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The return of industrial policy in Brazil: A comparative analysis of Brazilian industrial policies in the first quarter of the 21st century

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This dissertation represents the culmination of a significant and challenging cycle, but also the beginning of a new period of study in a new field of research and a new culture.

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Resumo

A política industrial voltou a ser um elemento-chave da formulação de políticas públicas, tanto em países em desenvolvimento quanto em países desenvolvidos, na última década. Diante disso, há um crescente debate sobre como essa estratégia deve ser aplicada no século XXI. Esta pesquisa busca contribuir com esse debate, por meio de uma análise comparativa dos quatro programas de política industrial apresentados no Brasil no primeiro quarto do século XXI, com o objetivo de identificar a estratégia de industrialização perseguida por este país. Dessa forma, esta dissertação revela que a política industrial brasileira adotou um caráter inovador e exportador nos anos 2000, mas voltou-se para um modelo de industrialização mais orientado para o mercado interno a partir de 2011. Essas mudanças são explicadas à luz do contexto da economia política, como sugerido pela literatura sobre Variedades de Política Industrial. Vale ressaltar, no entanto, que esses modelos de industrialização não se excluem. Na verdade, eles têm sido usados em paralelo no Brasil, mostrando que estratégias aparentemente divergentes de industrialização podem ser complementares.

Palavras-chave: Política industrial, Brasil, estratégias de industrialização.

Código JEL: O250, O140.

Abstract

Industrial policy has once again become a key element of policymaking in both developing and developed countries in the last decade. Given that, there is a growing debate about how this strategy should be applied in the 21st century. This research seeks to contribute to this debate, by deploying a comparative analysis of the four industrial policy programs presented in Brazil in the first quarter of the 21st century, with the aim of identifying the strategy of industrialization pursued by this country. Thereby, this dissertation reveals that Brazilian industrial policy deployed an innovative and export-oriented character in the 2000s, but has turned to a more inward-oriented model of industrialization from 2011 onwards. These shifts are explained in the light of the political economy context, as suggested by the literature on Varieties of Industrial Policy. It is worth noting, however, that these models of industrialization do not exclude each other. Actually, they have been used in parallel in Brazil, showing that apparent divergent strategies of industrialization can be complementary.

Keywords: Industrial policy, Brazil, strategies of industrialization.

JEL Code: O250, O140.

Table of contents

Introduction ……7
1. Literature review ……9
1.1. Varieties of industrial policy ……9
1.2. Strategies of industrialization ……10
1.2.1. Infant industry ……10
1.2.2. Import substitution industrialization ……11
1.2.3. Export-oriented industrialization ……12
1.2.4. ISI x EOI ……13
1.2.5 Neoliberalism ……15
1.2.6 Alternative strategies ……16
2. Brazilian industrialization in the long run ……18
2.1. Industrial awakening (1808-1930) ……18
2.2. State-led industrialization (1930-1985) ……19
2.3. Pitfalls of Brazilian early industrialization ……22
2.4. Neoliberal experience (1990-2002) ……23
3. Methodology ……27
3.1. Comparative analysis ……27
3.2. Process tracing ……28
4. Results and discussion ……30
4.1. Industrial, Technological and Foreign Trade Policy (PICTE): 2003-2007 ……30
4.2. Productive Development Policy (PDP): 2008-2010 ……34
4.3. Bigger Brazil Plan (PBM): 2011-2014 ……38
4.4. New Industry Brazil (NIB): 2024-2026 ……42
4.5. Discussion ……47
4.5.1. Strategies of industrialization: The Brazilian path in the 21st century...47
4.5.2. Institutional improvement ……50
5. Conclusion ……60
References ……62

Index of charts

Chart 2.1: Industry's share of Brazilian GDP, in current prices (%)

Index of tables

Table 2.1. Main milestones of the Brazilian industrialization process in the 20th century
Table 4.1: A comparative analysis of the industrial policies implemented in Brazil in the 21st century
Table 4.2: Goals of the Brazilian industrial policy in the 21st century
Table 4.3: Structure of the Brazilian industrial policy in the 21st century
Table 4.4: Sectors targeted by the Brazilian industrial policy in the 21st century
Table 4.5: Main instruments deployed by the Brazilian industrial policy in the 21st century
Table 4.6: Measurable goals of the Brazilian industrial policy in the 21st century
Table 4.7: Specific goals of the New Industry Brazil

Glossary

ABDI - Brazilian Industrial Development Agency

Anfavea - National Auto Vehicles Manufacturers Association

BNDES - Brazilian Development Bank

CNDI - National Industrial Development Council

CNI - Brazilian National Confederation of Industry

Dieese - Brazilian Inter-Union Department of Statistics and Socioeconomic Studies

ECLAC - Economic Commission for Latin America and the Caribbean

EOI - Export-Oriented Industrialization

GDP - Gross Domestic Product

IBGE - Brazilian Institute of Geography and Statistics

IMF - International Monetary Fund

IPDS - Industrial Policy/Developmental State

ISI - Import Substitution Industrialization

JK - Juscelino Kubitschek

NIB - New Industry Brazil

PBM - Bigger Brazil Plan

PDP - Productive Development Policy

PICE - Industrial and Foreign Trade Policy

PICTE - Industrial, Technological and Foreign Trade Policy

PND - National Development Plan

UNCTAD - United Nations Conference on Trade and Development

U.S. - The United States of America

WTO - World Trade Organization

Introduction

Industrial policy has once again become a key topic in academic and policymaking debates over the past decade. Whereas researchers discuss how this strategy should address the demands of the 21st century (Chang and Andreoni, 2020; Mazzucato, Doyle and von Burgsdorf, 2024), policymakers have reinforced the use of industrial policies worldwide, to face challenges such as the need for a green transition, external competition, and low economic growth.

The European Union, for instance, has adjusted its legislation and investment plan in order to counter climate change and build competitiveness in the green economy (European Commission, 2025). The United States has raised tariffs to tackle deindustrialization and external competition, especially from China, which continues to stimulate technological development, mainly through subsidies and state support (Zhang, 2025). Amongst emerging markets, Brazil also launched a new industrial policy, aiming to stimulate productive and competitive improvements, create quality jobs, and reposition itself in the global value chain (Brazil, 2024). Developing economies, in turn, still use this strategy mainly to unlock industrialization and economic development, as is the case in Indonesia (Hopewell, 2024).

This new wave of industrial policies thus encompasses different goals and instruments, which appear to vary according to the context of each country, as suggested by the literature on Varieties of Industrial Policy (Andreoni, 2017). Beyond that, it seems not to simply fit the models of industrialization that reigned in the previous century: the Import Substitution Industrialization (ISI) and the Export-Oriented Industrialization (EOI).

The present research aims thus to identify the kind of industrialization pursued in the 21st century by Brazil -a country that was one of the main adherents of the ISI model in the 20th century; went through a process of trade liberalization in the 1990s, while the world admired the success of EOI in East Asia; and resumed the use of industrial policies afterwards to try to keep climbing the development ladder. Under the leadership of the Workers' Party, Brazil launched four different industrial policies between 2000 and 2025. Hence, it stands out as one of the major users of this strategy in recent times and constitutes an appropriate case study for understanding how industrial policies have varied lately.

Furthermore, Brazil has been debating how its new industrial policy should be designed and executed. Economists and even the media have claimed that, despite being important to boost national development, this strategy must be prepared not to repeat "past mistakes", such as the maintenance of benefits that should be temporary (Pinheiro, 2024; O Globo, 2024).

Aware of it, the government has sought alignment with the production sector and opted for a "mission-oriented industrial policy" while launching its new industrial policy, the New Industry Brazil, in 2024. That is, a new approach of industrial policy that is supposed to pick missions rather than sectors in order to engage different actors in solving grand societal challenges (Mazzucato, Doyle and von Burgsdorf, 2024). Nevertheless, it is still unclear in which other features the New Industry Brazil resembles or differs from the previously industrial policies carried out by the Brazilian Workers' Party. Hence, this work can also help clarify this issue.

The present research seeks thus to identify the path of industrialization pursued by Brazil in the first quarter of the 21st century, besides understanding how its industrial policy evolved through time. More precisely, this work intends to answer the following questions: What strategy of industrialization is Brazil pursuing in the 21st century? How does the New Industry Brazil resemble or differ from the previous Brazilian industrial policies?

In order to do this, this work is based on a comparative analysis of the four industrial policy programs already launched in Brazil in the 21st century: Industrial, Technological and Foreign Trade Policy – PITCE (2003), Productive Development Policy – PDP (2008), Bigger Brazil Plan – PBM (2011), and New Industry Brazil – NIB (2024). This analysis takes into consideration the policy document of each strategy. Moreover, it counts on process tracing to understand the reasons behind the changes and continuities found amongst such policies, particularly regarding their goals, targeting, and governance.

Besides this introductory chapter, the present work is organized into five more chapters. Chapter 1 traces the different strategies of industrialization that have been performed and studied over time. Chapter 2 explores the Brazilian industrialization process, focusing especially on the state-led industrialization of the 20th century. Chapter 3 presents the methodological choices and the data used in this research. Chapter 4 performs a comparative analysis of the industrial policy programs presented in Brazil in the 21st century, under the guidance of the Workers' Party. This chapter relies on a specific session for each industrial policy analysed, plus a final section that summarizes how these strategies evolved and discusses potential explanations for such movements. It argues that, while trying to improve its institutions, Brazilian industrial policies encompassed different goals and therefore pursued different paths of industrialization throughout the century, due to changes in the political economy context. Chapter 5 concludes by summarizing the main arguments of such analysis and proposes guidelines for potential future research.

CHAPTER 1

Literature review

1.1. Varieties of industrial policy

Industrial policy is a theme that has pervaded economic thought for centuries, with researchers discussing not only the importance of such a strategy, but also the ways in which it should be applied. After all, there are different strategies of industrialization, and industrial policy varies according to the path pursued by each state.

According to Chang (1996, p. 60), this is "a policy aimed at *particular industries* (and firms as their components) to achieve the outcomes that are *perceived by the state* to be *efficient* for the *economy as a whole*". In other words, this is a selective policy, which targets specific industries or sectors, seen by the state as strategic for national development, with the aim of boosting the entire economy.

Such a strategy was widely used for those countries that managed to reach a certain level of industrialization and development. Yet, it has varied substantially throughout history, despite some similarities and common fundamental goals, such as transforming the industrial structure, as observed by Andreoni (2017, p. 248).

Accordingly, the "varieties of industrial policies" reflect each country's industrial structure and institutional setting, as well as the future its state envisions and the space policymakers have to build this future. After all, countries may choose different paths of industrialization, according to their specific context. Developing countries, for instance, may opt to create completely new sectors, absorb new technologies, or achieve certain quality standards through their industrial policies, while already industrialized countries might use this strategy to compete in the technological frontier or even to face deindustrialization (Andreoni, 2017, p. 249).

Furthermore, states can use different tools to promote industrial development, from tariffs, export subsidies, directed credits, research and development support, to monopoly rights, investment planning, and public-private cooperation. Hence, "there is no 'one-size-fits-all' model for industrial development - only broad guiding principles and various examples from which to learn" (Chang, 2005, pp. 65-66).

Given that, the literature on industrial policy encompasses different paths or strategies of industrialization, especially infant industry protection (List, 1909), import substitution (Prebisch, 1950), export-oriented (Gereffi, 1990), and innovation-oriented industrialization

(Ebner, 2009), besides debates of practical issues related to industrialization. It is important to bear in mind, nonetheless, that such models are not mutually exclusive. Actually, they can be understood as different phases or stages of structural and industrial transformation (Cypher and Dietz, 2009, p. 354) or as "compatible and even mutually reinforcing" strategies, as history shows (Gereffi and Wyman, 1987, p. 8).

1.2. Strategies of industrialization

1. 2. 1. Infant industry

Since it became clear that manufacturing could boost "the wealth of nations", there have been debates about how states could climb the development ladder. Yet, different historical analyses show that this process typically begins with infant industry protection (Chang, 2005) or import substitution industrialization - ISI (Cypher and Dietz, 2009).

The infant industry argument was developed right at the beginning of the Industrial Revolution, when Alexander Hamilton (1791) and Friedrich List (1909) challenged the liberal thinking that free trade could boost the development of nations.

First United States Secretary of the Treasury, Hamilton sent a report to the U.S. Congress in 1791 advocating manufacturing promotion with "the incitement and patronage of government". He argued that the "superiority" of countries which had already industrialized was an "obstacle" for those which wanted to follow this path, because that prohibited "a competition upon equal terms, both as to quality and price", that is, a "successful rivalship, without the extraordinary aid and protection of government" (Hamilton, 1791, para. 92-94).

Influenced by what was already being done in Britain, Hamilton recommended to U.S. congressmen the adoption of tariffs and subsidies, or protecting duties and bounties, as he called them. The rationale was that duties on foreign articles would make them more expensive and therefore favour national manufacturers, while bounties could "stimulate and uphold new enterprises" (Hamilton, 1791).

Thereafter, the German economist Friedrich List (1909, pp. 117-145) refined this theory, stating that "a new unprotected manufacturing power cannot possibly be raised up under free competition with a power which has long since grown in strength and is protected on its own territory". Accordingly, free trade would lead to "a universal subjection of the less advanced nations to the supremacy of the predominant manufacturing, commercial, and naval power".

So, nations should protect their "most important" industrial branches until they acquire capabilities to compete with imports.

In fact, virtually all developed economies count on infant industry protection during their catching-up periods. The United States of America, for instance, raised tariff imports during the war with Britain in 1812 and kept this policy after the conflict, to protect especially cotton, woollen and iron goods, just as Britain had done before, particularly with the textile industry (Chang, 2005). History shows thus that the U.S. and Britain did not practice free trade when they were still developing countries. Actually, they were "the pioneers and frequently the most ardent users of interventionist trade and industrial policy measures", as put by Chang (2003, p. 1), who mapped the use of such measures during the early stages of development of rich countries.

However, tariff protection is not the only policy tool used by such countries to protect their infant industries. Actually, there is "a considerable degree of diversity" among their policy mix, "depending on their objectives and the conditions they faced". Germany and Sweden, for instance, relied more on direct state involvement in key industries and public-private joint activity schemes, respectively (Chang, 2005, pp. 65-66), which reinforces the idea of "varieties of industrial policies" (Andreoni, 2017).

1.2.2. Import substitution industrialization

Latin American countries followed a similar strategy at the beginning of the 20th century, but under the motto of import substitution industrialization -a strategy of "development from within" (Cypher and Dietz, 2009, p. 173) that was spread in the region by the Economic Commission for Latin America and the Caribbean (ECLAC) and its then director Raúl Prebisch (1950).

By evaluating the economic development of Latin America and its main problems, Prebisch (1950, pp. 71-72) called attention to the international division of labour in which core countries produce manufactured goods and peripheral countries produce food and raw materials. He argued then that industrialization was not an end in itself in Latin America, "but the principal means at the disposal of those countries of obtaining a share of the benefits of technical progress and of progressively raising the standard of living of the masses".

Preoccupied with the long-term deterioration in terms of trade for primary producers, Prebisch (1950) supported an import substitution industrialization. That is, the domestic production of manufactured goods that were already being imported by a country, in order to reduce the import coefficient and change the composition of imports. Accordingly, such a

strategy requires an increase in customs tariffs, as already advocated by the infant industry argument. Yet, it also implies the import of capital goods, especially when it moves up to more sophisticated products, which means that the export of primary products or foreign capital may still be necessary for countries to finance these imports.

The import substitution industrialization, though, usually starts with the production of basic consumer goods, such as clothing and building materials, which do not require very advanced technology or skills. Known as easy, primary, or horizontal ISI, this process "is an essential first step if countries are to move to a higher growth and income path", but is "only a first step on the path toward a higher level of industrialization and development" (Cypher and Dietz, 2009, p. 299).

As explained by Cypher and Dietz (2009, p. 309), easy ISI tends to increase economic growth substantially at first, due to the shift from agriculture to industrial activities. However, such growth slows once all the potentially viable non-durable consumer goods imports have been replaced by domestic production. Furthermore, it does not change the export basket, leaving countries still subject to foreign exchange constraints. Therefore, easy ISI is usually replaced by another development strategy at some point.

Most Latin American countries, for instance, decided to deepen the process of import substitution by promoting the domestic production of more advanced goods, especially consumer durables, intermediate, and capital goods, such as automobiles, batteries, and machinery. Such a strategy is known as secondary, vertical, or difficult ISI and was an option for those countries since they could count on primary export to earn foreign exchange and large internal markets for manufactured goods, but also because of the political and economic influence of the agricultural elite. Nonetheless, it ended up making many economies dependent on the multinational corporations that used to control the technology and expertise needed for the production of such goods (Cypher and Dietz, 2009, pp. 317-322).

1.2.3. Export-oriented industrialization

East Asian economies, in turn, went through a different strategy. They also had an initial stage of easy ISI, but this experience was shorter than that of Latin America and was followed by an export-oriented industrialization (EOI). That is, an industrialization focused on transforming the export profile of those countries, which started with basic exports but quickly moved up to higher value-added products, like electronics and automobiles.

As explained by Cypher and Dietz (2009, pp. 319-326), those ISI firms that managed to meet foreign competition initiated the export process. After this "easy export substitution

industrialization", such countries moved to a more dynamic export pattern, which included chemicals, machinery, and durable consumer goods. This shift to "difficult export substitution" was possible due to state support for specific industries and sometimes firms. Accordingly, such industries were shielded from international competition with infant industry protection, but also had to meet certain conditions to obtain these incentives, such as exporting.

According to Amsden (1989, pp. 14-15), these reciprocal rules led to lower and more efficient subsidies. Moreover, it nurtured big and diversified businesses, because those firms that stood out in fulfilling these conditions were rewarded with further licenses to expand and enter more lucrative sectors. These large enterprises were crucial to countries such as Korea to catch up, since their broad diversification allowed access to new technologies and markets, helping them to survive the hardships of late industrialization and innovate. It is no wonder that some of these large Korean firms, known as chaebols, still stand out today among the largest conglomerates and exporters in the world, such as Samsung, Hyundai, and LG.

This approach helped East Asia to build new comparative advantages and achieve cumulative returns in terms of foreign exchange earnings, allowing a rapid process of development. After all, replacing primary exports with manufactured exports boosts economic growth and improves national terms of trade, avoiding the foreign exchange constraints that penalized ISI adherents (Cypher and Dietz, 2009). Given that, some economists even say that "economic development is impossible without good export performance" (Chang, 2011, p. 98). Besides, East Asian countries moved toward this direction at a time of extraordinary dynamism in the world economy and trade (Gereffi and Wyman, 1987, p. 14).

1.2.4. ISI x EOI

The East Asian Miracle raised debates about development policies and comparisons between ISI and EOI. Nonetheless, while acknowledging the importance of export for economic development, it is worth noting that the contrast often made between these strategies may be oversimplified, since Latin America and East Asia pursued both ISI and EOI, plus a mixed strategy afterwards (Gereffi and Wyman, 1987).

The difference between these late industrializers actually lies in the timing and sequencing of industrialization strategies, as observed by Gereffi and Wyman (1987). While Latin America first deepened ISI and only later began to promote exports, East Asia had a short period of easy ISI and focused on export-oriented industrialization before undertaking a process of secondary ISI. Yet, it is worth remembering that ISI provided the impetus for EOI, since "the superprofits

earned through selling in the protected domestic market helped to finance the learning and scale economies necessary to export" (Amsden, 2001, p. 188).

Given that, Chang (2011, p. 100) argues that it is needed “to abandon the ‘export promotion vs. import substitution’” to discuss the factors that determine the “optimal mix” of these strategies, as well as the timing of switching between them. That is, “to debate how exactly to mix free trade, export promotion, and infant industry protection—across sectors and over time—in a manner that helps a country to upgrade its industrial structure and grow quickly”.

It is equally important to bear in mind that the East Asian Miracle was possible because of its institutional setting, too. Wade (1990, p. 343) even says that “the difference between what happened in East Asia and experience elsewhere does not lie in the discovery of industrial policy instruments not known elsewhere”, but in the awareness of existing opportunities in the industrial sector and the state’s capacity to produce sizable effects on the economy and to control the direction of these effects. Accordingly, the economic success of the Asian Tigers was “the result, in important degree, of a set of government economic policies”, such as incentives, controls, and mechanisms to spread risk. That is, a concerted action that enabled the government to “guide -or govern- market processes of resource allocation so as to produce different production and investment outcomes than would have occurred with either free market or simulated free market policies” (Wade, 1990, p. 26).

In a similar vein, Amsden (2001, p. 8) argues that "the rise of 'the rest'" was possible, amongst other things, due to the establishment of "reciprocal control mechanisms". That is, those mechanisms that impose discipline on the economic behaviour around the principle of reciprocity. It means that the subsidies created to promote industrialization "did not become giveaways", because "the recipients of subsidies were subjected to monitorable performance standards that were redistributive in nature and results-oriented".

In fact, Evans (1995) already noted that the successful state involvement in industrial transformation depends on its “embedded autonomy”. That is, the ability to combine a corporate coherence that ensures its autonomy with social ties that embed it in society, especially with industrial capital, and enables the continuous negotiation of goals and policies. It was what happened in Korea and Taiwan during the 1970s and the 1980s, for instance, but not in Brazil. Accordingly, Brazil ended up limited to “pockets of efficiency” that allowed some successful projects of sectoral transformation, but were not enough to replicate the performance of the East Asian developmental states during that time.

1.2.5. Neoliberalism

The value of industrial policies, though, has been questioned by neoclassical and neoliberal thinkers. These scholars doubted the ability of states to run such policies, saying that politicians and bureaucrats could favour personal interests over the national ones and did not have enough information to "pick winners", that is, to select the sectors and firms targeted by these initiatives (Andreoni and Chang, 2019, p. 5).

Given that, such economists believed that "the best industrial policy is none at all" (Becker, 1985, cited in Wade, 2015, p. 67). Moreover, the multilateral institutions that embraced this paradigm tried to attribute the East Asian Miracle to market-friendly policies (World Bank, 1993a, p. 347) and alleged that the import substitution industrialization had failed in Latin America (World Bank, 1993b, p. 23).

In a contested report published in 1993, the World Bank recognized that East Asia intervened in the market, but said that these interventions occurred "within well-defined bounds limiting the implicit or explicit costs" and that "promotion of specific industries generally did not work". It argued, then, that "market-friendly policies are the foundation of East Asia's economic success" (World Bank, 1993a, pp. 347-354).

A few months later, the World Bank (1993b, p. 23) also published a report regarding Latin America and the Caribbean, to evaluate regional development after the debt crisis of the 1980s. Accordingly, there was "an increasing consensus on the need to redefine the role of the state", due to the belief that "the ever-growing state presence from 1950 to 1980 ended up hurting efficiency and growth, and that the state's focus on production de-emphasized the provision of effective social programs to alleviate poverty".

In such a report, the World Bank (1993b, pp. 23-24) acknowledged that multilateral institutions helped to spread this economic thinking in Latin America. Actually, it came out in defence of structural changes aimed "to move the region decisively away from the inward-looking and interventionist policies of the past", towards a "new consensus" that included macroeconomic stability, trade openness, poverty reduction, and a minimal state. In other words, "a new paradigm based on competition".

As evidenced by such documents, multilateral institutions pushed the neoliberal recipe of "development" to developing countries since the 1980s through the Washington Consensus. Given that, governments were told not to interfere in the economy or do any type of planning, as an industrial policy requires. What the state should do under the neoliberal creed was instead to deregulate, liberalize, and privatize, to let the market guide the economy. After all, the

neoliberal project also aimed to “disembed” capital from “constraints” such as state-led planning, state ownership of key sectors, and trade barriers, as put by Harvey (2007, p. 11).

This strategy, nonetheless, did not deliver fair and stable economic development in most of the world. Hence, it was also questioned and has been losing momentum, especially after the 2008 financial crisis. Chang (2003, p. 13) even said that “free trade and laissez-faire industrial policies seems at odds with historical experience”, so “the developed countries that propagate such a view seem to be indeed ‘kicking away the ladder’ that they used in order to climb up to where they are”.

1.2.6 Alternative strategies

The crisis of neoliberalism reopened space for experiences on industrial policy, but also for a “more balanced, pragmatic debate” on such a topic (Chang and Andreoni, 2020), that focus not only on “whether to pursue it”, but mainly on “how best to design and implement it” (Mazzucato, Doyle and von Burgsdorf, 2024, p. 4). So, new varieties of industrial policy or strategies of industrialization have been proposed in the last few years.

One of the most influential strands of this literature is the national innovation systems approach, which emphasizes the importance of knowledge, learning, and innovation to economic development (Lopes-Valença, 2017, p. 18). In that regard, Ebner (2009) presented a Schumpeterian theory or an innovation-oriented type of industrial policy, which is built on the idea of an entrepreneurial state that works to promote innovation and knowledge-intensive activities. In other words, a state that not only creates the conditions that enable innovation, but also plays a key role in this process, by funding and fostering innovative breakthroughs, as happened in the United States in areas like the internet (Mazzucato, 2011).

Another strategy that has gained a foothold is resource-based industrialization. That is, the attempt to process and transform raw materials into intermediate or finished goods through local industry for either export or sale in the domestic market. Deployed in countries like Indonesia, this strategy seeks to promote economic growth and structural diversification, as well as to reduce the price volatility related to the commodity market. Yet, it may have a modest impact in terms of employment creation and keep countries dependent on multinational companies, according to the literature (Roemer, 1979; Neilson et. al, 2020).

Researchers have also been discussing how industrial policies could help to face the economic challenges and opportunities brought by phenomena such as climate change and globalization. In this sense, the green industrial policy seeks to alter the production structure with the intention of generating environmental benefits (Hallegatte, Fay and Vogt-Schilb,

2013). The global value chain-oriented industrial policy, in turn, aims to position a country strategically in global value chains, generally through specialization in a specific niche of the production process (Gereffi and Sturgeon, 2013).

The shocks caused by the COVID-19 pandemic, however, raised debates about the resilience of global value chains. Given that, the United Nations on Trade and Development - UNCTAD (2020, pp. 173-174) suggested a shift from the export-oriented to an "export 'plus plus'" industrialization, which combines exports with production for local markets and infrastructure development. Accordingly, policymakers in developing countries should consider the transformation of international production in their policy framework and, as a consequence, balance export-oriented industrial policies with "built-in national economic security and resilience mechanisms". That is, to try for an equilibrium between openness and resilience.

Another recent, but influential approach is the mission-oriented industrial strategy (Mazzucato, Doyle and von Burgsdorff, 2024). It is built upon the idea that, by setting goals or missions instead of targeting specific sectors or technologies, governments can catalyse cross-sectoral investment and innovation to collectively solve societal problems. The aim is to bring economic, social, and environmental goals into alignment and foster economic growth along this process. Thus, it is a broad view of industrial policy, which can encompass different goals, sectors, and instruments, and that has been embraced by countries such as Brazil and Barbados.

Before proceeding with the comparative analysis of the industrial policies implemented in Brazil in the 21st century, though, this work traces a historical analysis of Brazilian industrialization. After all, understanding the policy context in which industrial policies are designed, implemented, and enforced along the development trajectory of a country is also critical to disentangle the variety of industrial policies we observe today (Andreoni, 2017, p. 248).

CHAPTER 2

Brazilian industrialization in the long run

Brazil had a late industrialization, due to its colonial past and the abundance of natural resources, which made the country keep relying on agrarian activities even after independence. Yet, it experienced a rapid process of industrialization in the 20th century, when structural transformation became a central element of the national political agenda and economic policy, making the country a symbol of state-led industrialization in Latin America (Suzigan and Furtado, 2006).

2.1. Industrial awakening (1808-1930)

As a colony, Brazil specialized in the export of natural resources, especially sugar, rubber, and coffee. According to Luz (1978), attempts at industrialization only began when the kingdom of Portugal was transferred to the colony, at the beginning of the 19th century. Trying to make Brazil the centre of the Portuguese empire, Prince Regent Dom João opened Brazilian ports to international trade, exempted the import of raw materials and the export of manufactured products. However, a trade agreement with Great Britain hindered national industrialization by opening up preferential space for British products.

Liberal thoughts and agrarian interests also delayed this process, by preventing the creation of a truly protectionist tariff system that could be associated with the infant industry argument. As noted by Luz (1978, p. 205), Brazilian customs policy was shaped mainly by fiscal concerns during the imperial period. As a result, it led to a "moderate protectionism" that "was not enough to boost or even sustain the industries that sporadically emerged as a result of the country's economic expansion".

In the Old Republic (1889-1930), agriculture still dominated the national economy and politics. Even so, the industry started to flourish again. According to Furtado (1983), agriculture itself contributed to this process, by increasing income and demand for manufactured goods in the domestic market and, therefore, stimulating the national production of such goods. Yet, the government also stimulated national production, strengthening tariffs and offering financial aid, such as exemptions from duties on machinery. Luz (1978) explained that industry came to be seen as a form of improving the balance of payments and guaranteeing occupation for the growing urban population. Moreover, the state became aware of the need to stimulate certain

basic industries, particularly coal mining and steelmaking, after the supply shock caused by the First World War.

Yet, it was only after the 1929 crisis that the “dynamic center displacement" took place (Furtado, 2016). That is, the driver of the Brazilian economy shifted from primary exports to activities related to the domestic market, especially industrialization. Furtado (2016) explains that the crisis constrained coffee prices and led to currency devaluation, making imported products more expensive. Domestic income, nonetheless, remained stable due to support policies for the coffee sector. As a consequence, production aimed at the domestic market became more attractive than primary exports.

The national industry, so, increased its profits and investments in the early 1930s. As a result, Brazil not only amplified the production of basic and consumer goods, but also began to produce capital goods. After all, the growth of industrial investments aimed at the domestic market created a “new pressure factor on the contracted import capacity”, making the industrialization process move forward (Furtado, 1983, p. 179). This is the process that Furtado (1983, 2016) calls “import substitution industrialization” and that made Brazilian production jump 50% between 1929 and 1937.

2.2. State-led industrialization (1930-1985)

Brazilian industrialization was also boosted by the state during that period. President Vargas (1930-1945/1951-1954) associated industry with economic progress and, therefore, sought to stimulate its development through tariffs and credits, in addition to the creation of sectoral laws and institutions (Fonseca, 2003). Vargas also enabled the establishment of a national steel industry, through the creation of state-owned enterprises, namely the National Steel Company and Vale do Rio Doce. It was also during his government that the state oil company Petrobras and the Brazilian Development Bank (BNDES) were created. Moreover, Vargas regulated labour laws to guarantee minimum rights to the growing number of industrial workers. As a result, Fonseca (2003) argues that the industrialization seen in this period cannot be understood just as a “byproduct” of the coffee appreciation policy, as Furtado (1983, 2016) may suggest.

State-led industrialization just increased after the Second World War, when development economists were discussing how industrialization could help nations to overcome backwardness and therefore should be encouraged by the state. Different strategies of industrialization emerged at that time. Brazil was especially influenced by the import substitution industrialization model supported by Prebisch (1950) during his passage at the Economic Commission for Latin America and the Caribbean. Yet, the Unbalanced Growth

theory, introduced by Hirschman (1958), also played a key role in the industrial policy launched by President Juscelino Kubitschek (1956-1961), known as JK (Hamaguchi, 2022, p. 115). Accordingly, since financial resources are scarce in less developed regions, the state should focus investments on key industrial sectors, capable of creating greater linkages, to stimulate further investments and economic growth (Hirschman, 1958).

Aiming to grow “50 years in 5”, JK launched a comprehensive goals plan, called “Plano de Metas”, as soon as he took office. There were 30 goals “designed to guide the execution of works and the expansion or implementation of industries and services essential to the national balanced economic development” (Brazil, 1958). The idea was to reconcile public and private resources to advance in energy, transport, food, and basic industries. So, while making large investments in infrastructure, the government encouraged the private sector to increase and diversify the national industry. That way, JK’s administration built power plants, oil refineries, railways, and even a new capital for Brazil - Brasília, built in a cerrado area in central Brazil with the aim of internalizing development. Furthermore, JK continued the expansion of the basic industry and pushed the import substitution process into a second stage, focused on the national production of durable consumer goods (Fonseca, 2003), such as televisions and cars.

As noted by Suzigan (1996, pp. 6-7), JK’s Plano de Metas also meant an institutional improvement for Brazilian industrial policy, since it had clear sectoral goals and large investments, but also institutions dedicated to their planning and execution, as well as a broad set of instruments. To ensure the implementation of the national automotive industry, for instance, the government first prohibited the import of already assembled cars and then set national content requirements for their parts. As a result, “foreign automobile companies had to choose either to abandon the Brazilian market or to invest in producing cars within five years”. The government, though, also offered subsidized credit and differentiated exchange rates during factories construction. Therefore, it managed “to kickstart local automobile production with perhaps a more significant number of firms and size of investment considering the size of the Brazilian market than if it were in a plain competition” (Hamaguchi, 2022, pp. 116-117).

In a notable work, Mello and Novais (1998) argued that this was also a process of "Late Capitalism and Modern Society". After all, it was a period of rapid economic development, which opened up several investment opportunities for national and foreign capital, but also favoured the qualification of urban workers and changed the consumption habits of the Brazilian population, through the introduction of goods previously associated only with developed countries.

The high level of public expenditure involved in such a plan, nonetheless, resulted in rising fiscal deficit and inflation. The outcome was an economic crisis that contributed to the military coup of 1964, led to macroeconomic adjustment and tamed industrial development in the following years. The macroeconomic stabilization, though, was followed by another period of high investments and incentives for industrialization, known as the economic miracle (Hamaguchi, 2022).

The military government presented two national development plans, known as First PND (1972-1974) and Second PND (1975-1979). The first one focused on transportation, telecommunications, and energy infrastructure, enabling the construction of big projects such as the Itaipu hydroelectric plant. Moreover, it induced Brazilian enterprises to participate in strategic sectors. The second one, in turn, broadened the range of strategic sectors to include other basic industries, capital goods, and advanced technology industries, such as telecommunications, aircraft, armaments, nuclear energy, and information technology. The goal was to increase the domestic supply of essential industrial input and reduce the dependence on imports to reform the balance of payment structure, as ISI suggests (Hamaguchi, 2022; Suzigan, 1996).

In order to do that, the government expanded the funding capacity of BNDES to support private companies, but also created a wide range of state-owned enterprises. In total, 47 state-owned enterprises were founded by the military regime (Brazil, 2020), from basic industries to agricultural research, technology, and data companies, such as Nuclep, Embrapa, Serpro, and Dataprev, respectively. It was also during the military regime that the Brazilian government created Embraer, consolidating the plan to have a national aeronautical industry, which had already been in the works for some time through research and training of aeronautical engineers (Forjaz, 2005).

Another successful project from this period was the creation of ethanol made from sugar cane, an abundant raw material in Brazil. According to Hamaguchi (2022), the aim was to include ethanol in the gasoline blend to alleviate the hike in imported fuel prices during the oil crisis, also encouraging producers and the national industry. Yet, it also led to the development of a fully ethanol-fuelled engine, whose sales were subsidized by the state in agreement with the National Auto Vehicles Manufacturers Association (Anfavea).

In addition, the government began to promote the export of manufactured products, not only with tax exemptions, but also with credits and special export programs. In this way, Brazil rose to a new position in the international division of labour, gradually ceasing to be a mere supplier of agricultural commodities and absorber of loan capital to become a growing exporter

of manufactured products and recipient of direct foreign capital investment (Suzigan, 1996, 2000).

2.3. Pitfalls of Brazilian early industrialization

Nonetheless, as industrial policies involve risks, this strategy also had unsuccessful projects, such as the national production of computers (Hamaguchi, 2022). Evaluating the growth of this industry in newly industrializing countries, Evans (1995) revealed bureaucratic issues of such a strategy, too. He explained that the military government inflated the state bureaucracy and nominated many public employees based on personal or clientelist relationships, rather than through meritocratic recruitment procedures. Therefore, it couldn't achieve the level of "embedded autonomy" seen in developmental states such as Korea. That is, the ability to maintain a state that is autonomous, but strongly connected to the private sector, and that enables the successful state involvement in industrial transformation. Actually, the Brazilian state bureaucracy ended up limited to "pockets of efficiency" that allowed some successful projects of sectoral transformation but were not enough to replicate the East Asian experience, according to Evans (1995).

Moreover, it is worth noting that most of the development achieved at that time depended on transnational corporations and did not reduce social inequalities. So, Brazil was considered as an "archetype of 'dependent development', a country whose rapid industrialization was propelled by a combination of investment by transnational corporations and the demand for consumer durables that depended on rising inequality" (Evans, 1995, p. 11). Or a typical case of "industrialized underdevelopment", a type of "contradictory, unbalanced, exclusive, but dynamic development", in which the productive base advances, but the social structure remains divided between the bourgeoisie and technobureaucrats who can adopt consumption patterns similar to those of the central countries and a large portion of society who remains with a low standard of living (Bresser-Pereira, 1998, p. 71).

While evaluating the outcomes of the industrial policies executed in Brazil between the 1930s and 1970s, Suzigan (1996, 2000) mentioned rentier activities too. He explained that such a strategy had some other problems, such as non-selective protectionism. That is, subsidies that were given to firms without targets, phasing out, or reciprocal control mechanisms. Therefore, it enabled the country to build a broad and diversified industrial base, but hindered the efficiency and competitiveness gains of such industry.

The industrial sector, thus, lost momentum in the 1980s, the so-called "lost decade", when Brazil entered a crisis due to the increase in foreign debt and inflation, and the government

ended up prioritizing macroeconomic stabilization over industrial development. To illustrate, the industrial sector reached a peak share of 48% of Brazilian Gross Domestic Product (GDP) in 1985 but shrank rapidly and in 1990 represented only 38.7% of GDP, the worst result since the early 1970s (CNI). Yet, it couldn't recover after this, since the following decades were marked by criticisms of industrial policy, especially of the ISI model followed by Brazil, and the spread of neoliberalism in Latin America, through the Washington Consensus (charter 2.1).

As observed by Fonseca (2003), academics linked to ECLAC, known as cepalinos, had already been discussing the limits of import substitution industrialization. The perception was that, after certain waves of substitution, this model could suffer a certain stagnation, as it became more difficult to replace certain imports, especially those that demanded more capital, technological level, and workforce qualification.

Yet, these criticisms only grew in the face of the East Asian Miracle, since it was pushed by an export-oriented industrialization. As observed by Gereffi and Wyman (1987, p. 7), East Asia's superior economic performance renewed impetus to a debate about appropriate development policies, making officials in key multilateral institutions and internationalized segments of the private sector advocate "export-promoting policies as the new development orthodoxy for Third World nations, thus denigrating the import-substitution approach of industrialization". The International Monetary Fund - IMF (1985, p. 183), for instance, said that developing countries were expected to adopt policies "less biased against exports" due to the "disappointing experience with import-substitution regimes and the need for adjustment".

There were also some scholars arguing that the contrast between inward and outward-oriented development strategies was oversimplified. Gereffi and Wyman (1987, p. 13), for example, showed that these strategies could be complementary. Accordingly, the difference between Latin American and East Asian performance was in the timing and sequence of such strategies, as well as in countries' response to ISI's challenges. Even though ISI was constrained in Latin America due to other reasons, too, especially the rise of neoliberalism.

2.4. Neoliberal experience (1990-2002)

Under the neoliberal paradigm, multilateral institutions pushed developing countries to deregulate, liberalize, and privatize. So, to refinance its external debt with the IMF amidst the Washington Consensus, Brazil presented a letter of intent promising, among other things, to eliminate subsidies and reduce government intervention to make the economy more efficient (Galvêas and Langoni, 1982). As a consequence, industrial policy did not find room to progress

in Sarney's turn (1985-1990), took new forms, and ultimately lost ground in the following governments, which embraced neoliberal precepts.

As observed by Cano and Silva (2010, pp. 3-4), under this paradigm, the objective of industrial policies was not to expand productive capacity, but to promote competitiveness, which was supposed "to be achieved by increasing efficiency in the production and marketing of goods and services, based on the modernization and restructuring of industry". Consequently, selective programs were replaced by horizontal instruments, under the premise that the best companies would survive “the challenge of competitiveness and would be rewarded with competitive integration into global markets” - a strategy called "industrial policy in reverse" by its critics (Cano and Silva, 2010; De Toni, 2024).

That way, Collor (1990-1992) launched the Industrial and Foreign Trade Policy (PICE) based on the assumption that the role of the state was to guarantee macroeconomic stability, restore a favourable investment environment, and reduce the participation of the public sector. Therefore, it promoted trade openness and privatizations. Fernando Henrique Cardoso (1995-2002) followed the same logic with his New Industrial Policy. The idea was to promote macroeconomic stability, trade openness, and competitiveness in order to increase investments and productivity. So, it led to fewer state interventions and more privatizations, including that of Vale do Rio Doce (Hamaguchi, 2022).

However, many companies or even entire industrial chains were unable to overcome this "competitiveness challenge". As a consequence, what the neoliberal industrial policy promoted in Brazil was deindustrialization and the replacement of local products by imported ones (Montgmomery, 2024). To be clear, industry accounted for 38.7% of Brazilian GDP in 1990, but this share fell to 26.7% in 2000, a level not seen since the early 1950s (CNI). The unemployment, in turn, was on the rise. So, the developmentalist debate resurfaced in the 2002 elections.

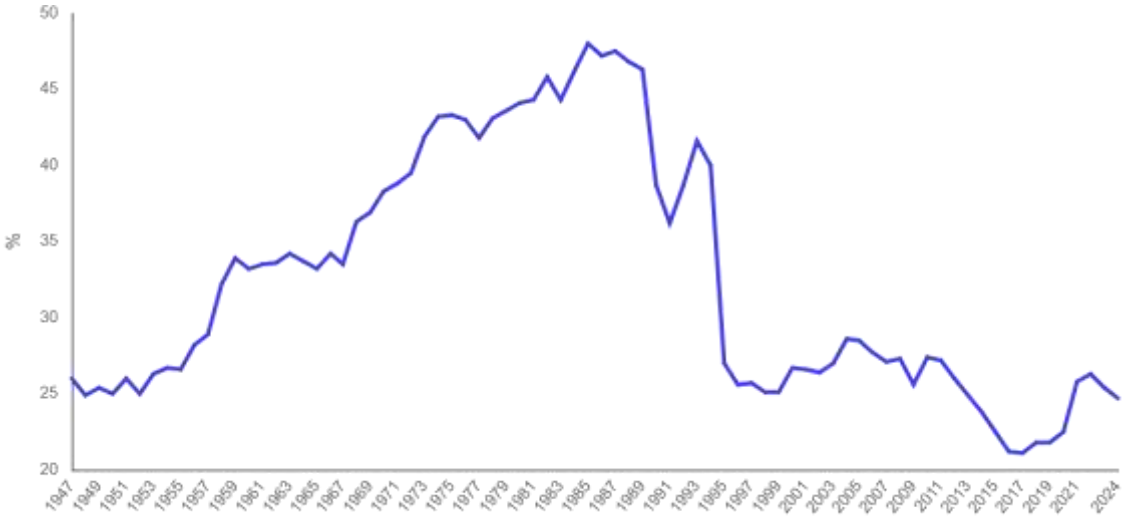


Chart 2.1: Industry's share of Brazilian GDP, in current prices (%). Source: CNI

Table 2.1. Main milestones of the Brazilian industrialization process in the 20th century

Brazilian industrialization in the long run	
1. Industrial awakening	
1808-1930	Fiscal and balance of payment concerns shaped the Brazilian customs policy, enabling only the awakening of industrialization.
1930s	Import substitution industrialization was triggered by the 1929 crisis. Brazil expanded the manufacturing of basic and consumer goods and began to produce capital goods.
2. State-led industrialization	
1930-1945 1951-1954	President Vargas stimulated industrial development through tariffs, credits and sectoral institutions, besides labour laws regulation. A national steel industry is established, through the creation of state-owned enterprises (National Steel Company and Vale do Rio Doce). The state-oil company Petrobras and the Brazilian Development Bank (BNDES) were created.
1956-1961	President JK launched the “Plano de Metas" (Goals Plan), which enabled large public investments in infrastructure and led the import substitution process into a second stage, focused on durable consumer goods. The automotive industry is established in Brazil.
1964-1985	The military regime executed two national development plans: ● First PND (1972-1974), focused on transportation, telecommunications and energy; ● Second PND (1975-1979), which focused on basic industries, but also capital goods and advanced technology industries, such as telecommunications, aircraft, armaments, nuclear energy and information technology. 47 state-owned enterprises were founded, including Embraer and Embrapa. Manufacturing exports started to be promoted.
3. Neoliberalism	
1990-2002	President Collor (1990-1992) launched the Industrial and Foreign Trade Policy (PICE) and President Fernando Henrique Cardoso (1995-2002) introduced the New Industrial Policy. The goal was macroeconomic stability, trade openness and competitiveness, as well as the public sector reduction through privatizations.

CHAPTER 3

Methodology

Industrial policy returned to the scene in Brazil after the Workers' Party came to power, with a developmentalist discourse that challenged the neoliberal paradigm, in 2003. Since then, four different industrial policies were launched in the country: PITCE (2003), PDP (2008), PBM (2011), and NIB (2024).

The presentation of the New Industry Brazil, though, sparked a debate not just about having or not having an industrial policy, but mainly about how it should be designed and implemented. Given that, this research is based on a comparative analysis of the industrial policies carried out in Brazil in the first quarter of the 21st century, in order to perceive how this strategy evolved and to identify the path of industrialization pursued by this country through time. Moreover, it uses process tracing to understand the reasons behind such changes or continuities.

3.1. Comparative analysis

The comparative method was chosen as the starting point of this study because of "its capacity to go beyond descriptive statistical measures, towards an in-depth understanding of historical processes and individual motivations" (Della Porta, 2008, p. 202).

Furthermore, when applied to policy studies, comparisons across time are "important for understanding path dependencies but also to trace, from a retrospective perspective, the historical context, timing, sequence, and other temporal dimensions of policies", as highlighted by the qualitative comparative policy approach introduced by Steiner-Khamsi and Silva (2024, p. 542):

> Longitudinal policy analysis can be crucial for an in-depth understanding of how and why policies came to have their current designs and features. It also allows for a more accurate depiction of context and its many transformations over time.

In this case, the goal is to explore similarities and differences amongst the four industrial policies implemented in Brazil between 2000 and 2025, especially regarding their purposes, targeting, and governance. By doing this, this research aims to comprehend what strategy of industrialization Brazil is pursuing through its latest industrial policies, as well as the economic sectors favoured by such programs. Moreover, it intends to comprehend how the government has coordinated the actions of such a policy, to be able to make adjustments if needed over time.

In order to identify these variables, this analysis is based on the program of such policies, made public by the government. It considers thus the following documents: the *Industrial, Technological and Foreign Trade Policy Guidelines* (2003); *Productive Development Policy: Innovate and invest to sustain growth* (2008); *Bigger Brazil: Innovate to Compete. Compete to Grow. 2011/2014 Plan: Reference Text* (2011); and *New Industry Brazil: Action Plan for Neo-Industrialization* (2024), as well as its updated version published in 2025.

As observed by Lopes-Valença (2017, p. 31), such research methodology has been applied in other studies about the practice of industrial policy before. After all, it allows tracing continuity and change between the documents that are considered representative of the industrial policy plans under study. Lopes-Valença (2017) himself used a similar approach to understand how Brazilian industrial policies have dealt with the issues of deindustrialisation and re-primarisation between 2003 and 2014, for instance.

It is worth noting, however, that this method implies an ex-ante analysis. That is, it allows identifying the concerns and intentions of policies, but not their ex-post effects (Lopes-Valença, 2017, p. 31). This work, though, indeed focuses primarily on the planning of Brazilian industrial policies. After all, this kind of policy requires time to be implemented and fosters a structural change that can only be assessed in the long term. So, it would not be possible to fully grasp the outcomes of the New Industry Brazil while it is still underway.

3.2. Process tracing

Besides uncovering what varied (or not) in the industrial policies implemented by the Brazilian Workers' Party in the 21st century, this research aims to understand the reasons behind such changes or continuities. To bridge the descriptive and the interpretative analysis, it counts on process tracing. That is, "a procedure designed to identify processes linking a set of initial conditions to a particular outcome" (Venesson, 2008, p. 224).

As explained by Venesson (2008, pp. 233-235), "the goal of process tracing is ultimately to provide a narrative explanation of a causal path that leads to a specific outcome". Moreover, in an interpretivist perspective, it allows researchers to focus "not only on what happened, but also on how it happened". Hence, it is an approach that can help to understand why certain features of the Brazilian industrial policies have changed or been perpetuated over time, taking into account the context in which they happened.

In order to uncover the factors that have influenced the design of the latest Brazilian industrial policies, this research counts on literature review, document and media analysis. The idea is to understand what happened between each industrial policy that may have led to path

dependencies, paradigm shifts, or more incremental/strategic policy making changes. After all, it is impossible to comprehend policies and institutions without reference to context (Paiva-Silva and Martins, 2025, p. 37).

That way, this research is also aligned with the idea that the Industrial Policy/Developmental State (IPDS) paradigm should follow a Critical Realist approach. Accordingly, studies about industrial policy experiences should focus on understanding processes, tendencies, and structures, usually by in-depth historical case studies, rather than following mathematico-deductivist methods that cannot address the complexity of social reality and the broad structural changes pursued by industrial policies (Paiva-Silva and Martins, 2025, p. 37).

In order to do this, the empirical section of this work is organized as follows: First, it provides an overview of each industrial policy through a narrative that presents the findings of the comparative analysis with theoretical and contextual explanations for the key features of such policies. Then, it summarizes how the Brazilian industrial policy evolved during the period under scrutiny, regarding its purposes, targeting, and governance, along with an interpretation of the possible drivers of such changes or continuities. The main findings of such analysis are also synthesized in tables, so that it is possible to observe the key themes of each policy and perceive whether they vary over time.

CHAPTER 4

Results and discussion

4.1. Industrial, Technological and Foreign Trade Policy (PICTE): 2003-2007

About 100 days before the 2002 election, the then Workers' Party candidate Luiz Inácio Lula da Silva published a “Letter to the Brazilian People” claiming that the neoliberal paradigm had run its course and that the country could not continue on that path, “under the penalty of remaining in chronic stagnation or even suffering, sooner or later, an economic, social and moral collapse” (Silva, 2002).

Along these lines, Lula supported the return of industrial policies of competitive import substitution and export upgrading as a way to boost economic growth and overcome the fragility of public finances. He also showed commitment to fighting inflation (PT, 2002). Lula was then elected, despite the distrust of the financial market, becoming the first president with working-class origins in Brazil and responsible for the resumption of national industrial policies.

In 2003, near the end of the first year of office, Lula’s administration presented the guidelines of the new Brazilian industrial policy. It was called Industrial, Technological and Foreign Trade Policy (PICTE) and aimed to increase efficiency and exports, but also to promote the diffusion and development of new technologies in the Brazilian industrial sector.

Built at the beginning of the 21st century, PICTE highlighted that this was a period “marked by a new economic dynamism, based on the expansion of demand for differentiated products and processes, made possible by the intensive and accelerated development of new technologies and new forms of organization”. It is assumed then that innovation was a key element for industrial and national competitiveness, and it is argued that this would be the basis for a greater national insertion in international trade (Brazil, 2003).

Accordingly, Brazil's participation in international trade shrank in the 1990s because the country was unable to expand its export base during that period. Brazil accounted for 1.84% of international trade in 1984, but this share fell to 0.79% in 2002. Furthermore, many of these exports were “products with low dynamic external demand, low technological content and unstable external prices”, such as iron ore, soybeans, and sugar (Brazil, 2003).

Taking this into account, PICTE intended to reduce national external restrictions in the short term and to promote the development of key activities, capable of increasing Brazilian competitiveness on the international stage, in the long run. Thus, it directed its actions toward four main goals:

- Increase exports, enhancing national products, improving the country's image abroad, and helping to create the “Brazil brand”;
- Promote the innovative capacity of companies and stimulate “future-oriented activities”, such as biotechnology, software, electronics, nanotechnology, renewable energy, and biofuels;
- Contribute to regional development, encouraging and strengthening local productive arrangements;
- Develop projects of mass consumption, in order to achieve economies of scale and international product standards, which would enable exports to countries with similar consumption patterns and incomes.

The rationale was that expanding exports, such as those of intermediate goods and agribusiness, could help improve the trade balance in the short term, while the development of new products and technologies could increase and upgrade exports in the long run. Moving to high-value-added industries, though, usually depends on machines and technologies. So, at the same time that sought greater and better exports, PICTE tolerated high levels of capital goods imports for a while, as long as within a strategy of complementarity. Furthermore, it highlighted the strategic role that research centres, big companies, and even multinationals could play in the process of development and consolidation of innovative industrial processes.

PICTE then not only marked the return of industrial policy, but also a renewal of this kind of policy in Brazil. While 20th-century industrial policies focused mainly on import substitution, PICTE attempted to increase and upgrade exports. Moreover, it aimed to foster innovation and, therefore, can be understood as an innovation-oriented type of industrial policy. That is, an industrial policy whose rationale is “to promote innovation as the source of international competitiveness” (Ebner, 2009, p. 384).

By promoting innovative activities, PICTE also broke with the neoliberal paradigm that had constrained the use of industrial policies in previous years. After all, it tried to create new comparative advantages for Brazil, rather than to stick to the existing ones. Such a strategy still enabled PICTE to demonstrate a key feature of industrial policy: selectiveness.

To advance this plan, PICTE argued that efforts needed to be concentrated on some knowledge-intensive areas and, as a result, targeted a few “strategic options”. Namely, semiconductors, software, pharmaceuticals, and capital goods. These were sectors considered by the state to be important for the national future, given their growing dynamism, linkages, and potential to open up business opportunities and to promote investments in research and

development (Brazil, 2003). Yet, such a choice also encountered reason in the literature, due to its "capacity for overflows and transversalities in the complex web of national industrial chain" (De Toni, 2024, p. 4).

Horizontal lines of action existed too, in order to promote innovation and technological development, external insertion, productive capacity, and industrial modernization on a greater scale (table 4.3). Nonetheless, even some of these proposals revealed certain selectiveness. Regarding innovation and technological development, for instance, the government supported the consolidation of a national innovative system, but suggested organizing its debates around "strategic topics", such as biotechnology, new materials, information and communication technologies, energy, and environment.

Given that, it was the innovative nature of this policy that stood out, which was important to broaden the support for PICTE, as traditional critics of industrial policy tend to approve innovation policies (Almeida, 2013, p. 282). The overall perception amongst academics was that the government was moving toward contemporary objectives and targeting complementary sectors, which help to spread technology and innovation (Suzigan and Furtado, 2006; Cano and Silva, 2010; De Toni, 2024).

The understanding that economic development requires not only import substitution but also export promotion and the upgrading of export industries also counted in its favour. This idea gained ground due to the East Asia Miracle and led some authors to even say that "the failure to promote export enough is one of the key reasons why the Latin American industrial policies were not as successful as those in East Asia" (Chang, 2011, p. 98). In this sense, Suzigan and Furtado (2006, p. 80) lauded the shift "from import substitution to the formation of capabilities and areas of competence" for considering that "gaining access to foreign markets and identifying the changes in clients' demands (whether present or potential) is more important than taking special measures to encourage the substitution of specific imports at a given moment".

Besides being in line with such concerns, PICTE reminded that industrial policy requires an institutional apparatus to be effectively implemented. It argued that state involvement is necessary to such a leap in industrial quality, as well as "institutional and business interactions and a fine articulation with educational systems and research centres, so that a new industrial environment of cooperation is cultivated" (Brazil, 2003). As a result, after introducing this plan, the government also tried to build or rebuild the institutions needed to put this strategy into practice. The National Industrial Development Council (CNDI), which, until today, serves as a forum for debates between the state and the productive sector, for instance, was created in the

aftermath of PICTE's guidelines presentation, along with the Brazilian Industrial Development Agency (ABDI), which has the duty of promoting the implementation of industrial policies. Given that, De Toni (2024, p. 6) observed that "one of the greatest advances made by the Lula government in its first term was the unblocking of the debate on industrial policy and the resumption, albeit timid, of planning and coordination instruments for the actors involved".

Furthermore, PICTE aimed to increase the transparency of decision-making, by requiring annual balance sheets of government activities and bidding its benefits to the achievement of goals designed to "reward efficiency, so that the policy is not understood as a benefit" (Brazil, 2003). These benefits included loans for modernization and capacity expansion, support for exports and internationalization, research, development, and engineering programs. The goals that should be achieved by its beneficiaries, nonetheless, were not explicit in the document that presented PICTE's guidelines. This only said that such goals could be related to foreign trade, productive efficiency, job creation, or contribution to regional development, and that beneficiary companies also needed to comply with tax, labour, and environmental legislation, as well as good community practices and labour relations.

Such efforts were not enough to guarantee PICTE's achievement. Possibly the main explanation for this is the fact that, in an attempt to gain the trust of financial markets, Lula's first government chose to maintain a macroeconomic policy focused on controlling inflation, which implied high interest rates that inhibited productive investments and the internal demand (Cano and Silva, 2010; Suzigan and Furtado, 2006). After all, "industrial development strategies are not made only with explicit industrial policies. No matter how well designed, they must be supported by compatible macroeconomic policies" (Cano and Silva, 2010, p. 8). However, this is also understandable given the efforts needed to rebuild the institutional structure for industrial policies and the limited duration of this policy (three years).

Even so, PICTE was important for reminding Brazilian society that "industry is an essential component for the sustained development of the economy" and that the state is a crucial part of industrial development and upgrading (Brazil, 2003). That is, for overcoming "the debate on the existence and the need for industrial policy, which constituted the basis for the (lack of) industrial policy throughout the 1990s" (Kupfer, Ferraz and Marques, 2013, p. 16). Moreover, it led to the reorientation of Brazilian industrial policies toward new objectives, more aligned with the demands of the 21st century and the lessons obtained by the successful experience of East Asia. Beyond that, it was capable of benefiting some companies and sectors individually (Cano and Silva, 2010, p. 10). Consequently, the government opted to continue carrying on

industrial policies in the following years, including using some of the institutional advancements brought by PICTE.

4.2. Productive Development Policy (PDP): 2008-2010

Elected for a second term in 2006, President Lula kept industrial policy in the Brazilian government's toolkit, but redesigned it to broaden its reach. PICTE was replaced by the Productive Development Policy (PDP) in 2008, under the guise that it was necessary to innovate, but also to increase investments in order to sustain the economic growth initiated by the commodities boom.

That was a moment of prosperity in Brazil, in which exports, domestic demand, and investments were all on the rise. Proof of this is that Brazil's GDP grew 6.1% in 2007, a growth rate not seen in the country since 1986. The government believed then that the moment was conducive for the establishment of a "new long cycle of growth" and directed industrial policy toward this direction. Hence, PDP was presented as a comprehensive industrial policy whose main goal was to provide sustainability to the expansion cycle of the Brazilian economy (Brazil, 2008).

In order to do that, PDP took advantage of the "recovery of the Brazilian state's formulation and coordination capacity" provided by PICTE (Brazil, 2008) to trace even greater pretensions, in terms of scope, depth, articulations, controls, and goals (Dieese, 2008; Cano and Silva, 2010). As such, it aimed to expand supply capacity, preserve the robustness of the balance of payments, foment innovation, and strengthen micro and small businesses. Furthermore, it assumed the challenge of making the Brazilian industry or a Brazilian company one of the five largest players in the world, as revealed by its strategic goals:

- **World leadership**: Maintain or position Brazilian production system or company among the five largest players in the world;
- **Conquest of markets**: Maintain or position the Brazilian production system among the five largest exporters in the world;
- **Targeting**: Build competitiveness in strategic areas;
- **Differentiation**: Position the Brazilian brand among the top five in its respective market;
- **Expanding access**: Expand the population's access to basic services for quality of life.

Such goals reinforced the export focus brought to the Brazilian industrial policy by PICTE. On the other hand, it led to a break with some of the main features of the industrial policy implemented in the first Lula government, especially its selective and innovative character. After all, most of these goals were not feasible for the knowledge-intensive activities that PICTE intended to foment. For instance, just a few already established industries could achieve world leadership at that moment, like mining, aeronautical, and ethanol, as observed by the Brazilian Inter-Union Department of Statistics and Socioeconomic Studies (Dieese, 2008, p. 8). So, such ambitions meant an increment in the number of sectors covered by the Brazilian industrial policy, including through the addition of sectors in which the country was already competitive.

As a result, unlike PICTE, which targeted a few strategic options, PDP encompassed "virtually every sector of the Brazilian economy" (Lopes-Valença, 2017, p. 37). In total, 25 segments were covered by this plan, from traditional ones in which the country already had comparative advantages, such as agribusiness, to technology-intensive industries in which it wanted to gain competitiveness, like pharmaceuticals. These sectors were split into three categories, according to their development and the government's ambitions:

- **Mobilizing programs in strategic areas**: Health industry, information and communication technologies, nuclear energy, defence, nanotechnology, and biotechnology;
- **Programs to consolidate and expand leadership**: Aeronautical complex, oil, natural gas and petrochemicals, bioethanol, mining, steel industry, meat, pulp and paper;
- **Programs to strengthen competitiveness**: Automotive complex, capital goods, textile and clothing, wood and furniture, hygiene, perfumery and cosmetics, civil construction, service economy, naval industry and cabotage, leather, footwear and artifacts, agribusiness, biodiesel and plastics.

By doing this, PDP sought to 1) build competitiveness in sectors considered strategic, due to their scientific and technological nature; 2) support investments in activities in which Brazil was already competitive, in order to encourage companies' growth and internationalization and to seek technological leadership; and 3) strengthen competitiveness in activities that could generate a chain reaction in the production structure or in sectors with export and competitive potential. The intent was thus to have programs oriented by strategic goals that considered the domestic productive structure (Brazil, 2008).

A critique, however, could be made of the fact that so many industries were included in the scope of the industrial policy, a policy that tends to be "explicitly selective" (Chang and Andreoni, 2020, p. 16). It is also relevant to note that only six of the 25 sectors covered by this plan were in the first category, which focused on building capabilities in strategic areas. All the other 19 seemed to already have some competitiveness. Therefore, it could be argued that PDP did not work so much in upgrading the national productive structure, but more in boosting existing industries, especially primary, resource-based, and low-technology manufactures, which were not likely to help to stanch the process of primarisation of the Brazilian export basket (Lopes-Valença, 2017).

Moreover, by seeking leadership, PDP gave more attention to big companies that became known as “national champions”. Such a strategy is common to other developing countries, such as Japan and Korea. However, ended up being questioned in Brazil, due to the strengthening of companies that export commodities rather than higher value-added products and the relationship built between some of these enterprises and the state, in which the reciprocal control mechanisms, that were paramount to Korea’s success, were not clear (Almeida, 2009; 2013).

Nonetheless, other reasons can be found in the literature for such sectoral expansion. Coutinho et al. (2012, p. 23) observed, for instance, that “a favourable fiscal situation and availability of credit for investment at the Brazilian Development Bank did not impose an a priori resource constraint” and, therefore, enabled the state to build such a comprehensive plan. Indeed, PDP foresaw billions of reais in subsidized loans and tax breaks for the industrial sector and highlighted the state's purchasing power as an inducer of development.

Almeida (2013), in turn, suggested that it was due to political reasons. After all, despite being lauded for its innovative character, PICTE was criticized for having left aside labour-intensive industries, such as footwear, textile, wood, and furniture. In a technical note, Dieese (2008, pp. 3-4) reinforced this thesis, which makes sense if one considers that industrial policy is prone to conflicts due to its selectiveness and, therefore, requires conflict management from the state (Andreoni and Chang, 2020). Accordingly, PICTE did not thrill the private sector because of its “timidity and limited scope”, but PDP seemed to be the “government response” to those who asked for a “concrete development project”, since this plan should “benefit all productive segments and, as a consequence, the entire Nation” (Dieese, 2008, p. 3-4).

In fact, the government brought other concerns within the scope of industrial policy while launching PDP. The actions focused on the sectors mentioned above constituted just one line of action of this plan, the structural or sectoral one. Besides that, PDP had a systemic or

horizontal and a strategic level. The former focused on actions that could generate positive externalities for the entire productive activity, such as the expansion of resources for investment and innovation, the improvement of legislation, especially regarding international trade, and the articulation of industrial policy with other public policies. The latter, in turn, comprehended themes considered by the state to be important to national long-term development, namely exports, regional development, micro and small businesses, sustainable production, and productive integration with Latin America, Caribbean and Africa (table 4.3).

However, to act on so many fronts, the government had to improve the governance and the goal-setting of industrial policy. As a result, PDP counted on a hierarchical line of management, which began with the Minister of Industrial and Trade Development and ended with executive committees responsible for its programs. Furthermore, it put each of these lines of action under the coordination of a specific government body and requested periodic monitoring reports on its activities and goals. In addition, the government attempted to strengthen the dialogue with the productive sector, to monitor compliance with the counterparts it requested, but also to make possible improvements to the policy.

Additionally, PDP established four macro measurable goals, as well as specific goals for each of its programs. These goals, though, had a short-term horizon to coincide with the Brazilian electoral cycle, which is classified by Almeida (2009) as a “big inconsistency”, since many of the structural changes expected from an industrial policy are better assessed in the long run. In short, the aim was to increase fixed investment, private spending on research and development, and exports, including from micro and small businesses, in just three years (table 4.6), to have a better picture in 2010, the last year of Lula’s presidency and the year in which he wanted to elect his successor, Dilma Rousseff.

The 2008 financial crisis, though, prevented the government from achieving many of these macro goals. Yet, having an industrial policy in place was important to face that moment, because PDP allowed the rapid implementation of anti-crisis measures and ended up having an anti-cyclical role (De Toni, 2024; Kupfer, Ferraz and Marques, 2013). It was not by chance that the industrial sector managed to recover quickly from the setback suffered in 2009, when the crisis arrived in Brazil. Thus, in 2010, the picture was somewhat positive, despite not being the one imagined by the government in 2006. The industry's share of GDP, for instance, had already returned to pre-crisis levels, and the number of workers in the sector had even increased, as well as the Brazilian share of world exports (CNI). The Workers' Party then won the elections and decided to once again keep industrial policy among its priorities.

4.3. Bigger Brazil Plan (PBM): 2011-2014

In 2011, the presidency of Brazil passed into the hands of Dilma Rousseff, also from the Workers' Party. Industrial policy thus continued in place, but it was once again redesigned to be in line with the new government and to respond more directly to the challenges brought by the 2008 financial crisis. So, PDP was replaced by the Bigger Brazil Plan (PBM).

Despite having recovered from the initial slump of the crisis in 2010, the Brazilian industry was unable to maintain a growth trend in the following years. After all, the financial crisis slowed down the world economy, reducing external demand for Brazilian manufactured goods (Marconi, 2013). Moreover, the local currency appreciation made imports cheaper, leading to an "avalanche of imports" which was detrimental to several national production chains (Cano, 2012). As a result, the industrial segment ended up presenting an erratic growth, losing space in the national economy and in world production from 2011 onwards (IBGE, CNI), which sparked a debate about deindustrialization in Brazil.

In view of this scenario, PBM maintained an export bias, but also focused on trade defence actions to face "the process of replacing national production in industrial sectors intensely affected by competition from imports" (Brazil, 2011). Given that, it was considered a more protectionist industrial policy than PITCE and PDP (Lopes-Valença, 2017). However, it is important to note that PBM did not intend to restore the Brazilian industry just through defensive measures, but also stimulating innovation and competitiveness. Such a concern was revealed by its intention to combine measures to combat illegal and unfair competition practices with programs to increase the productive efficiency of national companies (Brazil, 2011).

Innovation was also presented as a key factor for facing the primarisation of Brazilian exports, a challenge which had been overlooked by PDP (Lopes-Valença, 2017), but became more prominent with the effects of the financial crisis and the increasing Chinese demand for commodities (Marconi, 2013). In that regard, PBM recognized that Brazil had been experiencing sustained economic growth and had the opportunity to maintain a trade surplus in the short and medium term, thanks to favourable conditions in the commodities market. However, argued that it was important to change "the quality" of this growth to keep it in the long run. It intended thus to overcome the commodity-based "dependent growth trajectory" to enable a "sustainable and inclusive growth path" driven by technological innovation and capable of provoking a "positive shift in the country's relative position in the global economy" (ABDI, 2011; Brazil, 2011).

Facing the formation of national champions in the commodities sector, PBM still advocated that "a step forward" should be taken in this process in order to promote the internationalization

of other exporting companies, especially those with capacity for product differentiation, value aggregation, and access to new technologies. Accordingly, having leading companies was important not only in terms of exports, but also for product differentiation, as they innovate in processes and products for the whole market (Brazil, 2011).

In short, PBM envisioned aggregating value to national production through innovation, to make its products more competitive vis-à-vis the imported ones, but also diversifying its exports. Such an attempt was in line with the perception that sustaining competitiveness in world markets depends on technological upgrading (Amsden and Chu, 2003) and that such upgrading is paramount to maintain high levels of exports in the long run (Chang, 2011). Moreover, it recognized the role big companies can play in the catch-up process of late industrializing countries (Amsden, 1989). Yet, to embrace all these challenges, PBM had to assume a comprehensive set of goals and work simultaneously with different economic sectors, which, as had happened with PDP, contrasts with the idea of selective industrial policies.

Based on the guidelines of 1) promoting innovation and technological development, 2) creating and strengthening critical skills for the national economy, 3) increasing the productive and technological density of value chains, 4) expanding domestic and foreign markets for Brazilian companies, and 5) ensuring socially inclusive and environmentally sustainable growth, PBM directed its actions toward the following strategic goals:

- **Sustainable development**: Innovate and invest to increase competitiveness, sustain growth, and improve quality of life;
- **Market expansion**: Diversify exports and promote the internationalization of Brazilian companies; increase the national share in energy technologies, goods, and services market; expand the population's access to goods and services;
- **Productive and technological densification of value chains**: Increase national added value; increase participation of knowledge-intensive sectors in GDP; strengthen micro, small and medium enterprises; produce more cleanly;
- **Creation and strengthening of critical skills**: Increase fixed investment, qualification of human resources, and corporate spending on research and development.

Based on these goals, PBM proposed from the outset measures to reduce the tax burden on investments and exports, expand financing and improve the regulatory framework for innovation, promote the growth of micro and small businesses, strength trade defence, expand and create special regimes for productive and technological densification of value chains and

regulate the government procurement strategy, in order to use it to leverage new businesses and technologies (Brazil, 2011). Subsequently, it proposed other systemic and structural programs (table 4.3).

The systemic dimension aimed to increase economic efficiency, by reducing the costs associated with doing business in Brazil (the Brazil Cost), as well as to disseminate strategic and technological knowledge in a transversal or horizontal manner among different sectors of the Brazilian economy. Hence, it ended up covering a broad range of topics, from foreign trade, investment, and innovation to sustainable production, small businesses, regional development, consumer welfare, working conditions, professional training, and qualification.

The structural or sectoral dimension, in turn, focused on the efficiency, technological modernization, and competitiveness of Brazilian industry. However, it was even broader than that of the PDP. In total, 27 sectors were encompassed by PBM. These sectors were split into five blocks, according to their technical specificities and their capacity to transform the productive structure:

- **Mechanical, electronic, and healthcare systems**: Oil, gas, and naval supply chain, health complex (pharmaceuticals, medical and hospital equipment), automotive, aeronautics and space, capital goods, defence industrial complex, information and communication technologies;
- **Scale-intensive production systems**: Chemicals, fertilizers, bioethanol, mining-metallurgy, pulp and paper;
- **Labor-intensive production systems**: Plastics, footwear and artifacts, textiles and clothing, personal hygiene, perfumery and cosmetics, furniture, toys and civil construction;
- **Agribusiness production systems**: Meat and derivatives, cereals and legumes, coffee and related products, wines, fruits and juices;
- **Trade, logistics, and services**: Trade and personal services, logistics, and productive services.

It is worth noting that, when targeting agribusiness, PBM's goal was to advance the development of genetic variation, especially in sectors led by Brazilian companies. Actually, all its sectoral programs should be based on guidelines such as export diversification, creation of technological and business skills, or the strengthening of production chains, which could help to tackle external competition in sectors such as the labour-intensive ones.

To coordinate these actions, PBM took advantage of the institutional improvements brought to Brazilian industrial policy by PDP, especially the hierarchical line of management. Hence, it split its operations into three levels: articulation and formulation, management and deliberation, and higher counselling. In addition, it more than doubled its goals, renewing the ambition of increasing fixed investment, private spending on research and development, and exports, but introducing goals focused on productive upgrading, such as the expansion of manufacturing and knowledge industries. There was also a greater concern with the qualification of human resources and sustainable production, themes that permeate PICTE and PDP, but gained specific goals only in PBM (table 4.6).

Again, however, many of these goals were not met. Actually, the industrial sector was in a worse situation in 2014, the last year of PBM, than that observed in 2011, at the beginning of this plan. Industry's share of Brazilian GDP, for instance, fell from 27.2% to 23.8%, the worst result since the 1940s (chart 2.1). Similarly, the national share in world production decreased from 2.07% to 1.9% in this period (CNI).

As observed by De Toni (2024, p. 11), different reasons are pointed out in the literature for the mismatch between PBM's goals and deliveries. Among them, the adverse macroeconomic scenario, with high interest rates and an appreciated exchange rate; the perception that its goals were too ambitious for its instruments and timeframe; and the possibility that the industrial policy had lost focus due to the decision to encompass so many sectors. In fact, Hamaguchi (2022, p. 138) argued that, "by supporting technological development for almost all sectors, the policy's attention to the peculiarity by sectors based on different nature of competitiveness became ambiguous". Similarly, Schapiro (2007) added that, despite presenting a "structuralist-evolutionary" approach, PBM ended up focusing primarily on correcting systemic and horizontal failures, failing in pursuing a "Schumpeterian efficiency".

Furthermore, it is important to note that the last years of Dilma's first term (and coincidentally of PBM) were marked by slowdown in economic growth, worsening of fiscal situation, protests and the beginning of Lava Jato -an operation that aimed to investigate allegations of corruption involving politicians and big companies, but was questioned lately and had negative economic outcomes, as the shrinkage of investments, jobs and national output (Dieese and CUT, 2021).

In this scenario, Dilma managed to be re-elected for a second term in 2014, but changed her economic program to try to regain political and business support, which ultimately meant a replacement of an "industrialist strategy" by a "discourse of 'austerity'" (Mello and Rossi,

2017). As a result, unlike what had happened in the first three Workers' Party administrations, Dilma took office in 2015, but did not renew the Brazilian industrial policy.

Of a neoliberal orientation, the following governments of Michel Temer (2016-2018) and Jair Bolsonaro (2019-2022) did not worry about implementing a new industrial policy either. Therefore, after the closure of PBM in 2014, Brazil entered again into a period of no coordinated efforts towards the industrial sector. It just changed when Lula was elected for a third term in 2022, promising, among other things, to "reverse the process of deindustrialization and promote the reindustrialization of broad and new sectors" (PT, 2022).

4.4. New Industry Brazil (NIB)

Left aside for almost a decade, industrial policy returned to the fore in Brazil in 2023, with Lula's comeback to the presidency. Lula first recreated the National Industrial Development Council, which had been kept inactive during Temer and Bolsonaro terms, and, by doing this, put together his ministers, the Brazilian Development Bank, the productive sector, and trade unions to discuss a new industrial policy. The New Industry Brazil (NIB) was then presented in 2024, as the "neo-industrialization" policy of Brazil.

NIB is based on the premise that strengthening the national industry is key to Brazil's sustainable development from a social, economic, and environmental perspective. Moreover, it assumes that the country faces a process of "early and accelerated deindustrialization", which has contributed to the primarisation of its productive structure and weakened links in supply chains. Additionally, it notes that the concentration of exports on products of low technological complexity has limited trade gains (Brazil, 2024). Given that, NIB has three main goals:

- Stimulate technical progress and, consequently, national productivity and competitiveness, generating quality jobs;
- Make better use of the country's competitive advantages;
- Reposition Brazil in international trade.

NIB, so, resumes the concern with upgrading the Brazilian industry, in order to increase its competitiveness and to achieve a better position in the global economy. This time, though, the government decided to address these challenges differently, through a mission-oriented industrial strategy -a strategy introduced by Mazzucato, Doyle and von Burgsdorf (2024) which is supposed to not pick sectors, but instead pick missions. Accordingly, missions are bold and concrete goals that can catalyse investment, innovation, and collaboration of different actors

and sectors, helping to tackle grand societal challenges and serving as “clear investment pathways” for industrial policies.

For the Brazilian government, it was a way to stimulate innovation, productive and technological development among multiple sectors and agents, but also to guide private investments, provide solutions that can improve people’s daily lives, and encourage economic and social transformations with a view to overcoming obstacles to national development (Brazil, 2024). Given that, NIB’s actions are organized around six missions which, according to the state, seek to bring benefits to the entire Brazilian society:

- **Mission 1**: Sustainable and digital agro-industrial chains for food, nutritional, and energy security;
- **Mission 2**: Resilient health-industrial economic complex to reduce SUS (Unified Health System) vulnerabilities and expand access to health;
- **Mission 3**: Sustainable infrastructure, sanitation, housing, and mobility for productive integration and well-being in cities;
- **Mission 4**: Industry’s digital transformation to increase productivity;
- **Mission 5**: Bioeconomy, decarbonization, transition, and energy security to guarantee resources for future generations;
- **Mission 6**: Strategic technologies for national sovereignty and defence.

Nonetheless, NIB also presents a sectoral or selective character. Under the justification that it was important to give more focus and objectivity to such industrial policy, the state decided to define priority production chains for each mission. In total, 19 production chains were chosen, through “political and technical criteria” (Brazil, 2025):

- **Mission 1**: Precision agriculture (drones and sensors), agricultural machinery and its parts and components, textiles, fertilizers, and biofertilizers;
- **Mission 2**: Medicines and biologically active ingredients, medical devices (medical equipment), vaccines, blood products, and advanced therapies;
- **Mission 3**: Propulsion systems, electric batteries, metro-railways and their parts, pieces and components;
- **Mission 4**: Semiconductors; industrial robots; advanced digital products and services (digital platforms and cloud computing; audiovisual);

- **Mission 5**: New energy sources (hydrogen, green diesel, and sustainable aviation fuel), green energy equipment (solar panels and wind turbines), decarbonization of basic industry (green cement, steel, and chemicals);
- **Mission 6**: Launch vehicles, radars, and satellites.

By targeting such production chains, NIB slightly reduced the sectoral scope of Brazilian industrial policy, which had covered virtually the whole economy previously (table 4.4). Nevertheless, it may still be too selective for the proponents of a mission-oriented industrial strategy, who believe that focusing on policy goals instead of sectors "can have a greater catalytic effect on innovation and growth" (Mazzucato, Doyle and von Burgsdorf, 2024, p. 52). The theoretical voice behind such a strategy, Mazzucato (2023, p. 15) even said that the framing of NIB's missions "does not fully capture the potential of missions to turn societal challenges into opportunities for cross-sectoral investment and innovation". The last mission, for instance, "reflects a more traditional approach to industrial strategy that relies on picking sectors or technologies, rather than identifying goals that will require innovation and investment across sectors and deployment of a range of technologies", in her perspective.

Nonetheless, it is worth noting that few of the traditional sectors targeted by PDP and PBM were kept, and some of those that remained were introduced with a more technological or sustainable look, such as agro-industrial chains and basic industry. In that way, NIB advances in the attempt to create new comparative advantages and upgrade the Brazilian industry, especially in sectors related to technology and energy transition. Such a choice reveals alignment with other industrial policies implemented in the 2020s, such as the American CHIPS and Science Act and the European Green New Deal. Moreover, it strengthens the idea of "neo-industrialization" introduced by NIB. That is, the "national development project that places at its centre the strengthening of Brazilian industry on new bases: more innovative and digital, greener, more export-oriented and more productive, with people's well-being as its axis", as defined by the Brazilian Vice President and Minister of Industry, Geraldo Alckmin (2024).

In fact, NIB expands the spectrum of influence of industrial policy beyond strict economic goals, by incorporating social, environmental, and identity-based dimensions (De Toni, 2024, p. 18). That is because it sees industry as an "instrument to overcome the major bottlenecks" of Brazilian society. Therefore, it is based not only on principles of productive development, competitiveness, and qualified international insertion, but also on socioeconomic inclusion, decent work and income, reduction of gender, race, and ethnic or regional inequalities, and sustainability. Thus, the goal of such a policy is to strengthen the national industry to make it

more competitive, but also capable of generating quality jobs, increasing national income, and reducing inequalities (Brazil, 2024).

In order to do this, NIB again makes use of financial instruments that seek to increase the resources available to the productive sector and horizontal measures that aim to improve the business environment (table 4.5). Additionally, it gives special attention to the "government purchasing power to create domestic markets for innovative products and services" (Mazzucato, 2023, p. 17), by adding local content criteria, preference margins, and offsets in public and state-owned enterprises' purchases, for instance. The national public procurement system has even been updated to, among other things, be aligned with the needs and opportunities of NIB's missions and, therefore, to leverage industrial development in strategic areas.

To better articulate these actions, the government also defined specific challenges, goals, and objectives for each mission of its industrial policy (table 4.7). Initially, aspirational goals were set for 2033 to serve as a "reference to direct the efforts to be made by the state and by society as a whole in their actions for industrial development". However, NIB ended up being revised afterwards and gained shorter-term goals for 2026 (Brazil, 2025).

Significantly, such challenges and goals reveal another important feature of NIB: the concern of reducing external dependence, by expanding national production of strategic goods. In this sense, NIB intends to minimize external dependence on health goods and services, technological solutions, semiconductors, automotive components, machinery and equipment, as well as nationalize the production of renewable energy equipment. The goal is to reduce the risk of variations in international supply, but also to guarantee energy security, strengthen strategic segments for digital and technological sovereignty, and obtain autonomy in critical defence technologies (table 4.7). It assumes, thus, that state action for industrial development must aim not only for productive densification of national chains, but also to guarantee sovereignty, social and economic resilience, especially in difficult times for the international system (Brazil, 2024).

In an article published in the newspaper O Estado de S. Paulo shortly before NIB's presentation, President Lula and Vice President Alckmin (2023) underpinned that Brazil needed "an intelligent industrial policy for the new era of globalization", arguing that "even the most liberal countries are investing in national content whether to build production chains that are more resilient to shocks, such as the one that caused shortages of inputs during the pandemic; or to deal with the imperative of climate change".

Such a concern finds practical, but also theoretical explanations. After all, recent shocks, such as the COVID-19 pandemic and the Russia-Ukraine war, revealed how countries may be

too dependent on global value chains and vulnerable to external shocks, fuelling debates about the resilience of global value chains and reshoring (Barbieri et. al, 2020). It then helped to reopen space for developmental trade and industrial policies, but also paved the way for economic nationalism and protectionism (Hopewell, 2024). After all, these shocks made clear that "the 'invisible hand' that is supposed to guide our markets and our economy as a whole toward a happy and healthy equilibrium isn't always right", raising questions about the "unfettered globalization" created by neoliberalism and opening space for a "new era of localization" (Foroohar, 2023).

Some even associate this movement with a comeback of the import substitution model of industrialization (Irwin, 2020), which could make sense if one considers the concept of secondary ISI, in which, after replacing the import of basic consumer goods, countries try to go further, replacing the imports of capital and technology-intensive goods too (Gereffi, 1990, p. 17). In the case of Brazil, Dos Santos Junior (2024, p. 95) said, for instance, that the "neo-industrialization responds to imperialism and dependence [...] in a similar way to what had already been done in the country between the early 1930s and the late 1970s", but highlighted that "there are significant differences regarding this historical comparison". The tariffs that were highly used in that period, for instance, are not amongst the main instruments of Brazilian industrial policy anymore. Instead, the government tends to stimulate strategic sectors mainly through credit and public procurement (table 4.5).

In fact, by attempting to reduce external dependence in strategic sectors, NIB recalls somehow the idea of import substitution and ends up presenting a weaker export bias or a more protectionist bias than the previous Brazilian industrial policies. However, exports are also encouraged by NIB, as well as innovation. Therefore, it can be understood as a comprehensive industrial policy, which combines different goals, showing that apparent divergent strategies of industrialization can be complementary. After all, a nation-state can work to replace imports in strategic areas for national development or sovereignty, but simultaneously stimulate exports from sectors in which it is already competitive and work on innovation policies to create new comparative advantages. As observed by Chang (2011, p. 100), what is important is to debate how exactly to mix these policies to improve national development.

4.5. Discussion

4.5.1. Strategies of industrialization: The Brazilian path in the 21st century

The comparative analysis of the industrial policies implemented during the Brazilian Workers' Party governments revealed that such a strategy had an uneven trajectory in Brazil in the 21st century. After all, the focus and the sectoral coverage of these policies changed over time, according to each administration's priorities and challenges (tables 4.2 and 4.4). That way, Brazilian industrial policy has been navigating amongst innovative, export and inward-oriented models of industrial development.

Initially, Brazilian industrial policy presented a more innovative character, which restricted the sectoral scope of PICTE. Shortly thereafter, it tried to embrace virtually the whole economy and focused on boosting exports, including through the development of national champions in the primary sector, as revealed by PDP. More recently, nevertheless, it has resumed a concern about the high level of imports in strategic sectors. So, it restored a more inward-oriented model of industrialization, without eliminating some stimulus to exports. This shift began with PBM and gained momentum at NIB, even bringing back memories of the ISI model (table 4.1).

Such shifts, however, can be explained by the context in which each industrial policy was thought, as suggested by the literature on "Varieties of Industrial Policy". Accordingly, "the variation in countries' industrial policy experiences is driven by their contextual—institutional and structural—and political economy differences as well as by the different policy space and rationales for government action". Therefore, "it is critical to understand the policy context in which industrial policies are designed, implemented, and enforced in each country along its development trajectory in order to disentangle the variety of industrial policies we observe today" (Andreoni, 2017, pp. 246-248).

Regarding the Brazilian case, it is important to remember that the model of import substitution industrialization that reigned in the country until the 1970s was much questioned thereafter, either because of the perception that the level of imports stopped falling at some point or the East Asian Miracle, which was driven by an export-oriented industrialization. Consequently, it was conducive to focus on other patterns of industrialization in the comeback of the industrial policy in the 2000s.

Furthermore, the global economy was much more open and undergoing a rapid process of integration at that time. So, it would be difficult to ignore international flows. Actually, Brazil would hardly be able to establish an industrial policy like those of the last century after its entry

into the World Trade Organization (WTO) in 1995. After all, “the use of many of the classic tools of industrial policy is now either banned or significantly circumscribed by the WTO”, in particular tariffs and quantitative restrictions (Chang, 2011, pp. 101-102).

Due to WTO’s rules, Wade (2015, pp. 72-76) even claimed that “the East Asian, French and Brazilian developmental State of the postwar decades is not a viable option today (except perhaps in a few of the largest developing countries)”. He argued, though, that there is still scope for a “developmental State Mark II”. That is, a developmental state that works with the instruments “subject to ‘medium’ or ‘low’ WTO restraint, such as public procurement, discriminatory subsidies and bailouts (‘murky protection’)” -instruments that, in fact, have prevailed in recent Brazilian industrial policy (table 4.5).

Given that and the emergence of new technologies, it is understandable why the Brazilian state decided to deploy an innovative and export-oriented industrial policy at the beginning of the 21st century, through PICTE and PDP. Put simply, “timing helps explain national development patterns, because the opportunities and constraints that shape development choices are constantly shifting” (Gereffi, 1990, p. 21).

The political economy landscape, nonetheless, has changed substantially in the last decade, particularly because of the increasing perception that, rather than promoting economic growth, the global order built by the neoliberal precepts of free and open markets may be increasing the vulnerability of local economies. Hence, Brazilian industrial policy has changed again in recent years, restoring a more defensive approach that recalls the ISI model.

As noted above, many Brazilian companies could not cope with the “avalanche of imports” (Cano, 2012) seen in the aftermath of the 2008 financial crisis. As a result, the government amplified trade defence in PBM, through measures to combat dumping, unfair competition practices, false declarations of origin, and other kinds of circumvention of trade measures. Moreover, it imposed import tariffs within the limits allowed by the WTO and Mercosur (Dieese, 2011).

Other countries have also raised new layers of protection recently, above all in response to the discontents of globalization (Stiglitz, 2017). After all, without delivering the economic growth and the jobs it promised, globalization ended up generating criticism of free markets, as well as a demand for protection, which many times takes the form of “economic nationalism”, as observed by Colantone and Stanig (2017).

This movement just strengthened after the COVID-19 pandemic, with reshoring, nearshoring, or friendshoring activities. This shock disrupted the supply or raised the costs of basic materials, creating a new “imperative” of mitigating supply chain risks to warrant

resilience and inducing the political and public mood to see a degree of reshoring as "healthy". That is, making these initiatives to gain a new guise, moving from a protectionist narrative to a healthy risk management perspective (UNCTAD, 2020, p. 158).

Hence, beyond trade defence, the international political economy has dealt in recent years with reshoring policies and even debates about deglobalization, as many countries try to derisk or even decouple from others. That is, to reduce external dependence by promoting the production of what is understood as paramount to the national economy in its own or friendly territory.

Built in the midst of this scenario, NIB incorporates such concern, seeking to boost national production of strategic goods, minimize external dependence, ensure sovereignty, and resilience in adverse international times (table 4.7). While promoting industrialization to strengthen the internal market, though, NIB also aims to upgrade exports and improve national infrastructure. Moreover, it applies a new model of industrial strategy, based on missions. That way, it attests that apparent divergent models of industrialization are not mutually exclusive. It reinforces thus the understanding that, rather than choosing one path of industrialization, policymakers should discuss the "optimal mix" of these strategies, as well as the timing of switching between them (Chang, 2011, p. 100).

Due to this array of goals, NIB covers different economic sectors, from agriculture to aerospace. Yet, the idea of an "export 'plus plus'" development path in fact implies the construction of diversified industrial clusters (UNCTAD, 2020, p. 173). Furthermore, this has been common in the Brazilian experience with industrial policy since the 20th century, except for what occurred in PICTE, as shown by this work (table 4.4). In addition, the sectors chosen by NIB are in agreement with what has been done in other countries in this new wave of industrial policies.

In brief, the comparative analysis of the industrial policies implemented in Brazil in the 21st century revealed that the goals and the scope of such strategy changed, according to the context in which each plan was thought. Even so, it is worth noting that the recent return of an inward-oriented industrialization did not exclude the concern in upgrading exports and innovation, attesting that apparent divergent models of industrialization can coexist and complement each other.

4.5.2. Institutional improvement

Despite dealing with different goals and sectors, the industrial policies implemented in Brazil in the 21st century have maintained and strengthened a line of governance. As a result, NIB counts on institutions that have been improved over time to coordinate national industrial development.

Since PICTE, this strategy has been structured by CNDI, and this forum has gained new monitoring bodies. NIB, for instance, has specific working groups for each mission, as well as working groups focused on cross-cutting themes. Moreover, it intends to launch a "NIB Monitor" in partnership with ABDI to have a dynamic and public evaluation of its activities. Targets, by the way, also evolved, since PICTE had no measurable goals, but PDP introduced, PBM amplified, and NIB refined them, by setting short and medium-term goals (table 4.6).

Brazilian industrial policies thus underwent institutional improvement, which is paramount to the success of such a strategy, according to the literature. Andreoni and Chang (2019, p. 148) noted, for instance, that "the effectiveness of industrial policy is critically dependent on the capacity of the state to deploy and strategically coordinate multiple policy instruments and institutions addressing complex interdependent dynamics". After all, it is through "institutions that industrial policy can be designed, but also implemented and enforced". So, when providing advice to the New Industry Brazil, Mazzucato (2023, p. 8) highlighted that "while the vision is critical, the practical implementation of this vision is equally so". That is, "the how matters as much as the what".

However, it is worth noting that, despite presenting goals aligned with current demands and institutional improvements, NIB still faces some challenges. Adverse macroeconomic conditions seem to be the main one, because Brazilian interest rates reached their highest level in 19 years in 2025. Shortly after the hike, the Brazilian National Confederation of Industry (CNI) stated that this scenario made "productive investment very difficult in Brazil, with serious consequences for the economy". Brazil's experience and literature, in fact, show how "alignment and synchronization between industrial and macroeconomic policies" are important to their success (Andreoni and Chang, 2020, p. 14). So, it would be important if further research analysed whether NIB will be able to achieve the goals set for 2026 and 2030.

In sum, Brazilian industrial policies have sought different paths of industrialization in the 21st century and still face some macroeconomic constraints. Nonetheless, these programs remind that building bureaucratic capabilities (Chang, 2011) is crucial for any industrial policy to be successful, since they seek not only to maintain, but also to enhance their governance and monitoring bodies over time.

Table 4.1: A comparative analysis of the industrial policies implemented in Brazil in the 21st century

	Strategy	Sectors	Measurable goals
PICTE (2003)	Innovation and export-oriented industrialization	4	-
PDP (2008)	Export-oriented industrialization	25	4
PBM (2011)	Export, innovation and import substitution industrialization	27	10
NIB (2024)	Import substitution and innovation-oriented industrialization	19	9, with short and medium-term goals

Table 4.2: Goals of the Brazilian industrial policy in the 21st century

Goals	
PICTE (2003)	• Increase exports, improve national image abroad, and help create the "Brazil brand"; • Promote the innovative capacity of companies and stimulate "future-oriented activities"; • Contribute to regional development; • Develop projects of mass consumption, achieve economies of scale, and international product standards.
PDP (2008)	• World leadership: Maintain or position Brazilian production system or company among the five largest players in the world; • Conquest of markets: Maintain or position the Brazilian production system among the five largest exporters in the world; • Targeting: Build competitiveness in strategic areas; • Differentiation: Position the Brazilian brand among the top five in its respective market; • Expanding access: Expand the population's access to basic services for quality of life.
PBM (2011)	• Sustainable development: Innovate and invest to increase competitiveness, sustain growth, and improve quality of life; • Market expansion: Diversify exports and promote the internationalization of Brazilian companies; increase national share in energy technologies, goods, and services market; expand population's access to goods and services; • Productive and technological densification of value chains: Increase national added value and participation of knowledge-intensive sectors in GDP; strengthen micro, small, and medium enterprises; produce more cleanly; • Creation and strengthening of critical skills: Increase fixed investment, qualification of human resources, and corporate spending on research and development.
NIB (2024)	• Stimulate technical progress, national productivity and competitiveness, generating quality jobs; • Make better use of the country's competitive advantages; • Reposit Brazil in international trade.

Table 4.3: Structure of the Brazilian industrial policy in the 21st century

Structure	
PICTE (2003)	5 action lines: • Innovation and technological development; • External insertion; • Industrial modernization; • Productive capacity and scale; • Strategic options.
PDP (2008)	3-level policies: • Systemic actions: focused on factors that generate positive externalities for the entire productive structure; • Structuring programs for productive systems: mobilizing programs in strategic areas, programs to strengthen competitiveness, consolidate and expand leadership; • Strategic highlights: small companies, regionalization, exports, sustainable production, productive integration of Latin America and the Caribbean and integration with Africa.
PBM (2011)	Structuring dimension: 5 sectoral guidelines • Strengthening productive chains; • New technological and business skills; • Energy supply chains; • Export diversification and internationalization; • Competencies in the natural knowledge economy. Systemic dimension: 9 transversal themes • Foreign trade; • Investment; • Innovation; • Professional training and qualification; • Sustainable production; • Competitiveness of small businesses; • Special actions in regional development; • Consumer well-being; • Working conditions and relations.
NIB (2024)	6 missions: • Sustainable and digital agro-industrial chains for food, nutritional, and energy security; • Resilient health-industrial economic complex to reduce SUS vulnerabilities and expand access to health; • Sustainable infrastructure, sanitation, housing, and mobility for productive integration and well-being in cities; • Digital transformation of industry to increase productivity; • Bioeconomy, decarbonization, and energy transition and security to guarantee resources for future generations; • Technologies of interest to national sovereignty and defence.

Table 4.4: Sectors targeted by the Brazilian industrial policy in the 21st century

Sectors	
PICTE (2003)	• Semiconductors; • Software; • Pharmaceuticals; Capital goods.
PDP (2008)	Strategic areas: • Health industry; • Information and communication technologies; • Nuclear energy; • Defence; • Nanotechnology; Biotechnology. To consolidate and expand leadership: • Aeronautical complex; • Oil, natural gas, and petrochemicals; • Bioethanol; • Mining; • Steel industry; • Meat; • Pulp and paper. To strengthen competitiveness: • Automotive complex; • Capital goods; • Textile and clothing; • Wood and furniture; • Hygiene, perfumery, and cosmetics; • Civil construction; • Service economy; • Naval industry and cabotage; • Leather, footwear, and artifacts; • Agribusiness; • Biodiesel; • Plastics.
PBM (2011)	Mechanical, electronic, and healthcare systems: • Oil, gas, and naval supply chain; • Pharmaceuticals, medical and hospital equipment; • Automotive; • Aeronautics and space; Capital goods; • Information and communication technologies; • Defence industrial complex. Scale-intensive production systems: • Chemicals; • Fertilizers; • Bioethanol • Mining-metallurgy; • Pulp and paper. Labor-intensive production systems: • Plastics; • Footwear and artifacts; • Textiles and clothing; • Personal hygiene, perfumery, and cosmetics;

	• Furniture; • Toys; • Civil construction. Agribusiness production systems: • Meat and derivatives; • Cereals and legumes • Coffee and related products; • Fruits and juices; • Wines. Trade, logistics, and services: • Trade and personal services; • Logistics; • Productive services.
NIB (2024)	Mission 1: • Precision agriculture (drones and sensors); • Agricultural machinery and its parts and components; • Fertilizers and biofertilizers; • Textiles. Mission 2: • Medicines and biologically active ingredients; • Vaccines, blood products, and advanced therapies; • Medical devices (medical equipment). Mission 3: • Propulsion systems; • Electric batteries; • Metro-railways and their parts, pieces and components; Mission 4: • Semiconductors; • Industrial robots; • Advanced digital products and services (digital platforms and cloud computing; audiovisual); Mission 5: • New energy sources (hydrogen, green diesel, and sustainable aviation fuel); • Green energy equipment (solar panels and wind turbines); • Decarbonization of basic industry (green cement, steel, and chemicals). Mission 6: • Launch vehicles; • Radars; • Satellites.

Table 4.5: Main instruments deployed by the Brazilian industrial policy in the 21st century

Instruments	
PICTE (2003)	• Financing for capacity expansion, equipment modernization, management modernization programs, design improvements, support for patent registration and technological extension; • Support for exports and internationalization of Brazilian companies; • Support for research, development, and engineering programs.
PDP (2008)	• Tax incentives, tax breaks, credit and financing, venture capital, and subsidies; • Public procurement; • Technical, economic, and competition regulation; • Technical support: certification programs, trade promotion, intellectual property, human resources training, business training.
PBM (2011)	• Financial and tax instruments: financing and tax exemptions; • Public procurement: R&D conditionalities; • Support for investments in innovation and fixed capital; • Support for foreign trade and internationalization; • Productive promotion.
NIB (2024)	• Financial instruments: Loans, grants, tax credits, equity participation; • Improving the business environment: technology transfer, intellectual property, infrastructure, regulation, foreign trade; • Public procurements: government procurement, preference margin, local content requirements, technology orders, public investment.

Table 4.6: Measurable goals of the Brazilian industrial policy in the 21st century

Measurable goals	
PICTE (2003)	-
PDP (2008)	For 2010: • Increase fixed investment from 17.6% to 21% of GDP; • Increase private spending on R&D from 0.51% to 0.65% of GDP; • Exports increase from 1.18% to 1.25% of global exports; • Increase the number of exporting micro and small companies by 10%.
PBM (2011)	For 2014: • Increase fixed investment from 18.4% to 22.4% of GDP; • Increase corporate spending on R&D from 0.59% to 0.90% of GDP; • Increase from 53.7% to 65% the amount of industry workers with at least a secondary education level; • Increase the value of industrial transformation over the gross value of production from 44.3% to 45.3%; • Expand the share of knowledge-intensive industry from 30.1% to 31.5% of the total value of industrial transformation; • Increase the number of innovative micro, small and medium enterprises from 37.100 to 58.000; • Reduce energy consumption per unit of industrial GDP from 150.7 to 137 tons of oil equivalent per R$ million; • Increase participation in international trade from 1.36% to 1.6%; • Increase the value of the value of industrial transformation over the gross value of production of energy-related sectors from 64% to 66%; • Increase the number of urban households with broadband access from 13,8 million to 40 million.
NIB (2024)	• Increase agroindustry GDP by up to 3% per year from 2024 to 2026 and by up to 6% per year from 2027 to 2033; • Increase the mechanization of family farming to 28% in 2026 and to 35% in 2033; increase the technological development of family farming to 43% in 2026 and to 66% in 2033. • Produce 50% of national needs in medicines, vaccines, medical equipment and devices, materials, and other health supplies and technologies in 2026 and 70% in 2033. • Contract 2 million homes through the social housing programme, of which 500 thousand will be supplied by renewable energy (photovoltaic panels) by 2026 and 6.9 million homes (1.4 million with photovoltaic panels) by 2033; • Increase the share of electrified vehicles with national batteries in the sale of new vehicles to 3% in 2026 and to 33% in 2033. • Digitally transform 25% of industrial companies in 2026 and 50% in 2033. • Increase the share of biofuels and electricity in the transport energy matrix by 27% in 2026 and by 50% in 2033; • Increase the technological and sustainable use of biodiversity by 10% by 2026 and by 30% in 2033. • Achieve 55% mastery of defence-critical technologies by 2026 and 75% by 2033.

Table 4.7: Specific goals of the New Industry Brazil

NIB's specific goals	
Mission 1	I. Expand and strengthen national production of bio inputs and generate new goods, services, and biotechnology routes in the food sector and agricultural production; II. Reduce external dependence and increase the national production of machinery, agricultural implements, fertilizers, and other inputs and technologies relevant to agricultural production; III. Expand connectivity in rural areas and develop safe and appropriate digital equipment and solutions for agriculture, aimed at the production and distribution of food and other agricultural products destined for industry, with traceability; IV. Develop and expand the production of agricultural and agroindustrial machinery, equipment, and implements adapted to the needs and scale of family farming and its production organizations; V. Develop and implement relevant technologies to improve quality, add value, and reduce losses and waste in the food and agricultural sectors; VI. Recover degraded areas.
Mission 2	I. Develop technologies and increase national production of health goods and services to reduce external dependence, expanding access to health care in the Unified Health System (SUS) and preparing the Health Economic-Industrial Complex to face future public health emergencies; II. Lead the research, development, innovation, and production of technologies and services aimed at the prevention, diagnosis, and treatment of endemic and neglected diseases in the country and the region; III. Develop information and communication technologies, with national control of data, in order to increase SUS's response capacity, expand and qualify the supply of products and the provision of health services; IV. Strengthen national capacity in clinical and preclinical research in critical technologies to the prevention and treatment of diseases and conditions that most impact SUS; V. Lead links in the health production chains, intensive in the sustainable and innovative use of biodiversity.
Mission 3	I. Strengthen national production chains for water and sanitation infrastructure, mobility, transport logistics, telecommunications, data, and energy, strengthening production and trade integration, both nationally and with neighbouring countries; II. Expand local digital infrastructures with a focus on high-speed and resilient connectivity, including private networks and integration between hardware and software, for the provision of services within the scope of smart cities and industries; III. Strengthen national production chains for construction and infrastructure works, prioritizing digitalization, smart construction systems, sustainable materials, renewable energy, water and sewage networks, and storm drainage, especially for housing under the national housing and other investment programs; IV. Develop national technologies, goods, services, and companies for mobility systems, transport logistics, their parts and components, focused on the circular economy, optimization of water resources, energy transition, efficiency, and digitalization.

Mission 4	I. Strengthen and develop competitive national companies in disruptive and emerging digital technologies, in strategic segments for digital and technological sovereignty; II. Increase the national industry's productivity through the incorporation of digital technologies, especially those developed and produced in Brazil; III. Reduce productive and technological dependence on nano and microelectronic products and semiconductors, strengthening the industrial chain of information and communication technologies; IV. Increase the participation of national companies in the digital platform segment; V. Carry out technological updating of mature industrial regions.
Mission 5	I. Expand productive capacity through the production and adoption of inputs, including critical materials and minerals, low-carbon technologies and processes, with energy efficiency; II. Strengthen production chains based on circular economy and the sustainable and innovative use of biodiversity, develop bioeconomy industries, and promote the valorisation of standing forests and sustainable forest management; III. Strengthen industrial chains for energy transition, with a view to autonomy, energy efficiency, and diversification of the Brazilian matrix; IV. Develop strategic technologies for decarbonization, energy transition, and bioeconomy, catalysing national intrinsic advantages with a view to the leading role of Brazilian companies in the domestic and international markets; V. Ensure energy security, stimulating the production of low-cost oil and gas with a low carbon footprint.
Mission 6	I. Obtain strategic autonomy in production chains related to critical defence technologies, particularly in materials, propulsion, control, and communications; II. Strengthen defence, security, naval and aerospace industry chains, particularly in micro and nanoelectronics technologies; III. Develop and strengthen industrial chains to improve national remote sensing systems; IV. Expand domestic capabilities in cyber, nuclear, and space areas; V. Develop dual technologies and increase the use of technological spillovers between the civilian and military sectors; VI. Expand exports of defence products.

CHAPTER 5

Conclusion

Industrial policy had a comeback in the last decade, becoming again a key element of policymaking in both developing and developed countries. Given that, there is a growing debate about how this strategy should be applied in the 21st century -a pragmatic debate quite different from the ideological deadlock that constrained the use of such policy during the neoliberal era.

This work aims to contribute to this debate by evaluating the strategy of industrialization pursued by Brazil in the first quarter of the 21st century. This country was chosen as a case study due to its historical experience with industrial policy. Brazil was one of the main adherents of the import substitution model of industrialization in the 20th century. Moreover, it has already launched four different industrial policies in the 21st century and has been debating how this strategy could be improved to boost national development sustainably.

As demonstrated in this research, the Brazilian government has taken into consideration the recent debate about industrial policy and the political economy context while elaborating its latest plans of industrialization. As a result, Brazilian industrial policy presented a greater concern in export and innovation at the beginning of this century, influenced by the successful model of industrialization of East Asia and the emergence of new technologies. Yet, it has restored a more inward-looking approach from 2011 onwards, to face the challenges brought by globalization.

To be clear, PICTE was presented in 2003 as an innovative-oriented industrial policy that also worried about leveraging exports. PDP made exports a priority in 2008, but expanded significantly the sectoral scope of Brazilian industrial policy in order to transform a national industry or firm into one of the top five exporters in the world. PBM, in turn, revealed concern with the high competition with imports and the primarisation of exports. So, it took a more defensive approach to protect the national industry and restored actions to upgrade exports in 2011. Finally, NIB strengthened this inward-oriented approach, by seeking to guarantee national production of strategic goods in 2024 (table 4.1). It is a strategy that reminds the import substitution model, even though it does not rely essentially on tariffs as before, but mainly on credit and public procurement (table 4.5). Yet, NIB also aims to upgrade exports and implements a new strategy of industrialization in Brazil, based on missions.

The comparative analysis of the latest four Brazilian industrial policies performed in this research reinforces thus the understanding that “it is critical to understand the policy context in

which industrial policies are designed, implemented, and enforced in each country along its development trajectory in order to disentangle the variety of industrial policies we observe today" (Andreoni, 2017, pp. 246-248). Furthermore, it attests that different models of industrialization can coexist and complement each other (Gereffi and Wyman, 1987, p. 8).

In addition, this research depicted the resurgence of an industrial policy that seeks to replace imports by national production -a strategy that helped Brazil to industrialize in the 20th century and now resurfaces to minimize the external dependence of strategic goods. Importantly, this phenomenon appears to also be underway in other countries. The United States, for instance, has raised tariffs and subsidized companies to augment national production of chips and semiconductors through the CHIPS and Science Act. Given that, it would be relevant if further research could evaluate whether this concern also guides the industrial policy of other countries. That is, if autonomy in strategic goods is a common goal of the latest wave of industrial policies.

Besides comparing the goals and the targeting of the industrial policies implemented in Brazil in the 21st century, this research observed their institutional basis. It noted that, despite navigating amongst different paths of industrialization, this strategy has been built upon an evolving line of governance. The Brazilian Workers' Party has maintained and expanded the institutions responsible for national industrial policy. Moreover, it has tried to set more precise goals for such policy over time (table 4.6), showing alignment with the idea that the effectiveness of industrial policy depends on its institutional setting (Andreoni and Chang, 2019, pp. 12-17).

It is worth noting, however, that the policy documents of such industrial policies do not express the compromises asked for the firms benefited by its subsidies. So, further research should evaluate the reciprocal control mechanisms of Brazilian industrial policy. After all, such mechanisms proved to be essential in East Asia's industrialization, and their fortification is an old inquiry in Brazil. It would also be interesting to investigate if the New Industry Brazil will be able to accomplish its goals, given that this work is based on an ex-ante analysis of such policy and, as a consequence, did not intend to trace its ex-post effects.

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