixa Econômica Federal (31.7%). FINEP, as an agency focused on innovation financing, appears in fourth place with 29.9% (Table 8). Public procurement and national content policies were deemed ineffective. In the case of public procurement, a highly bureaucratic legal framework caused severe difficulties to carry out procurement based on innovation and quality criteria rather than price. In the case of national content, large industrial buyers, especially MNEs, saw it as a barrier to their global sourcing and sometimes deployed their purchasing power to dissuade

local firms from offering their products.

Table 8: Organizations in the financing of industrial development.

Type of organization	Know and used the services	Only know	Do not know
BNDES	56,7	43,3	---
FINEP	29,9	53,7	16,5
APEX	9,8	48,8	41,5
Banco do Brasil	45,1	54,9	--
Caixa Econômica Federal	31,7	65,9	2,4
BID	6,1	77,4	16,5
Fundos Setoriais do MCTI	7,9	44,5	55,5

Source: Survey Research Grant 447.334/2014-0.

About the experience of the sample firms with the use of these agencies, there is a higher agreement with the bureaucratic obstacles to access the financial resources with an arithmetic mean of 7.4 stands out. The conditions of the loan and the coherence between the agencies' call for proposals and the needs of the firm are seen more positively as shown in Table 9. According to an interviewee from the Movimento Emprearial pelo Inovação (MEI), the main problems in the industrial policies were governance and financing. Although, there has been relative plenty of financial resources to finance investment projects and innovation projects during the time.

Table 9: Perception on the effectiveness of the organizations.

	Mean
Call for proposals from these agencies are not suitable to the needs of our company.	4,7

Access to financial resources from these agencies are very bureaucratic.	7,4
The cost of loan is higher than loans from private financing.	3,9

Source: Survey Research Grant 447.334/2014-0. Scale ‘1’ disagree strongly and ‘10’ ‘agree strongly’.

Conclusion

Concerning the role of ideas in the coordination of industrial policies, the ideational failures help to explain the diminishing support from business to industrial policies as recently seen in the political shift in Brazil. Political variables as the level of fragmentation from parties and representatives encourage policy short-termism and undermine the collective action from business. With a political system conducive to “pork and barrel” politics, it is extremely difficult to reach consensus on less electorally sensitive issues such as industrial policies.

As macroeconomic policies become so interwoven with industrial policies, it is hard to assess the specifics of the latter. It resembles the claim that peripheral capitalist countries have to struggle to solve problems pertaining to different phases from capitalist development. At the same time, the macroeconomic problems produce the wrong incentives encouraging firms to avoid the risky innovation and search rents from other business opportunities, sometimes politically created opportunities. A coherence between industrial policy and macroeconomic policy was never achieved.

A substantial disincentive to innovation and also a significant obstacle to having private banks finance industrial development is the public debt with its high-interest rates. Lending money to the government at virtually no risk is indeed a very attractive opportunity for banks and investment funds.

There are some lessons related to ideational failures able to be drawn from the trajectory of these policies. For instance, encompassing a wide array of

industries was not related to an idea of industrial policy, but a political calculation to galvanize support from business in general. With a shorter time-horizon, they were long-term policies oriented to transform the industrial structure.

When being a selective type of policy, the selective nature of the industrial policies cannot depend on the preferences of business but must be a government choice. Only the government has the long-term rationality needed for industrial development as a whole. However, this power of government to choose the target industries is dependent on the political system and its supporting coalitions. As a consequence, strong political bargaining around the industrial policy undermines its initial goals.

One example was the PITCE. It was a modern vision of industrial policy relying on the connection between industrial and technological policies. However, there were several perspectives from those engaged in the design of this policy. The initial idea from the Minister of Industrial Development and Foreign Trade, Luiz Fernando Furlan, was not a selective industrial policy for PITCE in contrast to the view from IPEA and its president Glauco Arbix.

The loss of legitimacy from industrial policies was a severe detrimental consequence because it will take a long time to recover the good reputation of such policies in Brazil.

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On February 19, 2019, in the same week when this book was on publishing, the French and German ministers of economy jointly launched a “Manifesto for a European industrial policy fit for the 21st Century” (Bundesministerium für Wirtschaft und Energie and Ministère de L’Économie et des Finances, 2019). That was not a minor development, and it comes with much significance. One can also disagree with their contents or even with their need, applicability and impacts, but it is hard to deny that industrial policies are fashionable, again.

The European announcement is a reaction to a fast-changing global landscape that challenges the leading economies in the continent and the companies based there. The United States and China are the two indisputable leaders in research and development in the globe today and are taking measures to strengthen their competitive positions further. While European companies have strong positions in precision mechanics, complex manufacturing products and high-end consumer goods, it is pretty clear the continent is lagging behind in the so-called platform economy, in technology areas like Artificial Intelligence and entrepreneurship. Europe wants a new industrial policy to play catch-up, a policy intended to have a strong focus on innovation, research and development, technology and large-scale initiatives.

A connected and super relevant discussion is about the nature of industrial policies in today’s world. There is no room for doubt: they have to be about innovation. Gaitán & Balestro draw attention to this aspect in the Introduction, and the final session of this chapter goes deeper into this topic. The importance of innovation as a driver for industrial development and growth (OECD, 2015) is not a novelty and has been widely analyzed and discussed in the contexts of countries such as Brazil and Argentina (De Negri & Turchi, 2007), whose industrial policy experiences were reviewed in the previous chapters.

At the very same time when this book was about to be published, the Brazilian National Confederation of Industry (CNI) released data on the state of manufacturing in the Country (Bergamo, 2019). The results show that, as of March 2019, manufacturing responded for 11.7% of Brazil’s GDP, the lowest point ever since 1947. In a nutshell: the efforts to promote industrial

(and manufacturing) development and growth in the country have failed. Why has that happened? What is behind the trajectory of Brazil's manufacturing sector? To what extent were the recent industrial policies related to that? This book was not designed to answer such questions, and the causes for Brazil's decline in manufacturing go beyond the industrial policy realm. Notwithstanding, there is a lot to be learned from the recent industrial policy cycle, and the analyses in this book provide useful insights on what is needed for industrial policies to work, their limitations and some of the root causes for the here reported transformation in the manufacturing sector.

Before we turn to the lessons learned and review the main findings of the different chapters, it is essential to call attention to what is meant by industrial policy. As the reader may have noted, we draw a distinction between industry and manufacturing development in the previous paragraph. There are few definitions offered along the book for industrial policy, but further clarification seems to be needed, as well as a reflection on the different cases covered in this book.

A variety of industrial policies

Industrial policies are full of controversies around the globe, and the understanding on their necessity and impacts depends typically on the affiliation of the analyst to one or another school of thinking, as it is the case in social sciences in general. However, most of the controversy is a result of misinformation and the lack of careful analysis. As Dani Rodrick (2008) wrote, the discussions on industrial policy need to be “normalized.” The question should not be *whether* the government should act to promote industrial development or not, but rather *how*.

One of the tricky things about ‘industrial policies’ is that there is not a shared and widely disseminated understanding of their meaning. “Industrial policy” can mean different things to different people and it usually does. This polysemy has many practical implications.

De Toni & Gaitán offer a well-elaborated theoretical debate on the matter in

Chapter 5. The authors adopt the definition proposed by Johnson (*apud* De Toni & Gaitán, 2019): “(...) industrial policy means initiating and coordinating government activities to leverage the productivity and competitiveness of the entire economy and specific industries that are part of it (...)”.

In chapter 6, Balestro & Gaitán quote Ferraz *et al.* (*apud* Balestro & Gaitán, 2019) to conceptualize industrial policy: it “(...) defines itself as the set of incentives and regulations associated with public actions affecting the inter – and intra-industrial allocation of resources by influencing the capital structure, conduct, and performance from economic agents.” All over the book, there are complementary definitions, and different aspects and features associated with ‘industrial policies’ are mentioned and presented.

In short, all definitions agree that industrial policies are government initiatives to promote the development of a particular industry or a set of industries. They are not limited to manufacturing, can and increasingly involve industries, not in the manufacturing domain. Other than that, there are relevant differences in the industrial policies across countries and periods in history. A variety does exist.

Are industrial policies related to the economy as a whole? To the manufacturing sector? To specific industries? Do they aim to improve existing industries or create new ones? There are different ways to respond to these questions and many others, as industrial policies are multi-dimensional, can assume many characteristics, have different objects, approaches, goals, and focuses. Balestro & Gaitán list in Chapter 6 the main distinctive features of industrial policies and provide a framework to think about and compare them.

This book was imagined around the idea that its main topic is a complex one – many perspectives and aspects are intertwined, mixed, combined, connected when the subject comes to industrial policies. The assumption is that it is vital to make sense of such complexity and shed light on the lines of thinking that presided the design and implementation of different breeds of industrial policies. This is what untangling industrial policies is about.

The cases analyzed in the book cover two nations and different periods in history, not just the most recent industrial policy cycles. The set of policies reviewed come in different flavors and stem from different concepts.

When originally conceptualized (Hamilton, 1971), industrial policies were integrally about “manufactures”. It is not the case anymore, and manufacturing policies alone are a particular case of industrial policies or a subset of them, as already discussed. The reasons for that include technology growth, the complexification, and expansion of global value and supply chains, the increasing interconnectivity and interdependence of services and manufacturing (the transformation of physical objects) activities, as illustrated by Locke & Wellhausen (2014). The trends associated with those drivers can be expected to continue and accelerate.

Rodrik (2008) makes the point that industrial policies must possess three key attributes: embeddedness, carrots-and-sticks and accountability. Embeddedness is closely related to the setup of institutions and public-private alliances. According to the same author “(...) the right model for industrial policy is a strategic collaboration between the private sector and the government with the aim of uncovering where the most significant obstacles to restructuring lie and what type of interventions are most likely to remove them” (Rodrik, 2004).

Delgado exemplifies in Chapter 2 one of such alliances, in the specific case of the Brazilian pharmaceutical and health industries. That is an emblematic case because of several aspects, including the localization of policy decisions and tools in the Brazilian government structure and its forward-looking perspective. That is, its perspective towards the development of new capabilities, technologies, products, businesses, in the same sense as proposed by Rodrik (2008). Even if localized, the results were positive. This was not the general case, nevertheless.

In general, the recent industrial policy experiences in Argentina and Brazil fell short of the promises initially associated with them and the expectations they raised. Why has that happened? The reasons can be conceptually be broken down into three main possibilities: (i) policy content; (ii) policy implementation; and (iii) aspects beyond the realm of industrial policies – the

macroeconomic environment, the political system, and economic cycles. The cross analysis of the experiences discussed in previous chapters reveals some important lessons related to these three dimensions.

Industrial policies in review: what can be learned?

Brazil and Argentina are coming from behind and followed similar trajectories in developing their economies and manufacturing sectors. Both countries went through imports-substitution periods and, more recently, have been flipping between moments when explicit industrial policies are in place, and others, when hands-off economic approaches prevail – even in those situations, some sort of government initiatives to support industry, are present.

As commented in the previous sessions, we endorse the idea that the time has come to “normalize” (Rodrik, 2008) the conversation on industrial policies. To do that, it is necessary to learn from past experiences, and we believe this work can contribute to that objective. The conclusions in previous chapters allow us to identify eight main ideas.

- i. **Well-functioning macroeconomic environments are needed for industrial policies to work properly.** Looking as back as to the 1960’s Gomes & Pinho (Chapter 1) identified macroeconomic conditions as one of the main aspects blocking the achievement of industrial policy results during the ‘export-oriented period’ in Brazil. Delgado (Chapter 2), De Toni & Gaitán (Chapter 5) and Balestro & Gaitán (Chapter 6) get to similar conclusions when they analyze the most recent cycle. Kulfas (Chapter 4) points to the difficult to articulate long-term strategy, the element at the core of any industrial policy, with short term volatility. If macroeconomic stability is not in place and macroeconomic levers are at extreme values, industrial policies become simply mitigatory or “compensation for macroeconomic hostility,” as put by De Toni & Gaitán (Chapter 5) – as said in Portuguese, they would serve just to “*enxugar o gelo*” (dry the ice), that is, would be resource-consuming but useless efforts. It is the case of countries that keep high-interest rates in order to deal with their macroeconomic imbalances and, at the same time, provide subsidized credit as part of their industrial policies;
- ii. **Political stability and some type of long-term component in government initiatives are conditions for industrial policies to achieve meaningful results .**

Industrial policies are and should be long-term oriented. While economic and political contexts can change over time and different political parties come into power, industrial development policies and strategies require a certain continuity to render fruits. Although the analysis made by Delgado in Chapter 2 on the political turbulence Brazil seems premature and more informed by ideology than factual analysis, the author certainly has a point when he comments on the negative impacts that such turbulence had in the economic environment and the effectiveness of the industrial policy. Going beyond that, Balestro & Gaitán highlight in Chapter 6 that even under the same party, there were relevant discontinuities in the industrial policies implemented in the recent Brazilian cycle. For the sake of comparison, in the US, the Trump Administration continued and even reinforced advanced manufacturing initiatives initiated in the Obama Administration, launching a Strategy for American Leadership in Advanced Manufacturing (U.S. NATIONAL SCIENCE AND TECHNOLOGY COUNCIL, 2018). Countries like Argentina and Brazil seem to have a long way to go to achieve that level.

- iii. **The incapacity to tackle systemic competitiveness issues makes industrial policies more complex to design, short-sighted, less effective and weak.** Delgado calls the attention in Chapter 2 to an unsolved problem: the Brazilian tax system puts a burden on investment and production. On the matter, it is also worth noting that Brazil possibly has the most complicated tax system in the world and, in average, is the country where companies spend more time to be compliant (WORLD BANK & PCW, 2018). Balestro & Gaitán reveal in Chapter 6 that the central macroeconomic aspect that concerns industry in Brazil is related to the tax system – the three top key issues are taxation, the political system and the shortage of finance. The Brazilian Federal Government has not been able to coordinate positions with state governments, industry and society in general to reform the country’s tax system – a tax reform has been a critical topic in the agenda for years, but coalitions to support it and political conditions needed to enable it are not in place. In the face of such situation, the Brazilian Government opted for localized, industry-specific and sometimes casuistic solutions, via tax exemptions. Instead of solving the problem, this approach adds new layers of complexity and makes government structures more susceptible to capture. In the long run, it undermines the credibility of industrial policies, as Balestro & Gaitán note, and make them less strategic, less about the transformation of the productive structure, more about mitigating systemic failures and focused on the short term. The focus on “short term demands” is not new, as Gomes & Pinho recount in Chapter 1, and remains a critical challenge.
- iv. **Governance mechanisms are essential to align positions between state and industry.** The possibilities for industrial policies (and any other policies) to succeed are in significant part determined by the capacity of governments to coordinate positions with firms and business entities, as Rodrik (2004) wrote and Balestro & Gaitán stress in Chapter 6. De Toni & Gaitán comment in Chapter 5 about the

relevant roles played by forums such as the National Council for Social and Economic Development (CDES) and the National Council for Industrial Development (CNDI), as well as the initiatives led by the Presidency-linked think-tank NAE, in shaping the content and creating favorable conditions for the approval of critical industrial policy measures in the early 2000s in Brazil. De Toni (2013) reveals that CNDI lost momentum in 2007, insulating policy design and concentrating power in the hands of traditional players within the government structure.

- v. **Coordination is a significant challenge for industrial policy initiatives.** One can hardly overstate the importance of coordination. In some way, failures in the coordination of efforts across government branches and agencies, and between government and private sector players, were highlighted in all chapters. Analyzing the case of Argentina, Kulfas comments in Chapter 3 about the “(...) lack of inter-institutional coordination, the overlapping of objectives and the lack of global development strategies”. In short, initiatives abounded, coordination was in short supply. Delgado mentions in Chapter 2 that Brazil’s National Industrial Development Council (CNDI) was weak and only functioned well for a limited period. In chapter 6, De Toni & Gaitán also highlighted the importance of coordination and called the attention to the role that CNDI played during the PITCE period, fading away after that. In Chapter 7, Balestro & Gaitán show that there is a strong perception in the industry that “(...) different government agencies have little interaction in the implementation of actions and projects to support industrial development”. It should come with no surprise that, as of today, the main forum to coordinate long term thinking and actions related to industrial development in a Country like Brazil is the “Entrepreneurship Mobilization for Innovation” (MEI), an initiative led by the National Confederation of Industry (CNI), not the government.
- vi. **Industrial policies are evolving, but such a process is uneven, subjected to backtracks and dependent on the interplay of political forces in society.** The implementation and design of industrial policies stem from world views – *weltanschauungs* – of the leading players in government and nuclei of power in industry and society. As Delgado notes in Chapter 2, in order to drive a future-oriented policy, it is essential to identify and build alliances with the nucleus/nuclei of the economy oriented towards innovation. De Tony & Gaitán (Chapter 5) came up with a great tagline to characterize the recent industrial policies in Brazil: “from ideas without support to support without ideas” – while the so-called PITCE put more emphasis on horizontal measures and innovation, PDP and PBM had a more traditional approach and strong vertical focus. PITCE was more forward-looking than the policy versions that came later but had less support. The difficulties in coordinating positions and build consensus are illustrated by Kulfas (Chapter 4) at a broader scale when he comments on the contradictions between the manufacturing and the natural resources (food production) sectors in Argentina.

- vii. Industrial policies need contemporary tools, strong and capable institutions.** Delgado noted in Chapter 2 the limitations of the institutions created to support the design and implementation of the Brazilian industrial policy in the early 2000s, namely the Brazilian Agency for Industrial Development (ABDI) and the National Council for Industrial Development (CNDI). Building on the assessment made by Suzigan & Furtado (*apud* De Toni & Gaitán, 2018), De Toni & Gaitán conclude in Chapter 6 that traditional institutions and the lack of government capabilities characterized the industrial policy setting, hindered coordination and constrained impact. May, Nölke & Schedelik note in Chapter 3 that “(...) in large parts, BNDES acts as an autonomous bureaucracy, in the Weberian sense (...)”, It is a seasoned and highly skilled professional organization, in contrast to other policy players. It is evident that new generations of industrial policies require new skill sets, toolkits, and institutions. A power shift in policy processes accompanied the transition “(...) from ideas without support to support without ideas (...)” commented by De Toni & Gaitán. The shift was from young and weak government bodies to a long-established and professional structure – one that, despite the modernization efforts and the qualification of its professionals, was designed to deal with the industrial development challenges of the 1950s and 1960s.
- viii. Sustainable industrial development requires new funding sources and financial tools.** Access to long-term finance is a critical bottleneck for countries like Argentina and Brazil. In Brazil, BNDES has been the primary funder for investments across a variety of sectors and industries and played a critical role in the recent industrial policy cycle, as observed by May, Nölke & Schedelik in Chapter 3. Kulfas reminds in Chapter 4 that segments in the Argentinean Industrial Union (UIA) asked the Government to re-create the National Development Bank (BANADE), a demand that that was not accepted, but had a public sector response through a more active participation in the economy by the Investment and Foreign Trade Bank (BICE) and the *Banco de la Nación*. In Brazil, the survey presented by Balestro & Gaitán in Chapter 7 shows that manufacturing companies expect a more active role of private banks in funding industrial development and less political influence in government-owned banks. In countries like Argentina and Brazil, where macroeconomic imbalances persist, the presence of development banks in the economy is highly sensitive. In Brazil, BNDES is undisputedly the most known and utilized government agency involved in financing industrial development, as Balestro & Gaitán also revealed. Nevertheless, a greater focus on innovation, present in different degrees in recent industrial policies, requires increased private sector participation and new types of tools, beyond those traditionally used to support capital expenditures in manufacturing facilities and equipment. Public banks will continue to be relevant for economies like Brazil, as pointed by May, Nölke & Schedelik in Chapter 3, but future development will demand new frameworks and institutions in order to expand private sector participation. The presence of government-owned development banks should be a driver to crowd-in private sector presence, as suggests Studart (2018), never the

opposite.

As a summary of the ideas, it is fair to say that industrial policies do not exist in the vacuum, they operate within the broader economic and political contexts. In order to increase the chances of causing real impact, industrial policies require positive macroeconomic environments and political stability, as expressed in (I) and (II).

They should not try to solve locally, at the industry level, issues that are systemic and affect the whole economy – see (III). We coincide with the notion proposed by Rodrik (2004) that industrial policies should essentially be about economic transformation – in economic terms, this means that existing industries generate the resources that are needed fund the investments to build new ones. This type of intertemporal coordination is only possible if government and future-oriented industries and segments of the economy collaborate, as suggested in (IV). Coalitions not only shape policy content but also create the political conditions to support implementation.

In addition to external support, industrial policies require a lot on intra-government coordination. Internal coordination is a challenge that governments need to face head-on as proposed in (V). This is particularly important and sensitive for countries like Argentina and Brazil. Industrial policy toolkits need to be updated to fit the technology, business and economic realities of the 21st Century, as suggested in (VII) and (VIII). Toolkits should be dynamic and engineered to invite and create the conditions for private sector participation in all sectors of the economy.

The industrial policy evolution process is subjected to the political dynamics of society, as observed in (VI) and dependent on the types and quality of the public-private alliances in place (IV). It is also affected by the broader economic and political context (I, II and III) and legitimized by the capacity that government has to coordinate initiatives and deliver policy results as in (V).

The knowledge systematized in this work can serve as an input for future research and debate. It can also help industrial policy practitioners to think

about some the issues they face and the critical decision areas to which they need to pay attention. The final session that follows includes suggestions for those interested in the design and implementation of future policies.

What is next for industrial policies?

Industrial policies always involve some government intervention in the economic domain. All over history, economic, industrial and manufacturing development resulted from a combination of public and private sector initiatives, as the World Economic Forum (2015) highlights. It will continue to be the case.

While this book offers analyses and insights on past policies, it does not cover the full spectrum of issues to be addressed in the design and implementation of future ones. As the global economic landscape changes and transformations accelerate, contemporary industrial policy exercises will need to have a renewed look at and give more emphasis to:

1. Policy content;
2. Institutional experimentation;
3. Data utilization in policy processes;
4. Government coordination;
5. Government capabilities and setup.

Old strategies and policies, tools and institutions have limited chances of success in the 21st Century complex, globally-connected, and technology-intensive economic landscape. **The time is ripe for new policy content**, to shift focus from market protection to capabilities development, from traditional industries to new ones, from 20th Century government toolkits to contemporary ones, from government ownership of companies and research organizations to public-private partnerships, from strict emphasis on local markets to internationalization – of workforce, companies, markets. Future industrial policies can be expected to put more emphasis on innovation and internationalization capacity and activities, focus on technology development,

highlight the ‘sustainability opportunity’ as a driver for future growth (LÜTKENHORST, ALTENBURG, PEGELS & VIDICAN, 2014) and characterize themselves by a high degree of interdependence with other policies or strategies. This is the case of a new breed of manufacturing strategies emerging around the globe, most of them being launched by advanced nations.

Technology growth powers a new breed of manufacturing strategies and policies

A few decades ago, manufacturing was fleeing to Asia, mainly to China – the globalization of the 1990s and early 2000s was much about manufacturing offshoring, particularly in the United States. There is evidence that this is not the case anymore. There is a manufacturing revival across the world, including and especially in advanced economies.

This new manufacturing era is even more powered by science and technology. A series of surveys like the Global Manufacturing Competitiveness Index (DELOITTE TOUCHE TOHMATSU AND COUNCIL ON COMPETITIVENESS, 2016) make it very clear: global CEOs understand and say that advanced economies are gaining competitiveness in manufacturing. From a strict manufacturing perspective – that is, without the consideration of any geopolitical reasons – the key drivers for that are the growing understanding of the linkages between innovation and manufacturing and the availability in advanced nations of human resources trained in science, technology, engineering and mathematics (STEM). As manufacturing becomes increasingly intensive in technology, it requires new and advanced skills, which by their turn simultaneously enable innovation in manufacturing and the deployment of manufacturing operations.

Technology growth and acceleration (Berman & Dorrier, 2016) are the main drivers for the emergence of a new manufacturing era. Governments,

consultancy companies, industry, think-tanks and policy organizations are writing, talking about and professing this new surge in manufacturing. Terms such as “advanced manufacturing,” “industry 4.0” and “4th industrial revolution” (Schwab, 2016) have proliferated.

This renewed interest in manufacturing arises not from the dissemination and adoption of one specific technology but, rather than that, the convergence and integration of different technologies. It also happens in a context in which manufacturing comes increasingly bundled with services and the flow of materials is inextricably linked to data and information.

The political coalition in power in Germany identified the industry 4.0 initiative as essential for the Country’s competitiveness in mechanical engineering, providing support and funds to the Platform Industrie 4.0 (PLATFORM INDUSTRIE 4.0). In the United States, the Obama Administration launched the Advanced Manufacturing Partnership (White House, 2011) and conceptualized a network of advanced manufacturing centers (Sargent, 2015), which was approved by Congress and launched in 2014. The initiative resulted in the establishment of fourteen public-private manufacturing institutes all across the US. The Trump Administration continued such efforts, connecting programs, integrating information in platforms such as <Manufacturing.gov>, emphasizing the commercialization of federally funded R&D and launching a new Strategy for American Leadership in Advanced Manufacturing (U.S. NATIONAL SCIENCE AND TECHNOLOGY COUNCIL, 2018). This continuation of efforts across U.S. administrations constitutes a good example of the network development model introduced by Wade (2014).

Besides the US and Germany, many other countries have recently launched (advanced) manufacturing strategies, policies, and initiatives. Australia (DEPARTMENT OF INDUSTRY, INNOVATION AND SCIENCE), Canada (GOVERNMENT OF CANADA, 2018), China (Tse & Wu, 2018), France (ALLIANCE INDUSTRIE DU FUTUR, 2015), Italy (Firpo, 2019), Malaysia (GOVERNMENT OF MALAYSIA, 2018), Sweden (GOVERNMENT OFFICES OF SWEDEN, 2016), the UK (GOVERNMENT OF THE UNITED KINGDOM, 2017) and other cases in the European Union (EUROPEAN COMMISSION, 2017) are just some

of the examples. In general, they all combine focuses on traditional (e.g., apparel) and emerging (e.g., biomanufacturing of human organs) manufacturing areas. The logic is simple: upgrade and transform existing industries, build new ones. They all want to leverage the potential of technology to drive innovation, value creation, and growth.

There are two main policy goals for this new breed of manufacturing strategies and policies: (i) to accelerate the adoption of advanced manufacturing technologies and business models, raising productivity levels economy-wide; and (ii) to build an edge in crucial technology domains and, thus, dominate future global markets in the manufacturing space – like the German Industrie 4.0 platform case exemplifies. The balance between the two varies from country to country. Government action is essential for the two goals, but particularly in the second case.

Countries need to build capabilities and control critical research and business assets in order to be dominant players in advanced manufacturing. As a result of that, it is impossible today to separate manufacturing from innovation, science and technology policies and strategies. The bigger the manufacturing ambitions, the stronger the linkages are.

We have expanding evidence that the different sectors of the economy are becoming more connected, interdependent and blurred, challenging the traditional classifications for economic activities. A similar logic is valid for government policies and operations. There is a blurring in the policy space.

Manufacturing, science, technology, innovation, digitalization, internationalization, ‘greening’, development and future growth are all mixed in today’s policy landscape. The recently announced Korea’s ‘Growth Through Innovation’ Plan (MINISTRY OF ECONOMY AND FINANCE OF SOUTH KOREA, 2018) provides a good example: it includes investments in specific technologies, skills development, manufacturing capacity and a range of application areas. A look at different national AI strategies also reveals lots of intersections with manufacturing and other traditional policy areas. As all those dimensions and perspectives come together, coordination within government structures

and between them and society will become more critical for industrial policies, whatever the names they are given.

The concepts that most people have on policy processes and the models that practitioners themselves use to communicate have little resemblance to what happens in practice. In reality, policy processes are recursive, even chaotic, not linear and policy-making systems are complex systems (Peters, 2018). Adaptability is a key attribute and industrial policies, like others, need to evolve and take into account the transformations in the economic landscape. An element of novelty in today's reality is that not just policies, but institutions, are demanded to adapt quicker than ever before.

It is well-documented that technology adoption in society (MacGrath, 2013; Desjardins, 2019) and technology growth are accelerating (Berman & Jason, 2016). We also have evidence that the lifespan of companies is decreasing. These combined trends pose new challenges to institutions at several levels and industrial policies in particular. Institutions always had to adapt to respond to technology change and new business models, but in the past they much more had time to do that; they don't anymore.

Considering Rodrik (2004) premise that industrial policies should be about promoting the creation of new things (products, businesses, industries...), how can countries – and states, regions and cities – create the institutional frameworks that allow for that in a time of speedy technology evolution? The answer has to do with institutional experimentation.

Regulatory sandboxes can accelerate and lower costs of innovation

Countries that aspire to build new industries need capital, expertise, business structures and institutions that allow for experimentation. The case of autonomous vehicles provides good examples of the nexus connecting new technologies, institutional change and industry transformation, at the national and state/local levels.

Canada was one of the first countries to establish a testing ground for unmanned aerial vehicles: the Foremost Airspace for Unmanned Systems (Canadian Centre for Unmanned Vehicle Systems), in the Province of Alberta. Companies are testing and developing the so-called ‘drones’ there (Stephenson, 2017) and, importantly from a competitive perspective, not doing so in other places. Amazon has research and development teams working on drones in Canada (Pilkington, 2015) and the UK (Wingfield & Scott, 2016), but initially faced barriers in the U.S.

In the US, the Department of Transportation (U.S. Department of Transportation) has launched 10 testing grounds for autonomous road vehicles and a series of state initiatives are also in place. Among others, the State of Arizona has created a regulatory framework (STATE OF ARIZONA, 2018) to support the test of autonomous vehicles and authorized tests in public roads back in 2015 – this is one of the main reasons because of what companies such as Uber and Alphabet’s Waymo have important R&D and testing operations in Arizona. Recently, the State launched a public-private partnership with Intel and three universities to implement an Institute for Automated Mobility (Randazzo, 2017). Several states in the U.S. are following similar paths (NATIONAL CONFERENCE OF STATE LEGISLATURES, 2018).

The autonomous vehicles case is not unique. The same logic applies to other technology domains and nascent industries based and/or powered by biotechnology, AI, nanotechnology, neurotechnology, robotics etc. Cities, regions and countries that are able to create innovative institutional frameworks for the controlled test and deployment of products and services that use new technologies will increase their chances of having research and development facilities, innovators and new business launched or deployed in their territories. In doing so, they will jump ahead of their economic competitors.

The world is not short of examples of special economic zones; that is, geographically delimited spaces in which constraints for trade, investment and capital flows are lifted and taxes lowered. It’s time for ‘special institutional zones’ to emerge as spaces where both new technologies and regulatory frameworks could be jointly prototyped and tested in a

controlled way. This type of approach has been particularly fashionable in the finance domain, with the emergence of fintech companies. The United Nations advocates that ‘regulatory sandboxes’ can be tools to conduce to innovation and lower its cost (UNITED NATIONS, 2017) and the Inter-American Development Bank (Herrera & Vadillo, 2018) follows a similar path, suggesting they can allow countries to understand how a new industry works – fintech in the case – and to adopt the “(...) appropriate regulatory measures to unlock its full potential within a controlled environment (...)”.

New generations of industrial policies are expected to increasingly incorporate regulatory or institutional sandboxes in their toolkits. The scope of the special conditions granted to those areas should not be limited to the technical features of products, like those related to safety. Countries can experiment full-fledged approaches that include special regulations related to foreign trade, labor relations, immigration, taxation, capital flows and more.

Despite the fact the approach does not go without criticism (Saltelli & Giampietro, 2017), there is momentum building towards evidence-based policies since the 1990s. Moreover, advancements in technology have changed how policy-makers engage with citizens and are transforming policy processes (MacGrath, 2013). As data becomes exponentially available, new approaches for industrial policy design, implementation and evaluation can be expected to emerge.

Brazil has pioneered the massive use of economic micro data to inform industrial policy design in the early 2000s. The PITCE – see Chapter 5 for details – was preceded by an analysis that crossed data from several government databases (foreign trade, employment etc.) and national surveys for more than 75,000 manufacturing companies in the Country, responsible 97.5%. The results were used to back policy and got publicized in a book published in 2005 (De Negri & Salerno, 2005) by the Brazilian Institute for Applied Economic Research Institute (IPEA), a government think-tank. Such innovative analysis was lately expanded and also replicated in other countries.

Janssen & Helbig (2018) identify technology-related developments that affect policy processes arising from developments in four domains: (i) ubiquitous civic engagement via social platform; (ii) open and big data; (iii) crowdsourcing; (iv) visualization and gaming. Those are accompanied by a growing political will to use technology and make data open and available to the public. The availability of new sources of data, data processing and visualization capabilities can be particularly relevant and enhance the toolkits available to policy-makers.

National surveys run by statistical organizations are essential sources of information for industrial policy processes. Nevertheless, most datasets only become available annually, triennially or even in longer cycles. Policy stakeholders now have the opportunity to complement those and build new metrics and layers of analysis using innovative data sources. For instance, it is now possible to track retail sales in real time, oil production and stocks, the pace of investments in infrastructure, the flow of goods around the globe etc. using satellite data – for an example, see Orbital Insights (2019). This type of data can be used to build metrics and develop forecasts for selected industries and the economy as a whole (Donaldson & Storeygard, 2016).

Other possibilities are offered by social media and government open data and it is encouraging to see countries like Argentina and Brazil well-positioned in the global open data ranking (OPEN KNOWLEDGE INTERNATIONAL, 2018). Overall, policy processes should and can be expected to become more data-intensive. The opportunities for that will further expand in the years to come.

The cases reviewed in this volume and the lessons summarized in the previous session do not leave room for doubts: government coordination is one of the most important issues to address in industrial policy initiatives. Its importance can hardly be overemphasized and has been recognized in different policy contexts and by multilateral organizations as the World Bank (Arbix et al., 2010). Peters (2018) presents a good summary on the reasons why coordination matters, all of them especially relevant in the context of the countries covered in this work.



The lack of government coordination costs more to middle-income nations

Coordination is a particularly critical issue for market or hybrid economy countries such as Argentina Brazil. They are in-between, midway in their development processes, are upper-middle-income countries and, in that position, are the ones that suffer the most from the lack of coordination.

High-income countries have well-developed civil society institutions and public-private coordination processes. They have several state and private sector players having a say in industrial, manufacturing and innovation policies and strategies, but had the opportunity, over the years, to build consensus about critical ideas, national priorities, and objectives. They are politically more stable than countries coming from behind and, especially in certain parts of Europe, are relatively more homogeneous than most nations.

Low-income countries, on the other hand, usually do not have well-developed government and civil society structures. The concrete outcome of this reality is that there are fewer players around the table to coordinate positions than one can find in more developed countries.

Upper-middle-income countries are in-between. They tend to have many more policy players, with a voice in policy design and implementation, than low-income countries but have not yet developed the coordination processes that advanced nations have. Upper-middle-income countries are comparatively in the worst position. Such countries demand more effort to build coordination. At the same time the need for it is more critical.

The lack of coordination comes with a cost. In some cases, it can be associated with the misuse of resources, but it is typically an 'opportunity cost'. The tricky thing is that advanced, high-income, countries can absorb such costs more easily than nations coming from behind. The lack of coordination costs relatively much more to middle-income nations such as Argentina and Brazil than to others.

How can government coordination be improved? The World Bank (2018) reviews dozens of cases around the globe and provides a framework to think and design better functioning systems. It is worth to note that, on the one hand, government coordination takes place in the space defined by the broader institutional environment of any given country; on the other hand, it can be built by design, via specific organizational architectures, practices and other solutions. In other words, coordination is not a given. Informed and purposeful action will be needed to improve coordination if future industrial policies – in Argentina, Brazil and any other countries.

The problem of government coordination is not new, and it is no secret that strategic policies, which have long-term goals, need to be coordinated from the center of power, at the President, Prime Minister or cabinet level. As De Toni (2013) pointed out, systemic policies coordinated at the government branch level can be easily disrupted during changes in the cabinet. Arbix *et al.* (2010) reviewed national innovation strategies and initiatives in 7 advanced countries and clearly marked they were all coordinated at the center of the power. Design efforts to improve coordination should pay attention to aspects such as organizational structures, decision rights on resources allocation and budget, reporting procedures and others. The World Bank Report (WORLD BANK, 2018) highlights five main drivers of effective policy coordination: (i) political leadership; (ii) institutional capacity building; (iii) incentives; (iv) transparency; and (v) technology.

All the issues and possibilities here outlined require a combination of skills to be tackled. The practical implication is that governments need to review their organizational setups and the types of capabilities necessary for industrial policy initiatives. Customarily, the design and implementation of industrial policies has been the trade of economist, particularly in emerging economies and geographies like Latin America. This approach will not be able to sustain future efforts.

As industrial policies will increasingly need to prototype institutions, political scientists, businesses strategists, technologists and legal experts will be much needed from the outset in any initiative. As technology growth has become a fundamental force for business and society transformation, STEM professionals must to be an integral part of any efforts. As industrial policies

require public-private coordination and, ultimately, are about business growth, they can only succeed if well informed by business finance, strategy and investment professionals. As policy becomes more intensive in data utilization, statisticians, designers and computer science experts are needed throughout policy processes. As engagement across society and with specific segments is of upmost importance to build and sustain coalitions, the participation of professionals with backgrounds in communications and media is necessary. Like never before in history, the exercise to design, implement and evaluate industrial policies requires multidisciplinary teams.

This book was mostly written by researchers with backgrounds in political sciences – the author of this chapter is the exception. As public-private collaboration mechanisms are essential for the success of industrial policies, their contribution and inputs from political sciences and related disciplines was never so important.

Partnerships for the future

It is about time to think development and the role of government beyond ideology (STIGLITZ & YIFU, 2013) and normalize the discussion on industrial policies (RODRIK, 2008). It is also time to recognize that the protectionist policies of the 1950-1980's do not make sense in the 21st Century economy and acknowledge that industrial policies need new content, toolkits and skill sets.

The recent industrial policy experiences in Argentina and Brazil did not generate the results that were expected. The reasons for that can be found within and outside the strict domain of industrial policies. Some of the main aspects identified in the previous chapters were summarized in section 2 and we hope they will deserve further investigation from researchers and attention from practitioners.

It is an assumption of this work that government initiatives to promote the development of a certain industry or a set of industries are not just legitimate and widely practiced around the globe, from China (Kenderdine, 2017) to the

U.S. (Wade, 2014), but also needed. To increase the odds of success, future policies should simultaneously learn from past experiences and pay attention to emerging aspects, some of them highlighted in the previous section.

Above all, the possibilities for economic transformation via effective industrial policy efforts depend on the alignment of world views – *weltanschauungs* – and the development of coalitions involving segments of the economy and policy-makers. The identification of spaces of dialogue and convergence is a massive task ahead for Argentina, Brazil and many others.

The author of this chapter once heard Tony Blair say that he “(...) was always conscious about the importance of convening traditional and big business leaders and proud about the meetings he hosted with them (...) but it was only towards the end of my term as Prime Minister that I understood the importance of also having young entrepreneurs and innovators around the table”. Future industrial policies can only succeed if based on coalitions involving those who are interested in building the industries of the future. The good news is that, in betting on innovative industries and pursuing industrial development strategies, Argentina, Brazil and others would be well-accompanied by countries in the global North, as seen in this chapter and throughout History.

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3. Ignacio Godinho Delgado was professor in the areas of history and political science at the Unviersidade Federal de Juiz de Fora (UFJF), where he also collaborates with graduate programs in historyandsocial sceiences. He is a researcher at the Instituto Nacional de Ciência e Tecnologia-Políticas Públicas, Estratégias e Desenvolvimento (INCT-PPED). He holds a PhD in Political Science from the Federal University of Minas Gerais (UFMG), 1999, and was a Visiting Senior Fellow at the London School of Economics and Political Science (LSE) between 2012 and 2013. Since 2016 he has been at the Directorate of Innovation at UFJF.
4. This article draws on studies developed since 2010 on the relations between healthcare systems and the pharmaceutical industry, incorporating some elements still unpublished. These studies were developed under the Instituto Nacional de Ciência e Tecnologia – Políticas Públicas, Estratégias e Desenvolvimento (INCT-PPED), directed by Renato Boschi, and the project Saúde e Desenvolvimento: novas abordagens, directed by José Maldonado and Laís Silveira Costa, of the Grupo de Inovação em Saúde (GIS) of the Escola Nacional de Saúde Pública (ENSP)/Fundação Oswaldo Cruz.
5. We focus here on the productive segments of the economic and industrial health complex (EIHC), which are more directly connected to the problem of technological innovation in processes and products. Healthcare services, although they sometimes incorporate in their path technological innovations that affect the organization of care itself, they have a different innovation dynamics and, to a certain extent, a more complex dynamic, in which more direct factors (institutional, organizational, human and technological) affect an activity characterized by intangibility, interactivity and simultaneity between production and consumption (non-stocking).
6. In order to characterize the ranking of countries in the world economy, we start with the formulation of Arrighi (1997), who defines the type of insertion of countries based on the presence in the national space of activities that allow greater retention of added value, expressed in the level of per capita income, which, naturally, varied throughout the path of the capitalist world economy. It would obviously involve the participation of innovation and the activities of medium and high technology in the domestic production to identify a central position (high weight of innovative activities and of greater technological intensity), semiperipheral (balance between innovative activities and of greater technological intensity and of low intensity) or peripheral (predominance of activities of low technological intensity in domestic production). For more details, see Delgado et alii (2010).

7. We will not dwell here on the discussion of the typologies of national innovation systems. It is important to identify only two different routes of technological learning, coupled with equalization efforts undertaken by countries grouped in semiperipheral positions at the beginning of the second half of the twentieth century, ie the rest, according to Amsden (2009). For a discussion of the different systems of innovation see Nelson (1993), Albuquerque & Cassiolato (2000) and Albuquerque (1996; 1999). Regarding the Brazilian case, see Dalhman & Frischtak (1993) and Mazzucato & Penna (2015).
8. A comprehensive review of the different approaches to national healthcare systems has been carried out in an unpublished study.
9. The case of Canada has not been addressed in the studies indicated above. In the case of the FIOCRUZ project, besides the US, the UK, Germany and Brazil, we also deal with Japan, China and India.
10. Life expectancy of Brazilians rose from 67 to 73 years between 1990 and 2006; the probability of dying before the age of five (per 1000 live births) reduced from 56 to 20 in the same period; infant mortality, which in 1997 was 31.9 per 1000 live births, reduced to 20 in 2007. These figures are still high, but are indicative of an effective improvement process (DATASUS).
11. In the opposite direction, article 68 of the law conditions the maintenance of a patent to the domestic production of the patented good, within a period of three years after its concession (Shadlen, 2005, 2009a; Homedes & Ugalde, 2006).
12. Mazzucato and Penna (2015) attach great importance to the industrial policy directed to the healthcare sector, including it between mission-oriented innovation policies in system of innovation such as Brazil characterized by several weaknesses.
13. The Mais Saúde Program operated under the guidance of the Ministry of Health, through the Executive Group of the Healthcare Industrial Complex (GECIS, in it's Portuguese acronym), within the scope of the Secretariat of Science, Technology and Strategic Inputs (SCTIE, also in it's Portuguese acronym).
14. This environment of affirmation of national companies does not seem to have changed, even with the political turbulences of the recent years and, in 2016, the rise a government (federal executive branch) with little inclination for policies to protect domestic industry. According to ANVISA (2017) report, among the ten leading companies in turnover in the Brazilian market for medicines (in 2016) five were national. Interfarma (2017) places six Brazilian companies among the 10 leaders in retail sales of medicides in the same year. On the other hand, the productive development partnerships, the operation of which has been unstable since the beginning of the second Rouseff government (in 2015), were still being coordinated by Ministry of Health, which announced, at the end of 2017, the launching of 25 new partnerships. At the end of 2017, the Ministry of Health announced the National Policy on Technological Innovation in Healthcare (PNITS in its Portuguese acronym) "to regulate the use of state purchasing power in contracting and purchasing of strategic products and services for SUS", also involving two other instruments, the "Technological Orders in the Healthcare Area (ETECS in it's Portuguese acronym)" and the Compensation

Measures in the Healthcare Area (MECS in its Portuguese acronym) (Ministry of Health, 2017). The question is whether such a policy will effectively be carried out within a framework of public expenditure containment, as provided for in Constitutional Amendment nº 95.

15. Further, Peter Evans points out the limits of the neoclassical postulates of theories about government failures to deal with issues such as social change and economic development, calling the attention for a paradox in their practical implications. Why would politicians and bureaucrats act to create the minimum state, if they always act in a self-interested manner, irrationally destroying the source of their gains? (Evans, 1998).
16. According to data from the United Nations Conference on Trade and Development (UNCTAD), in 2008, gross domestic product (GDP) grew at the rate of 5.17%, followed by a fall of 0.33%, in 2009, and an expansion of 7.53%, in 2010 (Delgado, 2016c).
17. Although not foreseen in the PBM texts, systemic actions included the initiatives of the Ministry of Finance to devalue real and to reduce basic interest rate, combined with actions to reduce banking spread in the private sector through competitive pressure from government owned or controlled banks. However, attempts were made to reduce the cost of electric energy by reviewing concessions to the private sector, which achieved little success (Delgado, 2016c).
18. In 2011, Brazilian GDP expanded 2.73%; 0.9%, in 2012; 2.3%, 2013. After a spectacular expansion in 2010 (of 10.1%), transformation industry posted a dim 0.1% increase in 2011. An impressive fall followed in 2012 (-2,5%) (CNDI & ABDI, 2013: 37).
19. In the debates on the reasons for the decline in growth since 2010 it gained prominence the orthodox critique of the so-called New Economic Matrix, as noted above, in special in the works of Samuel Pessôa (2015). On a different token, Bráulio Borges (2017) emphasized the weight of exogenous factors and relativized the importance of the economic policies carried out in the Rousseff government to explain the recent deceleration and the crisis experienced by the Brazilian economy since 2015. Although mentioned in several analyzes, the unstable political scenario as determinant of the slow-down process and crisis has not been carefully evaluated.
20. According to the United Nations Conference on Trade and Development – UNCTAD data (Delgado, 2016c).
21. Much of the Brazilian economic debate is marked by the polarization between liberals, of course, opposed to the adoption of industrial policies, and developmental theorists, who emphasize the importance of an active role of the State in promoting development, but not necessarily through industrial policies, highlighting exchange and monetary policies as the main instruments to support industrial production.
22. Christian May did his PhD in Political Science from the University of Bremen with a dissertation on the cultural political economy of Brazil, India and China. In the fall of 2009, he was at the Institute of Advanced Studies of the University of Lancaster, UK. In 2014, he was visiting scholar at the University of Amsterdam. Christian May teaches

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23. Andreas Nölke is Professor of Political Science, in particular International Relations and International Political Economy, at the Goethe University Frankfurt. He obtained his Master's degree in Public Administration at the University of Konstanz (1988), and he earned his doctorate in Political Science (with distinction) at the same university (1993).
24. Michael Schedelik is research associate at the Institute of Political Science at Goethe University Frankfurt. He is currently writing his dissertation (PhD) about innovation policy in Brazil.
25. An earlier version of this paper has been presented at the workshop on "Finance for Growth and Development", Cambridge, 29th November 2016.
26. The author is economist (University of Buenos Aires), has a master degree in political economy (FLACSO), professor and research fellow at the School of Economics at the University of San Martin and also at the School of Economic Sciences at the University of Buenos Aires. His PhD degree is from FLACSO in Argentina.
27. It is very important to differentiate between this industrial model from the IDE., from the perspective of the macroeconomic functioning. In that period, as modelling by Braun and Joy (1981), the deterioration of the commercial balance, given growing imports was the key factor to provoke the external adjustment. In the IAF, the strong international integration of Argentina, its tendency to dolarize its portfolios and the exports of capitals introduce an additional effect: in situations with strong growth not only imports tend to grow, as well as its international reserves.
28. Jackson De Toni is currently a Project Specialist in the technical staff of the Brazilian Industrial Development Agency (ABDI), linked to the Brazilian Ministry of Industry, Foreign Trade and Services (MDIC). He is also the Planning and Governance Manager at ABDI since 2011. He holds a PhD in Political Science at the University of Brasília (UnB), with a dissertation on State-Business Relations (SBR) in the Brazilian industrial policies.
29. Flavio Gaitan is currently Adjunct Professor at the Federal University of Latin American Integration and a researcher from INCT in Public Policies, Strategies and Development. Has a PhD in Political Science from the University of Rio de Janeiro (2009). His main topics of interest are: development, Latin America, democracy, economic policies and social policies.
30. GDP growth in the first period of Lula's administration was 4% per year (2003-2010).
31. US dollar exchange rate changed from 3,533 R\$/US\$ (2003) to 1,6974 R\$/US\$ (2010), representing an overvaluation of the Real above 100 %.
32. The exchange rate remained at levels, far from the value that some developmental economists, such as Bresser Pereira, estimated at R\$ 2.70. See: MELLO, João. (2015). O que arreventou a economia foi o câmbio, diz Bresser-Pereira (What broke the economy was the exchange, says Bresser-Pereira). GGN, Nov. 13, 2015. <<https://jornalggn.com.br/noticia/o-que-arreventou-a-economia-foi-o-cambio-diz-bresser-pereira>>.
33. based in part on an adaptation of DE TONI, J. (2016). A recente experiência de política

industrial no Brasil: nadando contra a maré. In: ANTUNES JÚNIOR, José Antonio Valle; HORN, Carlos Henrique; PELLEGRIN, Ivan De; VAZ, Ibes Eron. (Orgs.). Nadando contra a maré: política industrial e desenvolvimento econômico no Rio Grande do Sul. 1ª ed., Porto Alegre: Bookman, v. 01, pp. 30-50.

34. From this period on, there were significant loans from the Treasury to fight the recessive effects of the 2008 Global crisis.
35. Rousseff administration faced economic problems related to international crisis. GDP growth was poor, when compared with Lula administration (mean of 4% vs. 1.6%). Nonetheless, unemployment was low. (Source, IBGE site: <<https://ww2.ibge.gov.br/home/estatistica/indicadores/pib/defaultcnt.shtm>>).
36. Interview with the President of the CNI on April 3rd 2012. <<http://www.portaldaindustria.com.br/agenciacni/noticias/2012/04/cni-diz-que-ampliacao-do-plano-brasil-maior-melhora-o-ambiente-de-negocios-e-ajuda-a-reindustrializacao/>>.
37. See GGDC Research memorandum nº 130. “Fragmentation, Incomes, and Jobs. An Analysis of European Competitiveness”.
38. Despite the fact that the dismissal has generated jobs and an increase in the salary mass, even though the social security cost of compensation is not included in the model (Scherer, 2015).
39. The most eloquent example of the loss of focus was the definition, since 2011, of more than a thousand measures distributed among 19 “priority” sectors.
40. UNCTAD Statistics.
41. The challenges of the new industry are described in Muro et al. (2015).
42. Moisés Balestro is an Associate Professor at the University of Brasília at the Research and Graduate Program on the Americas at the Department of Latin American Studies. He holds a PhD in Social Sciences from the University of Brasília (2006). Visiting scholar at Goethe Universität Institute of Political Science (2014-2015). He is a researcher in the area of economic sociology and leads a research group Comparative Studies on Economic Sociology registered at the Brazilian National Research Council (CNPQ).
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44. Available at <www.pwc.com/payingtaxes>.
45. Roberto dos Reis Alvarez is the Executive Director of the Global Federation of Competitiveness Councils and a research scholar at Arizona State University. He holds a Ph.D. in Industrial Engineering from the Federal University of Rio de Janeiro. Roberto was trained in Quality and Productivity at the Japan Productivity Center and Exponential Technologies and the NASA AMES-based Singularity University. Before joining the GFCC, he was a Senior Manager at the Brazilian Agency for Industrial Development. Roberto also worked as a management and operations consultant, co-

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