

UNIVERSITÀ DEGLI STUDI “G. d’Annunzio”
Chieti-Pescara

SCUOLA SUPERIORE DI DOTTORATO

DOTTORATO DI RICERCA IN

Business, Institutions, Markets

CICLO

XXXIII

**Erratic Development in an Era of Accelerated Change:
Political Coalitions, Foreign Direct Investment, Technological Upgrading,
and the Automotive Transformation in Brazil (1988–2025)**

PhD Thesis by Henrique Estides Delgado

Thesis Director: Prof. Massimo Del Gatto

Coordinatore: Prof. Marco Angelone

President of the Defense Committee: Prof. Giuseppe Ioppolo

Doctoral Dissertation Defense Committee (Commissione Giudicatrice):

Prof. Carlo Nitsch, Prof. Carlo Pongetti, Prof. Dalila Ribaudó, Dott. Alfredo Cartone, Prof. Aaron Schneider.

Pescara, February 28, 2026

Table of Contents

1. Introduction.....	4
2. The Global Economic Transformation Race in the Automotive Industry: Shifting Global Technological Frontier until the Age of Green Digital Innovation.....	10
2.1. The automotive sector as a development arena	15
2.2. Automotive Producers	21
2.3. Automotive Suppliers and Global Value Chains.....	25
2.4. Emerging Technologies and Industry Trends	31
2.5. The emergence of non-Western states and their players in the automotive industry	40
2.6. A Qualitative Framework for Assessing the Shifting Global Technological Frontier as Outcomes in the Global Economic Transformation Race in the Automotive Industry Worldwide	43
3. Explaining variation in development outcomes across the top automotive producers	48
3.1. China: from Joint-Ventures to National Champions – strategic learning, growing internationalization and the breeding ground of the ongoing EV revolution.....	48
3.2. United States: The forerunner of socioeconomic change through automotive industrialization.....	53
3.3. Japan: The original display that leapfrogging to the first position is possible, but it takes coordination, quality and innovation.....	59
3.4. India: Diverse Ownership Structures – from Foreign-Owned Firms and Joint-Ventures to Tata and Other Indian Automakers	65
3.5. South Korea: The Chaebol Way.....	70
3.6. Germany: Between Legacy and Leadership, the Coordinated Market Economy on Wheels	73
3.7. Mexico: Producing and Exporting Within a Regional Value Chain.....	79
3.8. Brazil: Planning and Protecting the Liberal Market – Internationalization and Incomplete Development ..	84
4. Manufacturing Development: The Political Economy of Automotive Industrialization Driven by Coalitions, FDI Strategies, and other Determinants of Industrial Policy in Emerging Markets	94
4.1. Regimes of Accumulation and the place of Peripheral Fordism	105
4.2. Neoclassical Political Economy versus State-Centric Political Economy	111
4.3. The roots of the frictions.....	133
4.4. Regional Context: Dependencies and Possibilism	142
4.5. Firms' competition as an extension to States' competition	157
4.6. Institutional Steering: The Role of Policies in Automotive Upgrading	158
4.7. Changing and New International Perspectives on Industrial Policy	165
4.8. Industrial Policies in Brazil.....	172
5. The role of public policies in automotive upgrading.....	174
5.1. Structuring a Supportive Coalition in the Brazilian Automotive Sector.....	185
5.2. Automotive Sectoral Chamber	198
5.3. Brazilian Automotive Regime	209
5.4. Lula's first two terms in power (2003-2010).....	214
5.5. Innovate-Auto	221
5.6. Route 2030.....	228
5.7. Mover	229
5.8. Concluding remarks on the role of public policy	233
6. Case Studies: firm-level strategies and responses to macro-political environments and policy incentives.....	235
6.1. "The Exit Case": Ford Turns One Hundred and Fades Away	237
6.2. "Embedded Adaptation": The Case of Fiat, the Italian 'National Champion,' and Its Remarkable Success Story in Brazil	244

6.3. Concluding remarks	257
7. FDI, Local Content Requirements and International Sourcing: transaction-level evidence from the Brazilian automotive industry – the case of Innovate-Auto	258
7.1. The Panjiva Dataset	261
7.2. Initial analysis.....	265
7.3. Conclusions	278
8. Conclusion	280
References	285

1. Introduction

Automotive vehicles have long been, and remain, a central element of contemporary societies and their economies. Over time, automobiles have embodied not only constructed identities but also a wide array of critical inputs and relatively cutting-edge technologies drawn from multiple fields of research and production. Automakers have occupied core positions in various societies and economies as the organizations able to assemble all those inputs into coherent wholes endowed with high perception of value and objective usefulness. Today, as the world undergoes a rapid change led by innovative technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), high energy density batteries, and integrated circuits of ever-high processing power within ever-small dimensions, this integrative role of automakers and their products is being reshaped while attaining renewed relevance. As these technologies, all of which constitute core elements of modern vehicles, become more efficient and pervasive, the automotive sector reaffirms its place as a critical locus for the development, coordination, and control of multipurpose innovation.

Therefore, automotive industrialization and upgrading remain significant for both developed and developing countries, given their capacity to drive economic growth, technological advancement, and employment generation. To analyze and interpret some of these features, in this Thesis I put together an analytical combination between the macro-political economy of industrial governance and the micro-foundations of firm-level strategy. This allows for investigating the mechanisms through which domestic political settlements among individuals, organizations, and institutions interact with global structural constraints. This inquiry seeks to answer the following question: why and how the emergence of "erratic development" took place in Brazil in the decades following the 1988 Constitution? To address this, the argument is presented and tested across six

chapters and a conclusion. The analysis proceeds from a definition of the various consequences of relative distance from the global technological frontier and the role of technology in fostering and achieving development to an evaluation of the domestic political configurations that mediate the capacity of the nation to reach it, either as enablers or constrainers. This scope encompasses the period of the current Constitution, following Brazil's most recent democratic transition inaugurated in 1985. While the core of the investigation unfolds across six chapters that deal, in turn, with qualitative and quantitative evidence, the conclusion offers a concise synthesis of the findings and their implications for development theory in both political science and economics, reflecting the study's interdisciplinary nature.

After outlining the Thesis structure and providing a brief overview in this opening chapter, Chapter 2 establishes the analytical baseline for the study. It covers a set of meaningful outcomes of automotive industrialization worldwide, structured around the "Dependent Variable" (DV) of the analysis: i.e., the shifting global technological frontier. This frontier is currently shaped by the ongoing digital and energy transitions, here sometimes condensed as the global race for DigiGreen or DigiPower transformation¹, which have rekindled industrialization in an age of accelerated innovation and change. By defining the DV not merely as industrial output, but as technological value-capture and market share, this chapter argues that the automotive industry is undergoing a fundamental reorganization. The shift from mechanical engineering and oil-fueled combustion engines to a convergence of software, also in terms of IoT and AI, as well as electrification together

¹ While the digital component is straightforward, the variation in the section regarding the energy transition stems from its own uncertainties and dualities. There is certainly a transition pursued by states and lower-level organizations in terms of seeking for higher energy efficiency, reliability and security – i.e., the version emphasizing ‘power’. Undeniably, this very pursuit often emphasizes sustainability, alongside efforts to decrease pollution and preserve or improve the environment, thus the version emphasizing its ‘green’ aspects.

with other forms of decarbonization, is reshaping the global market just as previous industrial landmark innovations have done. Consequently, this chapter operationalizes "development" as the narrowing of the gap between local production capabilities and this moving global benchmark.

Following the evolution of this moving global benchmark, hand in hand with the different ways in which automotive industrialization has unfolded in representative countries, in Chapter 3, I cover the experiences throughout the twentieth century until this first quarter of the twenty-first century of the eight countries that currently count with the highest output of automotive production within their borders.

After mapping the global variation of outcomes that also highlight a few distinct pathways, determinants and other variables of interest sustaining those results, I move, in Chapter 4, to the explanatory framework, constructing and testing the validity of the "Independent Variables" of this Thesis's core analysis. This chapter engages with a range of scholarly works and ancillary sources that aim to explain both the economic growth and industrial development challenges facing Brazil, as well as specific ones dedicated to the specific case of automotive industrialization. Accordingly, I engage with different perceptions that influenced and were influenced by the literature on the Middle-Income Trap, positing that this trap has distinct economic and political components that are acutely manifested in the Brazilian automotive sector. The chapter contrasts the role of different policies as means to explain varying outcomes through time, focusing on the composition of political coalitions. It distinguishes between Developmental Class Coalitions which are long-term focused and enforce reciprocal control mechanisms aimed at technological upgrading and Rent-Seeking Coalitions, which prioritize short-term gains and capture subsidies without commensurate upgrading. The central argument here is that the variance in Brazilian industrial outcomes is a

function of the political difficulty of implementing "Progressive" (Developmentalist) policies. When the coalition between the State, Labor (unions), and Capital (automakers and associated sectors) is misaligned, policy inevitably reverts to "Conservative," short-term focused rent-seeking.

Chapter 5 serves as the qualitative core of the Thesis, offering a macro-institutional historical analysis of the policies structuring the Brazilian automotive sector from 1988 to 2025. This focus offers an original contribution to the field, as foundational works such as Helen Shapiro's *Engines of Growth* have largely focused on the period prior to 1988. Conversely, this Thesis examines the liberalization era marked by the disassembly of the import substitution regime (ISI) and the post-liberalization period as a continuum defined by recurrent short-term shifts between rent-seeking and developmental orientations. The chapter surveys the major sectoral regimes implemented over the last three decades: the 1992 Automotive Sectoral Chamber, the 1995 New Brazilian Automotive Regime, the 2013 Inovar-Auto program, the 2018 Rota 2030, and the 2024 Mover program. Additionally, it analyzes the specific measures implemented between 2003 and 2010 which, while not constituting a single macro-structural framework, significantly impacted the sector. Through a comparative perspective, this chapter explores how institutional arrangements induce the transfer and localization of technology. It examines specific variables such as the role of trade unions, the fragmenting preferences of the upper classes (industrial versus financial/agri-export capital), and the tradition of tripartite negotiations. The objective is to explain the dynamic "state of the art" of the sector its strengths and relative development, but also its missed opportunities identifying political instability as the key mechanism that shortens the policy time-horizon and prevents the maturation of technological upgrading.

In Chapter 6, the analysis shifts from the macro-political level to firm-level responses. This chapter presents case studies comparing the pathways of specific automakers as they digested the incentives described in Chapter 5. The analysis is anchored by two primary cases. The first is the "Exit Case," exemplified by Ford. This case represents the failure of conservative policy, in which, despite decades of subsidies, the firm failed to update its local portfolio to the global platform, leading to de-industrialization and its exit from the market after a century of production. Even though there is a relevant nuance, as Ford not only kept but expanded its engineering team in Brazil. The second is the "Embedded Adaptation Case," represented by Fiat/Stellantis. This case illustrates the success of skillfully navigating the volatile policy environment through a strategy of regional integration and "tropicalized" innovation, demonstrated by the historical trajectory of the Betim (Minas Gerais) and Goiana (Pernambuco) plants.

Meanwhile, Chapter 7 constitutes the quantitative core of the Thesis, providing an empirical assessment of the impact of policy withdrawal in the behavior of participant firms. Utilizing firm-level shipment data from the Panjiva database a source not previously used in academic analyses of this type, this chapter analyzes the expiration of Inovar-Auto in December 2017. As the most comprehensive industrial policy of the 2010s, Inovar-Auto utilized Local Content Requirements (LCR) to reduce trade deficits and incentivize modern vehicle production. The qualitative analysis of Chapter 5 sets the hypotheses for this quantitative test: it explains the intent and politics of LCR mandates, while Chapter 7 measures the "stickiness" of those supply chains once the legal mandate disappeared. The working assumption is that while prohibitive trade costs fell after the policy's removal, the "overhead" costs of maintaining local factories remained. By differentiating between intra-firm and arm's-length shipments, this chapter explores whether firms switched from locally

produced to imported inputs. The findings suggest that Innovate-Auto, although effective in increasing the number of MNEs with plants in Brazil working with upgraded technology, had limited success in fostering wider industrialization, as supply chains did not remain sticky once the regulatory constraint was lifted. Instead, firms largely reverted to importing inputs from the Rest of the World (ROW). Positively, not only for Inovar-Auto but for other policies in Brazil that promote R&D and the expansion of skilled labor, relatively less routine tasks were more likely to remain within the area of the previous regulatory constraint.

Finally, the eighth section of this Thesis provides a concise conclusion, synthesizing the preceding discussions and their policy implications. It juxtaposes the qualitative findings that inefficient or misaligned political coalitions limit policy consistency with the quantitative evidence of supply chain fragility following policy removal. The conclusion argues that the Brazilian automotive sector's inability to fully engage with the shifting global technological frontier does not stem from economic constraints, such as market size. Rather, it is the result of political coalitions that prioritize short-term, liquid gains over the long-term institutional development required for sustained technological upgrading. Nonetheless, as this Thesis demonstrates, instances of technological upgrading do occur in specific segments of the industry at different points in time, mainly due to policies set in motion by specific cross-class coalitions. This gives Brazil a distinctive middle-income or middle-ground position in terms of automotive industrialization: neither stagnant nor fully advanced, but situated somewhere in between, with certain areas of notable progress that are also worthy of being better understood, as they display pathways of catching-up, leapfrogging, and development more broadly.

2. The Global Economic Transformation Race in the Automotive Industry: Shifting Global Technological Frontier until the Age of Green Digital Innovation

There is an ongoing global race to harness and dictate the technological standards that will underpin the new industrialization process. This new industry is digital-based and would like to become energy-efficient. The emergence of this new industrialization represents a contemporary challenge where nations must rapidly adapt to digital advancements to remain competitive in global markets, as well as find ways to not stay behind in the pursuit of energy-efficiency. One of the characteristics that differentiate the new industrialization process is that products are merging with services through digital inputs. This fusion of products with services implies an important change in the division of labor both within and between countries as it breaks traditional sectoral boundaries and fosters competition among previously unrelated firms. These movements present new challenges for workers, business managers, and policymakers.

Nowhere else is this economic transformation race observed with all its features as in the automotive sector. Moreover, Brazil's experience in automotive industrialization illustrates many of the relevant challenges at stake for both nations and firms. Arguably, changes in capitalism are often more perceptible from an emerging country's perspective because these nations experience the direct impacts of global economic shifts in a multitude of discernible ways. The dual reliance on domestic and foreign capital, the varied expectations about the role of the state, the struggles that arise due to complex international trade dynamics with perceptible impact on the population, and the pressures of industrialization and modernization are all more vivid with their puzzles and complexities in

emerging nations. The dynamics of global capitalism make developing countries key sites for understanding the interplay between global economic forces and local social structures. This vantage point provides critical insights into the evolving nature of capitalism. Correspondingly, as proposed by Braudel (1983), even the observation of long-term stability(ies) does not mean absence of change, for a system, such as the market economy, “is itself constantly evolving and changing” (224).

As Brazil integrated into global value chains, the country encountered both opportunities and challenges in creating a growing industry for a growing market, as well as reaching and maintaining innovation and competitiveness. Similarly, in the current global race for digital and energy transformation, countries like Brazil must leverage international collaboration, technology transfer, and innovation to harness the full potential of the digital age. The framework is similar for the challenges of global energy transition. As will be demonstrated here, it is in the automotive sector that these two transformations – the digital and the green – get intertwined in a way that directly impacts the lives of a large part of humankind.

Meanwhile, the trajectory of Brazil's automotive sector reveals the consequences of industrialization that, despite establishing a broad base, remained insufficiently advanced and lacked global competitiveness in most areas. This serves as a warning for the digital age, where innovation's rapid pace leaves no room for delays. Brazil's focus on internal markets and foreign investment limited its international reach when it came to automobiles. As the world shifts to a digital economy, Brazil's experience illustrates the crucial need for proactive, timely adoption and development of technologies and policies to secure a competitive edge in this new era of global transformation. In the global race for digital and energy transformation, the stakes are even higher than in previous

critical junctures of industrial transformation, as the rapid pace of innovation leaves little room for error.

Marked by partnerships with multinational corporations and the adaptation of foreign technologies, the Brazilian automotive industry illustrates the gains and the limitations of different models of alliances in navigating global shifts. As the country has been host to the main players of the global automotive sector over time, the evolution of its market in relation to its policies provides an adequate vantage point to analyze industrial and policy trends. By using the concept of “automotive upgrading” as a lens, we can better understand the broader “global economic transformation race” that is reshaping industries across the world. This race, driven by rapid technological advancements, especially in terms of energy and digital innovations – which include the massive investments and advances achieved in the use of AI –, mirrors many of the industrial challenges faced during the evolution of the automotive sector, such as adapting to new technologies, shifting market demands, and global competition. Just as the automotive industry had to pivot to survive and thrive, today’s economies must embrace digital and energy transformation to remain competitive.

The ongoing Fourth Industrial Revolution, often referred here as “new industrialization” or “new technological revolution”, brings opportunities but also risks for those slow to adopt. As advanced technologies – like AI, automation, connectivity, and big data – redefine how industries operate, the stakes are higher than ever. By studying the automotive sector’s response to industrial shifts, we gain valuable insights into how economies can position themselves within this energy and digital race. It’s not just about technology and innovation but about how industries, policies, and labor markets adapt and evolve to leverage these tools for future growth and resilience.

In this sense, historical legacies and critical junctures must be taken into account (Collier and Munck, 2022), as well as the dynamics of path dependence that constrain the set of choices, with the caveat provided by North (1990), that if the stories narrated here eventually come to sound “like an inevitable, foreordained account, [they] should not. [Because,] at every step along the way there were choices — political and economic — that provided real alternatives. Path dependence is a way to narrow conceptually the choice set and link decision making through time. It is not a story of inevitability in which the past neatly predicts the future” (pp. 98-99).

The goal of this chapter is to outline the global breadth of variation possible in the dependent variable of our analysis. As the study subsequently concentrates on Brazil, the variation in the dependent variable narrows, as it becomes constrained by the actual outcomes made possible by Brazilian public policies — our main independent variable of interest — accompanied by and interacting with other independent variables, which are introduced in Chapter 4. Accordingly, Chapter 5 turns to the empirical variation in the variables manifested specifically in Brazil, focusing on developments observed between 1988 and 2025.

While Chapter 3 will focus on the extent of variation in automotive industrialization within major global automotive markets. Chapter 4, on the other hand, will explore the various theoretical frameworks and arguments that have historically been applied to the independent variables of this study, with a particular emphasis on those that are more closely applied to the Brazilian context. Ultimately, Chapter 5 presents the qualitative core of this analysis, putting together all that has been discussed in Chapters 2, 3 and 4, and applying them to a systematic analysis of the public policies that have shaped Brazil's automotive industrialization from 1988 to 2025.

In light of the above, I maintain that beginning with an examination of the global range of possible outcomes in automotive industrialization is essential in order to keep in mind the various alternative combinations of independent variables that lead to the different empirical outcomes of automotive industries around the world. This approach is arguably beneficial for a few reasons. First, because the variation observed within Brazil is, in the end, a subset of the broader variation manifested across the various jurisdictions of the global automotive sector. Second, because many of the major players involved in the Brazilian version of automotive industrialization are firms originating from several of these countries. Therefore, to some extent, they either constitute or interact with key explanatory variables in the core analysis of this study. Finally, by beginning with an examination of the determinants and characteristics of major automotive industries around the world to highlight existing empirical pathways and outcomes, I also underscore the global network identity of the automotive industry – a defining feature of this modern sector that has grown steadily over time and is all the more evident today.

The concise narratives of how the main global outcomes were achieved – here limited to the ten largest automotive markets in the 2020s – can be regarded as the initial alternative outcomes, in a broad sense, to the Brazilian case. Naturally, some of these cases differ more significantly from Brazil than others, but the argument is that they all involve important variables that are either absent or present to varying degrees in our core study, which focuses on how automotive industrialization takes place in Brazil.

2.1. The automotive sector as a development arena

Automotive industrialization has been pursued by many countries around the world as the means to move beyond low value-added activities, with the development of the automotive sector in Brazil being a prime example. After a process of decades of consolidation, the sector is now well-structured and serves as a beacon of industrial prowess in a country that is still developing and middle-income. Among industrial activities in Brazil, the automotive sector generates the most multipliers for the country's gross domestic product (GDP).

The sector was structured over the years by public policies that organized in a decisive way the incentives for its participants. The automotive industry's largest multinationals were attracted to operate in the country through different institutional arrangements involving the host country's private capital and the federative units. This Thesis analyzes how the variation in institutional arrangements across time, across Brazilian states, and in relation to multinational firms affect incentives for (i) transfer, incorporation, and local spillovers of technologies from multinationals; (ii) linkages and improved participation of Brazilian organizations in Global Value Chains (GVC); and (iii) densification of cooperation networks for innovation and socio-environmental sustainability.

Global automotive production went from 56,258,892 units in 1999 to a peak of 97,302,534 in 2017. Total production in 2022 would be 85,016,728, still an increase of almost 29 million units from the 1999 production level. During this time a transition consolidated from West to East and from developed countries to developing ones as the major sites of production.

While vehicle demand became saturated in the developed world, demand kept increasing in many parts of the developing world. Table 2.1. shows the distribution of global production in 2022 among the twenty-one largest producers.

Table 2.1. — Global Automotive Production by Country in 2022

TOTAL	85,016,728	11 INDONESIA	1,470,146
1 CHINA	27,020,615	12 FRANCE	1,383,173
2 USA	10,060,339	13 TURKEY	1,352,648
3 JAPAN	7,835,519	14 CANADA	1,228,735
4 INDIA	5,456,857	15 CZECH REP.	1,224,456
5 SOUTH KOREA	3,757,049	16 IRAN	1,064,298
6 GERMANY	3,677,820	17 SLOVAKIA	1,000,000
7 MEXICO	3,509,072	18 UK	876,614
8 BRAZIL	2,369,769	19 ITALY	796,394
9 SPAIN	2,219,462	20 MALAYSIA	702,275
10 THAILAND	1,883,515	21 RUSSIA	608,460

Source: OICA, 2023.

The twenty-one largest automobile producers in 2022 include developed and developing countries more or less evenly distributed. There is a larger production in emerging markets and developing economies (EMDEs) nonetheless. Nine countries produce more than 2 million units per year, and 17 countries produce more than 1 million.

As illustrated in Table 2.2, global production experienced a 9% increase from 2022 to 2024. During this period, China expanded its lead with a 16% growth, while the United States saw a 5% increase in production. The top four positions remained unchanged from 2022 to 2024.

China continues to distinguish itself in terms of production, exceeding 30 million vehicles produced annually. The United States maintains a robust second position with 10 million vehicles, followed by Japan and India.

Notably, Mexico surpassed Germany and South Korea within these two years. Meanwhile,

Brazil remained stable in the eighth position, followed by Spain, the last country to produce at least two million vehicles annually. The subsequent seven countries produce between one and two million vehicles. Finally, as an unintended consequence of the sanctions related to the war with Ukraine, Russia increased its production by 61% from 2022 to 2024, ascending to the 18th position.

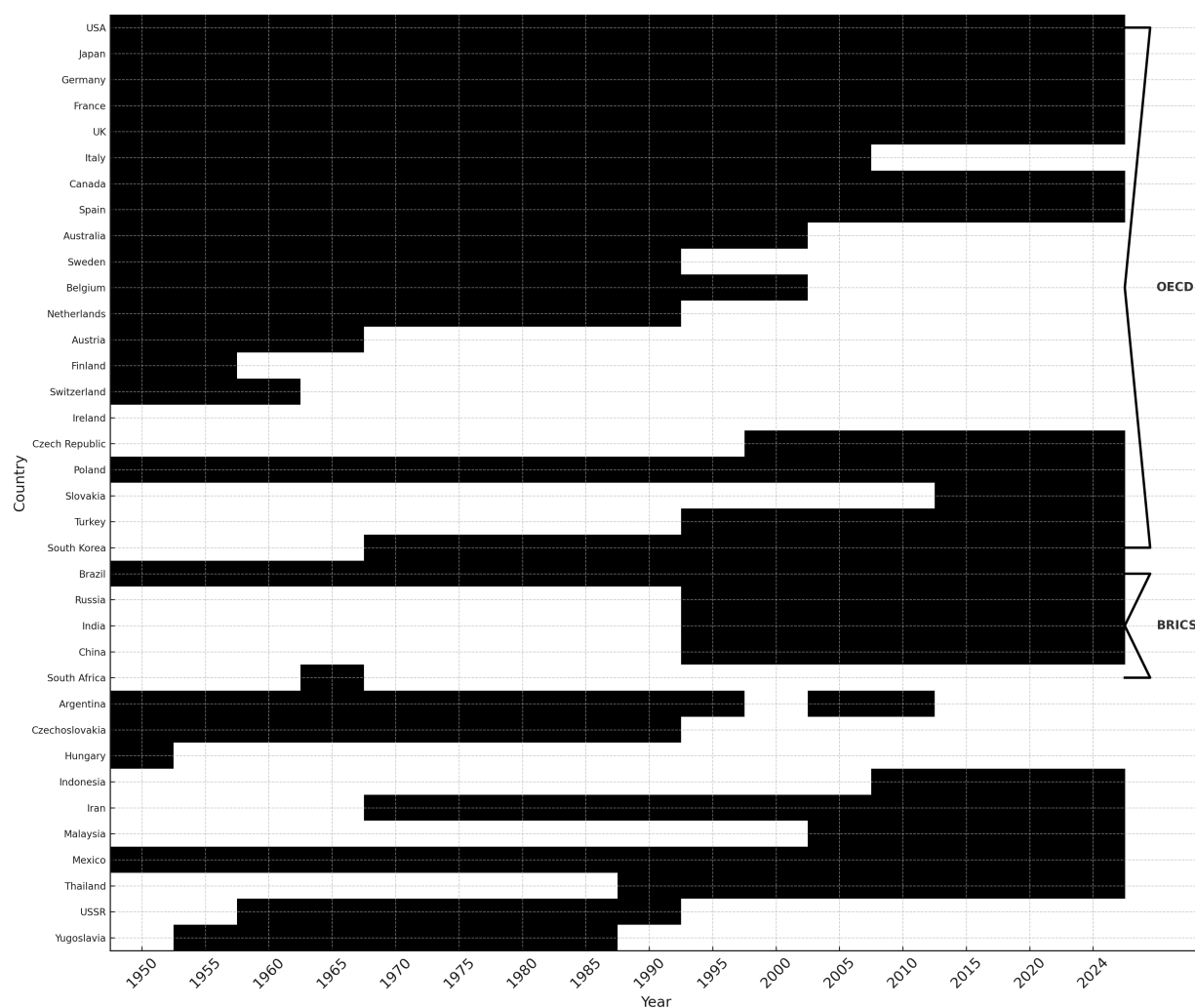
Table 2.2. — Global Automotive Production by Country in 2024

Rank	Country	Amount	Rank	Country	Amount
	TOTAL	92,504,337	11	CZECH REP.	1,458,892
1	CHINA	31,281,592	12	TURKEY	1,365,296
2	USA	10,562,188	13	FRANCE	1,357,701
3	JAPAN	8,234,681	14	CANADA	1,342,647
4	INDIA	6,014,691	15	INDONESIA	1,196,664
5	MEXICO	4,202,642	16	IRAN	1,077,839
6	SOUTH KOREA	4,127,252	17	SLOVAKIA	993,000
7	GERMANY	4,069,222	18	RUSSIA	982,665
8	BRAZIL	2,549,595	19	UK	905,233
9	SPAIN	2,376,504	20	MALAYSIA	790,347
10	THAILAND	1,468,997	21	ITALY	591,067

Source: OICA, 2025.

Meanwhile, Table 2.3. brings a heatmap of the countries that have been counted among the 21 largest vehicle producers in the 1950-2024 period. We see that Brazil has been one of the 21 largest vehicle producers every year since 1950. This is not the case neither for India nor China, for example.

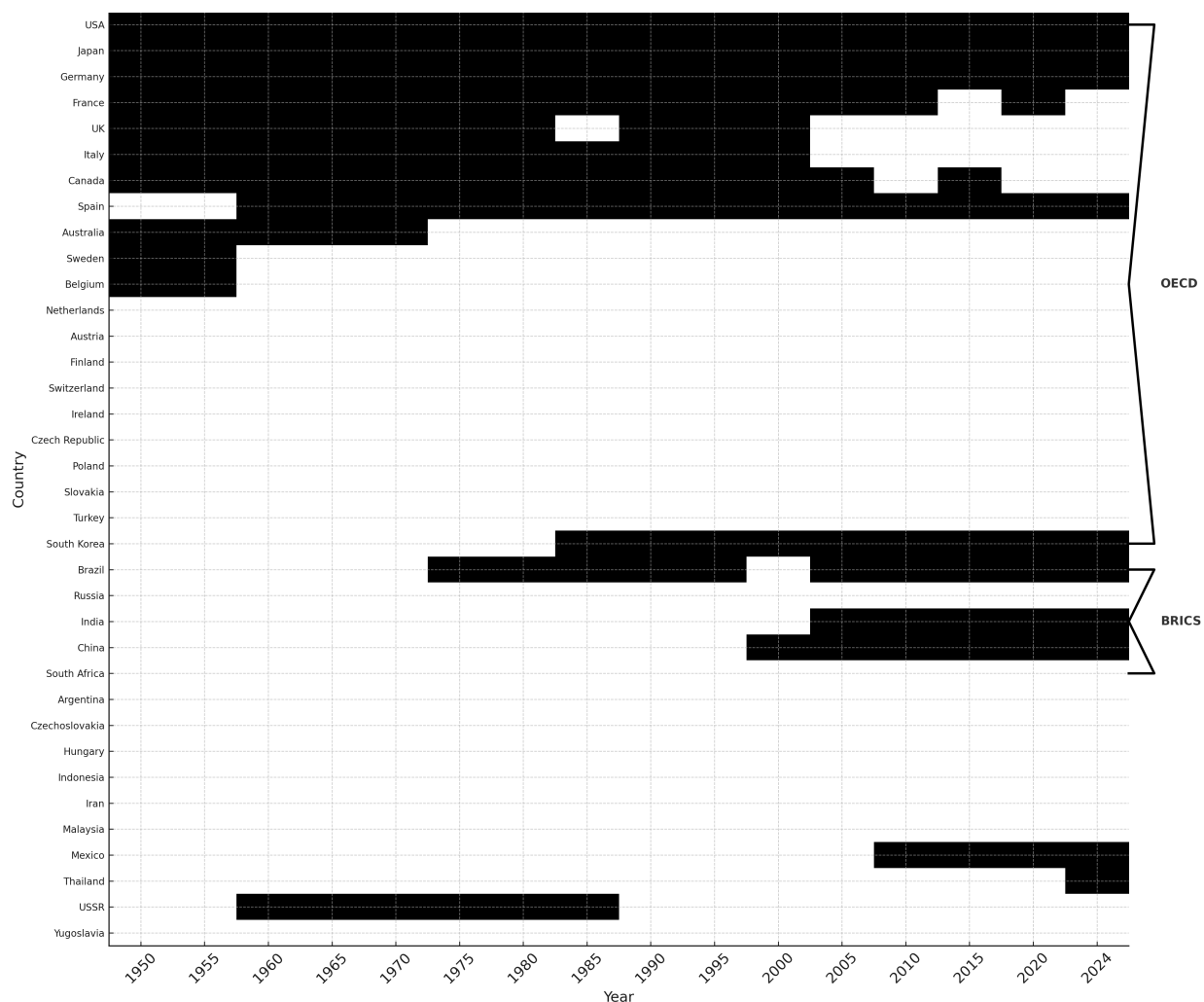
Table 2.3. — Top-21 Vehicle Producers 1950-2024 (dark = presence)



Source: OICA, various years.

A similar exercise is presented in Table 2.4 below but now showing a heatmap only of the countries that have been counted among the 10 largest vehicle producers in the 1950-2024 period. We can see that Brazil enters this group in the early 1970s and stays among the 10 largest vehicle producers worldwide but for a brief period encompassing the late 1990s and early 2000s. The United States, Japan, and Germany are the only three countries that have always been among the 10 largest vehicle producers since 1950.

Table 2.4 – Top-10 Vehicle Producers 1950-2024 (dark = presence)



Source: OICA, various years.

The automobile sector can be characterized by several dimensions, including size, effectiveness of technology transfer and innovation, integration in global value chains (GVCs), impact on domestic production and employment, policy compliance and adaptation, and socioeconomic impact and sustainability. These six dimensions serve as orientating labels to highlight significant differences across automotive industries. In the following country-specific

sections, each nation's automobile sector will be evaluated using these six explicit labels. Examining these aspects across the eight largest automobile producers in 2023 – China, the United States, Japan, India, South Korea, Germany, Mexico, and Brazil – allows for a nuanced understanding of how various countries' automotive industries differ, without attempting a comprehensive comparison.

This approach demonstrates how these key dimensions help characterize important differences in the automotive sectors of these countries. Each country has unique strengths and weaknesses that shape its role in the global automotive industry, and analyzing these factors sheds light on broader patterns of global economic transformation. Moreover, by establishing these dimensions, I lay the groundwork for a more focused analysis of variations within the Brazilian context, where these factors can be applied to examine the diverse outcomes in the country's automotive sector across time, regions of the country, and different manufacturers.

The variation in automotive industrialization is captured both at the industry level and at the firm level. At the industry level this study traces the evolution of the sector through cycles of boom and bust. This allows for international comparisons. At the firm level, the research covers the experiences of specific firms in the Brazilian context. These are organized as a set of case studies.

The concept of "automotive industrialization" is assessed by analyzing the interaction between two principal units of analysis: (i) industrial policies pertaining to the automotive sector – which, in the main section dedicated to Brazil, focuses on the period from 1988 until 2025 –, and (ii) the automakers operating within the country. This study concentrates on how these interactions have shaped the industrialization process within the automotive sector.

By examining the interplay between automakers and the policies that shape the industry, this approach seeks to provide a comprehensive and workable framework for evaluating the relative success of automotive industrialization in Brazil. Furthermore, this serves as a means to approach some of the determinants and the pathways involved in the ongoing “global race for digital and energy transformation”.

To be clear, in this study "automotive industrialization" is conceptualized as the dependent variable that encapsulates, in the current stage, the “global race for digital and energy transformation: new industrialization in the age of accelerated innovation”, stressing the perspective of a developing country, even when observing situations, pathways, and characteristics in developed countries.

To orientate the discussion, I propose a framework consisting of key dimensions that influence the development of the automotive sector and offer essential inputs for a robust qualitative analysis of each country's outcomes from a comparative perspective. A qualitative examination of automotive industrialization can be organized around six interrelated dimensions that elucidate the roles of both automakers and industrial policies. Instead of quantifying performance through a numerical index, this approach highlights the characteristics, interactions, and outcomes that define the sector's trajectory.

2.2. Automotive Producers

The world seems to have a plethora of automotive brands, but they are organized in an oligopolistic market structure. In 2017 there were 22 automotive producers producing at least 1 million units per year. Brazil's most emblematic industrial park is almost totally composed by multinational enterprises (MNEs).

Table 2.5 – Major Global Automotive Producers in 2017

Rank	Group	Production	Country of Origin
1	TOYOTA	10,466,051	Japan
2	VOLKSWAGEN	10,382,334	Germany
3	HYUNDAI	7,218,391	Korea
4	G.M.	6,856,880	USA
5	FORD	6,386,818	USA
6	NISSAN	5,769,277	Japan
7	HONDA	5,236,842	Japan
8	FIAT	4,600,847	Italy
9	RENAULT	4,153,589	France
10	PSA	3,649,742	France
11	SUZUKI	3,302,336	Japan
12	SAIC	2,866,913	China
13	DAIMLER AG	2,549,142	Germany
14	B.M.W.	2,505,741	Germany
15	GEELY	1,950,382	China
16	CHANGAN	1,616,457	China
17	MAZDA	1,607,602	Japan
18	DONGFENG MOTOR	1,450,999	China
19	BAIC	1,254,483	China
20	MITSUBISHI	1,210,263	Japan
21	SUBARU	1,073,057	Japan
22	GREAT WALL	1,041,025	China
23	TATA	932,387	India
24	IRAN KHODRO	710,869	Iran
25	SAIPA	648,324	Iran

Source: OICA, 2023.

Among the fifty top producers we have ten countries of origin. The nine listed in the table above – Japan, Germany, Korea, USA, Italy, France, China, India, and Iran – plus Russia. Although Western producers are very well positioned with Germany, USA, Italy and France, there is an overall

dominance of Asian producers. Especially among the last 25 of the first 50 producers, Asian companies, mainly Chinese, are widely represented. Unfortunately, the International Organization of Motor Vehicle Manufacturers (OICA) stopped computing this ranking in 2017.

As remarked by Sturgeon and Florida (2004, 52) “with its massive employment, huge corporations, and iconic products, [the motor vehicle industry] seems to sum up a country’s psyche – GM and Ford for the United States, Fiat and Ferrari for Italy, Toyota and Honda for Japan, Mercedes and BMW for Germany, Volvo and Saab for Sweden, and Hyundai and Kia for Korea”. Moreover, while in large, “advanced economies, motor vehicle employment is closely watched as a bellwether of manufacturing sector health, in many developing countries, creating and nurturing a local vehicle sector is one of the key goals of industrial policy”. In this dynamic, the brands that seem to sum up a country’s psyche where their headquarters are located also come to play a very relevant role in the psyches of the countries where their factories are hosted.

Table 2.6 — Revenue and Units sold in 2022 by the 20 carmakers with largest revenues

Rank	Carmaker	Revenue	Units sold
1	Fiat	R\$ 45.3 billion	429,591
2	Toyota	R\$ 39 bi	191,109
3	Chevrolet	R\$ 37.7 bi	291,036
4	Volkswagen	R\$ 31.4 bi	271,013
5	Jeep	R\$ 26.6 bi	137,339
6	Hyundai	R\$ 19.7 bi	187,651
7	Renault	R\$ 12.5 bi	125,930
8	Nissan	R\$ 8.2 bi	53,587
9	Honda	R\$ 7.5 bi	56,622
10	Caoa Chery	R\$ 6.2 bi	34,977

11	Mitsubishi	R\$ 6 bi	22,580
12	BMW	R\$ 5.6 bi	13,765
13	Ford	R\$ 5.4 bi	19,480
14	Peugeot	R\$ 4.7 bi	41,657
15	Citroën	R\$ 3.7 bi	32,048
16	Mercedes-Benz	R\$ 3.3 bi	8,833
17	Audi	R\$ 2.3 bi	5,482
18	Porsche	R\$ 2.2 bi	3,232
19	Volvo	R\$ 2.2 bi	5,267
20	Land Rover	R\$ 2 bi	3,653

Source: Jato Dynamics apud O Estado de S. Paulo, 2023.

Table 2.6 presents the earnings of automakers in Brazil for the year 2022. Notably, the top four companies have been operating in the country since prior to 1990. Jeep arrived in the northeast state of Pernambuco in 2015. Hyundai arrived in the state of São Paulo in 2012. Renault arrived in 1998 in Paraná. In 2001 Nissan would arrive in the country sharing a factory with Renault. Later on, Nissan would thereafter have a second factory in the state of Rio de Janeiro. Honda started producing cars in 1997 in São Paulo. Caoa started producing South Korean Hyundai cars in 2007 and in 2017 made the joint-venture with Chinese Chery. It has plants in Goiás and in São Paulo.

Mitsubishi started production in 1998 in Goiás in a joint-venture with local capital. In 2014 BMW would inaugurate its plant in Santa Catarina. Ford in the thirteenth position has not had a factory in the country since 2021. Before that Ford assembled cars in Brazil for a century and still has many retailers. Peugeot and Citroën are part of PSA group and they have produced cars together in Rio de Janeiro since 2001. Mercedes-Benz has been in Brazil since 1956 producing trucks and

buses. In 1999 it started producing cars in Minas Gerais but would stop production in the 2000s and convert the factory to trucks. In 2016 it inaugurated another car factory in São Paulo – incentivized by Innovate Auto – but would sell it in 2021 to Chinese Great Wall. Audi shares a factory with Volkswagen in Paraná. Porsche imports all its vehicles. Volvo also imports all its cars but has produced trucks and buses since 1979 in Brazil. Finally, Land Rover inaugurated its factory in 2016 in Rio de Janeiro.

2.3. Automotive Suppliers and Global Value Chains

One of the most important ways in which the automotive industry has changed in the last decades has to do with the role that different suppliers play in the making of automobiles. The sector went through massive reorganization punctuated by important emerging phenomena. One of these trends was the emergence to dominance of first-tier suppliers. This class of suppliers play a crucial role in the global automotive production chain, serving as direct suppliers to automakers and providing key components that are critical to vehicle assembly and functionality. These companies are responsible for the production of complex and essential parts, often integrating advanced technology and ensuring high standards of quality and reliability. Their contributions are vital for automakers to meet production schedules, maintain competitiveness, and innovate in areas such as safety, efficiency, and connectivity.

The automotive sector encompasses both vehicle manufacturers and the vast ecosystem of parts and equipment suppliers organized into a multi-tier production hierarchy. This structure is commonly described in terms of Tier 1, Tier 2, and Tier 3 firms, a sequence that maps the flow of

value and responsibility along the supply chain. Tier 1 suppliers maintain direct contracts with automakers, delivering complex systems and components that are immediately integrated into vehicle assembly. Over time, Tier 1 companies have evolved from simple parts providers into pivotal technological partners, often driving innovation and design across the entire value chain. Nowadays, the power of Tier 1 firms is hardly overstated. Meanwhile, along the supply chain, Tier 2 suppliers provide sub-components and materials to Tier 1 firms, while Tier 3 suppliers form the base of the network, producing raw inputs and basic parts.

As previously mentioned in the section on Germany, global Tier 1 leaders such as Bosch now operate as strategic nodes within these networks linking various chains of supply. Moreover, as critical parts of the automobiles are outsourced to Tier 1, they end up shaping industry standards in both hardware and software through their cross-platform integration with virtually every major automaker worldwide.

Bosch, for example, provides a wide range of components to various automakers in many different countries, including electronic systems, braking systems, and powertrain solutions. Bosch's expertise in developing advanced components and systems makes it indispensable to the automotive industry, extending beyond vehicle manufacturing to the technologies that support maintenance, diagnostics, and repair in garages and service centers over the world. For example, Bosch's advanced driver assistance systems (ADAS) became a common feature of current vehicles' safety packages. As a first-tier supplier, Bosch collaborates closely with various automakers to develop and integrate these technologies, ensuring that vehicles meet the latest standards in safety, efficiency, and performance.

A curious case in this respect – and one very attuned to the chaebol way described above in the section on South Korea – is the one of Hyundai. The Korean conglomerate exemplifies the role

of a first-tier supplier by producing not only vehicles but also key components such as engines and transmissions, which are essential for the final assembly not only of their vehicles but also of some competitors in the market for cars. As an automaker with vertical integration, Hyundai manufactures a significant portion of its components in-house, which allows it to maintain stringent quality control and ensure seamless integration of parts. This vertical integration also enables Hyundai to innovate rapidly and adapt to changing market demands, particularly in areas like EVs.

The emergence of first-tier suppliers in the automotive industry has significantly impacted Brazilian suppliers not only by increasing competition but mainly by disrupting the way in which business is done. Scale economies on a global scale became even more important to sustain raising standards for quality, technology, and efficiency, with shorter product lifecycles. The situation is exemplified by the sale of Brazilian Metal Leve to the German Mahle conglomerate in 1996. That sale marked a turning point for the country's automotive supply industry.

As global first-tiers like Bosch consolidated the market, they brought a pipeline of ever-advancing technologies hand in hand with establishing closer and closer relationships with automakers. This new framework allows first-tiers to define many trends in the industry, often sidelining smaller, local suppliers who struggle to play by these new rules. This shift pushed Brazilian suppliers to innovate in certain niches and specialize in other tiers to remain competitive. Nonetheless, most players were either excluded from supply chains or absorbed by competitors.

Objectively, the transformation described above dismantled the "Triple Alliance" that had governed the Brazilian automotive sector from the 1950s through the 1980s. During the ISI era, the state orchestrated a pact where multinational automakers accessed the protected market in exchange for utilizing a supply base dominated by national capital. In this dynamic, the employer organization

of the Brazilian auto-parts industry, Sindipeças, acted as a powerful political broker for the domestic industrial bourgeoisie. However, the trade liberalization of the 1990s shattered this arrangement. As global sourcing strategies took hold and protectionist barriers fell, the "national component" requirement became obsolete in practice, leading to a rapid denationalization of the sector. Sindipeças, once at the vanguard of Brazilian capital, saw its membership profile shift dramatically as traditional family-owned national champions were acquired by global Tier 1 conglomerates and others seeking immediate market share and established client relationships, effectively ending the era of autonomous national technological development in most critical systems.

In this new liberalized context, Rules of Origin (RoO) within the Mercosur framework emerged as the primary, albeit imperfect, industrial policy instrument designed to retain some semblance of local value addition. While nominally intended to foster regional industrial integration by mandating a minimum regional content index (typically 60%), these rules often functioned more as a safeguard for assembly jobs rather than a mechanism for technological deepening. The concept of "local content" has become increasingly flexible, enabling global Tier-1 suppliers, known as "systemistas," operating within or in proximity to automakers' industrial complexes, to import high-value sub-components while conducting final assembly locally. As a result, Rules of Origin (RoO) policies have effectively sustained the volume of activity within Brazil. However, they have not succeeded in preventing the erosion of the domestic engineering base, as strategic decision-making and research and development centers remain headquartered in Europe, Japan, or the United States, relegating local operations to build-to-print subsidiaries.

Today, the participation of genuine Brazilian capital is largely relegated to the lower rungs of the supply chain, marking a stark stratification of the industry. While the Tier 1 level is almost

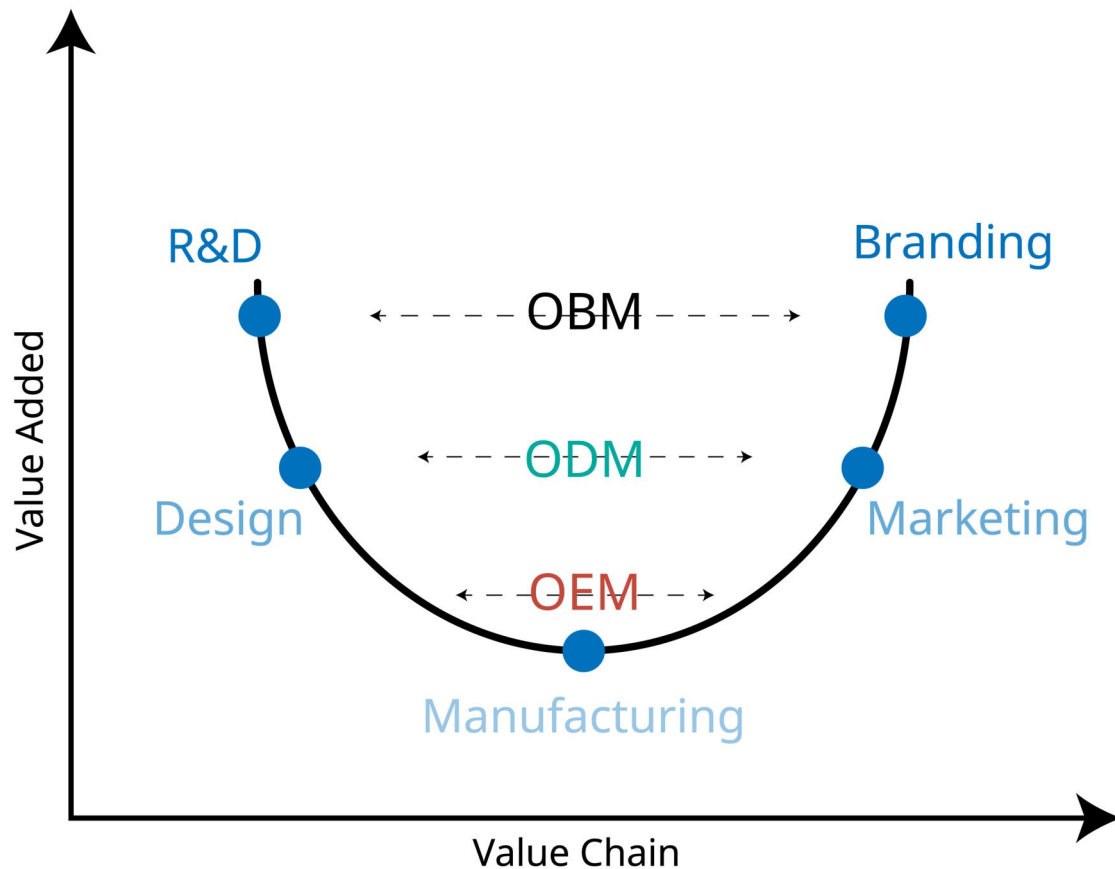
exclusively occupied by multinational giants capable of handling complex modular assembly and global platform standardization, Brazilian firms have survived by entrenching themselves in Tier 2 and Tier 3 positions, supplying raw materials, simple castings, and injection-molded plastics, or by retreating into the aftermarket segment where brand loyalty and distribution networks offer some protection against global competition. Sindipeças now represents this heterogeneous mix, managing the tensions between the dominant foreign-owned systems integrators and the fragmented base of local lower tier suppliers.

This structure reflects a persistent dependency where national firms are price-takers in a hierarchy defined by global innovation cycles, having lost the direct interface with OEMs that characterized the developmentalist period (Shapiro, 1994).

The figure below helps to visualize the current distribution of value that is captured in the automotive value chain. Known as the smile curve, Figure 2.1 heuristically displays the distribution of value added currently captured by three different types of players populating the value chain: i.e., Original Equipment Manufacturer (OEM), Original Design Manufacturer (ODM), and Original Brand Manufacturer (OBM). They are three main types of production relationships in the manufacturing sector.

These arrangements are fundamentally differentiated along a clear continuum defined by the degree of operational control, intellectual property rights, and product liability assumed by the manufacturing entity. The OBM model signifies the maximum assumption of these factors, while the OEM represents the minimum.

Figure 2.1 – The Smile Curve



Specifically, the OEM model involves a firm producing goods strictly based on the client's proprietary design and specifications for subsequent resale. In this arrangement, the manufacturer acts as a pure contractor, assuming little to no responsibility for the product's conceptualization or market positioning. The ODM model involves the manufacturer taking on a significantly broader scope, encompassing the design, development, and complete fabrication of a product. These products are subsequently branded and marketed by the client, who leverages the manufacturer's existing intellectual property and supply chain expertise. The OBM model represents the highest stage of integration, where the enterprise conceptualizes, designs, manufactures, and sells the products under its proprietary label. This vertical integration grants the OBM full command over

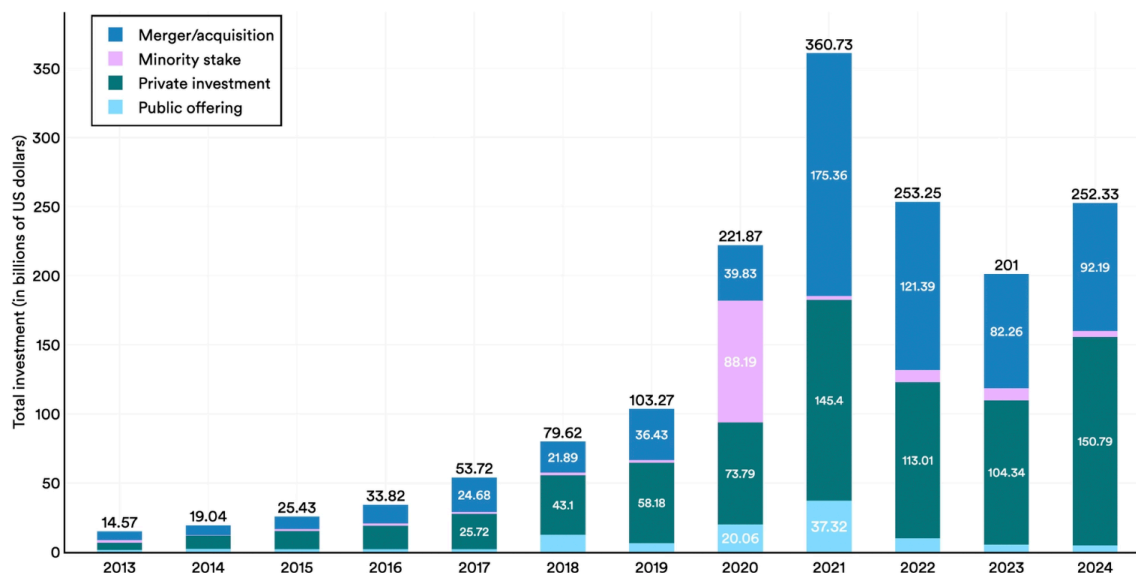
the entire value chain, from initial R&D and design through production quality control to final market dissemination and branding strategy.

2.4. Emerging Technologies and Industry Trends

The rise of the digital economy together with robotization and calls for zero-emissions technologies to power vehicles bring new constraints and opportunities that are reshaping not only the automotive industry but its relationship with the rest of the economy. The role of technology-induced and institutionally induced transitions in automotive sector is currently on the spotlight given the spread of digital content in automobiles – both in terms of the more mature non-connected electronic devices, as well as the upsurging connected electronic devices (i.e., Internet of Things – IoT) and the use of AI –, together with the transition towards electric vehicles and other low-emission engines.

Objectively, of these emerging technologies, at least AI is a kind of General-Purpose Technology (GPT). GPTs are innovations that generate pervasive change in multiple areas, from the individual level to whole systems, and whose propagations and effects are protracted (Bresnahan and Trajtenberg, 1995; Helpman, 1998). GPTs do not appear very often, and the current race to get to leadership positions in the development and application of AI is manifested in the massive investments destined to AI in the past decade (Figure 2.2), which have accelerated in the most recent years.

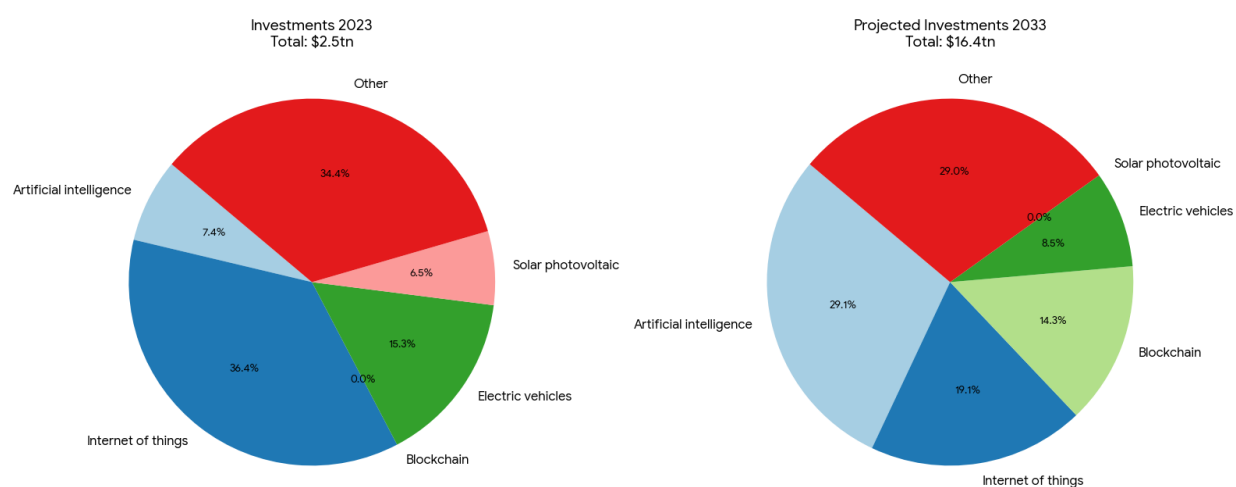
Figure 2.2 — Global corporate investment in AI by investment activity, 2013–24



Source: Maslej et al. (2025).

Remarkably, beyond AI itself, the frontier technologies attracting the largest investments worldwide in the mid-2020s are also directly linked to the automotive industry. In particular, alongside AI, electric vehicles, taken as a distinct category of innovation, and IoT rank among the top three areas of global investment. Moreover, UNCTAD expect these three technologies to remain among the largest investment destinations around the mid-2030s (Figure 2.3).

Figure 2.3 — Estimated investment share and market size of selected frontier technologies, 2023 and 2033



Source: UNCTAD (2025).

The automotive industry is experiencing a profound transformation that impacts nearly every aspect of the sector, ranging from advanced production and distribution strategies to innovative mobility solutions integrated to digital communications systems. In order to maintain a competitive edge in the market, automobile manufacturers must adeptly manage complex systems of supply networks, production and after-sales services, which are increasingly susceptible to a growing set of risks that must be addressed and uncertainties that are beyond control. This complexity necessitates a strategic approach to both operations and risk management to navigate the evolving landscape effectively. The challenge to produce and deliver “the right vehicle to the right place at the promised time” is stimulating the design of technological concepts relying on artificial intelligence (AI) and other data-driven methods that try to address “uncertainties in multivariant production and logistics” (Dürr et al., 2021). In this context, AI can, for instance, “be used to

anticipate customer wishes better, to generate planned objects, and to match them to real orders” (492).

In terms of the pursuit of energy efficiency, the shift to electro-mobility, in its various degrees, is significantly transforming the landscape for OEMs, ODMs, and OBMs, as well as the broader automotive supply chain. This shift, however, presents challenges as OEMs manage the simultaneous production of traditional, hybrid, and electric vehicles, leading to efficiency challenges on integrated assembly lines (Göppert et al., 2021). This situation contributes to the trend of an increasing diversity of products with shorter product lifecycles, thus necessitating frequent reconfigurations of production lines. The challenge is both for policymakers and automakers in defining optimal ways to facilitate and move forward with the reconfigurations of production lines.

In the past, a similar situation took place in Brazil with the promotion of automobiles that could run on ethanol and other biofuels. In response to the global oil shocks of the 1970s, Brazil, which had limited oil exploration at the time, became a pioneer in developing technologies to replace oil in mobility solutions. Nowadays, there is an ongoing heated debate in Brazil between three alternatives for efficient low-emission engines to be prevalently adopted in the country: (i) electric vehicles, (ii) engines that run on ethanol and other biofuels, (iii) a mixture of i and ii. While alternative i is favored in Europe, China, and the U.S., Brazilian researchers tend to argue that option ii would be both more viable and favorable to the country. Meanwhile, alternative iii appears as a compromise between Brazilian competitive advantages in ethanol and other green biofuels on the one hand, and international pressures for convergence towards battery-run electric vehicles on the other hand.

Considering that “technological progress has been a driver of aggregate prosperity, but also of labor market disruption” (Baldwin, Haaland, and Venables 2021), it is both theorized (Brynjolfsson and McAfee 2014, Baldwin 2019) and empirically observed (Acemoglu and Restrepo 2018 and 2019) that such disruption manifests in two main formats: (i) labor-eliminating technical change, and (ii) skill-biased technical change. When formats (i) and (ii) are considered together, the overall perception is that rise of the digital economy together with uneasiness around the relationship between steady growth and environmental degradation can transform profoundly the means to achieve higher incomes for various sectors of the population. This has distributional consequences both within as well as between countries. Therefore, MNEs – that are the major operators linking countries – offer a privileged perspective on some of the most critical questions of our time. Arguably, the automotive sector in Brazil offers a privileged space to study the evolution of MNEs relations with a developing country and its industrial policies as well as transformations in GVCs.

The capitalist world economy that constitutes our modern world-system (Wallerstein, 1979; 2004; 2011) is going through important changes. Among them, there are the moveable margins of profits. Technological change – hand in hand with institutional adaptation to it – has moved the margins of profits towards the digital economy. We are currently experiencing a transition from globalization in which MNEs captured rents by organizing and coordinating GVCs to a form of globalization in which the rents are available through digitalization within and across value chains. As data – whether it is text, voice, video, financial, command and control, behavioral revealed-preferences and privacy-related, informational, situational, telemetric, locational and mobility-related, biometric and health-related, metadata, cryptographic hashes and proofs, and so forth –

travels through digital networks, the chains of value become significantly subject to two types of power wielded by private and state organizations in advantageous network positions².

These two forms of power can be employed in both foreign policy and business operations, often in an intertwined manner. Farrell and Newman (2019) define these as panopticon and chokepoint effects, which arise from and are implemented through networks to secure and sustain advantages as well as to leverage negotiations. Panopticon effects refer to the use by advantaged states and other organizations of their "network position to extract informational advantages" (46), whereas chokepoint effects refer to the capacity to cut off third parties from network flows. Overall, the defining characteristic of the current era – as shaped by its emerging technologies and institutions – is that “identity and control”, those fundamental building blocks of human social organization theorized by White (2002) and discussed in greater detail below, are being progressively mediated and parameterized by digital networks. Such networks are now, and will increasingly be, pervasive across the products and services of the automotive sector³. Also increasingly, as the technology of digital networks create their own rules about how society should behave, the mechanisms of surveillance capitalism merge in an overwhelming arrangement the rules of the game and the technology of digital networks (Zuboff, 2019).

Accordingly, cybersecurity threats are expected to increase in direct proportion to the growing connectivity enabled by communication technologies. Security can be understood in two

² This is likely the reason behind UNCTAD's estimate that by 2033 blockchain will move from negligible levels in 2023 to occupy the third position in terms of investment share and market size among selected frontier technologies, as shown in Figure 2.3 below.

³ Beyond the automotive sector, this analytical framework can be expanded in the future to encompass mobility more broadly, also considering the increasing significance of multimodality. Moreover, this is linked to the emerging concept of Mobility-as-a-Service (MaaS), which is being enabled by Information and Communication Technologies (ICT). As mobility continues to be a major social divide even in developed countries, the challenges associated with new mobility platforms and social equity are “expected to be even more complicated in developing countries, as current practices from ridesourcing, bike-sharing and scooter-sharing providers portrait a grim picture” (Ho and Tirachini, 2024, 167).

distinct ways: unintentional failures (since equipment or systems may contain flaws that allow attacks) and intentional vulnerabilities (deliberately built-in access points that enable external interference). As nearly all infrastructures, systems, and devices become interconnected, concerns intensify about the potential impact that security breaches, whether deliberate or accidental, could have on critical infrastructure, products, services, populations, and even entire countries.

As vehicles increasingly integrate features akin to those found in smartphones, such as cameras, GPS, and voice commands, plus various systems connected through IoT and similar technologies of wireless connectivity, they simultaneously become susceptible to hacking and wireless sabotage. For instance, a 2015 *Wired* article documented an experiment in which researchers successfully manipulated a reporter's SUV remotely, causing the stereo to play at high volume, activating the windshield wipers, and even shutting off the engine while the vehicle was traveling at 70 mph on a highway near St. Louis. As the experiment revealed, commands coming from several miles away can be directed not only to systems like the radio and air conditioning but also to those that control a vehicle's most vital operations, such as steering, transmission, braking, and acceleration (Greenberg, 2015).

Strange (1996) already pointed out that “the accelerating pace of technological change” is a prime cause of the “shift in the state-market balance of power” (7). Moreover, because the technological change is skill-biased and core-periphery dynamics changed from being simply North-South to becoming more functionally oriented in GVCs, certain models start to behave in a not so clear way. Politics is unavoidably at the center of GVC. Something that Mayer and Phillips (2017) point out through the concept of “outsourcing governance”, a practice in which a variety of governance functions and authority are delegated to private agents. Even such scattered governance

“of the evolving GVC world can be properly theorized as revolving around the inseparability of economic and political power” (1). Indeed, three main elements of the GVC approach are precisely power, institutions, and inter-firm governance (Sturgeon, Biesebroeck and Gereffi, 2008).

Additionally, there are two types of works modelling firm’s decision which are basically divided between location decisions and organizational decisions, as summarized by Chor (2019) while listing the models used by economists to analyze GVCs. The interest in establishing and participating in GVCs is partially related to the fact that they are expensive structures to put in place and, as such, enjoy high levels of stickiness. Arguably, only persistent shocks to the global economy and to the logic of a specific GVC will entail relocation.

In terms of studies on the causes and consequences of inequality, during the period of “hyperglobalisation” of 1986-2008, “trade integration and inequality grew very much in parallel even at fairly high frequencies” (Antràs, 2020, 35), because those harmed by trade integration were not adequately compensated. Moreover, without proper adjustments it “seems likely” that current “technological developments will aggravate income inequality in both advanced and less developed economies” (p. 38). Different scenarios might be projected using general equilibrium approaches, which are currently divided in four main types: trade volume, trade pattern, welfare gains, labor markets and inequality.

If globalization is about a reduction in tariffs and transportation costs that gave rise to the unbundling of activities along GVCs, the disruption of GVCs – partially linked to dissatisfactions with aspects of globalization – can lead to new distribution of production across space. As both tariff and non-tariff barriers can be treated as increases in transportation costs, one way to think about the challenges to globalization is to consider artificial increases in transportation costs. In general, goods,

services, ideas, and people can all be hindered by these costs. In specific, such increases impact the distribution of international trade. Over the past few years, there have been increasing discussions and actions promoting the reconfiguration of GVCs towards "nearshoring" or "friendshoring". Meanwhile, these can be traced to protectionist and isolationist shift in parties and the electorate as documented in Colantone, Ottaviano, and Stanig (2021) leading to the election of anti-globalization leaders. In this sense, the backlash against globalization is political, since there are clear shortcomings in the way it has been dealt with.

Challenges to globalization are not new though. As part of a process, the backlash on globalization precedes a few relatively recent inflection points highlighted by observers that see globalization at a crossroads: the disruptions caused by the Covid pandemic, the Russia-Ukraine War, and the US-China rivalry. While each of the preceding facts has the characteristic of inflection points in the organization of the global economy, there has been a growing dissatisfaction with globalization for decades (Stiglitz, 2002) manifested, inter alia, in the rise of right-wing populism (Rodrik, 2021). Additionally, after years of worldwide tariff reductions there has been a surge in new protectionist measures put in place by left and right-wing governments.

Globalization is also undergoing a change from being more intensive in the international transaction of goods from manufacturing industries to becoming more intensive in the international transaction of services and goods from information industries (Van der Marel, 2020). Baldwin (2019) argues that global trade of services – taking place through tele-migration, for instance – will have a sweeping effect in the global economy, changing the nature of globalization. Accordingly, Pol Antràs (2020) points out that it is digital technologies that are likely to sustain and expand GVCs in this scenario of “slowbalization” – one in which, since 2008, globalization is not expanding but it is

not declining either. From different angles, globalization is stalling because international trade as a share of GDP has reached a portion of the global economy that serves somehow as a natural limit.

Ultimately, globalization is at the same time a long historical process that began alongside the emergence of capitalism in the sixteenth century as well as a more contemporary phenomenon derived from increasingly integrated multinational production and trading systems. Multinational production networks that emerged and expanded in the past sixty years gave globalization its current form. From time to time, technological progress brings about profound change. Today, the exponential expansion of digital technologies is poised to drive a new evolution in the globalization process. If technological conditions make viable to become as globalized as never before, there are mounting tensions that feed political action aimed at taming and redirecting the course of globalization. All the same, information and communication technologies lie at the core of this transformation, enabling qualitative changes in how inputs, outputs, and economic surpluses are organized, controlled, and distributed.

This study examines these dynamics through the automotive sector, with particular attention to their implications for inequality and development, things that are measurable both within and between countries.

2.5. The emergence of non-Western states and their players in the automotive industry

The contemporary automotive industry is undergoing significant transformations influenced by accelerated technological change and shifting global dynamics. One aspect of these dynamics has to do with the emergence of a multipolar world where non-Western states increasingly assert their

influence. This shift is evident in the automotive industry, where countries like China and India have become key players. These nations leverage state policies and large domestic markets to drive innovation and expansion. China's aggressive push for electric vehicles (EVs), supported by substantial government subsidies and a robust manufacturing ecosystem, exemplifies this trend. Similarly, India's burgeoning automotive industry benefits from a combination of government initiatives and private sector dynamism.

Other large non-Western markets, such as Russia and Iran had already developed their own domestic automobile brands. However, they do not have a meaningful incursion into foreign markets. On the other hand, the Indian experience of buying global brands such as Land Rover and Jaguar, as well as the recent international expansion of Chinese EV brands, demonstrates that emerging economies are not merely passive recipients of technology but are actively shaping the innovation landscape, challenging the traditional dominance of Western automakers.

Take the Latin American market for example. Once dominated primarily by the United States and secondarily by Brazilian-made vehicles, in recent years China has reshaped Latin America's automotive landscape, firmly establishing itself as the region's leading vehicle supplier. By 2023, Chinese exports to the region had skyrocketed to \$8.56 billion (R\$41.43 billion), a dramatic increase from \$2.18 billion (R\$8.78 billion) in 2019. Accounting for 20% of the total value of automotive imports in Latin America, China displaced the United States, which had dominated the market until 2021 but saw its share shrink to 17%, while Brazilian-made vehicles also lost ground, declining from 14% to 11%.

If the focus is placed on the electric vehicle (EV) sector, we find an even greater Chinese dominance. Slightly over half of all EVs sold in Latin America originate from China, which also

supplies virtually all of the region's electric buses. China's growing integration into the region's automotive ecosystem marks a strategic shift that highlights both its economic influence and its role in shaping the future of the global automotive industry.

Unlike Latin America, markets like the European Union and the United States, protected by tariffs specifically targeting Chinese imports, have managed to limit Chinese penetration into their automotive sectors. However, in Latin America, Chinese automakers are doubling down on increasing their footprints. No other region outside Asia relies so heavily on Chinese vehicles, reflecting China's growing role not only as Latin America's second-largest trade partner, but also as the biggest trading partner of various countries in the region, including Brazil, Argentina, and Chile.

China's success in Latin America goes beyond mere exports. Chinese players are also ramping up their investments, particularly in Brazil, the region's largest market and top automotive production hub. BYD, for example, is building a state-of-the-art factory in Camaçari, Bahia, where Ford once operated. Set to produce 150,000 electric vehicles annually, it will be the largest Chinese EV facility outside Asia. Similarly, GWM has repurposed a former Mercedes-Benz plant in Iracemápolis, São Paulo, to manufacture 100,000 EVs per year.

This trajectory has been evolving for years already, as “the leading role of Chinese companies in the electric vehicles market creates interesting opportunities for countries in the region. For example, in 2014 BYD announced a plant in Brazil to produce chassis for electric buses with an initial investment of 90 million dollars, which opened in 2017. In 2019, they announced an expansion of this plant, to produce solar panels, with an estimated investment of 300 million dollars.” (Closset, Plottier and Kreiter, 2023, 59-60). By early 2026, in its revamped Camaçari plant, BYD is still simply assembling Semi Knocked Down (SKD) vehicles, with not much participation of

Brazilian inputs, but the company has already invested over 500 million dollars and anticipates actual local production – i.e., not simply SKD or CKD forms – by the second semester of 2026. Moreover, BYD affirms that its plan is to manufacture cars in Brazil not only for the domestic market but also for exports.

2.6. A Qualitative Framework for Assessing the Shifting Global Technological Frontier as Outcomes in the Global Economic Transformation Race in the Automotive Industry Worldwide

To analyze the quality and depth of automotive industrialization across the selected countries, this study employs a comprehensive framework built upon six core dimensions. These dimensions capture the interplay between state-led industrial policies and firm-level strategies, allowing for a nuanced comparative assessment of how different national models respond to evolving economic and technological pressures. Throughout the framework, ‘development’ is understood in relational terms, as a country’s position vis-à-vis a shifting technological frontier. Because the frontier itself changes over time, the assessment is necessarily time-specific: what counts as leadership in one period may represent something else in another. This framing highlights that the objective is not merely to achieve industrialization in a general sense, but specifically to reach or approach the industrial frontier. Moreover, to be clear, services and commerce, as industries of the tertiary sector, are also part of the industrial frontier and of industrial development as defined here. This framework goes beyond simply increasing industrial activity or output. Industrialization at the frontier implies adopting and/or developing cutting-edge technologies, processes, and standards that characterize the leading edge of global industrial capabilities, thereby fostering competitiveness and innovation.

Ultimately, it underlines a dynamic and forward-looking vision of industrialization centered on technological advancement and structural transformation.

The first dimension concerns the scale and investment depth of the automotive sector, focusing on its material footprint and maturity. Industrial policies shape this dimension by providing incentives, setting output and export targets, and facilitating supportive infrastructure. Conversely, automakers' investment strategies — encompassing production volumes, local sales, export levels, capital expenditure, and employment generation — reflect the industry's actual capacity and embeddedness within the national economy. Together, these factors determine the sector's ability to sustain large-scale operations. They also matter because they condition the sector's ability to generate and sustain capital accumulation also through economic rents, whether through economies of scale, control over essential assets and standards, brand strength, or exclusive access to finance, technology, and distribution networks. In this context, industrial maturity is not merely a quantitative measure but also a foundation for market power. This aspect, therefore, aids in discerning when production capacity translates into strategic leverage rather than simply an increase in assembly volume.

The second core dimension relates to technological depth, learning, and innovation capacities. Here, the focus is not only on the presence of advanced technologies but also on the capabilities required to learn, adapt, and improve them over time. Innovation encompasses both individual and organizational dimensions, as both grapple with technological advancement that might be channeled to forging a workforce that is more skillful and oriented to non-routine tasks that are, by definition, harder to automatize or substitute in other ways. Aspects observed include problem-solving capacity, engineering integration, supplier development, and capacity to assimilate

external knowledge. This distinction delineates episodic technology adoption and development from the sustained accumulation of capabilities. In this sense, industrial policy is pivotal in promoting local research and development, mandating or incentivizing technology transfer from multinational firms, and cultivating domestic innovation ecosystems. The contribution of automakers is observed in their ability to internalize advanced technologies, localize production processes, and adapt global innovations to the national context, whether of the host or home country. Moreover, engagement in product development, technical training, and collaboration with local research institutions signal the extent to which innovation has become an embedded feature of the national automotive landscape.

The third dimension examines the extent of global value chain integration. Yet integration alone is insufficient. The critical question is what share of value, such as profits, knowledge, and strategic control, remains domestically retained and/or captured versus appropriated elsewhere in the chain. Therefore, the framework focuses on governance positions within GVCs, including whether domestic actors control design, critical components, standards, or platform interfaces. This reframes "integration" as a question of hierarchy and value capture, not merely participation. After all, one way or another, everyone participates in the global economy, and are integrated in value chains, even if unknowingly. As such, from a policy standpoint, this entails efforts to strategically reduce, or more precisely steer, trade barriers, establish advantageous partnerships, and promote the export of vehicles and components. Meanwhile, for automakers, integration is reflected in their participation in global supply networks, the sophistication of sourcing and logistics systems, and the ability to meet international standards. This dimension assesses whether the sector remains inward-looking or positions itself competitively on the global stage.

Closely related is the fourth dimension, which emphasizes the domestic production and employment effects of the sector. Policymakers typically aim to support production within national borders to foster stable, high-quality employment and stimulate a robust local supplier base. This dimension is also a proxy for the notion of domestic embeddedness, which checks whether, how and by how much the automotive sector is linked to local suppliers, skills formation, and regional production systems. Conversely, it could be the case that it remains thinly connected and enclave-like. Employment and supplier density matter because they indicate diffusion of capabilities beyond lead firms. In that sense, the focus is not simply on job counts, but on the quality of linkages within the firms, immediately around them, and also those through which the sector generates broader industrial spillovers. For instance, once more the concept of routineness, mentioned in the second dimension, appears. Inasmuch as workers that are more skillful and oriented to non-routine tasks become less amenable to automation through computers, digital services — including AI —, and robotics, these jobs tend to be more secure and well-paid, due to their very characteristics of being less codified and predictable. In all, it is observed the way in which automakers contribute by sustaining production levels, distributing and improving employment and wages, as well as investing in local manufacturing and assembly facilities, highlighting the sector's potential function as a pillar of industrial employment and economic diversification.

The fifth dimension focuses on responsiveness to regulation and policy goals, centering on the dynamics of compliance and adaptation. Sound industrial policies define clear expectations regarding local content, sustainability, and technological upgrading, and their effectiveness depends on adjusting to industrial conditions while maintaining their enforceability. The responses of automakers, particularly their willingness and ability to comply with requirements and align with

national development priorities, serve as indicators of mutual adjustment, relational quality and alignment in the sector. Responsiveness to policy goals is therefore interpreted as part of an adaptive relational capacity that sustains an upgrading trajectory under changing technological and political constraints both at home/host and geopolitically. Inasmuch as the frontier moves and development must also be assessed dynamically, the key issue under the spotlight here is whether policies and firms can pivot as the sources of competitiveness shift, for example, from mechanical capabilities toward software, electrification, advanced materials, and new regulatory regimes.

Finally, the framework considers socio-economic spillovers and environmental sustainability. This dimension evaluates how policies foster regional development and income growth while contributing to broader and more diffuse social improvements and environmental responsibility. Automakers contribute to these goals through tax revenues, wage distribution, community engagement, social programs and projects, philanthropic activities, constructive spillovers and various forms of positive externalities, such as local infrastructure investment and deeper local economic integration supported by thoughtful ESG (Environmental, Social, and Governance) strategies. They also play a role through active efforts to reduce and offset emissions, as well as to improve energy efficiency and waste management across their operations.

Taken together, these six dimensions provide the analytical tools to identify specific strengths, structural challenges, and opportunities in each national context, supporting a robust understanding of the drivers and limitations of automotive development.

3. Explaining variation in development outcomes across the top automotive producers

The sequence of national cases that are presented in this chapter follows the automotive production ranking in Table 2.1, encompassing the eight countries that are currently the top producers of automobiles in the world.

3.1. China: from Joint-Ventures to National Champions — strategic learning, growing internationalization and the breeding ground of the ongoing EV revolution

China is by far the largest producer, followed by the United States then Japan. China became the largest producer in 2009, and these top positions have remained stable since 2011. The journey to becoming the world's number one producer was long and strategically planned for China. It is, therefore, a prime example of how to build an entire sophisticated industry from the ground up, based on meticulous long-term and periodic planning — through, for instance, China's Five-Year Plans, implemented since 1953 — alongside decisive policies promoting, on the supply side, national content, technology transfer, and innovation. Characteristically, the country heavily relied on foreign direct investment (FDI) through joint ventures with local capital. These joint ventures facilitated technology transfer and the accumulation of managerial expertise through learning-by-doing, both essential features for building the domestic industry's capabilities. Over the years, China perfected this active learning-by-doing mechanism, hand-in-hand with the competitive emulation of successful industrial products.

In a nutshell, the state fostered an environment where local firms could absorb and adapt advanced technologies and practices from their foreign partners and competitors. This approach generated significant spillovers and spinoffs, whereby local firms not only improved their production processes but also innovated and expanded their capabilities. The state policy actively supported these developments, providing infrastructure, financial incentives, and regulatory frameworks that nurtured the growth of a vast automotive industrial park. Today, this industrial park is characterized by its extensive network of suppliers, manufacturers, and research institutions, making China a formidable player in the global automotive market. Although much of what China was able to do relied on the incentives stemming from the distinctive attraction of its massive consumer market, the country did not stop there and, in 2023, China surpassed Japan to become, for the first time, the world's largest car exporter.

The central importance defined by the Chinese state to the automotive industry stems from the fact that this is a sector that provides large multipliers in Leontief input-output models, indicating its substantial impact on the broader economy. For instance, the study by Garcia, Kizior, and Simons (2020) illustrates how the automotive sector stimulates demand across various industries, including steel, electronics, and services. This interconnectedness explains why countries with large populations, such as China, prioritize the automotive industry as part of their development strategies. By fostering a robust automotive sector, these countries can generate significant employment, enhance technological capabilities, and stimulate economic growth.

China's strategic emphasis on the automotive industry reflects a broader understanding of its role in driving industrialization and economic modernization. Examples of this strategic emphasis include more recently the implementation of aggressive policies promoting the production and

adoption of electric vehicles (EVs). These measures have not only solidified China's position as a global automotive leader by effectively harnessing the home advantage of its massive market, but also aligned with its goals of enhancing energy security and increasing its participation in the export markets of higher value-added products. Moreover, China's early adoption of EVs and its heavy investment in developing the technologies necessary to support this new mobility standard represent a clear case of strategic leapfrogging — a situation that can be described as “latecomers trying something different ahead of the forerunners, thereby leaping over them” (Lee 2021, 123).

It is quite clear that China's rise to the top of the global automotive industry was not merely a result of passive market forces but the outcome of strategic decisions that harnessed market forces to accomplish the objective of fostering national firms that are increasingly dominant and competitive. This strategic approach involved carefully planned as well as ingeniously adapted policies and initiatives that incentivized both domestic innovation and international collaboration. Such a multifaceted pathway to industrial upgrading underscores China's deliberate efforts to transform its automotive sector into a cornerstone of its industrial and economic prowess.

In the mid 2020s, Chinese automotive firms started to send FDI abroad in an unprecedented robust manner. Some observers point out that these investments are part of a second wave of Chinese global investment (White, 2025). The current one follows an unprecedented acquisition campaign in early 2010s by a group of Chinese billionaires. While that first wave was characterized by significant debt financing, to acquire prominent assets across the United Kingdom, the European Union and the United States, the current one is more internationally diversified and promoted by firms that are, at the same time, more well-established at home and promising in terms of their proprietary assets. Led by firms such as solar panel producer Longi Green Energy Technology, battery

powerhouse CATL, and automakers BYD and GWM, this ongoing wave is less driven by personalism and more focused on maximizing return on investment and strengthening brand identity. Their challenge is to avoid the many pitfalls committed by the first wave and that made it not last. For that, their executives will need to be more culturally aware and their strategies more sophisticated. FDI is not a trivial pursuit, as the firms that engage in it must learn to navigate a reality in which diverse social, political, economic, and legal systems come into not just close contact, but a continuous interaction. This interaction requires substantial investment to acquire legal and political know-how that is both applicable within each jurisdiction and capable of bridging across them.

In an appalling incident, for example, the technologically sophisticated automaker BYD had 163 Chinese workers rescued by Brazilian labor officials from “slavery-like conditions” while working on the construction of BYD’s first car plant in Brazil, at the end of 2024 (Pitombo, 2024; Pooler, 2025). Although BYD responded by terminating the Chinese subcontractor responsible for building the factory – BYD’s first car plant outside Asia –, situations like this not only damage reputations and undermine efforts to strengthen brand identity, but they also showcase a significant oversight and a failure to learn from previous challenges encountered by Chinese firms in navigating foreign institutional environments. The entire episode underscored the sine qua non importance of relying on adequate local legal and political know-how regarding the ‘rules of the game’ applicable in each jurisdiction. While it is observed that Chinese firms are realizing that achieving success in FDI necessitates having a competitive product and employing the appropriate local talent, some misjudgments show that the latter still needs to be done more thoroughly and in accordance with local institutions.

Keeping such a cautionary tale in mind, the most relevant point to highlight is that China is now very close to achieving the sustainable internationalization of its automakers. In doing so, it is following in the footsteps of Japan and South Korea, which, after developing the capacity and quality of their own brands domestically, eventually internationalized production and captured the lion's share of many major foreign markets with flagship brands such as Toyota and Hyundai, among others. By 2025, China is projected to maintain its position as the leading producer and consumer market for automobiles. Additionally, it has recently emerged as the foremost exporter and has initiated a strategic effort to enhance its global market share through FDI. Initially, this is evidenced by increasing FDI flows, but it is anticipated that substantial stocks of Chinese FDI might become a common feature worldwide.

In concluding this country-specific subsection, the evaluation of China's automobile sector across six dimensions reveals a landscape defined by exceptional state-led success and rapidly maturing firm-level capabilities. Regarding market scale, the sector is bolstered by decisive industrial policies that have fostered a massive domestic base, though automakers – while titans at home – are still in the nascent stages of true international expansion. In the realm of technology transfer and innovation, the institutionalized joint venture (JV) scheme has proven exceptionally effective in embedding automotive technology within the national fabric. Automakers track closely behind, exhibiting a strong positive outlook driven by their adept navigation of the electrification shift.

Integration into global value chains (GVCs) presents a more nuanced picture; while industrial policies have effectively laid the groundwork for connectivity, Chinese automakers largely remain in the early phases of establishing deep global networks. Conversely, the impact on domestic production and employment is profound, supported by policies that have maximized local value

capture, with national firms increasingly dominating the domestic market and beginning to project power abroad. Responsiveness to regulation is similarly high, characterized by strong alignment between state directives and corporate strategy. Finally, regarding socioeconomic impact and sustainability, the sector demonstrates a comprehensive commitment to national development goals. Ultimately, the Chinese case stands out as a paradigm of effective state intervention, where strategic and nationalist-oriented policymaking has served as the primary engine of sectoral development over time.

3.2. United States: The forerunner of socioeconomic change through automotive industrialization

Even though the United States is not the birthplace of the automobile, the country is the birthplace of automotive industrialization. Iconic mass production processes and products originated in the country, setting the automotive sector as the fulcrum around which the country's entire industry would evolve for decades. The Ford Model T revolutionized the industry by establishing the very production process, alongside a regime of accumulation and distribution that would characterize a whole epoch. Fordism would become the name that defined a period from the 1920s to the 1970s in which manufacturing dominated the means of production and accumulation in the US. Characterized by assembly line production and economies of scale, Fordism was central to the U.S.'s rise to economic dominance. The United States achieved not only economic preeminence but also superpower status during this period. The automobile encapsulated the American way of life. For decades, the automobile became a symbol of American culture,

representing freedom, mobility, and industrial strength. Producing 10 million automobiles per year, the US is still way ahead of most countries.

By the mid-20th century, the United States had solidified its position as a global economic superpower, partially due to its leadership in automotive production, with its many upstream and downstream connections with the rest of the economy, as well as the usefulness of its technological developments to other applications. For decades, the scale and efficiency of American manufacturing, particularly in the automotive sector and the industries connected to it, were unparalleled. The production of millions of vehicles annually not only fueled domestic prosperity but also reinforced the U.S.'s influence in global markets as its major automakers entered foreign markets through exports and FDI. For many, the U.S. cars were more than just a product; they reflected American leadership in innovation and industrial might.

The success of the U.S. automotive industry was also a reflection of the broader economic and social trends of the time. As manufacturing became the backbone of the economy, the widespread availability of cars led to the development of suburbs, transformed urban planning, and influenced the cultural landscape as portrayed in movies and TV ads. Cars were no longer just a means of transportation but also an integral part of the country's identity.

Even today, after the former Steel Belt became known as the Rust Belt, the legacy of the U.S. automotive industry is evident. Although the global landscape has become much more competitive, with other nations emerging as significant players in automotive production and with their companies securing much larger market shares, the U.S. remains a key producer, manufacturing around 10 million vehicles annually. This enduring capability underscores the country's ongoing influence in the global automotive sector and its historical role as the birthplace of large-scale

automotive industrialization. And the U.S. is more than just legacy companies, the country is also leading the auto industry's shift to software and electrification. Even though Tesla cars are not as affordable as Chinese EVs, by 2024 Tesla is by far the biggest by market capitalization. On record, Tesla's highest market cap was US\$1.24 trillion, reached in November 2021⁴. In this ranking, Tesla has been followed by Toyota in a distant second place.

Finally, in assessing the United States across the same six dimensions delineated at the end of this chapter's section 1 – “Automotive Industry Worldwide and in Brazil” –, the country presents a profile of enduring industrial heft, underpinned by a decentralized, market-oriented policy framework. This analysis unveils the continued resilience of U.S. automakers while revealing the distinct character of American industrial policy, which, though often concealed or rebranded, remains a potent force. This is particularly pertinent in the promotion of innovations that bridge economic cycles, as well as in critical junctures when the dominance of U.S. automakers is challenged.

First, in terms of size and scale, federal and state incentive programs have played a crucial role in developing and sustaining one of the world's largest automotive consumer markets. Historically, these programs refrained from imposing explicit production mandates, favoring indirect support. However, clearer intervention becomes visible when concerns arise about overly successful foreign competition, exemplified by the 1985 Plaza Accord's impact on Japanese automakers and the nationalist – if not outright mercantilist – strain advocated more recently by President Trump. Meanwhile, the “Detroit Three,”⁵ alongside Tesla and a robust set of transplant

⁴ As of August 2024, Tesla's market cap is around US\$700 billion. Meanwhile, Toyota is around US\$250 billion, immediately followed by Chinese BYD at US\$95 billion.

⁵ Tellingly, one of Detroit's Big Three automakers, Chrysler, is now a junior partner in Stellantis – one of the world's most internationally diversified automotive groups. Basically, Stellantis serves as an umbrella organization for legacy

producers, give U.S. automakers a broad global manufacturing footprint and extensive domestic sales volumes. Nevertheless, despite this scale, their global market shares have increasingly eroded since the 1990s, indicating a trajectory that faces significant competitive headwinds.

Second, regarding the effectiveness of technology transfer and innovation, the ecosystem is highly mature. Public and private R&D funding, Defense Advanced Research Projects Agency (DARPA) spillovers, and the Inflation Reduction Act's clean-tech credits have all encouraged the diffusion of various innovations, including more functional engines, advanced batteries, semiconductors, and autonomous-vehicle know-how. Yet, as these policies rely heavily on private uptake, the relevance of automakers in setting industry benchmarks is paramount. U.S. firms remain leaders in software-defined vehicles — exemplified by Tesla and GM's Ultium platform — and patent output, even if they still trail Asian rivals in battery cost curves. The outlook here remains stable, anchored by deep technological capabilities.

From the perspective of integration into global value chains, U.S. policies are manifested in trade agreements such as NAFTA (now USMCA) that support regional production networks. This is currently balanced by an uptick in selective reshoring incentives and ad-hoc tariffs that have complicated supply-chain planning. Meanwhile, automakers remain deeply embedded in North American and trans-Pacific value chains, though they have been decreasing their participation in various global markets where they were once dominant. Furthermore, export intensity is lower than

brands such as Peugeot, Citroën, Fiat, Alfa Romeo, Chrysler, Ram, and Jeep. Being particularly dominated by investors originally associated to Italy's Fiat, its current chief operating officer (CEO) is an Italian executive, Antonio Filosa, who rose to that role after a successful long tenure in South America — particularly in Brazil, where he obtained Brazilian citizenship while propelling Fiat to market leadership and significantly expanding the group's other brands. A press release published on Stellantis's website when Filosa was nominated the group's CEO, highlights his role in launching the U.S. iconic Jeep brand in Brazil through “the creation of the Pernambuco plant, one of South America's largest automotive hubs, [...] which quickly [turned Brazil into] the brand's leading market outside the United States.” (Stellantis, 2025). By 2025, in terms of sales volume, Stellantis appears as the world's fifth-largest automaker, ahead of Ford and General Motors, the other two automakers forming Detroit's Big Three.

in Europe or East Asia, and it remains unclear how growing pressures for decoupling from China will impact automakers that rely increasingly on key Chinese links within specific GVCs—such as GM and Tesla.

As for the impact on domestic production and employment, targeted loan guarantees and pandemic-era rescue packages have stabilized output in recent years, while new battery and EV-component plants are expanding employment in the South and Midwest. However, over the long term, policies have been less robust in boosting domestic production relative to regional and class disparities. While the industry benefits from a plethora of diffuse support initiatives that retain high-value activities like design within the U.S., the country reached its peak production capacity decades ago. Employment has secularly declined due to automation and supply chain shifts, though the diffuse policy landscape still ensures the industry remains a major domestic employer. Automakers collectively assemble roughly ten million vehicles a year and anchor hundreds of Tier-1 suppliers, yet overall unionized employment remains well below its postwar peak.

Regarding policy compliance and adaptation, the U.S. regulatory environment is characterized by flexibility, with Corporate Average Fuel Economy (CAFE) standards and Buy-America provisions undergoing periodic adjustments. In general, industrial policies provide considerable leeway for automakers, while occasionally supporting investments in game-changing technologies. Automakers generally comply, although their progress in adapting to worldwide market demands, as well as fleet electrification and emissions reduction, has been inconsistent—influenced significantly by lobbying efforts and American consumer preferences for trucks and SUVs. A key observation is that automakers, most notably Tesla, benefit significantly from public incentives. Tesla is currently a primary beneficiary of federal tax credits for electric vehicle purchases,

complemented by government loans and tax breaks. These incentives, alongside subnational rebates, make EV ownership more attractive, though federal benefits explicitly exclude vehicles from Chinese brands.

Finally, concerning socio-economic impact and sustainability, the landscape is evolving. Federal and state initiatives, such as those for charging infrastructure, just-transition funding, and advanced-manufacturing tax credits, have begun channeling investment towards low-carbon mobility, even though the political consensus on decarbonization remains fractured. Meanwhile, automakers make significant contributions to GDP and play a critical role in the cities and regions where they operate, evidenced by multibillion-dollar battery "gigafactories" in Michigan, Georgia, and Tennessee. However, they continue to face scrutiny regarding lifecycle emissions, supply-chain sustainability, and labor practices.

Overall, the evaluation of U.S. automakers and American industrial policy demonstrates a balanced, though not fully optimized, interaction between globally significant firms and a diverse array of diffused industrial policies. This results in a robust, albeit less centrally coordinated, trajectory of automotive industrialization compared to China's directive model, or the state-led frameworks of South Korea and Japan. During the Fordist era and the immediate postwar decades—under the lingering influence of the New Deal—the U.S. arguably represented the apex of automotive industrialization globally. Over time, however, this position has deteriorated, symbolized by the transformation of the Steel Belt into the Rust Belt. U.S. automakers gradually lost ground due to internal factors and the success of foreign industrial policies. Yet, given its exceptionally high starting point, the U.S. industry remains prominent. While the process of creative destruction fuels hopes of renewed leadership — with Tesla as the prime example — the trajectory is complex. Tesla's ascent,

occasionally marred by erratic leadership, raises questions about whether this new wave can match the global structural impact historically achieved by U.S. automakers during the heyday of the internal combustion engine.

3.3. Japan: The original display that leapfrogging to the first position is possible, but it takes coordination, quality and innovation

The United States is currently followed relatively closely only by Japan, another case of a country associated with a past golden era of being the leader of the global automotive industry, before entering in some sort of relative stagnation. The East-Asian country appears as the main early example of how this industrialization can be replicated somewhere else adapting to local circumstances and bringing economic change. The history of the industry in Japan can be divided in two periods. The first period spanned from 1920s until World War II and was controlled by Ford and General Motors. The second period followed World War II and saw a complete dominance of local players in the automotive market. In the 1950s and 1960s a handful of iconic Japanese brands such as Honda started car production.

In a story focused on decisions by states and corporations contextualized by existing economic forces and their possible dynamics, there is one person that shaped in an important way the emerging Japanese industrial success after World War II. His name was Edwards Deming. And Deming's story connects the experiences and interactions between the U.S. and Japan in an illustrative way. Following the war, the U.S. decided to stimulate the recovery of Japanese industry, and Deming, formerly engaged in inspecting and streamlining production during the U.S. war effort,

was one of the consultants sent to cooperate with the Japanese. The processes suggested by Deming to enhance quality control in a system of production geared to the market are one of the pillars behind the immense success of Japanese firms. It might seem simple nowadays, but the understanding that the Japanese possessed an extensive knowledge that was fragmented and uncoordinated but could be channeled into a cohesive production system through the implementation of a few new processes was revolutionary. You began to have top management and engineers working together with a focus on anticipating and meeting customer needs. This was fundamental in the rise of the Japanese automakers as well, especially Toyota. And later, when faced by intense competition by Japanese firms, U.S. automakers would have to catch-up to that “lost” knowledge that had been polished so much in Japan over the years. Such was the case that U.S. automakers also hired Deming as a consultant, including Ford in the 1980s. At that time, Toyotism, a maturation of those processes to enhance quality control in a system of production geared to the market, encapsulated the dominant trend in the industry.

Human-made systems are made up of interdependent components that collaborate to achieve a shared goal. For a system to function, it must have a clear aim. Deming’s perspective was that everyone involved should understand the system’s aim, which should also include future plans. Moreover, effective management of the system is fundamental and “requires knowledge of the interrelationships between all the components within the system and of the people that work in it”, in order to secure what is key: i.e., the “cooperation between components toward the aim of the organization” (Deming, 2000, 50). Over time, the processes in a well-managed system of production geared to the market, will not only ensure quality control but also continuous improvement. That

is the case of Toyotism, the name of the cost saving advantages that resulted from a special management system and marked an era of industrial production.

Toyota reached the position of world's top-selling carmaker, and its methods were copied by competitors. The system, known as the Toyota Production System (TPS), introduced groundbreaking principles that significantly transformed manufacturing processes. Developed in the mid-20th century, Toyotism was, to some extent, a response to certain inefficiencies of mass production methods pioneered by Henry Ford. In all, TPS aimed to create a production methodology that minimized waste, improved efficiency, and enhanced product quality.

Central to Toyotism is the Just-in-Time (JIT) production strategy, which concentrates on producing only what is required, exactly when and in the quantity demanded. This approach dramatically reduces inventory costs and waste by aligning production schedules with customer demand. Another key element is kaizen, or continuous improvement, which involves all employees contributing ideas to refine processes and eliminate inefficiencies. Arguably, this culture of ongoing improvement has shown not only to boost productivity but also to foster a sense of responsibility and ownership among workers. Toyotism also introduced the concept of lean manufacturing, which seeks to deliver greater value to the customer alongside drastically reducing waste. This includes optimizing workflows, reducing downtime, and improving overall efficiency. Finally, there is Jidoka, or automation with a human touch, which entails a focus on quality control ensuring that problems are identified and resolved early, improving overall product quality.

By integrating JIT with Jidoka, kaizen and lean manufacturing, Toyota significantly cut production costs, enhanced product quality, and reduced lead times. These improvements allowed the company to quickly adapt to market changes and customer demands, propelling Toyota to

become the world's top-selling carmaker. The success of Toyotism attracted the attention of other manufacturers, who began adopting and adapting Toyota's methods to enhance their production systems. Over time, both globally and across diverse industries, the principles of Toyotism have been incorporated into various production systems.

By prioritizing efficiency, quality, and waste reduction, the TPS revolutionized manufacturing processes and set new industry standards. Within the automotive industry TPS was reproduced by competitors aiming to create a more efficient and responsive production system. For instance, General Motors (GM) implemented elements of TPS through its Saturn division in the 1980s and 1990s. Despite its successes, Toyotism has faced criticisms and challenges. For instance, the reliance on JIT can make supply chains vulnerable, as seen during the COVID-19 pandemic when global disruptions caused significant production delays. Additionally, the intense focus on continuous improvement and cost reduction can sometimes lead to employee burnout and the social weaponization of job insecurity, underscoring the need for a balanced approach to management practices.

Beyond Toyota, the main Japanese automotive manufacturers today, such as Honda, Nissan and Subaru, continue to be pivotal players in the global automotive market, leveraging their historical engineering, manufacturing efficiency, and innovation. Honda, for instance, is renowned for its engineering prowess and reliability, with significant contributions to both the automobile and motorcycle markets. The company's development of the VTEC engine and its consistent performance in motorsports underscore its commitment to technological excellence. In all, the Japanese automotive industry has a record of competitiveness and keeps adapting to new market demands and technological shifts while maintaining its reputation for quality and innovation.

Assessing the Japanese automotive industry across the same six dimensions showcases why Japan represents the paradigmatic success case of late-industrialization, where the state-guided coordination of the Ministry of International Trade and Industry (MITI) converged with the operational excellence of private firms to redefine the global technological frontier. In terms of scale and investment depth, the Japanese sector remains a titan. Being led by Toyota's status around the world, the industry exhibits a profound maturity characterized by massive, sustained capital expenditure and a global manufacturing footprint that rivals any competitor. Regarding technology transfer and innovation capacity, Japan historically set the benchmark for efficiency through the TPS and lean manufacturing, effectively teaching the world a new way to build cars. Today, this dimension is defined by a complex duality: while Japanese automakers maintain undisputed hegemony in hybrid propulsion and internal combustion efficiency – exemplified by Honda's engineering prowess and Toyota's multi-pathway strategy – they face a formidable challenge in pivoting toward the software-defined, battery-electric paradigm where new entrants currently dictate the pace of innovation.

The integration of Japan into GVCs is structurally unique, originating from the vertical keiretsu networks that have evolved into sophisticated, deep-tier global supply webs, which are one of the key aspects of East-Asian development in general. Japanese automakers successfully managed the "hollowing out" risks better than their American counterparts by internationalizing production while strategically retaining high-value-added component manufacturing and R&D within the country. This strategic equilibrium directly bolsters the facets of domestic production and employment outcomes. Despite elevated labor costs, the sector remains committed to the principles of monozukuri (the art of making things), serving as a steadfast foundation for domestic employment

and averting the rust-belt deindustrialization experienced by other advanced economies. The synergistic relationship between assemblers and a robust domestic supplier network ensures that the socio-economic benefits of the industry are deeply integrated into regional economies, spanning from Aichi to Kanagawa.

Finally, regarding responsiveness to regulation and socio-economic sustainability, even though the Japanese model exhibits a high degree of institutional alignment, it currently faces divergent global pressures. Historically, policy compliance has been notably high, with both government and industry collaboratively advancing energy efficiency and safety standards. Nonetheless, the current industrial policy's emphasis on a "multi-pathway" approach — simultaneously investing in hydrogen, hybrid, and electric vehicles (EVs) — deviates from the battery electric vehicle (BEV)-focused mandates prevalent in Europe and China. Somehow this is similar to what Brazil is doing when it protects its flex-fuel combustion-engine that can run on decarbonized fuels. This strategy reflects a deliberate effort to capitalize on existing competencies and ensure energy security. However, for all its strengths, it poses the risk of isolating the Japanese sector should global standards converge on pure electrification. Despite this, the industry's sustained contribution to Japan's trade balance and its adaptability amidst demographic challenges highlight a resilience that suggests Japan will continue to be a central, albeit evolving, heavy-weight node within the global automotive system.

3.4. India: Diverse Ownership Structures — from Foreign-Owned Firms and Joint-Ventures to Tata and Other Indian Automakers

India overtook China in 2023 and now has the largest population on earth. The potential demand of its automobile market is a factor of its population. It has, therefore, a lot of space to grow its already large production. India mixes the approaches of proprietorship in its automotive environment with different combinations of national and foreign capital. To incentivize domestic assembly over the importation of fully built units, India imposes a very high import tax on foreign imported cars, whereas the tax rate for components is set at the lower end. These tax differentials steer the automotive industry towards local assembly within India's borders.

If nowadays India's automotive sector has substantial room for growth, historically the Indian government has played a crucial role in shaping this industry, implementing policies that favor domestic production over imports. These policies have their roots in the import substitution strategies of the mid-20th century. This approach has transformed India's automotive landscape from one dominated by foreign companies assembling imported vehicles to a diverse industry mixing national and foreign capital, with a strong emphasis on local production and assembly.

Throughout the 20th century, the transformation of India's automotive industry was primarily driven by government import substitution policies. During the initial phase, in the first half of the century, the industry was dominated by foreign companies that assembled imported vehicles in CKD (completely knocked down) form. However, starting in 1949, the government began restricting the importation of fully assembled vehicles, encouraging local production instead (Singh, 2019). For the sake of our focal comparison, note that the same prohibition on car imports would be introduced by Brazil just a few years later, in 1953, thus compelling multinational automotive

corporations to choose between exiting the market or producing vehicles domestically. Both in India and Brazil, this movement was reinforced in the following decades through the establishment of local content requirements (LCRs). As a result, domestic automotive manufacturers emerged in both countries. In Brazil, as early as 1956, the Romi-Isetta was launched – the first fully domestic car, manufactured by Romi, a company that until then had specialized in lathes and agricultural equipment. Whereas in India, the car considered the country's first fully domestic model – though based on a design by the British firm Morris Motors Limited – is the Hindustan Ambassador, launched in 1957. However, while in Brazil the domestic automotive manufacturers were relatively short-lived, in India, local players such as Hindustan Motors, Premier Automobiles Limited (PAL), and Tata Motors Limited retained a crucial role in the development of the national automotive industry. The Hindustan Ambassador, for instance, was manufactured from 1957 to 2014 and enjoyed immense popularity in India. Meanwhile, among the three firms mentioned above, Tata Motors remains one of the strongest players in the Indian automotive sector – also demonstrating notable international expansion through the acquisition of iconic brands such as Britain's Jaguar and Land Rover, among other achievements.

The growth of India's automotive industry was closely tied to the expansion of the auto parts sector, known as the "ancillary" industry. This sector ranged from the production of simpler yet essential inputs to sophisticated and critical components such as engines, braking systems, and electrical equipment. The relationship between automakers and suppliers was characterized by a high degree of interdependence, both in terms of quality and economic viability. Studies from the 1970s highlighted that the growth of the ancillary industry could not be considered "separately from that of the main assemblers" (Krueger 1975, 37). This was because automakers relied on these

suppliers to meet production demands, while suppliers needed assurances of substantial orders to justify investments in new tools and technologies.

Protectionist policies aimed at fostering the national industry also brought significant challenges. The government's insistence on increasing local content led to high production costs, as identified by analysts concerned with the inefficiencies of the ISI (import substitution industrialization) model. These analysts would notice that as domestic costs of producing automotive components were significantly higher than their import costs, that would result in increased final prices and “in increasing the overall cost of the domestic producer and reducing his overall profit margin” (Tariff Commission Inquiry apud Krueger, 1975, 39).

Moreover, as seen in Brazil during the same period, limiting international competition contributed to relative technological stagnation and the low quality of domestically produced vehicles when compared to what was being supplied abroad at the same time. This situation was leading to consumer dissatisfaction.

It is also important to note that the structure of India's automotive industry was shaped by external crises and foreign exchange restrictions, which directly influenced industrial policies. When facing a balance of payments crisis, for example, the Indian government mandated that each automaker focus on producing only one car model to reduce the need for foreign currency. This policy resulted in a strong dependence on the domestic market and difficulties in achieving global competitiveness. Despite these challenges, India's automotive sector managed to develop a robust production base, which later served as a platform for greater diversification with strong national automakers, even as future reforms and market liberalization were implemented.

India presents a distinct case of industrialization where the trajectory was heavily determined by the interplay between strict balance-of-payments constraints and a unique "hybrid" ownership structure. The history of India's industrial policy, rooted in the need to conserve foreign exchange — especially during crises like the one in 1991 — meant that the scale and investment depth of the sector were built upon decades of mandated high local content. This protectionist past, which once effectively limited automakers to singular models, paradoxically laid the groundwork for a deeply localized supply chain, even with the development of some Indian first-tier global players, which is a significant advantage in today's market configuration.

Today, this has evolved into a large-scale production, positioning India as the third-largest automobile market globally. The sector plays a crucial role in the GDP, with significant impacts on domestic production and employment. It acts as a reliable foundation for acquiring industrial skills and generating jobs across key manufacturing hubs.

In the context of technology transfer and innovation capacity, the sector demonstrates a dual nature. During the pre-liberalization period, basic manufacturing capabilities were established, yet the development of complex innovative capacity was constrained. Following liberalization, the formation of successful Japanese and Korean joint ventures (JVs), such as the one that led to the creation of Maruti Suzuki, emerged as the primary means for disseminating modern process technology and quality standards throughout the supplier base. This development has ensured that the mass market has access to vehicles that are globally competitive. However, Indian-owned conglomerates like Tata and Mahindra have been compelled to cultivate their unique strengths in "frugal engineering" and are now — also through the acquisition of leading foreign automakers — proactively advancing into electric mobility (EVs). This progression, supported by initiatives such as

FAME⁶ and the Production Linked Incentive (PLI) scheme, illustrates a high level of adaptive capacity. Nevertheless, the broader component base continues to lag in mastering the high-precision electronics and battery technology essential for the new digital-value chain.

Finally, regarding integration into GVCs, India operates less as a deeply integrated node and more as a specialized hub for the export of small cars and auto components, supported by a vast, self-contained domestic ecosystem. Although the country is a notable exporter of components — some of which compete with big international competitors such as leading first-tier Bosch from Germany, for instance —, its global market share remains modest in comparison to China and other nations, resulting in an asymmetric GVC integration. India continues to rely on imports for high-value electronics and battery cells, particularly from Asian counterparts. The regulatory environment has experienced a fundamental transformation from the restrictive "License Raj" to aggressive, disruptive policy mandates. This transformation, combined with the industry's high compliance agility in adapting to shocks such as the direct transition from BS-IV to BS-VI emission norms, demonstrates a high responsiveness to regulation.

Nevertheless, the socio-economic sustainability of the sector presents ongoing challenges: while it serves as a major economic anchor, the rapid expansion of the private fleet often strains urban infrastructure and contributes to congestion and pollution. This creates a tension between industrial growth and care for the environment and for human health linked to controlling pollution, which current green mobility policies are attempting to address.

⁶ FAME is the acronym for India's government scheme for Faster Adoption and Manufacturing of Electric and Hybrid Vehicles.

3.5. South Korea: The Chaebol Way

South Korea is a landmark example of a developing country that became developed since the second half of the twentieth century. It is noteworthy that indeed South Korea is one of the very few countries that effectively “graduated” from underdevelopment to fully developed status after the end of the Second World War. After suffering a devastating conventional war, South Korea benefited from a favorable position it negotiated during the Cold War, one which gave it considerable leeway compared to other countries attempting to merge nationalist industrial policy and exports. In this scenario, South Korea also represents a case of strong partnership between the state and capitalist enterprise, organized into big family-controlled conglomerates known as chaebol.

If South Korea’s rapid transformation from a developing nation to a developed economy is largely attributed to the strategic collaboration between the government and large family-owned business conglomerates known as chaebols, Hyundai is one of these chaebols. A very key one, founded and controlled by the Chung family. The support of Hyundai through several industrial policies was used as a means to lead the country from a marginal position in world trade of automobiles to occupy a central position within decades. In the automotive industry Hyundai is at the same time one of the major global automotive producers and one of the largest tier-one suppliers of inputs for automotive production.

These chaebols played a pivotal role in driving industrialization and economic growth by leveraging state support in the form of favorable policies, financial assistance, and infrastructure development. This partnership – even though heavily criticized for issues of abuse of power, various types of political capture, and outright corruption – has effectively enabled South Korea to overcome

initial disadvantages in global trade and technology, fostering competitive industries that could scale rapidly on the international stage.

Hyundai exemplifies the success of the chaebol model, particularly in the automotive sector. Starting from a peripheral position in the global automobile market, Hyundai expanded its capabilities to become not only one of the world's leading automotive manufacturers but also a significant tier-one supplier, producing key components for other car makers. This dual role highlights Hyundai's vertical integration and innovation capacity, which have been critical in securing its competitive advantage globally. The chaebol structure, with its concentrated resources and coordinated management, has thus been instrumental in positioning South Korea as a central player in the global automotive industry within a span of not many decades.

In all, South Korea's automotive industry stands as a quintessential embodiment of the developmental state model, leveraging the chaebol structure to achieve a rapid and coordinated global ascent. In terms of scale, investment depth, and domestic production, the sector is both vertically integrated and globally competitive, driven primarily by Hyundai and Kia, which is also part of the Hyundai Motor Group, thus showing how horizontal integration has been also supported by regulators in South Korea. This configuration has fostered deep domestic production capacity and sustained capital accumulation, enabling South Korea to emerge as one of the world's leading automobile exporters. It has also minimized the risk of a "hollowed-out" manufacturing base, ensuring that industrial upgrading translated into robust domestic production and high-quality employment effects. The sector's success reflects a government strategy that tightly coupled policy discipline with performance reciprocity: domestic market control and extensive financial support

were contingent upon export competitiveness and technological advancement, exemplifying the reciprocal control mechanisms Amsden (1992) identified as central to late industrialization.

In this context, even though some observers tend to emphasize South Korea's penchant for exports as a signal of liberalization, South Korea's experience explicitly resonates with the argument that state-directed distortions, such as subsidized credit, controlled interest rates, and managed exchange regimes, can serve as deliberate instruments of industrial upgrading rather than market inefficiencies (Amsden, 1992). The Korean state's "wrong" prices created the needed incentives, enabling firms to reinvest profits into capacity expansion and R&D rather than short-term rent extraction. Although counterintuitive for some theoretical frameworks, this strategic misalignment with orthodox market signals was key to achieving technological learning and scale in a capital-intensive sector like automotive manufacturing. Of course, as pointed out in the beginning of this section, this was likely only possible due to uncommon accommodations made by large international partners that were also not using strictly rational tools to measure this specific relation, as it was taken as part of a larger game where priorities were given to certain preferences regarding geopolitics and global security.

The state-led collaboration with the chaebol conglomerates was therefore pivotal for technology transfer and innovation. Unlike many emerging economies that passively absorbed technology through MNEs, South Korea actively internalized and domesticated foreign knowledge. Early partnerships with Ford and Mitsubishi provided an initial platform for capability building, but Korean firms quickly transitioned toward independent R&D and the establishment of world-class domestic supplier networks. These cumulative learning processes ensured that technological capabilities became embedded within the national innovation system rather than confined to

footloose foreign partners. Today, this legacy positions Korean automakers at the forefront of global transitions in electrification, battery systems, and software-defined vehicle architectures, demonstrating how policy-driven learning trajectories can sustain competitiveness amid technological disruption.

Finally, South Korea's insertion into GVCs is marked by high export intensity and strong forward linkages. Korean firms operate extensive global manufacturing and distribution networks across North America, Europe, and Asia, with some entrance in South America both through JVs and through subsidiaries, an outcome of early and consistent state commitment to export-oriented industrialization that was followed by the internationalization of its firms through FDI. The coordinated structure of the chaebol system has further enabled swift and uniform compliance with domestic and international regulatory standards, from safety to emissions. This institutional coherence, grounded in state-firm synergy and continuous upgrading, has secured South Korea's place at the technological frontier of the global automotive industry, embodying a developmental trajectory that moved from the periphery to the core within just a few decades.

3.6. Germany: Between Legacy and Leadership, the Coordinated Market Economy on Wheels

Germany has been producing automobiles since the beginning of the industry at the global level. While the car industry began developing in Europe in the late 1800s among Italy, France, the UK, and Germany, over time the latter would maintain it as its flagship industry longer and with greater international market share. Notably, German engineer Carl Benz is credited with obtaining the first patent for a gasoline-powered automobile. Both before and especially after World War II,

the automotive sector has stood at the heart of Germany's economy. Moreover, following that traumatic event, cars have consistently represented a positive sense of national identity for Germans – evoking ideas of prosperity, achievement, family values, enjoyment, autonomy, and more (Wentland, 2017). Beyond serving as a pillar of Germany's export-driven economic strategy, the automobile has remained a powerful source of national pride.

After its inception, the brand Mercedes-Benz emerged as a successor to Benz's original enterprise and consolidated its position as one of the world's leading automakers, alongside other major German firms such as Volkswagen, BMW, Audi, and Porsche – the latter two now under Volkswagen's umbrella. As a result, Germany today has three large, globally independent automotive players.

This first-mover advantage and sustained innovation set the stage for Germany's long-standing dominance in the automotive sector. The country's firms were able to shape their brand identities around engineering excellence and technological advancement – hallmarks of its automotive industry. This early lead enabled German manufacturers to establish a strong foothold in the global market, setting benchmarks for quality, performance, and innovation that have influenced the industry for decades. This influence is also linked to the establishment, through a protracted strategy of global mergers and acquisitions (M&A), of a stronghold by German automotive parts suppliers, such as Bosch. By 2024, the German automotive industry encompassed 911 firms engaged in the production of motor vehicles and their components (Statistisches Bundesamt, 2025). This industry includes the automakers as well as automotive equipment manufacturers divided in Tier 1, Tier 2, and Tier 3 suppliers. The three-tier supplier network is a globally recognized nomenclature within this industry that categorizes suppliers based on their

proximity to the final automobile manufacturer. While Tier 1 suppliers are those directly contracted to produce parts and components specifically for use in the primary automaker, Tier 2 suppliers provide components to Tier 1 suppliers, and Tier 3 suppliers supply to Tier 2 suppliers. Accordingly, as Tier 1 automotive parts suppliers have progressively increased their influence on the automotive industry, a prominent Tier 1 player like Bosch – producer of major systems, modules, hardware and software directly integrated into vehicles of various automakers worldwide – has increasingly set industry standards.

The consolidation of these major German automotive brands is closely tied to the institutions of German capitalism, which have, in turn, indirectly played an important role in shaping the global automotive landscape. Each of these manufacturers has developed distinct brand identities and market niches, while collectively remaining associated with Germany's reputation for high-quality vehicles. This concentration of automotive expertise within a relatively small geographic area has allowed for significant economies of scale, formal and informal shared research and development efforts, and a unified approach to addressing industry challenges – often in cooperation with state agencies such as KfW, Germany's leading development bank since 1948, headquartered in Frankfurt. This reliance on a development bank to facilitate strategic investments embraced by the State would influence the creation of BNDES, Brazil's leading development bank, in 1952. Since then, BNDES has been critical to sustaining and pushing forward the automotive sector in Brazil through various credit lines and support schemes.

A country that has distinctly maintained a relatively high level of industrial participation in its GDP – amidst a global era in which services have increasingly dominated and the secondary sector has declined –, Germany is perceived as an industrial powerhouse on the world stage. It boasts

a highly advanced automotive industrial base and research infrastructure, which over time have reinforced expectations of global leadership by its automotive players. In sociopolitical and economic terms, Germany is regarded as the paragon of a coordinated market economy (CME), in contrast to liberal market economies (LMEs) such as the United Kingdom and the United States (Hall and Soskice, 2001).

A notable aspect of this divergent historical trajectory involves a degree of forgotten cross-pollination, as recalled by Collier (2018, 88), who notes that “post-war Germany got the industrial relations that British trades unions had learned from the failings of the British system.” More specifically, he observes that “post-war German industrial relations policy was heavily influenced by what the British Trades Union Congress proposed would be a better way of conducting them than the confrontational British practice of the pre-war era.” Arguably, while “the aftermath of defeat broke the vested interests and enabled Germany to do the policy reset,” in Britain “victory enabled [those interests] to remain entrenched.” Although it should be noted that the United Kingdom did implement measures to improve social relations across the different classes in the immediate postwar period, it would, over subsequent decades, gradually evolve toward the institutional configuration later characterized in the Varieties of Capitalism literature as LME. Meanwhile, the characteristics of the CME model are particularly evident in the structure of Germany’s automotive industry.

The CME system – characterized by close cooperation between industry, labor unions, and government – has fostered an environment of long-term planning, stable employment relationships, and sustained investment in research and development. These features have significantly shaped the structure and operation of Germany’s automotive sector and have enabled the industry to maintain

high standards of quality and innovation throughout economic cycles – even in the face of growing global competition, shifting market dynamics, and economic crises.

However, one area in which the German auto industry appeared less prepared was the shift toward electrification and digitalization (Felser and Wynn, 2023). The United States, through Tesla, and especially China, through BYD and other manufacturers, advanced this transition much faster and with distinctive qualities compared to legacy competitors – including the German giants. Partly as a result to that, in 2022, Germany fell behind China in automobile exports for the first time, amid China's rapid rise to a leading position driven by its dominance in electric vehicle production. That year, China exported approximately 3 million vehicles, while Germany exported around 2.6 million. Arguably, this shift may be partly attributed to German automakers' delayed response to the electric vehicle revolution.

This recent development marks a significant turning point in the global automotive industry, highlighting the challenges traditional powerhouses face in adapting to new technologies, evolving regulatory environment and consumer preferences, as well as the emergence of competitive challengers in this moment that materializes as a critical juncture. More than a mere technological change, the rise of electric engines – whether leading to fully electric or hybrid motorizations – together with deeply digitally connected vehicles, represents a fundamental transformation in the industry's value chain and competitive landscape. German automakers, long dominant in conventional automotive technologies, must now rapidly adapt their research, development, and production systems to meet the demands of the EV market. A similar shift, though still in its early stages, can be observed in the variation of distribution among different national actors in the global outflows of FDI.

Anecdotally, regarding the Brazilian market, which is constantly receiving inflows of automotive FDI, Mercedes-Benz divested its manufacturing facility in Iracemápolis, São Paulo, in the early 2020s, selling it to the Chinese automaker Great Wall Motors (GWM). After several years of modernizing the facility, GWM inaugurated its Iracemápolis plant in mid-2025, marking its first factory in the Western Hemisphere. According to the company's strategic plans, this facility is anticipated to function as a regional hub for exports to neighboring Mercosur countries and other Latin American markets, while also catering to the Brazilian market. In addition to introducing the electric vehicle expertise that currently distinguishes China, GWM is adopting a multi-powertrain strategy. This approach, tailored to the Brazilian market, involves the integration of various engine types within each vehicle, thereby enabling the combination of multiple power sources.

Wrapping-up, Germany's automotive sector exemplifies a model that is at the same time diversified, quality-oriented, and immense in its scale of operation, functioning as the primary engine of the national export economy. In terms of the six dimensions that I have been using to compare the top producer countries in terms of key components of the "shifting global technological frontier", the sector maintains a profound investment depth that supports its historical dominance in premium vehicle segments and well-established position in more popular segments. The domestic R&D expenditures frequently exceed €30 billion annually and accounts for roughly one third of all German industrial R&D (GTAI, 2025, 3). Innovation capacity is structurally embedded through a dense institutional network linking Fraunhofer institutes, technical universities, and private firms, although this established prowess in mechanical engineering now faces significant friction as the technological frontier shifts toward software and battery electrochemistry. In terms of GVC integration, the industry utilizes a sophisticated "bazaar economy" strategy. One exemplified by the

fact that high value design, engineering, and final assembly are retained domestically, while deep Tier 1 supply chains are integrated across Central and Eastern Europe, and volume production is increasingly localized in major markets like China to hedge against geopolitical trade volatility.

The domestic socio-economic footprint of this industrial configuration is underpinned by the specific institutions of the Coordinated Market Economy, notably the dual vocational training system and codetermination via works councils, which have historically sustained high skill and high wage employment despite global cost pressures. However, domestic production volumes have consolidated in recent years as high energy costs and the reduced labor intensity of electric vehicle assembly challenge this traditional employment stability. Meanwhile, the responsiveness to regulatory frameworks has undergone substantial evolution following the 2015 diesel emissions scandal, prompting a strategic shift from a defensive compliance stance to a proactive alignment with the mandates of the EU Green Deal and stringent sustainable supply chain management. As a result, the sector continues to produce significant socioeconomic spillovers, serving as a cornerstone for regional economies in Bavaria and Baden-Württemberg and maintaining its role as a central pillar of German industrial stability. This occurs even as the sector navigates the challenging transition from its combustion engine legacy to a carbon-neutral future.

3.7. Mexico: Producing and Exporting Within a Regional Value Chain

In terms of automotive production, Mexico has been the beneficiary of the North Atlantic Free Trade Agreement (NAFTA), replaced by the United States Mexico Canada Agreement (USMCA), which gives it access to the US market. Mexico can produce for its own large internal

market but also can export with geographic and tariff advantages to the neighboring US market. However, this situation that can be seen as a favorable access to advantageous networks of financing, R&D, production, and distribution, at face value, does not come without its own issues, fragilities and contradictions.

In discussing collective identities in motion, Adler (2005, 230) reminds us that borders seem to be characterized not only by geography but also by shared identity. To this, one may add shared markets as well as social, political, and economic ties, as shapers of those identities over time. Therefore, Adler is reflecting on the effects of NAFTA, when he provocatively asks, “where is Mexico?”, arguing that the country had already moved from Central to North America a decade earlier. At the same time, it is not difficult to find pundits in the United States who continue to contest Mexico’s belonging to North America often on an identity basis, despite the fact that, from the strict standpoint of physical geography, let alone social composition and shared history, it clearly does. This exclusionary unease is exemplified by security frameworks grounded in exclusion rather than inclusion, which gained increasing prominence in the United States in the decades following Adler’s 2005 work. Such dynamics were symbolically captured by proposals to build a wall along the Rio Grande and by the heightened militarization of relations with countries south of the river.

In the Western Hemisphere, Mexico also has a free trade agreement for automotive vehicles and auto parts with Brazil, which was put in place many years after NAFTA and is subject to an institutional framework that, in the end, does not constitute a pure free trade agreement. Instead, it is rather an arrangement designed to reach and maintain comparatively higher levels of trade flows between the two countries, while keeping in place margins and mechanisms for steering and controlling such flows through the use of safeguards.

With respect to the framework of qualitative dimensions, Mexico has consolidated a massive scale and investment depth, footprints supported by tariff advantages, relatively lax labor regulations, and geographic proximity that enable world-class levels of production and exports. Yet, as suggested above, this apparent productive “maturity” faces underlying fragilities and contradictions, insofar as access to advanced financing and distribution networks does not necessarily translate into sovereign control over industrial standards or strategic assets. Instead, Mexico remains hierarchically subordinated to the governance structures of global headquarters, maintaining not much bargaining sway especially with the ones located in the United States. For instance, this condition is more pronounced in Mexico than in Brazil. Even though both markets are dominated by global players, in Brazil, subsidiaries of MNEs tend to enjoy relatively greater operational autonomy vis-à-vis their headquarters.

This configuration can be partly explained by Mexico’s automotive model, which is defined by deep integration into GVCs – dimension number 3 of the framework –, particularly at the regional level, where the country operates as a productive pillar of the North American trade bloc under NAFTA/USMCA. This integration, however, is marked by a tension between physical geography and political identity, as Mexico occupies a position of high dependence on the U.S. market. Notably, amid growing U.S. reservations regarding Chinese firms and their inputs within American production chains, several Chinese companies, as well as companies of third countries operating from China, have increasingly used Mexico as a platform to mitigate these tensions and continue serving the North American market.

In terms of technological depth and innovation capacity catalogued under dimension 2, Mexico presents a paradox: although embedded in high-technology ecosystems led by transnational

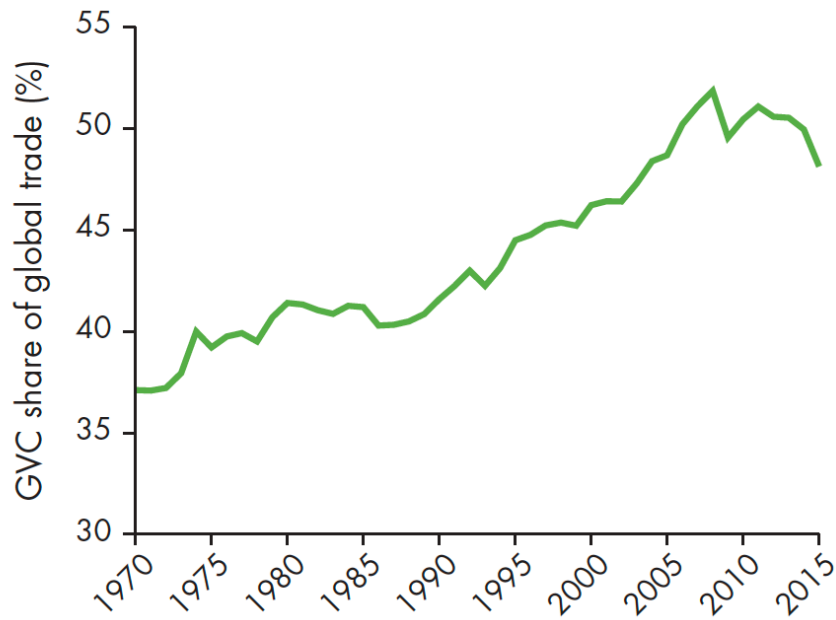
firms that dominate various markets, the internalization of these capabilities and the formation of a genuinely domestic innovation system remain relatively elusive. Sectoral dynamics suggest that, despite access to R&D networks, the accumulation of local capabilities tends to be episodic or constrained by an export-oriented functional integration.

These dynamics also distinctly influence responsiveness to regulation and policy objectives, listed under dimension 5. These features are shaped in Mexico by a complex relational adjustment, illustrated both by the asymmetric discipline imposed by the USMCA and by the more balanced – though less profitable – automotive agreement with Brazil. The latter indicates that Mexican industrial policy does not rely solely on unfettered market forces, but also on safeguard mechanisms and managed trade flows designed to preserve trade balance equilibrium and protect industrial margins.

This, in turn, directly shapes domestic production and employment effects, listed under dimension 4. While the sector constitutes a pillar of employment and economic diversification, there remains a risk of an “enclave” configuration, in which the density of local suppliers and the diffusion of high-complexity competencies beyond lead firms are conditioned by rules of origin and cost dynamics within the asymmetric North American region. So far, however, Mexico can celebrate producing over four million vehicles in 2024 – the fifth largest producer worldwide –, a number that is much higher than expected, given the country’s population and lack of ownership of key organizations in the global automotive industry. Although trade flows are very high for Mexican automotive industry, the value-added trade is less impressive.

Arguably, the concept of “value-added trade” is more appropriate to understanding this world organized in GVCs than the more familiar concept of “gross trade flows”. Figure 3.1 shows that the percentage of global trade that takes place through GVCs is around 50%.

Figure 3.1 — GVC share of global trade (1970-2015)



Source: World Bank, 2020.

Finally, these subtleties also affect socio-economic spillovers and environmental sustainability of dimension 6, since regulation in Mexico largely follows standards set by the U.S. market. In this sense, there is limited evidence of organized domestic pressure to advance environmental sustainability beyond globally and regionally defined parameters. Nevertheless, the Mexican case reveals, as elsewhere, an automotive industry that not only drives economic activity but also shapes national and regional identity, while contributing to a larger domestic output. Even if this output remains significantly captured abroad: in the sense of profits that are either accrued

mostly before and after the production and assembly stages within Mexican borders or that are simply sent abroad.

3.8. Brazil: Planning and Protecting the Liberal Market – Internationalization and Incomplete Development

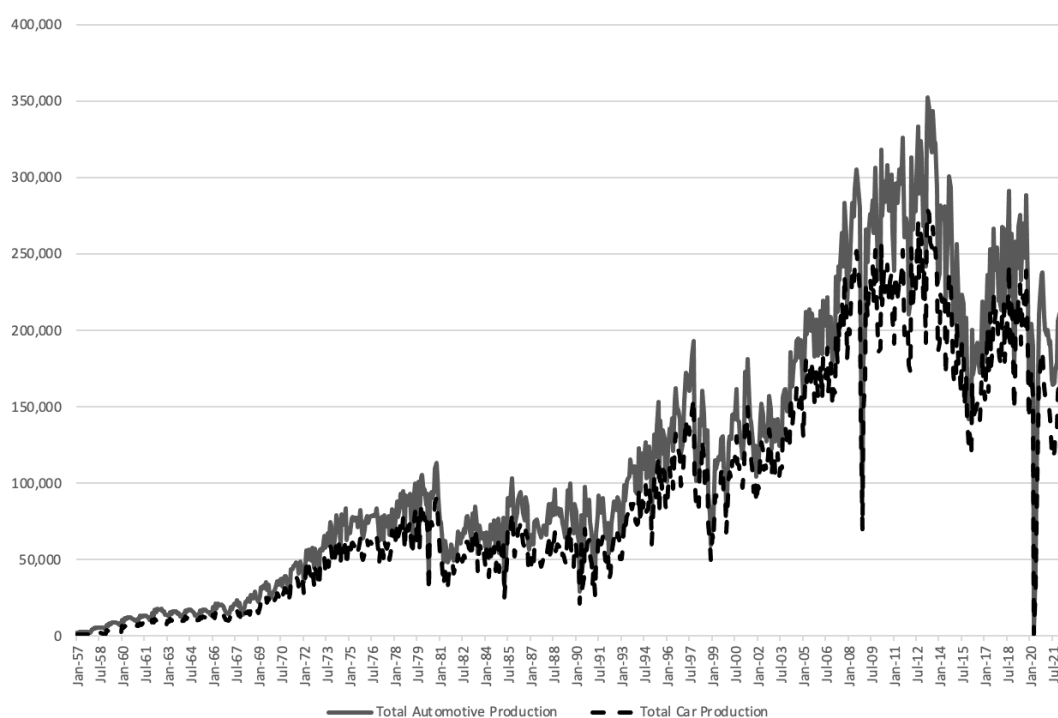
Ultimately, the role of this chapter's final section is to serve as a synthetic introduction to the forthcoming chapters that will treat in detail the case of Brazil. Noticeably, from 2006 onwards, there are around 10 countries in the world that, either constantly or variably, have been producing more than 2 million units of motor vehicles a year. It has been varying, yearly, from a minimum of 9 to a maximum of 12 countries. The world pandemic crisis of 2020 kept that number at the lower end. Brazil has appeared among the top 10 producers since 1959, with the 2 million units' threshold being reached in 2002⁷. In terms of how long the country is featured in such list, Brazil is a unique case among middle income, middle power countries. One may currently lose sight of this, but Brazil has made into the list much before China or India, its peers in the emerging BRICS grouping that, at the same time, have had much more successful decades – in term of catching-up, upgrading, and GDP growth – than Brazil from 1990 onwards. Nevertheless, since 2002, automakers in Brazil have produced over 2 million units uninterruptedly, even though it was one of the hardest hit countries worldwide by the 2020 crisis, with the production falling by a third from 3 million in 2019 to 2 million in 2020. This fall in production indicates the current crisis for Brazilian car-making, which

⁷ In that year, the number 1 producer was the United States with 12.4 million units, followed by Japan with 10.4 million, Germany with 5.6 million, and China with 3.5 million. Meanwhile, in 2020 China leads with 25 million units, followed by the United States with 8.8 million, Japan with 8 million, and Germany with 3.7 million (OICA, 2021).

goes hand in hand with a relative deindustrialization of the country. Reversing deindustrialization is precisely a critical challenge of this time.

Figure 3.2 shows that monthly car production is around 150,000 units in 2021/2022. Something similar to what it used to be in the early 2000s, and far from the peaks of 250,000 units per month around the late 2000s and early 2010s. Brazil has a production capacity of 5 million units per year, spread over 61 factories located in 10 different states (ANFAVEA 2021).

Figure 3.2 — Monthly automotive and car production in Brazil from January 1957 to September 2022



Source: ANFAVEA, 2022.

Historically, the automotive industry was at the core of Brazilian industrialization strategy. The arrangement that would be called the triple alliance (see Evans, 1979), would coordinate state capital and private domestic capital with foreign direct investment (FDI). In this alliance, state owned enterprises (SOEs) produced the heavy inputs necessary to the foreign-owned automotive plants, while the domestic private sector would provide downstream services as well as a network of component suppliers for the factories ran by the multinationals. In the beginning of the process, Brazil had a SOE in the automotive sector. FNM, or Fenemê, as it was called had been created to produce airplane engines for World War II. In 1949, FNM started to make trucks. Less than a decade later, in 1957, FNM launched a truck in which 72.8% of the inputs were made in Brazil. Then, in 1960, the SOE produced its first car, named FNM JK. 1960 was the same year in which Brasilia, the new capital, was inaugurated, and 133 thousand vehicles produced in Brazil were sold⁸. In 1968, during the military regime, the FNM was privatized. Overall, the state was a conductor of private interests. Therefore, “private business groups were especially favored, and the privatization of the only Brazilian government-held automotive company was seen from the outset as a necessary step toward making the local market more appealing to foreign investors” (Ioris 2014, 125).

This situation acquired new colors with the retreat of the state since the 1990s. There is a rise of a new form of local firms trading “the rents associated with state protection of the local market for those associated with their transnational corporate allies’ proprietary technology and global market power” (Evans 1995, 16), with the difference that – in the current phase of disembedded neoliberalism (Da Silva and Bandeira, 2021) – instead of state protection of the local market what

⁸ The vehicles were made by FNM, Vemag, and the MNEs Willys, Simca, Volkswagen and GM.

they have is their market shares based on a history of accumulating data and information about the local consumer base.

To understand the prevailing logic, consider the points of view expressed by an interviewee who serves as the head of public and government relations for Brazil and South America at a very large European MNE. First, they acknowledge that the integration of MNEs with Brazil's industrial and R&D ecosystem has always depended on specific Brazilian legislation, which serves as "an important instrument in this integration and a catalyst for significant corporate investment in the country – whether from foreign or domestically headquartered firms".

Yet, regarding the possibility that specific Brazilian legislation could either have been drafted differently or could eventually change to stimulate the development of larger local players, their explanation of why Brazil has no large locally headquartered MNE in their sector of operation, even though the country is one of the largest global consumers of its products as well as a capable producer and developer of technology in the area, is based on the observation that "the aspiration for a native Brazilian company to compete with large MNEs must confront reality: each of these MNEs invests billions of U.S. dollars annually in R&D, holds tens of thousands of patents, and operates in nearly every country in the world."

Even so, despite the fact that the executive notes that South Korea represents a remarkable case of a country that, despite "not being among the world's ten largest economies, lacking a very large population, and having GDP per capita well below that of the United States and Western Europe (and even Japan), has for years been a technology exporter, with very high R&D investment, strong public and private commitment to technological adoption, and reaching leadership in cutting-edge technologies alongside the United States – the world's largest economic power, with a GDP

roughly thirteen times larger,” they see no contradiction in stating that it is “unfortunate that from time to time different countries pursue the ambition of creating a ‘national champion’ capable of competing internationally on the basis of scale generated at home.” Because “in a world of global value chains, this no longer exists.” Accordingly, they argue that “the concept of ‘Brazilian technology’ is outdated”, although they regard Brazil as “a major contributor to technology”. For, in their vision, “today’s innovation chains are global, integrated flows that no longer survive on industrial policies aimed at developing 100% national technology firms.”

Consequently and quite characteristically, they assert that “it is hard to say” that the MNE they represent “is not as Brazilian as any other company founded here”, before affirming that “there is no country in the world – be it the United States, China, Germany, Sweden, South Korea, or Brazil – that is capable of operating in isolation and competing globally with products that are not developed and produced within the framework of GVCs.”

Eventually asked about the existence and possibility of competition between rival firms being entangled with competition between rival states (Stopford, Strange, and Henley 1991) or even regarding scenarios in which there are misalignment of interests between partners in asymmetric relations, they became far more parsimonious, with a paucity of words not seen on other topics, merely highlighting that they “do not comment on eventual geopolitical disputes,” nor do they “comment on other companies, or on decisions taken by governments anywhere in the world.”

Arguably, while there are many benefits from being deeply integrated with MNEs, such deep integration creates dependencies that might eventually be abused when different nodes of these asymmetric relations are not aligned in specific issues. If Brazil has reinforced the deep internationalization of its automotive industrial park during this long 1988-2025 period of

comparatively more liberal market in terms of the country's history, there is at least one interesting case of local organizational success that happens to become each time closer to what the automotive industry is becoming: a company created in 1961 to make electric motors, called WEG.

In many ways, WEG exemplifies the potential for dynamism within Brazil's private industrial sector in cutting-edge and strategically relevant technologies for the current stage of the global economy. Producing electric motors and electrical machinery with advanced automation and digitalization capabilities for a wide range of sectors, WEG is a Brazilian multinational enterprise with the capacity to serve different industries that are undergoing worldwide rapid expansion, including electric mobility and more efficient energy systems. Even though WEG is not in the core of the Brazilian automotive industry, it has the potential to move in that direction. And it has something each time rarer within Brazilian wealthy elites: its leadership has accumulated capital that came from innovative industrial activity and is invested in innovative industrial activity. Correspondingly, in Forbes magazine's 2025 list of 300 Brazilian billionaires⁹, WEG was associated with 34 names, one of them making the top 50 in the ranking. In other words, nearly one in nine of the individuals on the list built their fortunes as shareholders of WEG, an organization whose market valuation has grown exponentially since the early 2000s.

In many aspects, however, WEG's emergence is mostly the exception that proves the rule. In general, the participation of Brazilian players in the industrial sector has been diminishing during the whole 1988-2025 period covered here. In part that has to do with the fact that, regardless of successful cases, the Brazilian business class has never demonstrated a sophisticated understanding

⁹ It is estimated that these 300 billionaires collectively hold R\$ 2.01 trillion (roughly equivalent to US\$400 billion), that correspond to 17.1% of Brazil's GDP. Moreover, considering only the individuals who appeared on both the 2025 and the 2024 list, their aggregate wealth increased by an average of 10% in this one-year period (Forbes Brasil, 2025).

of the historical alternatives available to their social class, especially in terms of representing a real conduit for catching up, upgrading and development in general.

Therefore, when it comes to assessing the six core dimensions used to heuristically measure the position of the country's current outcome in relation to the shifting global technological frontier, the results appear as follows:

In terms of scale and investment depth, Brazil has reached and has been able to maintain a large and historically significant automotive base led by MNEs from various countries with constant support from local industrial policies. With a broad installed capacity, the last three decades have seen an extensive physical footprint spreading to more regions, while in terms of inputs, these have also become more concentrated in the hands of foreign MNEs.

Also noteworthy is the fact that the sector's scale has increasingly coexisted with underutilization and volatility, to some extent because production is mainly directed to the domestic market, which is disputed by many firms. As a result, the ability to translate production capacity into sustained rents and local capital accumulation is asymmetric and frequently dependent on supportive policies consisting mainly of tax incentives. Surely, macro instability and shifting policy signals do not help.

Regarding technological depth, learning, and innovation, Brazil's automotive sector has absorbed important production capabilities and engineering that encompass both routine and non-routine tasks. While much of this remains oriented toward manufacturing, adaptation, and incremental upgrading, there are areas of frontier-defining innovations. However, they mainly function either as technologies for the Brazilian market or as engineering offices of MNEs that control patents and are directly linked to MNE projects abroad without much link to other firms in

Brazil. Because learning tends to be mediated by MNE strategies, often nudged or steered by local Brazilian policies, the diffusion of practices might take place with or without deeper internalization of R&D agendas. While platform control and proprietary technological trajectories remain proprietary content of the MNEs. The mix of MNEs international know-how and Brazilian policy nudging or steering results in pockets of competence that, while having high potential, do not clearly cumulate into a nationally anchored innovation system that shapes the frontier in a way that will generate rents and local capital accumulation. Therefore, capability accumulation appears fragmented, regardless of whether it is shaping or following the frontier.

The dimension of GVC integration and value capture is closely linked to the above, as Brazil has been integrated into global automotive value chains primarily through multinational production networks and supplier structures that have become increasingly multinational since the 1990s. Consequently, its position remains largely subordinate in terms of governance and value capture. High-value activities, such as platform definition, standards-setting, software architectures, and control over critical components, are typically retained abroad, even when developed in Brazil. This scenario limits the domestic appropriation of profits and strategic knowledge. In this sense, integration exists, but it does not consistently translate into domestic control over the decisive nodes of the value chain.

As for the domestic production and employment effects and embeddedness components, the sector continues to matter for jobs and overall capillarity. Even if assembly sites have become increasingly occupied by robots and other automated machinery, they remain a key sector in industrial employment during a time of structural decline in the participation of industrial employment and output in Brazil's overall employment and output. Under favorable conditions, it

can generate meaningful supplier ecosystems and leverage regional production systems. However, embeddedness varies, and the risk of enclave-like dynamics persists when local supplier density and capability diffusion remain bounded by cost pressures and the sourcing logics of the MNEs, which are nonetheless institutionally steered by policies, as the case of the Brazilian automotive sector clearly demonstrates. Therefore, the key issue is the quality of the policy framework. Likewise, the quality of employment and spillovers remains policy-contingent, as they depend heavily on whether skill upgrading and non-routine work expand beyond narrow segments of the sector.

At this point, the dimension evaluating responsiveness to regulation and policy goals already has the key inputs to be answered. Brazil's policy environment has often oscillated between ambitious industrial policy episodes and periods of weak or inconsistent coordination, which sometimes makes compliance and adaptation more reactive than strategic. While firms can respond quickly to targeted incentives and requirements, sustained upgrading depends on predictable rules, credible enforcement and stable investment horizons. The result is an adaptive capacity that exists, yet is frequently oriented toward short-cycle adjustment rather than long-cycle technological repositioning as the frontier shifts toward software, electrification, and new regulatory regimes. The good news is that, one way or another, firms respond to overall regulation and policy goals that have teeth. The accompanying part of the news is that there is a high cost in terms of tax exemptions and other incentives that have become the norm to oil these wheels of growth.

Finally, in assessing socio-economic spillovers and environmental sustainability, it is noted that automakers and suppliers contribute through tax revenues, wages, local procurement, and selective community and ESG initiatives, producing socio-economic spillovers that are real at the same time that they are uneven and asymmetric. Environmental sustainability, meanwhile, has

advanced most decisively through regulatory delimitations that were at the same time clear and substantially aligned with global standards. Taken together, Brazil's mature automotive sector shows spillover potential that is structurally present to a higher degree than in many of its peers – except those that, being as large as Brazil, count at the same time with their own automaker(s) of global projection – but is not consistently mobilized toward a frontier-oriented transformation. This erratic outcome, in the form of path dependence, is also shaping the way in which the newer green and digital domains, that increasingly define competitiveness, are being incorporated in Brazil's automotive sector as it moves into the future.

The central takeaway is twofold and will be further explored in Chapter 5: (i) different policies within 1988-2025 are the key variables altering the course of automotive industrialization, catching up, upgrading, and development in general, as it spreads from the automotive sector, inasmuch as they influence how close to or further from the shifting global technological frontier in the area; (ii) the fundamental aspects of varying policies are, in turn, determined by variation in the sociopolitical coalitions that design and implement the policies, with cross-class coalitions resulting in higher marks – through “i” – of automotive industrialization, catching up, upgrading, and development in general.

4. Manufacturing Development: The Political Economy of Automotive Industrialization Driven by Coalitions, FDI Strategies, and other Determinants of Industrial Policy in Emerging Markets

The main explanations for the state of automotive industrialization can be traced to some traditions of social-political-economic analysis. This chapter provides an overview of the main theoretical perspectives that try to explain why and how industrialization in general and automotive industrialization in specific take place.

As concisely argued by business scholars, from the point of view of firms, technological upgrading is a matter of deciding whether to buy, to borrow or to build (Capron and Mitchell, 2012) the technologies that will allow for the firm's evolution. Some firms in less dynamic industries tend to do so more as a reaction to circumstances in which their survival and profitability are in check. Whereas firms positioned in more dynamic sectors are pushed to engage proactively in upgrading pursuits. Between these two situations, there is the role of policy and other institutions that mediate technological adoption.

Either way, firms are aware of these dynamics that were seminally defined in terms of a constant process of creative destruction (Schumpeter, 1934 and 1942), but are currently understood as an evolutionary never-ending construction, or something that could be labeled dynamic recombination (Youn, Strumsky, Bettencourt and Lobo, 2014). Accordingly, some authors like to call it Schumpeterian Recombination (Galunic and Rodan, 1998) – and, in general, both firms and markets expand and generate spinoffs as the result of “some entrepreneurial organization that is proselytizing for a product reconstrued enough to be considered new” (White, 2002, 266). In this

sense, firms tend to be actively making such decisions and devising strategies to defend their interests. Whereas the state, in functioning societies, provides and/or safeguards institutions that facilitate, in different ways, those planning and decision-making processes by firms, other organizations, and individuals. That is the very logic of collective action through an organization and, at a higher level, through the state.

If everything pertaining to these dynamics were either internal to the organizations or frictionlessly organized in markets running with no transaction costs and incurring in no externalities, that would be mostly of interest to business scholars. However, that is often not the case. Inasmuch as firms behave like political actors, are influenced by them, and both generate and are shaped by broader economic trends and social frictions, these dynamics fall within the realm of political economy and are therefore of interest to economists, political scientists, and sociologists.

At least since the industrial revolution, one key interest of the analysis of political economy has been to understand how and why the industrialization process unfolds in different countries. Following a few waves of industrialization that generated large gaps between early industrializers and latecomers, the industrialization process became central to development strategies in the 20th century, especially in the aftermath of World War II (Gerschenkron, 1962; Chang, 2002). To do so, it was necessary to reject the notion that underdeveloped nations should remain specialized in sectors where they were relatively more efficient – typically agriculture, mining, or at most, low value-added manufacturing. While accepting such specialization meant upholding an international division of labor in which industrial activities – especially advanced ones – remained concentrated outside their borders, developing countries that dared to defy these boundaries encountered various forms of resistance to their pursuit of autonomy (Furtado, 1961). This resistance was often

legitimized by the enduring influence of theoretical arguments associated with, or derived from, a few perspectives of the classical English political economy in general – and David Ricardo’s theory of comparative advantage (Ricardo, 1817) in particular – whose ideas, when treated not as diagnosis but as doctrine, have often served to justify the continued primary-export orientation of underdeveloped countries.

For instance, Brazil’s difficulty in capturing and benefiting from a more substantial share of the income generated within the Brazilian and global automotive production networks is not particularly surprising when we consider that, even in products where the country holds so-called natural comparative advantages – and even among those where such advantages have persisted for centuries, as is the case of coffee – Brazilian organizations remain unable to capture and retain a more meaningful share of the income generated within the global production network based on that commodity – coffee, for instance.

As thoroughly analyzed by Dulci (2021), the case of coffee is all the more contradictory given that, to this day, the majority of the world’s coffee is still produced on Brazilian soil, while the internationalization of capital in this industry sustains a governance model that creates entry barriers favoring actors from the Global North. Meanwhile, actors from the Global South have often been entangled in secondary disputes and have been unable to organize in a way that would rebalance the distribution of income derived from something so deeply rooted in the lived realities of the Brazilian population, in this case, and other societies across the Global South. As a result, the overwhelming majority of profits in the global coffee industry are amassed by countries that do not grow a single coffee shrub or tree.

In practice, however, countries have pursued industrialization with varying degrees of success. While comparing Latin American countries that bet on import substitution industrialization (ISI) with the experience of East Asian newly industrialized countries (NICs), Haggard (1990) points out that both neoclassical (see Krueger, 2010) and dependency (see Prebisch, 1950) analyses of those experiences suffer from a lack of taking seriously the institutions in the policy-making process. To understand the possibilities that are open and viable to different countries in different moments one needs to take into consideration how politics and institutions affect policymaking.

In this sense, there is an interplay between political parties (which are often the legally legitimate interest-aggregator in political processes that start with interest articulation of partially conflicting preferences) and technological upgrading on the part of firms. This interplay is further mediated by the *rules of the game* – understood here as the *institutions*, following North (1990) – of a nation-state with its defined political processes that shape the definition, implementation and regulation of public policies. The extent that these policies effectively condition the potential for development is a factor of the degree and the quality of their impact on the economy.

Inasmuch as capitalism is a method of economic change, these political dynamics fostering or hindering technological upgrading impact development, broadly defined as economic change towards the frontier, for every single country, region, group and person. Although all countries face these political dynamics, developing and middle-income countries are often subject to more constraints than in developed countries to freely choose which technologies to adopt. Such constraints can be either objectively material or can occur in terms of different structures of domination (Scott, 2001), that can exert themselves even in the absence of material shortcomings

directly related to a certain technological upgrading. This slight variation in the landscape of less powerful polities shows up in the fact that they face a different matrix of interest groups that try to mold policy according to their preferences.

After all, advanced technologies are the most sought after means to exert “relational power and to reinforce other kinds of structural power” (Strange 1998, 31), making the issues of technological upgrading in developing countries a fascinating and challenging field of research. Objectively, the means by which technology can be bought, borrowed or built by developing countries is subject to the same rules and processes as in developed countries, but for the fact that there are occasions that developed countries become actively interested parties in the design and implementation (or not) of technology-related public policies, thus distorting the outcome in various ways. How do political parties, national institutions and public policies condition domestic technological upgrading in specific and economic change (or development) in general? Firms are a central part to the explanation.

A firm is an island of conscious power (Coase, 1988 [1937]) networked with other firms, organizations in general, and individuals through markets. Markets are thus embedded in social networks (White, 2002) in which asymmetries are rife. One instance of specific interest is the fact that “relative access to institutions – domestic or international – compared to other sub-state or market actors is a source of asymmetric power particularly with regard to agenda setting as these opportunity structures are not equally distributed among actors” (Farrell and Newman, 2016, 727). Global Value Chains (GVC) brought distributional consequences that are not easily accommodated, nor played around with standard trade policies. Currently, core-periphery dynamics are much more functionally oriented, than territorially oriented and organized. There are islands of wealth and

access to decisive information connected across the globe and with much less meaningful material connection to their closer surroundings beyond the limits of their daily living areas. Unbalanced growth and accumulation - therefore unbalanced development - has become the rule within territories that are unified by state borders, which are not necessarily economic borders anymore (UNCTAD, 2016). As marked regional inequalities is a characteristic of developing countries - think of the differences between Southeast and Northeast Brazil or East and West China -, in terms of regional disparities countries around the globe seem to evolve towards sharing more features of developing than developed countries. This is, in a significant way, the reversal of the long-lasting expectation of a positive convergence. Somehow as manifested in Italy - perceived in the past as an outlier of persistent deep regional disparity within a developed country -, as well as it is often cited in the historical case of the United States with disparities between north and south, new regional imbalances are emerging. And the dynamics of industrialization versus deindustrialization, which in a significant part pertain to the mobility area in general and to the automotive sector in particular, are present.

According to Pol Antràs, during the period of “hyperglobalisation” of 1986-2008 “trade integration and inequality grew very much in parallel even at fairly high frequencies” (2020, 35), because those harmed by trade integration were not adequately compensated. Moreover, without proper adjustments it “seems likely” that current “technological developments will aggravate income inequality in both advanced and less developed economies” (38). These movements are having clear impacts in the ongoing reorganization of mobility and transportation industries.

Surveying the GVC literature, especially the work produced by multilateral institutions, Ravenhill (2014) points out that “when it comes to policy implications” they still “simply lack

imagination” (271), advocating policies that are very similar to those that used to be championed in a pre-2000s and thus a pre-GVC world. What about the quality of the analyses in the current situation of GVCs being bombarded by post-Covid considerations and with the growing recrudescence of geopolitical rivalries? There is nonetheless a mature and vast literature on how public policy can foster economic and social upgrading in a semi-globalized (Ghemawat, 2007), multiplex (Acharya, Estevadeordal, and Goodman, 2019) GVC-world (Bamber and Fernandez-Stark, 2021; Stolzenburg, Taglioni, and Winkler, 2021; Morris and Staritz, 2021; Mayer and Gereffi, 2021).

Across the world, capitalism does not operate precisely in the same way in every country. Although it has the same tendencies as a method of economic change, national institutions embed (Polanyi, 1944)¹⁰, regulate (Aglietta, 1979; Aglietta and Bai, 2012) or channel these methods in ways that achieve different outcomes. In sum, there are varieties of capitalism, both among developed democracies (Hall and Soskice, 2001; Hancké, Rhodes and Thatcher, 2007), in rapid-growing non-democratic countries (Fishlow, 1973; Evans, 1979; Arrighi, 2007; Huang, 2008), and in developing democracies (Schneider, 2013, Doner and Schneider, 2016). Moreover, different outcomes can be explained based on such differences (Schneider and Soskice, 2009), also serving as a cautionary tale and comparative learning devices (Feldmann, 2019; Sánchez-Ancochea, 2020).

Complementarily, for Deutsch (1963) the way to look upon government is to focus on problems of steering. Shonfield (1965) singles out the French statist, the Nordic corporatist, and the liberal epitomized by the US and the UK as alternative approaches to steering the economy. These

¹⁰ In different polities, across time, and across issue areas, development questions can be assessed in the light of to what extent the economy in general or a policy in specific is rather “embedded in social relations” that are as wide and representative as possible in that society, or the policy comes to make local “social relations embedded in the economic system” (60), which is in turn always embedded in thicker and wider social relations somewhere else. After all, there is no such thing as a fully disembedded market economy. It is always embedded in some social relations. Which tend to manifest themselves asymmetrically across countries especially in issue of technological diffusion. Thus, being more exclusionary or more inclusive in different polities, across time, and across issue areas.

ideal types could be seen replicated in different levels of resemblance around the world. To some extent, not only have developing and middle-income countries yet to master steering techniques, but the application of these techniques has also faced a concerted – albeit asymmetric – challenge over the past decades.

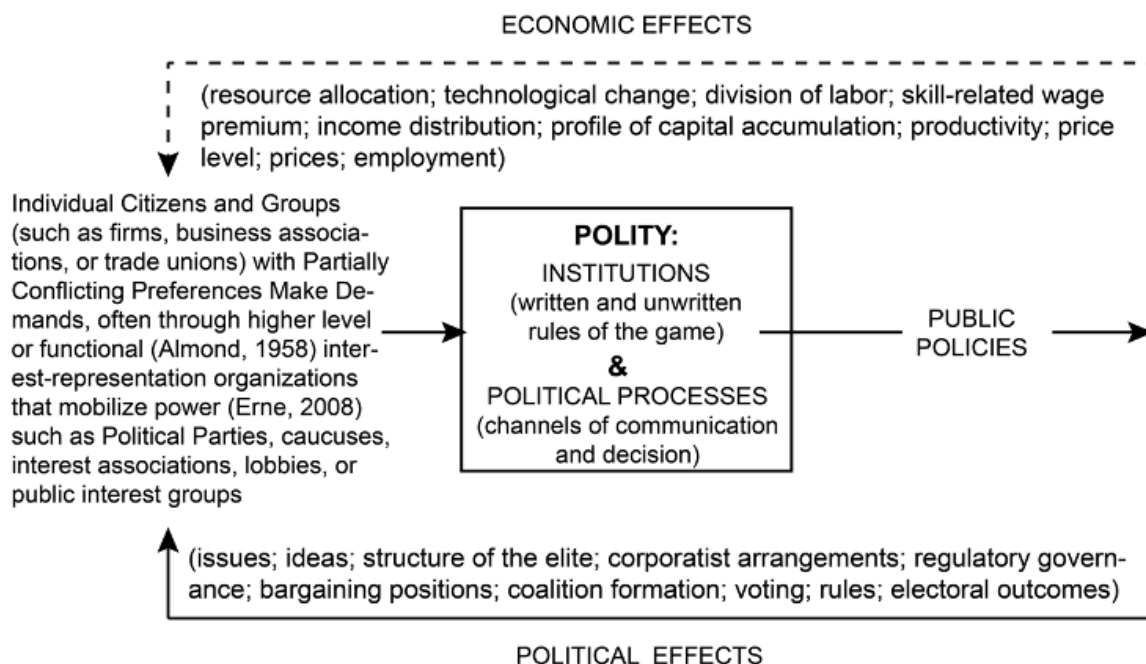
With the advent of neoliberalism, which accelerated after the end of the Cold War, a consensus emerged that “deployed considerable power to break the trade unions, roll back labor market protections, challenge welfare benefits, and introduce competition into sheltered sectors like telecommunications and transportation and later public social services, such as education and healthcare.” (Levy, Stephens, and Leibfried, 2015, 362). It is often in this context – of either the deconstruction of a previously existent statist or corporatist order that built the contours of a state, or from within an ongoing fragile state-building process – that firms in developing and middle-income countries lobby politicians, political parties, and other functionally competent government institutions for technological upgrading in the cases that they cannot operate by themselves.

The most interesting cases for development discussions are precisely the ones in which firms cannot operate by themselves. That is the reality of how technological progress is fostered in developed countries (Chang, 2002; Mazzucato, 2015) and these are also the moments in which one sees important economic change taking place in developing countries (Evans, 1979; Evans, Rueschemeyer, and Skocpol, 1985; Evans and Heller, 2015).

Figure 4.1 presents a sketch of how firms make their demands to parties (or to a caucus organized in Congress to advance the interests of the industry to which the firm is a part), and how resulting public policies feedback in terms of political and economic effects. In the tradition also of Berger (1981; 2005), Figure 4.1 underscores that interests are organized and represented by various

intermediary associations that are different from political parties. In Brazil specifically, some of these associations, that are closer to representing business interests, have a century-old tradition of being organized in several layers that, in turn, separate and amalgamate according to sectors of the economy and diverse jurisdictions, such as city, state and federal levels, with some different regional associations in between. In the case of industrial activities of the secondary sector, for instance, the various layers of employers' association include various 'Associations of Industries', organized according to cities, regions and different activities, which are amalgamated in a Federation of Industries at the state level, and then in a Confederation of Industry (CNI) at the national level.

Figure 4.1. — The Public Policy Process

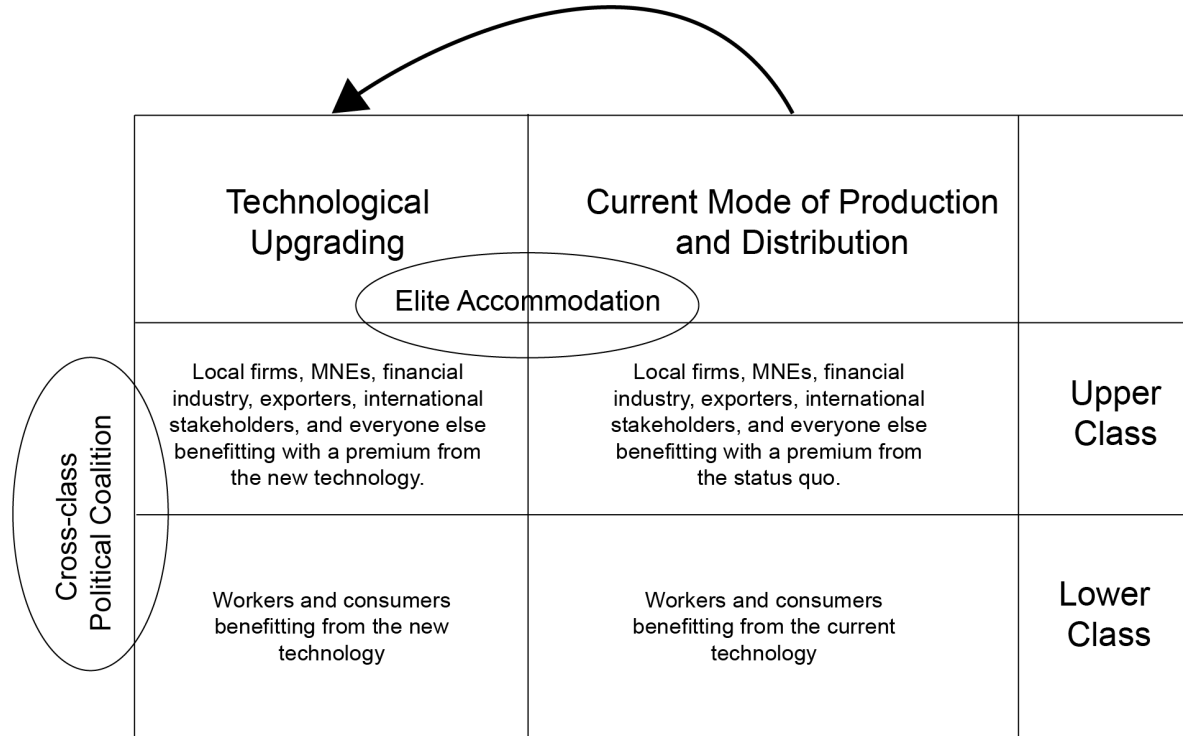


Source: Author, drawing upon Mitchell (1967).

The potential for development is thus conditioned by the economic effects of these public policies. Which in turn shape and are shaped, *inter alia*, by the structure of the elite and the coalition that is formed for or against technological upgrading. The more the upgrading will change the structures of power in society, the narrower governments “based on a particularly small number of essentials drawn from a very large group of interchangeables and, usually, a relatively small batch of influentials” (De Mesquita and Smith, 2011, 20) tend to resist.

Public policy starts as a problem of social choice. Each society has its number of essentials and influentials that shape social choice. A current regime of accumulation and distribution can have a technological (or institutional) upgrading when there is, or emerges, a sufficient political coalition supporting it. Patterns of continuity and change can be evaluated using the framework presented in Figure 4.2. Within this framework, upgrading can occur in two distinct forms. The first form involves an accommodation among the upper class when the issue is not articulated in terms that are sufficiently electorally (dis)advantageous to necessitate or enable a cross-class coalition. Alternatively, when these issues are amplified and present potential electoral benefits, they require the support of the majority of voters, or at least influential individuals, from the lower class. In such cases, a broader cross-class political coalition becomes essential. The use of the term 'accommodation' to describe this upper-class alliance draws on its application to labor incorporating regimes, as described by Collier and Collier (2002 [1991]), and parallels the logic applied to the formation of social coalitions that support or obstruct progressive tax regimes and the "expansion of dynamic sectors with welfare provision" (Schneider 2012, 203).

Figure 4.2. — Two modes of promoting or stalling upgrading through policy



For sure, amplifying the issue to the point of making it electorally relevant is a strategy for those unsatisfied with what the upper class is deciding (be it in favor or against upgrading). These coalition formations that have the potential to change the profile of the technology in use by domestic firms tend to be dependent on the types of industries, international insertion and relations maintained by the transnational elites present in developing countries. I will return with more detail to this in Chapter 5, when exploring the different policies for the Brazilian automotive sector from 1988 to 2025.

For now, the point is that technological upgrading is fundamental for the development of countries and their populations. This change takes place through firms, often transnational firms operating with relevant embeddedness in those markets. Considering that different groups in society

have partially conflicting preferences, inclusive development often takes place through political parties that are able to work for and form cross-class coalitions that use and foster opportunities created by moments of technological change to improve the country's insertion in the global economy through improving the insertion of lower classes in the domestic economy. For our specific case, there is a vast literature highlighting features, dynamics and evolution of patrimonialism and hierarchy in the ways that capitalism operates in Brazil (Evans, 1979 and 1995; Boschi, Diniz, & Santos, 2000; Lazzarini, 2011; Schneider, 2013; Musacchio & Lazzarini, 2014; Alston, Melo, Mueller, & Pereira, 2016). In all, Brazil remains an intermediate case between predatory states and efficacious developmental states as studied by Evans (1995). Brazil is an intermediate case because some "examples of successful intervention could be found even if the broader state apparatus did not approximate the developmental state model" (Haggard, 2018, p. 42). In Brazil, one of such examples is the so-called "Lei do Bem", a law that gives tax incentives to technological innovation by local firms. Other examples are the policies that foster the auto industry.

4.1. Regimes of Accumulation and the place of Peripheral Fordism

Chronologically, there is Taylorism and then there is Fordism. Even though the latter superseded the former, you have in the world arrangements that are still akin to Taylorism and you also have the coexistence of both in other regions. Taylorism can be characterized as the aggregate of production relations within the labor process aimed at expediting the mechanical sequence of tasks and filling time gaps during the working day. These relations manifest in overarching principles of organizing work, diminishing the autonomy of workers and subjecting them to continuous scrutiny and control in meeting output standards (Aglietta, 2015). Meanwhile, Fordism represents

the concept of a connection between the production process and the consumption mode, giving shape to mass production as the distinctive element in the universalization of wage labor in a characteristic semiautomatic assembly-line production (Aglietta, 2015).

After Fordism, two concepts have emerged – Neo-Fordism and Post-Fordism – both of which retain references to Fordism. This implies that, while significant changes have taken place relative to classical Fordism, they do not collectively amount to the advent of a completely new model. Post-Fordism denotes a clear break from Fordism, although the full shape and implications of this break have yet to be thoroughly documented and grasped. Conversely, Neo-Fordism suggests a variant of Fordism – an evolution or recombination that preserves much of its essence while introducing notable modifications.

Meanwhile, the way in which Fordist production methods were adapted – and often only partially realized – in the “peripheral” regions of global capitalism is covered by the concept of Peripheral Fordism (Lipietz, 1989). Rather than replicating Fordism in its idealized form, these peripheral economies, such as Brazil, exhibit hybrid models that blend local conditions (such as weaker labor protections and different market structures) with some of the hallmark features of standardized mass production. This resulting configuration produces industrial environments where many of the original promises of Fordism – like stable employment and rising wages – remain unfulfilled, hinting at a structural imbalance between the core and the periphery of global production.

The significance of Peripheral Fordism lies in demonstrating how local social, economic, and political contexts reshape even the most robust production paradigms, including those led by multinational enterprises accustomed to implementing Fordism in their home markets. Meanwhile,

in these peripheral regions, Fordist strategies like assembly-line organization and hierarchical labor relations might coexist with informal employment, limited union influence, or persistent regional inequalities. The analysis provided by Lipietz (1989) underscores that, while the Fordist framework was transformative in high-income industrial centers, its exportation to peripheral nations yielded uneven outcomes and notable tensions. As a result, the framework of Peripheral Fordism helps to consider how developmental paths diverge from the hegemonic blueprint of Fordism, questioning whether global uniformity in industrial organization is achievable —or even desirable —in a world marked by stark regional disparities.

The automotive industry in Brazil provides a particularly clear and relevant example of Peripheral Fordism in practice. Despite adopting key characteristics of classical Fordism — such as assembly-line production, vertical integration, and large-scale standardized manufacturing processes — the Brazilian automotive sector diverged significantly from its original Fordist model. Local socioeconomic conditions, marked by historically high inequality, informality, macroeconomic instability, and particular institutional structures, have resulted in a fragmented consumer market and employment relations that failed to become universally directed to continuously and incrementally feed the mechanism linking better paid jobs and mass consumption. This situation prevented the realization of the full social compact traditionally associated with Fordism in core economies. Moreover, multinational automakers adapted their Fordist practices to the Brazilian environment by emphasizing technological flexibility and cost reduction within non-universal parameters, rather than sticking to the original Fordist objectives of employment stability, wage improvements, and broad-based mass consumption. Thus, the Brazilian automotive experience illustrates how Peripheral Fordism evolves through a continuous negotiation between global

production paradigms and local structural constraints, yielding outcomes distinctively different from those anticipated by both classical Fordist theory and the experiences of the countries at the core of the global economy.

Considering that politics distinctly matter, one key aspect of the endurance of peripheral characteristics is observed in the fact that the political consciousness and grasp of the Brazilian economy as a whole, and even more of the global economy, both for the Brazilian business class as well as for the elites within it, remain relatively narrow and unambitious. As previously mentioned, the existing divergences to this pattern are rather the exceptions that prove the rule.

In general, the Brazilian business class has never demonstrated a refined understanding of the historical alternatives available to their social class, especially in terms of representing a real conduit for catching up, upgrading and development in general. And this becomes clear both in moments when the severe contradictions permeating Brazilian society reach a crisis of such magnitude that they stimulate authoritarian closures, and in the routine politics of Brazil's electoral democracy.

Throughout Brazil's various democratic periods, the Brazilian business class has engaged in politics primarily by financially supporting parties and their key figures mostly during political campaigns, guided, since the 1980s, far more by opinion polls than by genuine ideological preferences. Peculiarly as well as tellingly, when they vocally support a candidate based on genuine ideological preferences, the outcomes have been either defeat or, in case of electoral success, relatively dire for many of their businesses. In this sense, their genuine ideological preferences, especially among business owners who lean conservative or even reactionary, are only profitable for those who are straightforward rent-seekers or operate in industries that allow for the bleak

exploitation of the environment and the working class without significant blowback. What emerges is a contradiction such that the genuine ideological preferences of many do not align with their own economic sustainability and growth.

Of course, on the structural incentives, nudges and incitements for rent-seeking it is important to note that, as pointed out by Guilherme Mello, currently serving as the Secretary of Economic Policy in Brazil's Ministry of Finance, "after decades of unrealistic interest rates, the Brazilian business class as a whole – whether productive or financial – has become entangled in purely rent-seeking activities, capitalizing on the certainty of high returns from safe, highly liquid investments" (Singer, 2017, 26). Be that as it may, their strategy of choice has consistently been to prioritize investment in the likely winner while never failing to hedge their bets on other candidates with electoral potential. In general, the Brazilian business class tends to exhibit behaviors that are unambitiously pragmatic and thus porous to the structural pull of unrealistically high yet privately profitable interest rates, alongside other forms of passive or quasi-passive income.

Curiously, this pattern of betting on whoever is anticipated to be likely winner while hedging with other well-positioned politicians shifted slightly, yet significantly, only with the introduction of public campaign financing since 2018, which was accompanied by a massive expansion in the budgets of political parties with seats in the National Congress. It was precisely in these recent years, perhaps due to the dwindling leverage of direct financial donations, that business leaders began to be more vocal in expressing their preferences, either directly through the various media outlets at their disposal or, even more so, indirectly by leveraging – also through the provision of grey financial backing – various media channels and social media influencers. Accordingly, this applies especially

to the burgeoning and influential social media platforms that have a disproportionate effect on the attention and the formation of the electorate's opinion.

The results of the 2018 electoral campaign demonstrate that, both in the new composition of the National Congress, since then filled with social media influencers, as well as in the new heads of the executive branches. Brazil's Electoral Superior Court (TSE), while unable to grasp in time what was occurring in 2018, has acted, in the subsequent elections, to curb at least some of the most explicit illegal manipulations that have plagued elections in this digital age, where social media has become the public's primary source of information. Since the early 2010s, a burgeoning body of scholarship suggests that the digital public sphere will increasingly surpass most, if not all, other arenas as the primary site of struggle for political influence and political contestation (Trottier and Fuchs, 2014; Gainous and Wagner, 2014).

Nevertheless, the lack of a sophisticated and logically structured politicization among Brazilian business elites remains relatively prominent. This is clearly linked to a lack of prospective vision regarding the country's history, associated with a lack of seeing the potential for their actions to foster national development within the world-system and not solely their private short-term gains. Arguably, compared to the elites of countries that embraced cross-class coalitions, which catapulted local industries to more hegemonic positions while raising the lower classes to higher standards of consumption and stability, the Brazilian business class remains focused on defending the corporate interests of their own organizations narrowly defined and, above all, personal gains, which includes the immediate family.

Finally, there is also another way of seeing this pattern of betting on the one anticipated to be the likely winner while hedging with other well-positioned politicians: in agreeing with Keynes's

analogy that professional investment is often not about choosing to allocate resources to ventures that, to the best of one's judgment, are intrinsically the best destinations, nor even to those that the average opinion genuinely thinks are the best destinations, a similar concept can arguably be applied to how business elites choose which candidates to support in elections. After all, in the latter as in the former, it is rather the case that, with everyone looking at the problem from the same point of view, "we have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be. And there are some, I believe, who practice the fourth, fifth, and higher degrees" (Keynes, 1936, 137). Meanwhile, to make things more problematic, it is also the case that politicians themselves devote their efforts not only to anticipating what average opinion expects the average opinion to be, but also to fit themselves and their "own" opinions into that moveable target, expressing and supporting things that resonate with what they expect voters would like to hear rather than thinking things through and actually supporting the policies that, to the best of one's judgment, are intrinsically more socially advantageous.

4.2. Neoclassical Political Economy versus State-Centric Political Economy

The early development of the Brazilian automotive industry during the 1950s and 1960s exemplifies effective state intervention. However, this experience does not fit neatly within the "dichotomous debate between neoclassical political economy and state-centric approaches to economic development" (Shapiro 1994, 17). This section examines the interplay between these contrasting perspectives in political economy, presenting arguments — such as those advanced by Shapiro (1994) and complemented by other authors — that transcend this conventional dichotomy.

The political economy of the nation-state traces back to Friedrich List (1789–1846), yet it also extends beyond him, encompassing earlier thinkers who anticipated many of his arguments, as well as authors whose ideas emerged concurrently along parallel lines of thought. Helleiner (2021) presents a thorough catalogue of thinkers who influenced List and who were influenced by him. List himself attributes the beginning of a structured political economy to François Quesnay (1694-1774) and the French economists of his time (List, 1885, 6). About this school of thought Adam Smith ponders that “this sect, in their works, which are very numerous, and which treat not only of what is properly called Political Economy, or of the nature and causes of the wealth of nations, but of every other branch of the system of civil government, all follow implicitly and without any sensible variation, the doctrine of Mr. Quesnay. There is upon this account little variety in the greater part of their works” (Smith, 1776, 903). However, List insists on a difference between “Cosmopolitical and Political Economy”. The former would “originate in the assumption that all nations of the earth form but one society living in perpetual peace”, while the latter “teaches how a given nation in the present state of the world and its own special national relations can maintain and improve its economic conditions” (List, 1885, 10).

For the sake of simplicity, the industrial policy stance of Neoclassical Political Economy is referred here as ‘laissez-faire’, while ‘developmentalism’ is the industrial policy stance of the State-Centric Political Economy. The doctrine of laissez-faire emerged from the ideas of nineteenth century political philosophy and the works of classical economists, particularly from the popularization and dissemination of Adam Smith's and David Ricardo's ideas. To be sure, the popularization of these ideas does not honor the complexities and more balanced reasonings of these thinkers – see Keynes (1926) for an exposition of why such is the case. However, the fact is that

laissez-faire has been interpreted “in the popular mind as the practical conclusion of orthodox political economy” (Keynes, 2010 [1926], 275), and therefore it is used here to refer to such strain of policy. In a nutshell, its advocates for minimal government intervention in the economy. The concept developed organically as a reaction against mercantilism and state control, with proponents arguing that free markets, driven by self-interest and competition, would naturally regulate themselves and lead to efficient economic outcomes.

Meanwhile, developmentalism is, in some respects, a reaction to laissez-faire —even though, in other aspects, it is also a kind of policy that both predates and is contemporary to laissez-faire. In the former tradition, the argument is that laissez-faire, often understood as the natural order of economic relations free from government intervention, was, in fact, a constructed and deliberately planned economic system (Polanyi, 1944). Instead of emerging spontaneously, the free-market economy was the result of intentional policies and regulatory frameworks established by the state and its ruling oligarchies. Therefore, the assertion that a self-regulating market was a utopian ideal with preexisting roots necessitating extensive governmental intervention for its dismantlement is inconsistent. Instead, what transpired was the deconstruction of existing social structures and the imposition of new economic relations that prioritized market mechanisms over social considerations. In essence, "society was made to conform to the needs of the market mechanism" (Polanyi 1944, 210). Subsequently, a countermovement emerged in response to this transformation.

While in the core countries where capitalism first developed, “the countermovement against a self-regulating market” was driven “by a purely pragmatic spirit” (Polanyi 1944, 147) that led these nations toward broader social welfare, in peripheral countries —a grouping whose composition has

changed over time —the pragmatic response took the form of a series of practices that can be broadly encapsulated under the label of developmentalism.

Instead of implying a complete lack of government control and intervention, establishing a free-market economy requires significant state involvement, including actions to create and protect the commodification of land, labor, money, and data, among other factors. These elements, which Polanyi refers to as "fictitious commodities", were not originally part of the market but were integrated through legislative and regulatory actions. This process necessitates a strong and centralized state mechanism to enforce market discipline and uphold property rights, thereby highlighting the paradox that *laissez-faire* depends on strong governance for its sustenance. Moreover, the imposition of market principles on society might lead to widespread social dislocation and economic instability, thus creating tensions and conflicts, as communities are forced to adjust to the demands of a market economy that prioritizes profit over social welfare. While these effects took place in their most severe form in the past, similar situations can take place today in a more controlled scale.

One useful lens through which to interpret the recurring alternation between *laissez-faire* and developmentalist practices in societies like Brazil — particularly in sectors such as the automotive industry — is precisely Polanyi's concept of the "double movement." In this context, however, the double movement unfolds not as a grand, society-wide shift over long historical periods, but rather as a series of more compressed, sector-specific cycles with narrower social reach. The liberalization of markets, often portrayed as natural or inevitable — think of Margaret Thatcher's political slogan "there is no alternative," with all its future reverberations in Brazil's embrace of neoliberalism, first under the Collor administration and later under the Cardoso administration, both during the 1990s

— can be better understood as a deliberate, interest-driven project. In turn, developmentalist reactions emerge as countermovements — also socially constructed and filled with their own interest-driven projects — mobilized in response to the dislocations, shortcomings, and asymmetries generated by market primacy. The swings between these phenomena — as well as the phenomena themselves — are inherently dialectical due to their very contradictions. Even today, they repeat in shorter spans of time and across more fragmented institutional terrains, marking the evolution of economic institutions shaped by tensions between market expansion and the societal need for stability, inclusion, predictability, and control.

Contradictions within social and economic systems — at the same time material and structural, and not just conceptual — are engines of historical change. In Marx, contradictions are the substance of dialectics, because without contradiction, there is no dialectical movement — no negation, no conflict, no transformation. Something similar comes in the arguments of Schumpeter.

Schumpeter makes it clear that, for him, capitalism was not "the final phase of social evolution" — a view that aligns with Marx's in this regard, though their perspectives diverge in important ways. For both Marx and Schumpeter, capitalism is, in a sense, "its own undoing." The key difference, according to Schumpeter — who came after Marx and studied his work extensively — is that while Marx believed capitalism's internal contradictions would ultimately make its continuation impossible, Schumpeter argued that "society is bound to grow beyond capitalism [...] because the achievements of capitalism are likely to make it superfluous" (Schumpeter 1955, 174).

4.2.1. Simonsen versus Gudin: an application of the discussion above to the Brazilian case

This section covers the Brazilian version of the debate between laissez-faire political economy and state-centric developmentalist political economy. Eugênio Gudin was the champion of laissez-faire political economy, while Roberto Simonsen sponsored state intervention to industrialize the country.

In the early 20th century, Brazil faced significant economic challenges that prompted intellectuals and policymakers to seek solutions for economic change and sustainable development. The country found itself at a crossroads to define what kind of economic structure it desired to establish as the basis to promote sustainable growth. The debate between laissez-faire liberalism and state-centric developmentalism emerged as a central theme in the economic discourse with its political repercussions.

Eugênio Gudin advocated for laissez-faire principles, arguing that minimal state intervention would allow market forces to drive economic growth. Gudin's perspective was rooted in classical liberalism, emphasizing the efficiency of free markets and the dangers of excessive government control. In contrast, Roberto Simonsen championed state intervention, believing that a proactive government role was essential to overcome structural barriers and foster a necessary industrialization.

Eugênio Gudin, a prominent conservative economist, argued that Brazil's economic development should rely on the principles of laissez-faire and the strategic harnessing of the country's comparative advantages as they were presented at his time (Bielschowsky, 2001). An erstwhile Minister of Finance and responsible for the creation of the Brazilian Institute of Economics (IBRE) at FGV university, Gudin believed that government interference often led to inefficiencies and distortions in the market. He emphasized the importance of private entrepreneurship and foreign

investment as catalysts for growth. Regarding the latter, his time at the Ministry of Finance was marked by the issuance of Instruction 113 of the Superintendence of Money and Credit (SUMOC), which facilitated foreign investments in Brazil and was later extensively utilized during the administration of President Juscelino Kubitschek. This Instruction 113 played a significant role in attracting foreign capital, thereby contributing to shape the industrial and economic development of the country not only during that period but setting also the foundations of the type of relation that Brazil would establish with FDI until today.

Revealingly, Celso Furtado – widely regarded as one of the most influential Brazilian economists of the twentieth century, with a career of practical service in official development agencies in Brazil and a close association with President Juscelino Kubitschek, whom he began assisting in January 1959, the same year he established the Superintendence for the Development of the Northeast (SUDENE) at Kubitschek's request – observed that Kubitschek “did not distinguish between national and foreign capital; he simply distinguished between capital that contributed to ‘creating wealth’ and speculative capital” (Furtado, 1989, 41). Without considering the potential ties between business corporations and foreign governments, as well as their commitments to their countries of origin and the ramifications of such associations, Kubitschek was convinced that “Brazil was such a great country that no international company could threaten it” (Furtado, 1989, 41). Overall, Kubitschek emphasized the potential of FDI, through the operations of MNEs in Brazil, particularly within the automotive sector, to foster wealth creation and stimulate economic growth and broader development.

According to Gudin, reducing tariffs and eliminating state monopolies would attract foreign capital, stimulate competition, and ultimately lead to technological advancement and productivity

gains (Gudin, 1957). His approach mirrored other international discourse in favor of liberalization during the mid-20th century. Noteworthy was Friedrich Hayek's staunch criticism of centralized economic planning and state intervention. Gudin was inspired by Hayek's works such as "The Road to Serfdom" and "The Constitution of Liberty," which emphasized the importance of individual freedom, free markets, and the dangers of government overreach.

In the national debate of alternative political economies, Roberto Simonsen, an influential industrialist and politician, countered Gudin's arguments by advocating for a state-centric approach to economic development. Simonsen believed that Brazil's underdeveloped industrial base required direct government intervention to foster growth. He argued that protective tariffs, subsidies, and state-owned enterprises were necessary to nurture nascent industries and reduce dependency on foreign goods (Bielschowsky 1988). Simonsen's developmentalist vision was rooted in the mercantilist tradition, which prioritized national economic self-sufficiency and strategic state planning. Among the Brazilian industrial elite of his time, Roberto Simonsen was the most prominent thinker, as well as a prolific writer.

The ideological clash between Gudin and Simonsen played out during the Vargas era, a period marked by significant state intervention in the Brazilian economy. In all, President Getúlio Vargas implemented a series of policies that aligned more closely with Simonsen's views. The creation of state-owned enterprises, such as Petrobras and Companhia Siderúrgica Nacional (CSN), exemplified the state-centric approach to industrialization. These initiatives aimed to build a robust industrial sector capable of competing on the global stage (Skidmore 1999). While these policies facilitated rapid industrial growth, they also sparked debates about the long-term sustainability, desirability and efficiency of state-led development that exist until today. One can point out that a

distinct separation still exists in Brazil between two schools of thought: the developmentalists, who carry forward the legacy of Simonsen, and the neoliberals, who continue the tradition established by Gudin.

In the context of the automotive sector in Brazil, the two schools of thought have shaped the industry's trajectory in distinct ways over time. In the 1950s, under the government of President Juscelino Kubitschek, the Brazilian state actively pursued policies that aligned with developmentalist principles: there was state intervention and economic planning as critical drivers of industrialization and broader national development.

While the government implemented import substitution industrialization (ISI) strategies, which aimed to reduce dependency on imports by fostering domestic manufacturing, the automotive sector was a focal point of these policies. The government offered incentives such as tax breaks, subsidies, and protective tariffs to attract foreign automakers to establish manufacturing plants in Brazil. Companies like Volkswagen, Ford, and General Motors were convinced to set up operations in the country, leading to the creation of a robust domestic automotive industry. The state's involvement in planning and supporting the sector was seen as essential for achieving economic modernization, job creation, and technological advancement. This period marked a significant phase of growth and industrialization for Brazil's automotive sector, driven by the developmentalist ideology that prioritized national industrial capacity and economic self-sufficiency.

In contrast, the neoliberal school of thought gained prominence in Brazil in the late 20th century, particularly during the 1990s, under the influence of global economic trends and the Washington Consensus. The neoliberal policies of this era emphasized deregulation, privatization, and the opening of the Brazilian market to international competition.

In the automotive sector, this shift towards neoliberalism led to significant changes. In the early 1990s, the reduction of tariffs and trade barriers exposed the domestic automotive industry to greater global competition. While this increased the pressure on local manufacturers to improve efficiency and innovation, it also led to challenges for industries that had previously relied on state protection. The liberalization of the market allowed for the influx of new foreign players, contributing to greater diversity in the types and models of vehicles available in Brazil. However, it also meant that the domestic industry had to adapt to survive in a more competitive, market-driven environment without the extensive support and protection that characterized the developmentalist era.

In many ways, the tension between these two schools of thought continues to influence the automotive sector in Brazil. While neoliberal policies have pushed the industry towards greater integration into the global market, elements of developmentalism persist, particularly in the form of government incentives for the production of flex-fuel vehicles and the promotion of electric vehicles (EVs) as part of Brazil's broader environmental and energy strategies. This hybrid approach reflects the ongoing debate between the need for state involvement in strategic industries and the benefits of market liberalization in fostering competition and innovation.

In summary, the automotive sector in Brazil has been shaped by the shifting influence of developmentalist and neoliberal ideologies. Developmentalism facilitated the industry's initial growth and establishment, while neoliberalism focused on introducing greater competition to foster efficiency. The interplay between these two approaches continues to define the sector's evolution, reflecting broader economic and political currents in Brazil.

4.2.2. A different appraisal about what also matters

Even from different angles and with different emphases, both the developmentalist and neoliberal perspectives focus on explanatory variables linked to power coalitions, business elites, and specific manifestations of capital while neglecting global geopolitics¹¹. Moreover, even within the schools of thought associated with the type of developmentalism rooted in Prebisch in particular and in the golden years of ECLAC more broadly¹², none of these – Fiori (2024) identifies three main strands: original structuralism, dependency theory, and the “Campinas School,” which have had greater influence in Brazil – “simultaneously incorporates into its long-term interpretation of Latin American capitalist development the issue of contradictions and conflicts between states and between social classes” (p. 347). In general, the limitation lies in the fact that “competition and power hierarchies among states do not play an important role in their theory of how wealth is distributed among nations” (p. 348).

Because the struggle unfolds through asymmetric and socially constructed hierarchical disputes over power and wealth, as well as over the monopolistic control of their expansion¹³, competition and conflict among states and among social classes are inherently asymmetric and tend to be hierarchical if socially constructed in that way. These dynamics generate structural

¹¹ Neoliberal perspectives often claim association to neoclassical economics, which typically endeavors to portray itself as value-neutral and objective frameworks for resource allocation. In these views, politics is often considered exogenous, and potentially distorting, as in more orthodox interpretations, or is deemed relevant in accounting for the mechanisms and processes that shape institutions, which may vary in their effectiveness and serve as explanatory variables.

¹² Arguably, these golden years lasted from Prebisch’s many years as Executive Secretary of the ECLAC (1950-63) all the way to the premature death of Fernando Fajnzylber, in 1991. Of course, more than simply personality-oriented, this 1950-91 period overlaps with relevant breaks in the broader process of change in world history, especially as it unfolded for Latin America.

¹³ See Elias (1939) for the logic of monopolistic expansion of property, where one can see the way in which monopolization processes are informed by technological and institutional mechanisms, and end up gradually resulting in an “immense human web” (272).

contradictions between the simultaneous processes of power accumulation and wealth accumulation that define the regime of accumulation in each historical period.

Arguably, if in many circumstances “hierarchy today is cloaked, submerged, and itself undisciplined because both dominant and subordinate states prefer not to acknowledge its existence”, an important effect of “revealing hierarchy” is that such display might be useful to “constrain and inhibit imperial projects by powerful states” (Lake, 2009, p. xiii), inasmuch as states are possibly benign and not obsessed with zero-sum gains, as they are variable in nature, and might as well prefer the mutual benefits of positive-sum frameworks.

Even though the usual way of describing political cleavages in preferences regarding approaches to development and insertion in the global economy is the one presented above contrasting liberals following neoclassical political economy versus developmentalists following state-centric political economy, it is not enough to say that Brazilian industrialization and the overall fate of its economy has been shaped by the shifting influence of developmentalist and neoliberal ideologies.

For Fiori (2024), the only two moments in which there was a proposal, or even an outline, of a “proper catch-up” occurred under Vargas in 1938 and under Geisel in 1974. And in both cases, these initiatives were “immediately contested and defeated by Brazil’s economic and political elites” (87). In this sense our catch-up experience has been always not simply erratic, but at least a notch below proper catch-up experiences in countries that sustained an upward trajectory across economic cycles and out of the middle-income trap. Deviating slightly from Fiori’s harsh assessment, perhaps beyond those two outlines drafted within authoritarian contexts, we might recognize other two attempts within democratic contexts: the first, associated with the federal administrations led by

Juscelino Kubitschek (1956-1961) and the second, more subjective but with a few objective measures, by the Workers' Party (during the 2000s, the early 2010s, and again in the 2020s).

Regarding the Workers' Party inability to deliver proper catch-up, arguably, one of the issues is that the administrations led by the Workers' Party are characterized by their reliance on conservative coalitions, through which Brazil's economic and political elites challenge and obstruct any proposals or measures that could substantially alter the status quo. Even if such changes could potentially benefit at least a portion of these elites in the long term, they are unwilling to assume the risk, as they are content with deriving income primarily from rents. In all, this arrangement facilitates their extraction of rents from Brazilian society, natural resources, and other endowments.

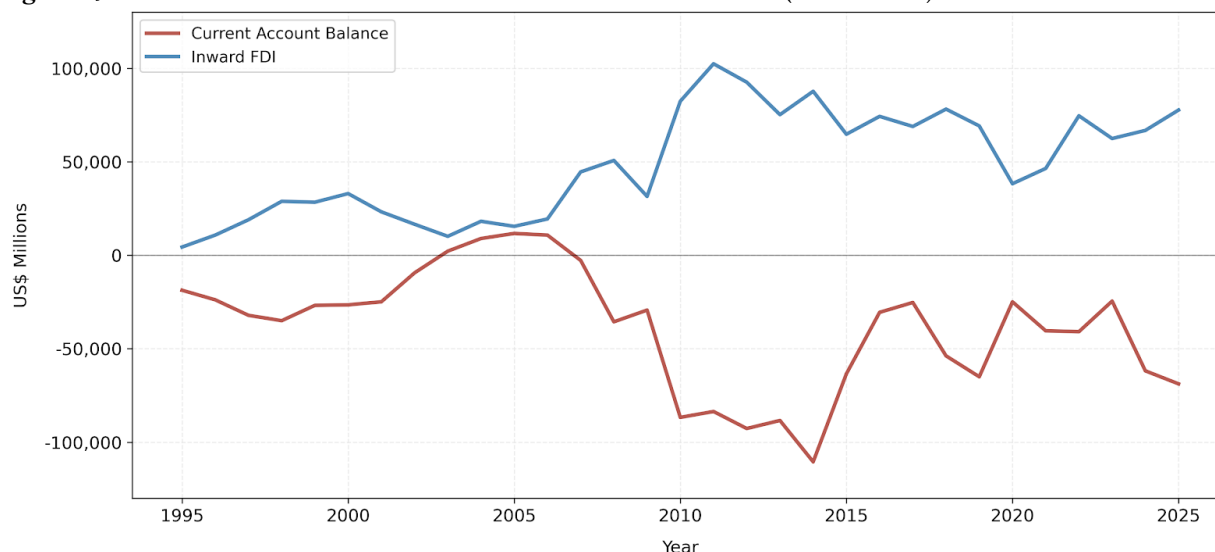
In an interview to this research project, a Workers' Party (PT) politician that served both as governor of a key Brazilian state and as minister of a portfolio that is key for the automotive sector, formulated the diagnostic that an important part of the issue is that "there is a missing pillar" in this post-1985 political economy: no party is primarily focused on articulating and defending the interests of a national industrial bourgeoisie. Accordingly, in his view, it should not be expected of the PT to organize and lead an industrial bourgeoisie in Brazil, since the PT's historical constituency is the working class. Therefore, in the post-1985 democratic transition, that role would have more logically fallen to the PSDB. In practice, however, the PSDB aligned itself much more closely with financial interests than with a productive industrial agenda. In contrast, the PT years are characterized by support for industrial development, whereas the PSDB's time in power was marked by the dismantling of the state-owned enterprises (SOEs) established by the more developmentalist administrations of Vargas, Kubitschek, and portions of the 1964-85 military dictatorship. And the latter action was not in favor of a national industrial bourgeoisie, but of financial sector's interests

aligned with FDI. Consequently, his view of this fundamental pillar missing from the post-1985 political-economic landscape: while Brazil has a major party that represents workers (PT), it lacks a political counterpart capable of articulating the interests of an industrial bourgeoisie. Instead, what exists is a fragmented set of parties that accept and reproduce the hegemony of financial capital, focused on rent-seeking, short-term gains, and maintaining certain privileges. Notably, the only relatively more productive sector organized within that fragmented set of conservative parties is export-oriented agribusiness, which employs fewer people than would be needed in a country with Brazil's workforce size, given a population exceeding 200 million.

The PSDB had and still has — even though it became a weak party in the 2020s — no “proper catch-up” program. The only envisaged catch-up was FDI-dependent and unable to take Brazil out of the middle-income trap. It is worth reminding that being historically dependent on FDI is listed as a reason for not attaining higher levels of development and being stuck at the middle-income trap (Doner and Schneider, 2016). Arguably, high FDI stocks is one of the very factors creating cleavages that fragment business and labor.

Since the years of Cardoso's two administrations (1995–2002), the macroeconomic framework associated with the Real Plan — which stabilized Brazil's economy by curbing the runaway inflation of the 1980s and early 1990s — became institutionalized. This regime was consolidated most clearly in the long-lasting ‘economic tripod’ established in the wake of the 1999 international financial crisis and enduring until today. From an IPE perspective, this marked not only a shift in macroeconomic management but also a deeper reorientation toward external financial integration, which increases the disciplinary power of finance, especially in the context of peripheral financialization in a world marked by a monetary hierarchy.

Figure 4.3 — Brazil's Current Account Balance vs Inward FDI (1995-2025)



Source: IPEADATA, 2026¹⁴.

Alongside price stability, the systematic attraction of foreign capital became structurally embedded in the macroeconomic model, shaping other policy possibilities and private agents' decisions. Figure 4.3 shows how inward FDI serves to systematically compensate current account deficits, since the creation of the Real in 1994. One can see that in the mid-2000s (during Lula 1st and 2nd terms) current account deficits were attenuated, but that would not last. Moreover, since the mid-1990s, the systematic attraction of foreign capital has focused not only on FDI but also on portfolio flows towards Brazilian stocks and bonds. The latter inflows, largely intermediated through the Brazilian equity and debt markets monopolized by B3 — as the São Paulo stock exchange is currently called —, came to be framed not merely as desirable but as necessary to sustain balance-of-payments equilibrium, even though as Figure 4.3 shows, FDI by itself does the trick. Portfolio flows

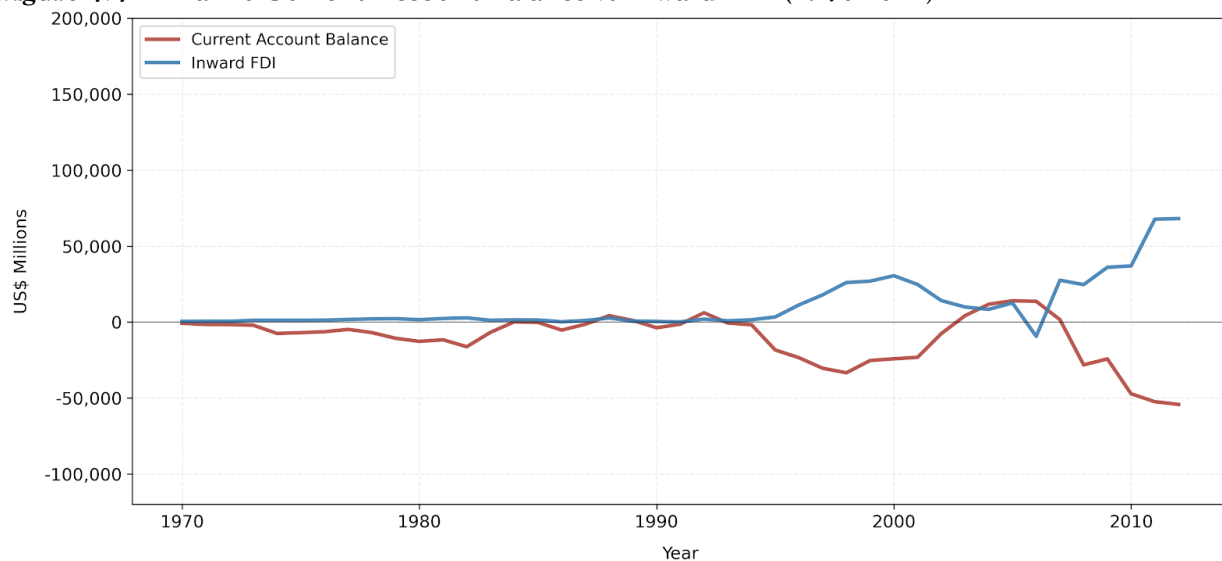
¹⁴ This data comes originally from the Central Bank of Brazil and follows the Sixth Edition of the IMF's Balance of Payments and International Investment Position Manual (BPM6).

directly affect floating exchange rates, which, in turn, affect inflation and, in turn, the benchmark interest rate for the Brazilian economy (Selic), set by the Central Bank as a tool to control inflation.

In practice, the way in which inflation has been tamed traded one kind of external constraint for another – relatively more modern, stable, and internationally comprehensible, to be sure – while nonetheless reinforcing a pattern of dependence and financial dominance in which domestic accumulation became increasingly conditioned by volatile global capital flows and high domestic interest rates. This dynamic not only created new external constraints for Brazil but also subordinated productive development to the imperatives of private investors' priorities, which tend to be relatively short-term focused. Moreover, without capital controls, the way to attract international capital with a time horizon beyond short-term has been to double down on FDI. Although Brazil's industrialization strategy has strongly relied on FDI since the 19th century¹⁵, especially from the 1950s onwards, it is the period since the Real Plan, which started in 1993, that has seen the flare-up of FDI alongside, not incidentally, the magnified structural deficit position of Brazil's current account balance (Figure 4.4).

¹⁵ From the beginning of independent Brazil in 1822 until the Great Depression of 1928–1933, FDI inflows were largely driven by British firms, particularly railway companies and public utility providers (Abreu, 2024). The privileged British position in Brazil was shaped not only by the broader global preeminence of British economic power at the time, including the central role of the pound sterling, but especially by the favorable conditions the United Kingdom secured through its alliance with Portugal during the Napoleonic Wars. When the Portuguese Crown refused to comply with the French Continental Blockade and sided with Britain, a series of events unfolded that led the Portuguese royal family and practically the entire court to relocate to Rio de Janeiro between 1808 and 1821, from where a significant portion never returned. These years coincided, not incidentally, with the birth of Brazil's industrialization, which had been proscribed by Portugal until then.

Figure 4.4 — Brazil's Current Account Balance vs Inward FDI (1970-2012)



Source: IPEADATA, 2017¹⁶.

Although curbing inflation was among the most pressing issues attracting social attention and demanding public action in the early 1990s — a period in which a succession of complicated stabilization plans were tried before the Real Plan achieved success while Cardoso was serving as Itamar Franco's Finance Minister —, the decision to link inflation control to the systematic attraction of foreign capital was ultimately a choice embraced by Cardoso and consolidated during his two subsequent administrations. Arguably, that alienated the interests of a relevant section of the native capitalist class that was linked to productive activities and had preferences to either achieve, maintain, or expand control over sections of the production and distribution process within Brazil. Arguably, embracing such an option was coherent with Cardoso's belief, expressed in his years as a

¹⁶ This data comes originally from the Central Bank of Brazil and follows the Fifth Edition of the IMF's Balance of Payments and International Investment Position Manual (BPM5), issued in 1993. Therefore, a few discrepancies are apparent if one juxtaposes Figure 4.4 and Figure 4.3. Nonetheless, the key message emerges on the variation pattern discernible when both figures are examined side by side. Accordingly, the historical trend was one where both FDI and the Current Account deficit remained relatively small (under US\$25 billion) until the mid-1990s, followed by significant growth in scale that endures across the key period examined here of much larger capital flows, where FDI significantly increased to cover larger structural Current Account deficits.

scholar, that the best “the Brazilian bourgeoisie” was able to do to channel modernization into the country was “limited to integrating itself into the scheme of international capitalism, to associating itself with international capitalism as a dependent and minor partner” (1973, 163). As a result, Cardoso’s PSDB alienated sections of the national capitalist class that were not necessarily content to be either a dependent and minor partner or to have most of their stakes solely in the financial market.

This characteristic of the PSDB would ultimately undermine the party’s electoral viability in the medium run. According to Diniz and Boschi (2007), two of the most thorough political scientists to have examined the preferences and behavior of Brazilian business elites, “dissatisfaction among a significant segment of the business community was one of the components of the conjuncture responsible for the defeat of the incumbent candidate” (p. 10), in the election immediately after the second and final term of President Cardoso (1995-2002). Tellingly, despite the PSDB being one of the two dominant political parties from 1994 to 2016, Cardoso remains the sole president elected by the PSDB since its establishment in 1988, when this party was formed by uniting several prominent figures from the MDB, which had served as the officially sanctioned opposition during the 1964-85 dictatorship.

Curiously, primarily due to electoral strategy rather than other motivations, it was the Workers’ Party that actively pursued cross-class incorporation by engaging with productive sectors of the business community rather than the contrary. This initiative occurred towards the conclusion of Cardoso’s second and final term in 2002, when Lula, reportedly frustrated with repeatedly narrowly losing elections, persuaded the Workers’ Party leadership to broaden the definition of workers to include well-off white-collar professionals and owners of business organizations, at least from the

productive sectors of the business community. In that context, then-Senator José Alencar, a prominent industrialist from the textile industry in Minas Gerais, was invited to run as Vice-President in Lula's ticket. Moreover, that move would consolidate an alliance with Alencar's Liberal Party (PL), a then-emerging right-wing party that, much later, in 2018, while the Workers' Party was at the lowest level of its social prestige, would elect the largest set of representatives to Brazil's lower chamber of Congress – a feat the PL has repeated in 2022 and will keep at least until early 2027, representing, during this time, the leading opposition to the current third administration led by President Lula (2023-2026).

In the 2000s, however, that coalition was dubbed as the alliance of capital and labor, and it was distinctly successful in Brazil's 2002 and 2006 elections. From that point onward, the Workers' Party administrations "prioritized" the interests of this "internal bourgeoisie" in both economic and foreign policy, which turned these administrations into "targets for criticism and opposition from international capital" (Boito Jr., 2018, 303). Moreover, in the final stage of the 2002 elections, Lula felt compelled to extend his outreach to encompass segments of the business community that remained skeptical and could present significant challenges. That final effort of compromise was particularly directed to assuage financial capital. This was achieved through the publication of the so-called "Letter to the Brazilian People," which was drafted with promises largely demanded by the financial sector and embraced by the country's most influential media-outlets. In a certain sense, that was targeted to appease important supporters behind Cardoso's administrations, promising some continuation in key macroeconomic aspects. If that was necessary to secure the positive electoral result, this is disputable, but it certainly served to set the context for what was arguably the best transition of power between two opposing parties in Brazil's history.

This situation did not last without disruptions, however, partly due to mistakes and misjudgments by some Workers' Party elites¹⁷ and segments of the coalitions they chose to cultivate, and partly due to a coordinated backlash from segments of that very coalition, acting in concert with dissatisfied fractions of capital. These groups were primarily interested in reaping rapid financial returns, privileging rent-seeking behavior together with a backlash in social policies, and a reactionary specialization within the prevailing international division of labor. What is curious yet understandable in terms of the entanglement of prejudices and complex social aspirations covered in Section 4.3, is to perceive in sharp relief that the "internal bourgeoisie" is not at ease with the idea of being represented by the Workers' Party, which is always pushing some agendas that benefit workers and the lower classes in general in this very unequal country.

An unequal country that has become less unequal precisely during an era in which most countries closer to the frontier of capitalism are becoming more unequal. While the understanding that "the expanded social welfare legislation that had been introduced in most countries after the [Second World War] made an important contribution not only to economic growth and to the smoothing out of the business cycle, but to social peace and strengthened democracy" (Hirschman, 1991, 114) has been increasingly under attack since the mid-1970s, in Brazil the objective situation

¹⁷ Although mistakes were many, one particularly striking is that by co-opting key social movements following its ascent to the presidency, "the social movements were neutralized by the PT, which is a paradox, a contradiction", as Dominican friar and theologian Frei Betto recollected in an interview (McKenna, 2020, 204). Elaborating on the conjunction between the aforementioned cooptation and the lack of sound initiatives to promote more substantial and long-lasting political inclusion and awareness of the Brazilian people, Gilberto Carvalho, a key figure within the Workers' Party who served as one of the cabinet ministers working within the Presidential Palace during Dilma Rousseff's first term (2011-2015) and had been one of Lula's closest aides before and during the PT's inaugural stretch of time in the Presidential Palace (2003-2011), acknowledged that "it's true that there was inclusion, it's true that there was the beginning of participation, but it is also true that we did not take care of the political and ideological inclusion of people. Let me explain: we made it so that these people could have access to the market, to a job, to a house, a refrigerator, etc. but we did not make these people citizens with a new outlook on the cultural questions, and in the relationship to the [democratic] project" (McKenna, 2020, 77).

of progressive taxation and welfare provision is more complex. To a large extent, owing to the lack of universal provision of public goods and a safety net that left large segments of the population unprotected prior to Brazil's 1988 Constitution, the reality is that the provision of public goods and social protection has expanded in Brazil since 1988, even in the face of the rising global tide of attacks on social welfare and progressive taxation. While the rise of the precariat is a worldwide reality, in Brazil the direction of inequality measures is mixed, certainly more mixed than in most other countries. Specially during the federal administrations led by the Workers' Party, public access to universal health care, education, housing, food, has expanded.

For peripheral countries, the present era arguably begins with the institutional reaction of core economies to Mexico's debt moratorium in September 1982. From that point onward, peripheral countries, largely indebted in international markets and with liabilities denominated in U.S. dollars, were compelled to submit to IMF-imposed discipline. This pressure was made possible and intensified – even if unintentionally – by the sharp appreciation of the dollar following the so-called “Volcker Shock,” the drastic interest-rate hikes implemented by the U.S. Federal Reserve between 1979 and 1982. The facts outlined above were all entangled with the second oil shock of 1978 and the global recession of 1981–83, which hit Brazil particularly hard (Hirschman, 1986, 177). Failure to comply meant losing access to both private and public international financial resources on which these economies structurally depended, given the rules of the game in place during the postwar international order, which were redesigned by two unilateral ruptures represented first by the Nixon Shock of 1971–1973 and later by the Volcker Shock of 1979–1982. From a global point of view, because it shares the same broader historical context shaped by the Nixon Shock, which extends through 1973, scholars such as Robinson (2024) identify 1973 –

globally marked by the first oil shock – as “the date of the onset of a structural crisis” that led to “subsequent globalization” (pp. 176–77).

Ironically, or perhaps contradictorily, the financial strategy promoted to peripheral countries as a means of navigating the readjustments of the 1970s became a financial straitjacket in the 1980s and well at least into the 1990s. Moreover, some researchers, such as Fiori, regard this reversal as a defining factor behind the prolonged “stagnation that began in the 1980s and extends to the present day” (2024, 75).

Countries that had accumulated substantial dollar-denominated debt through poorly structured contracts during the 1970s were thus confronted with an abrupt and dramatic increase in debt-servicing costs throughout the 1980s and beyond. Pressured to maintain timely interest payments and forced into successive renegotiations from a position of weakness vis-à-vis creditors, they accepted a policy discipline that imposed macroeconomic rules and institutional reforms which sharply reduced national policy space. This process contributed to the emergence of a one-size-fits-all institutional framework that later facilitated the hyperglobalization of 1986-2008, up to the present moment, in which the Trump administration has again introduced multiple unilateral disruptions to the global economic order.

In any case, the institutional response of core countries to Mexico’s 1982 moratorium plunged Latin America into a condition of near-chronic economic crisis. The result was a prolonged period of stagnation spanning the 1980s and extending well into subsequent decades, retrospectively labeled the “middle-income trap.” This diagnosis has often framed Latin America’s difficulties as the result of domestic institutional shortcomings, thereby shifting responsibility onto the region itself for a condition that is deeply rooted in the structural dynamics of the international economic system.

4.3. The roots of the frictions

In the perspective of a society divided in classes that unequally amass surplus value, Brazil's ruling class has historically been an oligarchy consisting of landowners, financiers, a few media-barons and the comprador group, aligned with international status-quo interests represented by their enterprises. Of course, the composition of this oligarchy evolved over time: while in the beginning it was dominated by landowners, later more of the occupations listed above would grow in importance. Historically dependent on raw exports and the rents paid to them by an often captured and indebted State, these groups favored free trade, thus clashing with the developmentalist cross-class coalition, who sought protectionism to foster industrialization and better paying jobs that made viable the establishment and sustainability of a middle-class.

In terms of caring for the fate of the working class and being serious on reducing inequalities and degrading forms of work, unfortunately, “the sense of social responsibility” among Brazilian business elites “hardly extends beyond mere charity” (Martins, 2016, 37). Therefore, the hesitation in leading incorporation frameworks that objectively ameliorate the lives of the lower classes goes hand in hand with the hesitation in leading or being part of cross-class coalitions focused at catching up, upgrading and development in general.

Once more, it is always necessary to do justice to point out the existing discrepancies in this pattern. For instance, Antônio Ermírio de Moraes, while spearheading the large Votorantim Group, could state without demagogy that his “mission as a business owner is, first and foremost, to develop the country. However, the social goals of the Votorantim Group are always present. Profits are used to create new technologies and new jobs” (Pastore, 2013, 141). Certainly, there are and have been

many other business owners that do or have done relatively as much or even more than Moraes and his group, but that does not change the dismal observed pattern, which is certainly one of the roots of Brazil's failure to fulfil its potential for reaching wholesome development.

While individual actors can play important roles as business leaders and entrepreneurs in allocating capital and developing technology, the exemplary transformation of Brazil's economic base in the 1930s not only marked a pivotal moment but also brought to sharp relief the relevance of the state in steering the country in a direction that is more prone to deliver development and reduce inequalities. After all, significant institutional change sometimes is needed to boost economic performance, and not necessarily the country's capitalist class will be inclined to back the kind of institutional change that is necessary in case that does not align with its private interests. On the contrary, it is much more common to see some of the main owners of private capital pressing for institutional change that, first and foremost, benefits their own private interests at the expense of the lower classes, with the actual development of the country coming just as a rhetorical afterthought embroiled in partiality, dogmas and narrow-mindedness. And this is not necessarily a fault on their part, but simply arises from the fact that it has been understood for a long time that "there is no clear evidence from experience that the investment policy which is socially advantageous coincides with that which is most profitable" (Keynes, 1936, 137).

In the 1930s, both the process of industrial-urban accumulation as well as the government's fiscal income become increasingly detached from the coffee-based economy¹⁸. From that point

¹⁸ In the early 20th century, Brazil was the world's largest coffee producer by a wide margin, responsible for around 70-80% of the world's coffee supply during this period. Coffee was also the main source of capitalist accumulation in the Brazilian economy and the main source of revenue for the Brazilian government. From the perspective of the country's domestic economy, things have significantly changed since meaningful structural transformations started in the 1930s, accelerating in the 1950s and onwards. In the current economic landscape, coffee is no longer a key driver of Brazil's GDP, nor does it rank among the top three export commodities within the country's agribusiness sector. Although agribusiness as a whole contributes around 25% to Brazil's GDP, coffee's role has diminished, reflecting the

onward, the emerging elite (each time more industrial and urban) accommodated relatively with the old oligarchy but was able to direct and subordinate the coffee sector to the goals and interests of urban-industrial development (Tavares, 1998). Different elites had some conflicts over the redistribution of surplus value, with the developmentalist elite aiming to reduce international business's profits to boost their own. The Vargas regime epitomized the beginning of their reformist efforts, as later the Kubitschek government displayed the ambitions of their agenda, but a growing fear of losing control over the flourishing mass movement outweighed their pursuit of full-fledged development¹⁹. Vargas and Kubitschek were shrewdly versed in the art of combining the four institutionalized patterns of relations that define the interactions between society and the state in Brazil, which Nunes (2017) refers to as the four political “grammars”: clientelism, corporatism, procedural universalism, and bureaucratic insulation. Nonetheless, around that point in time – i.e., the two decades following the end of the Second World War: 1945-1965 –, a coalition among substantial parts of the elites was getting increasingly dissatisfied in being unable to reach control over the national government electorally and would move to support and install the military as

diversification and growth of other agricultural products and industries within the sector. Nevertheless, until today Brazil remains the largest producer of coffee in the world, contributing to approximately 37% of the global coffee supply. This figure can vary slightly depending on the year and market conditions, but Brazil consistently remains the top producer, with its coffee largely coming from the states of Minas Gerais, São Paulo, and Espírito Santo.

¹⁹ In terms of public economic discourse, the fear of losing control was directed toward balance of payments problems that had the means to fragilize developing economies even when facing “comparatively moderate inflations,” as Brazil was experiencing in the 1950s. An acute and privileged observer at the time, Albert Hirschman, pointed out the lack of a “greater comprehension on the part of the advanced countries and the international financial institutions (the International Monetary Fund and the World Bank), which at that time considered any two-digit inflation as evidence of profligate fiscal and monetary policies that had to be corrected before further development finance was made available” (1986, 24). Accordingly, “particularly in the Brazil of the Kubitschek years this policy seemed to me highly ill-advised, and I still believe that it bears some responsibility for the tragic ‘derailment’ of Brazilian politics from 1958 to the military takeover in 1964” (24).

mediators and enablers of a top-down approach to conservative modernization²⁰ under the aegis of the multinational-associated sector. (Stepan, 1973; Starling, 1986).

The debate between *laissez-faire* political economy and state-centric developmentalist political economy continued within the 1964-85 dictatorship. Moreover, the four political “grammars” mentioned above – i.e., clientelism, corporatism, procedural universalism, and bureaucratic insulation – remained accounting for the institutionalized patterns of relations that define the interactions between society and the state in Brazil, with greater space for bureaucratic insulation, which proved “decisive” for the substantial “strategic capacity” the Brazilian state was able to maintain “until the late 1980s” (Lessa, 2017, 22).

From the perspective of the global economy, between 1950 and 1987 – thus, the decades immediately preceding the timeframe covered in this research project – Brazil’s GDP growth was consistently among the strongest in the world (Table 4.1). Moreover, this is sometimes overlooked, but Brazil had a higher GDP per capita (in constant 2015 US dollars) than South Korea until 1985. Perhaps even more striking, by that same year, Brazil’s GDP per capita (in constant 2015 US dollars) was nine times higher than China’s (6,167.5 versus 676.3). This serves to place the criticisms of Import Substitution Industrialization (ISI) into their proper context. The decade following 1985 marked the very dismantling of the ISI model in Brazil, driven by the anticipated gains of neoliberal reforms that – at least in terms of GDP growth – failed to materialize. Simultaneously, from 1985 onwards, East Asian latecomers continued to experience record-breaking growth. This trajectory, spurred by China’s rise since 1978, eventually led the East Asian giant to overtake Brazil’s GDP per

²⁰ For the architects of this conservative modernization, it was necessary to repress the working class. That would unfold in a authoritarian order that could enforce “that the lower classes who pay the costs under all forms of modernization do not make too much trouble” (Moore, 1966, 442).

capita (in constant 2015 US dollars) by 2016, the same year in which Brazil faced its most profound combined political and economic turmoil ever. While one could argue that Brazil had faced more severe political crises in the past, the 2015–2016 period was defined by the worst recession in the country's history. While different observers will diverge in assigning what political and economic variables were causes and what political and economic variables were consequences of this downturn, the recession was unmistakably aggravated and largely instrumentalized to achieve the replacement of the ruling elected political leadership without resorting to military intervention.

Table 4.1. Comparative growth performance of Brazil, 1950–87 (average annual growth rates)

	1950-64	1964-73	1973-9	1979-1987	1950-87	1964-87
Brazil	5.9	8.1	6.5	3.5	6.0	6.1
Korea	6.1	9.6	9.0	7.0	7.6	8.5
Taiwan	8.3	11.0	8.4	7.4	8.8	9.1
China	5.2	6.9	5.0	9.3	6.5	7.2
India	4.3	2.7	3.4	4.6	3.8	3.6
Argentina	3.0	4.9	2.3	-0.4	2.6	2.4
Chile	4.2	2.8	2.3	1.6	3.0	2.2
Mexico	6.2	6.6	6.1	1.7	5.3	4.7
Austria	5.5	5.1	2.9	1.7	4.2	3.3
Italy	5.7	5.1	2.6	2.2	4.3	3.4
Japan	9.5	8.9	3.6	3.8	7.1	5.7

Source: Chang (1994, 92), calculated from Maddison (1989), tables B-3, B-4, and B-5.

In the 1950s, the Brazilian government enacted what Ioris (2014, 105) describes as “the two most important pieces of commercial legislation supporting the import-substitution industrialization policies of the period.” These measures underpinned the phase of fastest GDP growth in Brazil’s history and contributed to profound urban and social transformations. The first was SUMOC Instruction No. 70, issued during the final Vargas administration, which centralized the monopoly over foreign trade in the Bank of Brazil and established five exchange-rate categories according to

the type of good being imported. The second was SUMOC Instruction No. 113, enacted during the brief Café Filho administration following Vargas's suicide, which granted special privileges to the industrial sector by eliminating the legal requirement to purchase import licenses for industrial inputs through the Bank of Brazil. This latter measure proved especially consequential in accelerating the inflow of industrial machinery and equipment into sectors considered central to the national development project.

Taken together, SUMOC Instructions Nos. 70 and 113 created a regulatory framework in which imports considered to be in the national interest, especially industrial equipment in priority sectors, were effectively subsidized, while other imports were strongly discouraged through a surplus tax. This tax would also become an important source of government revenue, helping to finance the ambitious industrialization agenda of the Kubitschek administration.

4.3.1 Periphery and Prejudice

One complicated aspect of the way that the comprador class, mentioned above, and various people that aspire to similar positions that emerged and appeared over time, has to do with domestic class-based prejudice that exists within Brazil itself which operates hand-in-hand with a spineless idealization of foreign qualities from more affluent places that, together, serve to justify a lack of a long-lasting commitment to cross-class alliance for national upgrading. This idealization is, in the end, accompanied by an acritical adherence to socially constructed hierarchies, those that rank classes of individuals in terms of wealth as well as place of birth – often, but not only, nationality – and justify privileges, pusillanimous deference and abuse of power. In his work, Jessé Souza (2009; 2018; 2022) presents a critique of what he calls "elitist ideology," both by exposing the fickleness and

mediocrity of the majority of the Brazilian middle class and by analyzing the instrumentalization of modern social science, particularly the most influential ones propagated from the North Atlantic, as a form of ideology that serves to manipulate and legitimize privilege.

Souza's arguments, focused on understanding inequality and class – both in terms of behavior and social relations – in contemporary Brazil, explore how a form of “symbolic violence” is granted “scientific” endorsement by “experts,” both internationally and domestically. This “scientific legitimation,” he contends, often reinforces what is essentially common sense – laden with illusions and prejudices – to justify entrenched privilege and sustain a pervasive opacity around the mechanisms of domination. In all, this elitist ideology ends up being used as a means for the exploited to rationalize their own relative deprivation. As a consequence, this pervasive opacity often leads the exploited to be either actively hostile to efforts aimed at challenging existing power structures or reluctant, unreliable, participants in such efforts.

Another important feature of Souza's critique is that various streams of social scientific theory, beyond merely reinforcing what amounts to common sense, also perpetuate a bias rooted in a prejudice that ultimately stems from a racist worldview. As he argues, even so-called critical approaches within the main branches of the social sciences, explicitly or implicitly, accept the “disguised racism” of culturalism²¹ as valid (Souza, 2009, 57). By essentializing and homogenizing individuals, sub-groups and entire societies, racism – even in its more covert forms – serves as a self-fulfilling prophecy that undermines the potential for genuine emancipation and the full development of targeted or marginalized societies, sub-groups, and individuals. Notably, because it

²¹ This is clearly the case with “modernization theory” and its variants – whether they explicitly reference it or distance themselves from it to claim legitimacy through differentiation from such a contested framework, as seen in various narratives about the explanatory power of certain “institutions” that are, in the end, intrinsically associated to specific “cultures”.

is hegemonically imposed and sustained through the aforementioned “pervasive opacity”, this “elitist ideology” renders violent coercion quasi-unnecessary – aside from its symbolic manifestations – to preserve the status quo.

Arguably, those shaped by internalized hierarchies – be they racial, regional, or class-based – often sustain them reproducing these same logics of domination within their own societies, “punching down” on those perceived as inferior. Yet, they themselves are subjected to similar forms of subjugation when positioned in relation to global hierarchies and broader structures of domination, particularly in the case of developing country elites when interacting with foreigners who operate according to parallel frameworks of distinction and exclusion. Socially constructed as it is, this recursive structure of domination is, however, often difficult to fully grasp through academic discourse alone. In this sense, art, especially cinema, can at times capture these layered contradictions more vividly and accessibly. It is in this spirit that I turn to a couple of recent movies as an illustration of these dynamics, before we return to covering more traditional epistemologies and epistemic sources related to development studies.

In this regard, the intricate thematic introduced above is vividly explored by director and screenwriter Kleber Mendonça Filho in his internationally recognized films *Bacurau* (2019) and *Secret Agent* (2025). Their recognition beyond Brazilian borders underscores how audiences worldwide can somehow grasp or at least sense the fabricated logic behind such socially constructed recursive structures of domination, highlighting the unique capacity of cinema to engage with and communicate these challenging concepts in which many variables across different categories are at play simultaneously to generate a mixture of fault lines rooted in perceived hierarchies, alongside conflicted allegiances and both objective and subjective contradictions. Both films, awarded at

Cannes and with *Secret Agent* also awarded at the 2026 Golden Globes and nominated for Best Picture at the Oscars, blend genres with a raw, often tongue-in-cheek approach, as a channel to express and discuss these complicated social dynamics that, nonetheless, have explanatory power for what is being discussed here.

Both movies take place in the Northeastern state of Pernambuco, the former in the backlands of the state, while the latter's plot occurs mostly at Pernambuco's capital and largest city. Significantly, the Northeast is generally perceived as a relatively less affluent region of Brazil that has been long subjected to prejudice within the country, especially during the second half of the 20th century when many of its residents migrated south in search of better opportunities, and, arriving there, were treated more or less like foreigners of poorer background are treated in affluent parts of the world.

Both films portray different parts of society facing situations with the direst consequences of socially constructed recursive structures of domination that, often unknowingly or not clearly perceived, link in a chain of subjugation from the tiniest town in the backlands of the backland region of the backland country all the way up, stage by stage, to the higher steps on the hierarchical ladder, or pecking order, of the global economy. It is a portrait of struggles in the periphery of the periphery of the periphery. Be it as it may, such pecking order, just to reiterate, is nothing else than socially constructed and maintained by institutions and technologies. As both storylines unfold, be it the townspeople in the former or individuals, families and relatively small organizations in the latter, what remains as an immediate alternative is simply to organize in whatever way possible and defend themselves in order to, at best, survive.

The reason I insert this unconventional excerpt here is because, in many ways, the path to development begins not with blueprint improvements per se, but with a community's capacity to organize and defend itself from exploiters that might be local and foreign at the same time²². Ensuring physical and symbolic survival in the face of marginalization, violence, or erasure is often a precondition for any sustainable form of development. Only by securing this foundational survival can communities begin to assert control over their futures and pursue broader social, economic, and political advancements. However, this idea is not a simple one to convey.

4.4. Regional Context: Dependencies and Possibilism

In the years following the end of the Second World War, some observers argued that the benefits of technical progress, including material gains, were not only primarily concentrated in industrialized centers but were also not transferred — as it was theorized to take place by frameworks of comparative advantage — to the countries that make up the periphery of the global economic system. Moreover, such situation was due to the way in which the terms of trade were established between these two poles of the same global economic system (Prebisch, 1950). The argument was that such situation was maintained through the established framework of international trade under *laissez-faire*.

In this framework, the periphery would sell raw commodities while the center would concentrate on the production and the export of industrialized products. Throughout the economic cycles, this center-periphery dynamic was relatively impoverishing the periphery because of an

²² Uncannily or not, the tension in the Secret Agent's plot, which unfolds in the 1970s, is around a gruesome fight for controlling R&D and patents used for electric vehicles.

unequal exchange between raw commodities and industrialized products. Such a situation arises from the fact that the prices of primary products rise more quickly than the prices of industrialized products during the upward phase of the economic cycle, but also fall more than the prices of industrialized products during the downward phase. As a result, the prices of industrialized products progressively distance themselves from the prices of primary products through these cycles (Prebisch, 1950). In such a scenario, the solution for the periphery was to design policy frameworks that would foster industrialization at home.

The diagnostic articulated by Prebisch using some data analysis previously put together by fellow economist Hans Singer, would later be recognized as the Prebisch-Singer hypothesis. Meanwhile, the treatment to overcome underdevelopment in this center-periphery dynamic was import substitution industrialization (ISI). This approach was the point of departure for the school of thought associated with ECLAC during the decades in which the organization focused on promoting a development strategy focused on increasing the domestic production of previously imported goods. While Prebisch's argument found resonance around relevant Latin American institutions dedicated to economic matters, it caused, reportedly, some consternation at the United Nations headquarters in New York and within the U.S. Administration (Bollard, 2023, 237). While it was very far from any kind of revolutionary prescription for action, it was one that led developed countries to face the mild embarrassment of seeing someone from within status quo structures – even though from the periphery of those structures – point out, in a rather convincing and logical manner, that the growing North-South divide could be structural. Moreover, that understanding could pose a significant risk of seeing a call to policies to reform such structures in order to make

them more prone to facilitate accumulation of capital and foster alternatives of development in the South.

Somehow, the framework of ISI as a means to equalize some of the distortions of a center-periphery dynamic was perceived as an anathema in circles that believed that a modernization process required countries to pass through a few prescribed stages of growth. That was the case of an influential view put together and defended by Rostow (1960).

The challenges faced by ISI is that not only the outputs of technical progress were primarily concentrated in industrialized centers but also some relevant inputs and processes. It was quite time-consuming and resource-consuming to develop them in the periphery. At the same time, it was challenging to transfer those assets to the countries that make up the periphery because that involved negotiations with multinational companies and their States. The realization that the international system would only allow developing countries to enter industrialized sectors closer to the technology frontier in some association with international businesses, led to the formulation of the dependency theory. This formulation appeared later in the work by Prebisch but created a tradition of analysis with different angles. To be honest, the variation in the angles that appear in dependency theory is so important that we can more correctly refer to a few traditions of analysis.

Is development only possible by invitation? Is it possible beyond certain levels in FDI-Led industrialization strategies? If the ability that developing countries might have to pursue a more advanced production is contingent upon access to the capital, technology, and expertise provided by corporations based in industrialized nations, different authors will have different prognostics.

What is clear is that criticizing the ways things are and the powers that be is healthy and necessary for polishing systemic evolution in a more humane way. Although certain conservative

factions within academia, politics, and society at large are always underscoring a looming threat to liberal capitalism, it is important to recognize that progressive reforms are not intended to dismantle capitalism but make it more truly democratic. Arguably, they aim, instead, to fortify it, as exemplified by the Keynesian revolution. These periodic reforms contribute to the development of a more robust, adaptable, and resilient system capable of fostering sustainable innovation in an environment that does not offend basic humanistic values. Accordingly, the incremental incorporation of socialist elements into most societies has not only made capitalism more responsive to human dignity but has also markedly improved its overall effectiveness. Ultimately, the guiding principle of progressively improving a society's economic relations, as understood here, is one that seeks to ensure that the freedom of some individuals does not come at the expense of others' subjugation, be them at home or abroad in this truly world economy.

Accordingly, even though we remain under capitalist institutions – always understood here, following North (1990), as the “rules of the game” – many of the operational aspects of these institutions have changed over time. Following Marx's own proposition that the identification of the relations of production established among individuals living in society constitutes the primary forces that, operating within the totality, trigger the chain of reactions through which historical development unfolds, it is evident that the relations of production in 21st-century Brazil, for instance, are fundamentally different from those of the 19th century.

What remains true is that the relations of production are a function of the development of the productive forces. In other words, it was the productive forces that changed first over the years – that is, technology continues to be the central component, in its entirety, of the economic structure of society. This structure is supported, logically, by institutions, leaving the remaining segments of

the social structure conditioned by this economic base rooted in the binomial of technology and institutions.

Moreover, I try to apply here the understanding that to fully appreciate the advantages of this conceptual framework, it is essential to distinguish between institutions and organizations (North, 1990). Institutions can be understood as the rules of the game – of social, political, and economic interaction – whereas organizations represent the entities that play these games, such as firms, associations, families, parties, churches, clubs, NGOs, and others. Furthermore, the combined framework of institutions and technologies is what constrains human social organizations, shaping their choices and evolutionary trajectories.

Also, considering the widespread concern about significant changes in recent years that challenge foundational aspects of social, economic, and political analysis, I acknowledge that Touraine (2013) provides a compelling rationale for this perspective. Yet it is crucial to also acknowledge thinkers like White, who assert that "whatever the changes in human social organization, the building blocks remain identity and control (Bourdieu, 1995; Luhmann, 1995; White, 1992), and the only reliable guide is explicit theory" (2002, p. 319).

The argument here is that explicit theory is enhanced by seriously considering identity and control as foundational, while technologies and institutions serve as the actual building blocks. Consequently, a key challenge of this study is to further operationalize these perspectives in a manner that enhances our understanding of human social organizations, their interactions – in political (cross-class versus non-cross-class) coalitions, for instance – and the outcomes that they shape.

Moreover, as many elements examined in this study of the automotive sector are social constructs, which both inform and are informed by social relations, it might be important to define

‘social’. Here, the concept of the ‘social’ is being understood as “a fluid visible only when new associations are being made” (Latour, 2005, 79). In this sense, relevant is Latour’s omission of the adjective ‘social’ in his earlier work (Latour, 1986), underscoring the importance of using the term judiciously, applying it solely to associations that convey specific and traceable meanings.

It is worth recalling here that, in such a context, ‘identities’ are not fixed entities but are continuously formed and reformed through networks of social relations, which are themselves dynamic structures. The notion of ‘control’, in turn, differs from hierarchical, bureaucratic, control in the Weberian sense or from forms of straightforward authoritarian domination. The latter two, of course, still exist and influence outcomes – but that is another variable, and I will be explicit when that is the case. In contrast, ‘control’ in this framework has a relational and contingent character, oriented toward the maintenance of ‘identity’ amid uncertainty.

Arguably, this framework partially aligns with Touraine’s perspectives on the significant transformations occurring in contemporary postmodern society, albeit from a distinct viewpoint with alternative interpretations. While postmodern individuals may liberate themselves from social and moral constraints – namely, the unwritten ‘rules of the game’ that have conformed the collective consciousness of social groups – they remain subject to the forces of ‘identity and control’ as shaped by networks of social relations, which, in turn, still rely on ‘technologies and institutions’ as their building blocks, as previously outlined. In this perspective, this is also valid for the international system, where the interests and the identities of the various states are formed, shaped and reshaped through the interaction with one another, resulting in a system that emerges endogenously (Wendt, 1992; 1999).

Given that, different authors, from different schools of thought will have different perspectives on the operations of institutions and organizations, as they employ and are conformed by moveable technologies, meanwhile shaping political-economic dependencies as well as apertures and possibilities of actual development. I turn to those now.

4.4.1. Are the possibilities of development only elsewhere?

While markets and trade have existed long before the advent of capitalism, the distinguishing features of capitalism, as articulated by Sullivan and Hickel (2023), include commodification, enclosure, and artificial scarcity. Specifically, by enclosure and artificial scarcity, I refer to the system's tendency to make individuals institutionally dependent on wage labor for their survival. Furthermore, capitalism is characterized by its reliance on perpetual expansion, necessitating the continuous production of commodified goods to sustain itself through the extraction and accumulation of profits. In the absence of such expansion, capitalism is especially prone to crises. Lastly, and perhaps paradoxically, capitalism inhibits democratic decision-making processes.

In this sense, for some, “dependent development” implies the pursual of rapid industrialization in a way that depended on rising inequality. This strategy combined investment by transnational corporations and the local/global demand for consumer durables in the form of ISI/EOI. Export-oriented industrialization (EOI).

By any means, however, in this view, true development could not be achieved within the existing global capitalist system. Dependency was unsurmountable without revolution.

As a complementary point of view on this topic, it's worth recognizing that the social and institutional changes brought about since the 19th century – through revolutions, but also through reforms and gradual transformations – have led to something closer to the elimination of extreme inequality and poverty within some countries (such as Norway)²³, and significant improvements in much of the world. The latter is the case in Brazil, where, despite the persistence of various forms of inequality, privilege, and deprivation, there has been a substantial increase in situations where the means of production and subsistence no longer function simultaneously as instruments of exploitation and domination over workers. After all, capital can serve the public good (Piketty, 2019), and there are mechanisms through which capital can be redirected and harnessed to promote a non-exclusionary society that is free of exploitation, domination, and deprivation, and in which power is accompanied by accountability.

In this respect, it is worthy reminding that for Marx the means of production and subsistence “only become capital under circumstances in which they serve at the same time as means of exploitation of, and domination over, the worker” (1867, p. 933). When these means are not employed for such purposes – even if they remain the property of the immediate producer or beneficiary – they do not constitute capital in the Marxian sense. Consequently, notions such as human capital (Becker), social capital (Putnam), cultural capital (Bourdieu), and symbolic capital

²³ It is imperative, however, to exercise caution regarding the enthusiasm surrounding Scandinavian capitalism. For instance, Ruchir Sharma, in his analysis of countries where billionaire wealth is rising rapidly as a percentage of GDP, identifies Sweden as a primary concern for 2025. Despite its reputation as a core nation within a region perceived as more equitable and socially just, Sweden has seen billionaire wealth climb to 31 percent of its GDP. Historically, while the wealthiest individual in the United States was John D. Rockefeller around 1910, with a fortune exceeding 1.5 percent of his country's GDP, this benchmark is not currently reached by any billionaire in the United States. In contrast, Sweden has seven tycoons whose individual wealth, relative to their country's GDP, surpasses Rockefeller's zenith. Moreover, Sweden counts 45 billionaires – approximately 1.5 times more per capita than the current United States, which is often described as experiencing “a new Gilded Age.” Paradoxically – and perhaps unexpectedly for Sweden – such extreme concentrations of wealth are argued to pose the highest risk of provoking some form of anti-capitalist backlash (Sharma, 2025).

(also Bourdieu) do not qualify as capital in Marx's framework unless they function as instruments of exploitation and domination over labor. That said, each of these forms of capital can, in various contexts, operate precisely as such instruments. Therefore, the use of the term "capital" by these authors and their followers may align with Marx's concept in specific instances, even if they frequently extend the term to situations where no exploitation or domination is involved. Still, as early as 1867, Marx noted that political economists often referred to all means of production and subsistence as "capital," regardless of their function – even when they represented something significantly different from instruments of exploitation and domination over the worker, or even their very opposite.

In other words, although Marx's concept of capital is typically associated with material means, the immaterial forms embedded in the logics of human, social, cultural, and symbolic capital might also be consistent with his framework insofar as they materialize as tools for establishing relations of domination and servitude.

However, there are also situations in which these means do not qualify as 'capital' in the strict Marxian sense, but they are still referred to here as capital in the broader sense – as one of the three classical factors of production, as well as the one that accrues the most power and profits in a capitalist society. Granted that clarifying these possible distinctions is necessary, in this study, unless otherwise specified, the term capital is used in its broader, commonly employed sense in contemporary economics: as one of the three factors of production, distinct from land and labor, referring to a stock of assets – whether real, proprietary, or financial – used in the production of goods and services.

4.4.2. Cardoso and Faletto: dependency with variation from place to place and with constrained possibilities for the discerning (as in opposition with the no possibilities for the stubborn radical)

The approach elaborated in Cardoso and Faletto (1969) to analyze the interplay between dependency and development emphasizes the intricate political dynamics between social classes and groups within each country. It is somewhat cynical yet genuinely concerned with the limited options for action in an environment that is increasingly constricting for the weaker side. The focus here is not on the power dynamics from abroad and the logic of monopolistic capital, probably for two reasons: on one hand, these situations were deemed as already well-explored, while on the other hand, “an effective subordination of the national economy to modern forms of economic domination” (Cardoso, 1973, 163) was already at play and therefore could be taken as a given.

Their idea was more concerned with what the developing parts of the world could make of the world as it is. Besides, for Cardoso, the reality was that of an “objective limitation” represented by the judgement that “capitalist accumulation in dependent economies does not complete its cycle” (p. 163).

The proposition is that the state of dependency has more apertures through time, considering the evolution of the dynamics between social classes and interest groups within each country, and how these classes and groups associate themselves with foreign interest. This framework views development not merely as an economic process but as a deeply political one, where power struggles, alliances, and conflicts among different social groups shape the trajectory of national progress. And it is one that understands the need for dialogue between opposing interests for the benefit of most, giving existing constraints. The approach surely recognizes that the interests of dominant classes often influence state policies, leading to outcomes that may benefit some groups

at the expense of others. By focusing on these internal dynamics, the "Cardoso and Faletto" approach provides a more nuanced understanding of how development paths are shaped by the political and social context within each country.

Moreover, the "Cardoso and Faletto" perspective assigns significant importance to ideological choices, policy strategies, and the alternatives that history presents in specific situations. This point of view acknowledges that development is not a one-size-fits-all process; rather, it varies according to the ideological orientations of key actors and the opportunities available in different historical moments. The emphasis is slightly more on the variation of opportunities, even as it maintains a critical perspective on the structural dependencies between peripheral and developed economies. Additionally, the approach highlights the variation in how peripheral economies relate to developed economies, suggesting that the nature of these relationships can differ widely depending on the historical, political, and social context. This emphasis on the diversity of experiences challenges the notion of a singular path to development, highlighting the need for context-specific strategies while still operating within the broader framework of dependency theory.

The main contribution of this analysis most likely emerged from the description of what was going on in Brazil in the 1960s and had been reshaping the mechanisms of social and political control. The emergence of an "internal market internationalization process" (Cardoso and Faletto, 1969, 165) meant the growing participation of FDI in the industrial production in key sectors of the modern economy – namely, the chemical, electronic, and automotive industries –, with a focus on the large and growing domestic market. This took place as a sort of new wave of industrial revolution for latecomers, bringing about a comprehensive reorganization in administration, technology, and finance. With some of its effects reconfiguring also traditional industrial production through the

use of advanced production techniques. Arguably, the automotive sector was at the heart of this process, serving as a key link to the rest of the economy.

However, the reconfiguration of mechanisms of social and political control — alongside the rising prominence of the automotive sector and other technologically advanced industries partaking in this reconfiguration — does not occur in a vacuum. Rather, it is shaped by a degree of path dependence rooted in the social composition and historical trajectories of the business elites and capitalist class that exercise such control. In this sense, Cardoso's earlier work examining the role of entrepreneurial business leaders, particularly in the industrial sector and from what can be described as a Weberian perspective, had already described the fact that "few business groups were in a position to push for an aggressive development policy that would strengthen the political and economic control of the industrial bourgeoisie" (Cardoso, 1964, 161). Accordingly, one of the reasons was the overall passive perception that industrial capital remained highly profitable even when industrialists aligned themselves more with the interests of the traditional agrarian and financial elites, rather than acting as a class striving to reshape power structures in favor of a new environment conducive to innovation and capital accumulation to sustain further innovation.

Beyond the intertwining of agrarian and industrial capital, where the latter was effectively subordinated to the former and both, increasingly, to financial capital, Cardoso pointed out how "the network of associations between domestic business leaders, foreign capital, and multinationals created a scenario very different from what occurred in countries associated with so-called 'original capitalism'" (Cardoso, 2013, 10). Although such a network has become an integral component of the environment and, as such, has become seldom subject to criticism, Cardoso was not unaware that a sense of estrangement could emerge among national industrialists who were not solely drawn

to conspicuous consumption, but who viewed capital accumulation as a means to invest in innovation and engage in market competition in ways conducive to broader national development. Eventually, this line of advocacy would be articulated, for instance, by Brazilian industrialist Antônio Ermírio de Moraes, who criticized the country's policy of implementing protectionist measures that favored unproductive foreign investment, at the same time that heated controversy would repeatedly strangle strategic action when similar protections were proposed to strengthen domestic industrial firms in productive sectors.

If, in the 1960s, Cardoso characterized Brazilian industrialists as a relatively new and heterogeneous social class, they continue to exhibit fragmentation today. They are no longer recent in origin, yet still predominantly come from three principal social backgrounds. First, they emerged from segments of former rural elites historically engaged in agriculture or non-industrial exports, whose political clout remains strong despite the lower value-added of the new industrial activities that they added to, or substituted in, their portfolios. Second, industrialist also arose from various families formed by late 19th- and early 20th-century immigration to Brazil's South and Southeast, who arrived in the country with some know-how – and in some cases, different forms of capital – conducive to industrial activity, which would subsequently become concentrated in those regions. Finally, third, from the mid-20th century onward, industrialists also emerged from the fast-growing urban middle-class, which typically were descendants of once-prominent but relatively impoverished families or of immigrants, often tied to the expanding network of high-profile civil service, as well as to the economic mobility made possible by Brazil's periods of uneven accelerated development, which took place often in different times across different regions.

As I am going to cover ahead, Cardoso would later become an elected politician and serve as the President of Brazil for eight years in the 1990s, when he would oversee important policies governing the automotive sector in Brazil, deepening the attraction of more FDI. The legacy of Cardoso's administrations – situated at the height of the Washington Consensus – is controversial, particularly when contrasted with the expectations many had based on his earlier academic work.

This contrast becomes less striking when we revisit the nuances of the intellectual choices that shaped his thinking. With an affectionate view of Brazil's culture and historical formation – tempered by little optimism that the major contradictions of social life can be fully resolved – Cardoso draws from his mentors, Antônio Candido and Florestan Fernandes, what is mostly the search to understand what is “the capacity for existence of social groups put in check by contact with expansive and dominating cultures and civilizations” (Cardoso, 2013).

Thus, it is through the encounter with the impact that normative diffusions had over the globe and the pragmatic awareness of the structures imposed by various forms of power upon the world that Cardoso's concept of dependence emerges – distinct from other interpretations that regard dependence merely as a negative condition to be overcome. For Cardoso, dependence is a structural condition that shapes the very possibility of existence for social groups within a broader global frame.

Later, he would argue that this broader frame, which he was trying to make sense of in his earlier work, was already the nascent reality of what would come to be known as globalization. This emerging condition was what Latin America – and the Global South more generally, with Brazil as a focus point – had to deal with in order to carve out a space for their continued existence. That

space, though shaped by contingency and constraint, could still be negotiated in ways that allowed for some form of development – albeit one that remained ‘dependent’ for the foreseeable future.

4.4.3. Hirschman’s possibilism

Keeping in mind the contributions from the perspectives mentioned above, this study differs by emphasizing further possibility of agency and statecraft as able to create apertures and innovation in the system. This study thus downplays deterministic outcomes that are derived from an “antipossibilist” policy orientation, as once criticized by Hirschman (1980). Albert Hirschman's concept of "possibilism" emphasizes the importance of identifying and leveraging opportunities within given constraints, rather than adhering to rigid theoretical models. In its original formulation, Hirschman (1971) argued that development strategies should focus on the specific conditions and potentials of each situation, rather than following universal prescriptions. This approach reflects his belief in the inherent unpredictability and complexity of economic and social processes, advocating for a flexible, context-sensitive approach to development that prioritizes practical, incremental improvements over grand, top-down solutions.

Contrasting with deterministic views of development, Hirschman's possibilism also highlights the role of human agency and creativity in shaping development outcomes. Rather than viewing constraints as insurmountable barriers, he saw them as challenges that could be navigated through ingenuity and resourcefulness. Even in adverse circumstances there is potential for positive change. This line of approach seeks to understand how policymakers and practitioners might explore

a wide range of possible actions, adapting strategies to the unique dynamics of each context, and remaining open to unexpected opportunities for progress.

4.5. Firms' competition as an extension to States' competition

There is a tradition of analysis of the issues covered in this study, which underscores that beyond competition among firms in international markets, there is an underlying and more holistic competition between states and their broader institutional frameworks (Stopford and Strange, 1991). This perspective highlights that global economic competition is not merely a battle between corporate entities but involves the strategic maneuvering of entire nations. Countries compete through their policies, regulatory environments, and institutional support systems, which collectively create competitive advantages or disadvantages for their domestic firms. For Fernando Fajnzylber, an influential Chilean economist associated with the United Nations Economic Commission for Latin America and the Caribbean (CEPAL), the international market serves as more than just a competitive arena for various business enterprises. It is rather a complex setting where different production systems, institutional frameworks, and social organizations intersect. Business enterprises, while prominent, are merely one component of a larger network that includes educational systems, technological infrastructures, labor relations, public-private partnerships, and financial systems (Fajnzylber, 1988). This interconnectedness highlights the multifaceted nature of technical and technological change as well as their connection to international trade and investment, where success depends on the seamless integration of these diverse elements.

For example, the automotive industry demonstrates how these networks function in practice. Japanese automakers, such as Toyota, not only compete globally but also rely heavily on a well-

developed educational system that produces skilled engineers, a robust technological infrastructure that supports innovation, and collaborative labor relations that ensure efficient production. Additionally, the relationship between the Japanese government and private sector, through policies and multifaceted incentives, further bolsters the industry's competitiveness. This holistic approach, where business enterprises are integrated into a wider socio-economic framework, underscores the importance of systemic coordination and support in achieving global market success.

From an international perspective, the growing rivalry between the United States and China in the technology sector illustrates this broader competition. The U.S. supports its tech firms through a combination of advanced educational institutions, substantial R&D investments, and a dynamic financial market that facilitates innovation. Conversely, China leverages state-directed investments, extensive infrastructure projects, and strategic industrial policies to bolster its tech industry. This state-level competition influences global market dynamics, as seen in the race to lead in areas like artificial intelligence, 5G technology as well as the future mobile standards that will follow, and electric vehicles. Such competition underscores the importance of considering the interplay between national policies and their institutional frameworks when analyzing global economic trends.

4.6. Institutional Steering: The Role of Policies in Automotive Upgrading

With this research I propose to analyze the pathways and the limitations of emerging market catch-up through hosting foreign direct investment (FDI) in the automotive industry, a sector with important linkages to the rest of the economy. In defining the automotive industry as the unit of

analysis, I direct special attention to car manufacturers' plants, inquiring about their local embeddedness and spillover effects. This study strives to bring about a firm-level analysis that can explore meaningful features of a handful of companies that are representative of the sector's evolution in emerging market and developing economies (EMDE) that used automotive industrialization as a strategic means of development. By focusing on a century-old transnational industry of decisive importance on different stages of development of countries all over the world, this research can map how change took place over time impacting corporations and the societies where they operate. The temporal core of the research is the period between 1988 and 2025, while its spatial core is Brazil, the archetypal large developing country that based its growth and upgrading strategy around the automotive sector.

How does international capital mobility manifest in technological forms in the Brazilian automotive sector and what are the spillover effects of that international capital in the local economy as mediated by auto sector institutions? For instance, policy incentives were provided to induce MNEs develop engines that run on ethanol as well as engines that run on any mixture of gasoline and ethanol (the so-called total flex engines). Later, the specific framework of Innovate-Auto fostered the development of more fuel-efficient and compact engines. The same framework was a sort of new protectionist policy that induced further relocation of MNEs into Brazil as well as enhancement of the overall technological content of automobiles. The policy was eventually halted once deemed in disagreement with international and national competition laws.

I focus on how the policy process and its outcome depends on the balance of national capital, MNEs, other class forces, institutional arrangements, and reform processes. Following Aaron Schneider (2012) that looks how different state-building balances of the above forces generate tax

regimes that are more progressive, universal, and capable or less so, this study focuses on how different policy-building balances generate automotive regimes that are more progressive, resilient, and innovative. Focusing on how industrial policy is discussed, designed, and implemented in Brazil, this study also builds on Ben Ross Schneider (1991), which looks at the role of elite bureaucrats in authoritarian Brazil, covering a large set of industries. As I focus on how policy making takes place in democratic Brazil—and why it has different outcomes over a thirty-year period—I target one industry, the automotive. Policy making in democratic periods are more multifaceted than in authoritarian ones, as there are more actors involved both de jure and de facto. Moreover, the automotive sector moved from having nine final assembly automotive manufacturers in the end of the dictatorship (see table 4.2) to twenty in 2021²⁴.

Table 4.2 – Automotive manufacturers in Brazil, 1985

Manufacturers	Sales (millions of US dollars)	Products ¹	Year of entry
Volkswagen (East Germany)	2,033	P, U, T	1953
Ford (USA)	1,585	P, U, T, B	1921
General Motors (USA)	1,438	P, U, T	1925
Mercedes-Benz (East Germany)	869	T, B	1956
Fiat (Italy)	853	P, U, T	1976
Saab-Scania (Sweden)	240	T, B	1957
Volvo (Sweden)	162	T, B	1979
Toyota (Japan)	25	U, T	1958
Gurgel (Brazil)	9	U, T	1969

1 – P: passenger vehicle; U: utility vehicle; T: trucks; B: buses

Source: Author and BNDES (1988) apud Fritsch and Franco (1991, 137).

While in 1985 the market for passenger vehicles was completely dominated by just four players (Volkswagen, Ford, General Motors, and Fiat), in 2021 there was a total of fourteen passenger vehicles manufacturers with assembly lines in Brazil. Moreover, in the past three decades

²⁴ Other four manufacturers assemble heavy agricultural and construction machinery such as tractors.

there was a series of technological innovations that significantly modified the inputs and the assemblage process of automobiles. In this context, the early 1990s represent a clear critical juncture for the automotive sector in Brazil as it will be further discussed ahead. At this point, I point out three major reasons: i) the liberalization shock that took place during the brief Collor administration; ii) the advent of Mercosur and with it the integration of Brazilian and Argentinian automotive markets; iii) the innovative framework of the Automotive Sectorial Chamber, which is the first attempt of creating auto sector institutions to mediate the relation between capital, labor, and the state after the country's re-democratization. Moreover, due to the pressures of technological change in the form of increased digitalization and decline in carbon emissions the current moment also appears as a critical juncture. This situation justifies the relevance of analyzing the past three decades to project how policy-building can optimally generate the next automotive regime taking into consideration a fruitful and inclusive balance between social and economic forces. One that fosters further development in terms of being more progressive, resilient, and innovative.

This situation acquired new colors with the retreat of the state since the 1990s. There is a rise of a new form of local firms trading “the rents associated with state protection of the local market for those associated with their transnational corporate allies’ proprietary technology and global market power” (Evans 1995, 16), with the difference that – in the current phase of disembedded neoliberalism (Da Silva and Bandeira, 2021) – instead of state protection of the local market what they have is their market shares based on a history of accumulating data and information about the local consumer base.

An important aspect of my argument is that what was conscientiously created by the Brazilian government in the immediate post-World War II era in terms of associating domestic with

international capital is replicated in this disembodied neoliberal context in partnerships in which the Brazilian private capital associates itself to leading transnational corporations that will keep the lion's share, but will maintain an association that allows these local businesses to flourish into the next phase of capitalism, into a full-fledged digital economy. In this transition to a data-driven and ICT-controlled knowledge economy in which finance and digitech are increasingly merging, the fate of automotive production is varying according to different arrangements that different MNEs have built in the places where they are located. This study seeks to explore variation within Brazil in the way in which digitalization is occurring.

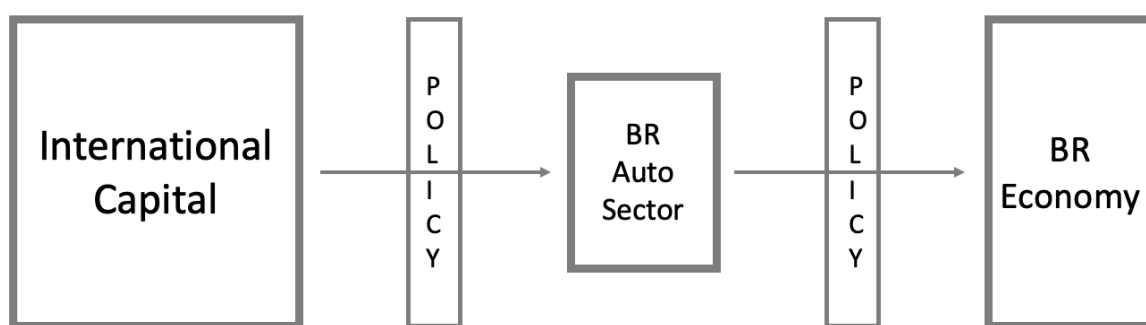
A changing relation of Brazilian capital to international capital also opens the possibility of competition among international capitals, and geopolitical competition for the Brazilian market is rapidly increasing. With economic decisions becoming more political than simply managerial. This research is also relevant for the emerging interest about how does competition between rival states take place through rival firms in the second largest market of the western hemisphere (Stopford and Strange, 1991; Wise, 2020). It is about how power is manifested in the structure of foreign trade (Hirschman, 1945) and the role of MNEs (Gilpin, 1975). Working with the three scenarios proposed by Buzan (2004), this inquiry focuses on the challenges that the United States faces in securing a position of preferred partner in South America. The one that “would then be ‘its’ region” (144) at the limiting case of American disengagement from superpower duties. This is especially puzzling in a context in which the global politics of corporate control (Gourevitch and Shinn, 2005) finds the United States less inclined to engage in robust long-term investing abroad (see Ivashina and Lerner, 2019, for a discussion about the importance of patient capital). The evidence to answer this question starts with analyzing the evolution of the links that connect Brazil and the United States – in

comparison with the links between the former and other great powers – in terms of trade and foreign direct investment (FDI). One anecdotal evidence is that the plants that were closed by Ford in Bahia and Mercedes-Benz in Sao Paulo, where both taken by Chinese players. While Great Wall Motors purchased the Mercedes plant in the city of Iracemápolis (SP), BYD is in course to receive Ford's former plant in Camaçari (BA) from the state government who is the final owner of the area.

Therefore, this study is also interested in providing a contribution about the way in which MNEs receive help from their home government, as part of their geopolitical strategy, and how Brazilian (and other EMDEs) industrial policy can take advantage of the possible rivalry between great powers.

This study looks first at the automotive sector as the arena in which the outcomes of international capital manifest themselves; and, second, at how the local economy responds to what is going on in the automotive sector. Mediating both processes there is the role of policy (Figure 4.5).

Figure 4.5 – Schematic representation of the logical flow linking international capital to outcomes in the Brazilian Economy through the auto sector as mediated by policies



Automotive production has been heavily subsidized by government through special financing schemes via agencies such as the development bank (BNDES) as well as via fiscal

incentives. It is estimated that between 2006 and 2018 the automotive sector received R\$28 billion in fiscal incentives from the Brazilian public sector (Barros, 2017). This includes incentives established by the Inovar-Auto (Innovate-Auto) program. However, it is important to notice, that in the period covered in this study there is no Brazilian Original Brand Manufacturer (OBM) producing cars. Neither there is a large tier-one OEM or supplier of the most technologically advanced systems and other inputs²⁵. Therefore, the development incentives in the over seventy-years-old Brazilian automotive industry are directed to attracting and maintaining MNEs with policies that try to increase and improve local content.

The end of Innovate-Auto in 2018 was followed by a contraction of these incentives. Once the COVID pandemic hit in 2020, the crisis coincided with Ford ending all its production in the country. Something that took place despite Ford's deep social embeddedness in São Paulo state – after all, the company has been assembling vehicles there since the early 1920s –, and fresh political commitments with the Northeastern states of Ceará and Bahia. Meanwhile, Mercedes-Benz – another early presence in Brazil's automotive production – retreated from car production while maintaining its more traditional commercial vehicles fully operational. These are then selected as two of the four in-depth case studies with automakers. The other two represent a group that keeps investing and expanding the operations (Stellantis/FIAT) located in the metropolitan region of Belo Horizonte, and Caoa, which started as a distributor of brands before becoming a manufacturer through joint ventures. The latter case – which is often in association with emerging East-Asian carmakers – represents an innovation in the way automotive industry is organized in Brazil.

²⁵ In 2017 the top 20 automotive parts suppliers in the world was composed of seven Japanese, six German, two French, two American, one Canadian, one Korean, and one Chinese (Natsuda and Thoburn, 2021). One of the German big players, Mahle, grew substantially in 1996 by acquiring the Brazilian Metal Leve.

What have been the wealth-generating effects and distributional consequences of these cases?

The main argument presented here is that international economic exchange – here taking place through MNEs – is positive when it takes seriously the importance of embedding liberalism in arrangements that pay attention not only to the generation of wealth, but also to its distribution and social consequences. If there are issues that arise from disarticulating markets from society (Polanyi 1944), a privileged locus to research is where the firms that serve those markets are located. In other words, one way to study the social embeddedness of markets is through the embeddedness of firms participating in such markets. Another way to justify a firm-centric perspective is that firms is where capital and labor operate in the end. Firm's strategies and decisions impact labor directly and, as we are covering large firms, impact GVC governance and the economy of the country where they are located.

Even if there is a focus on firms, this study will provide industry-level analysis and country-level analysis as well. While the unit of observation will be the firm, but the project will also aggregate firm observations to describe the sector and country-level development outcomes.

4.7. Changing and New International Perspectives on Industrial Policy

Industrial policies are designed to drive structural transformation and involve strategies selectively applied to enhance productive and technological capabilities of specific sectors and emerging activities. These policies are targeted interventions that can serve as a mean to reach economic catch-up and/or to establish new industries and activities that foster dynamic efficiency

(Johnson 1982; Amsden 1989; Chang 1994; Wade 2004; UNCTAD-UNIDO 2011; Oqubay et al. 2021).

Industrial policies operate within the framework of a broader national vision and development strategy. Quite often, successful economic advancement has relied, both in a specific sector and in the general economy, on a proactive industrial policy (Chang, 2002; Mazzucato, 2015 and 2021; Oqubay et al. 2021).

For Nayar (2013, 98), around 1950 most underdeveloped countries adopted strategies of development consisting of three dimensions. First, there was an “attempt to limit the degree of openness and integration with the world economy” as countries perceived the importance of “autonomous development”. Second, as “the market, by itself, was not seem as sufficient to meet the aspirations of latecomers to development”, “the state was assigned a strategic role in development”. And third, in the catch-up process, “industrialization was seen as an imperative”, and ISI was the key strategy pursued. The framework putting together these dimensions was precisely industrial policy. They would be anchored on specific institutions, rules of the game steering the economy in a direction that would favor industrial development. For Brazil specifically, refer to the previous subsection describing the regulatory framework created by SUMOC Instructions Nos. 70 and 113 to support mid-20th century ISI, as well as the next subsection covering what industrial policy has become from the 1990s onwards.

After all, decades later, however, these three dimensions were abandoned by many latecomers to development, including Brazil, a country long marked by political polarization between two opposing views regarding the usefulness and desirability of the three dimensions highlighted by Nayar. Therefore, considering that the temporal core of this research spans the period between

1988 and 2025, Brazil experienced during this time (i) relatively greater openness and integration with the world economy, (ii) a restriction of the role of the state in development and a transfer of development aspirations to the market, and (iii) ongoing deindustrialization year after year, with import-substitution industrialization (ISI) abandoned as a strategy and increasingly mocked as implausible, impossible, and, at best, fiscally unsound and inefficient.

The demise of ISI came around together with debates comparing it with export-oriented industrialization (EOI), the latter being argued as a different framework and credited with what has been labeled the "East Asian Miracle" (World Bank, 1993). In the 1980s and the 1990s there was an insistence reverberated by influential organizations such as the World Bank, according to which ISI had more inferior results than EOI. As the argument goes, the latter was depicted by many as a strategy in which governments would not engage very much in their allocative function in the economy. In a nutshell, these studies implied that liberalization led to growth instead of growth leading to liberalization.

Mainstream economic discourse of the late twentieth and early twenty-first century consolidated a view that trade liberalization was a fundamental step for an economy to reach its full potential. Lifting trade barriers would boost economic efficiency by allowing the allocation of resources to follow price signals formed freely in the markets. The state could not allocate resources in a more efficient way, and intervention through policies such as trade barriers was hindering growth and development. The idea that "economic growth is generally faster in countries with more open trade regimes" (Krueger, 2010, 120) pervaded academia, politics and policy centers.

Beyond reducing trade tariffs, a consensus was adjudicated on what was supposed to be the right way to conduct other aspects of micro and macroeconomic policy. Noteworthy were the

prescriptions that interest and exchange rates were to be determined by market forces, as deregulation was the way to boost entrepreneurship and curb corruption. Accordingly, both import liberalization as well as privatization should be pursued for the better good as they were efficiency boosters (Williamson, 1990).

For Krueger, openness was a “forcing variable” (120) that would get rid of and be a hurdle to the adoption of distortive measures that in the long run were simply counterproductive and harmful to growth and development. The key idea is that the state is not better apt to allocate resources than the free market, and gains would accrue “through openness itself” (120).

Recently, however, the vulnerabilities inherent in this hands-off approach have become increasingly evident, prompting the emergence of new international perspectives on industrial policy. Reflecting more broadly on the capitalist system, Paul Collier characterizes this hands-off, or laissez-faire, approach as operating on “autopilot.” In his analysis, since the evidence suggests that capitalism “periodically derails,” it should not be left to operate on autopilot. Accordingly, being left on autopilot somehow since somewhere around the 1980s, capitalism is now experiencing its “third serious derailment.”²⁶

It goes without saying that this autopilot-induced derailment is precisely the context addressed within the 1988-2025 temporal scope of this research. While variations certainly exist within this period, as demonstrated here, it is compelling that the overarching belief among influentials and policymakers was that capitalism was better left to self-steering, albeit to varying degrees. Consequently, any form of industrial policy, particularly within the Brazilian political

²⁶ While these formulations were mostly derived from oral sources, they are documented in Collier et al (2020) and Collier et al (2021).

environment, had to contend with – and, to be honest, still must contend with – this prevailing undercurrent.

After all, as G. L. S. Shackle (1991) maintained that “economics is about thoughts,” one could add that politics is also about thoughts, and that the social sciences more broadly are likewise about thoughts. And often, hegemonic thoughts crystallize into overarching beliefs that function simultaneously, or in an alternating manner, as currents and undercurrents. In this sense, the vilification of ISI since the end of the 20th century is a telling case.

ISI, as a development strategy, has been disparaged as having more inferior results than export-oriented industrialization (EOI), the latter being for many a strategy in which governments would not engage very much in their allocative function in the economy. Moreover, a few studies implied that liberalization led to growth instead of growth leading to liberalization. The World Bank itself would embark on this account in its assessment of the "East Asian Miracle" in 1993. Later, in 2001 the World Bank recalibrated its position in a new publication dealing with that process and its various mechanisms and determinants. The 2001 publication would be more aligned with Rodrik (2001), who also offers a reassessment of ISI.

The traditional case study was a comparison that identified East Asian countries as models of export-oriented strategies in comparison with other developing countries that were pursuing import-substitution. Rodrik's careful observation brings attention to three things. To begin with, not only this “account overlooks the active role taken by governments” and public enterprises of Japan, Taiwan and South Korea, as the opening up process only took place “when high growth was already firmly established” (2001, pp. 18-19). A third relevant point is that before the supply side-driven downturn caused by the first oil shock, total factor productivity (TFP), the main engine of

growth beyond the pure increment of factors of production, was actually higher in the Middle East and Latin American countries associated with ISI than in the East Asian countries associated with EOI. Thus, the story is more complicated. The public image damage – so to say – caused on ISI, however, has not been resolved since then.

That did not affect China's path or thoughts about the way to manage its economy and strategize its growth and overall development. After all, this could be seen as contradictory, but it is a fact that China became viscerally integrated with the world economy, from the standpoint of reliance on international trade, without abandoning the strategic importance of what Nayyar called "autonomous development", which is akin to Furtado's notion of nurturing "endogenous centers of decision." This idea refers to the capacity to ensure that a country and its citizens are able to organize the process of capital accumulation according to priorities defined by themselves (Furtado, 1984, 10). It implies not merely living in the slipstream of the external world, whether shaped by the abstract forces of the global economy or by the more concrete influence of other countries and their corporations that are unwilling to relinquish their own "endogenous centers of decision", often extending their influence over others.

China experienced four decades of rapid economic growth while maintaining restrictions on cross-border capital flows, even as it selectively welcomed foreign direct investment through a managed and state-steered framework involving state-owned enterprises, a strategy reminiscent of import-substitution industrialization. At the same time, China developed dense and far-reaching trade linkages with the global economy, a hallmark of export-oriented industrialization. Through this hybrid approach, China emerged as the world's second-largest economy measured in current U.S. dollars and has already become the largest economy when measured in purchasing power parity.

Even though the country has embraced a distinctly pragmatic approach to development strategy since the period in which Deng Xiaoping served as China's paramount leader, this experience stands in sharp contrast to the package of liberal reforms commonly referred to as the Washington Consensus (Lo and Zhang, 2011).

Chinese pragmatism, set in place in the Deng era, was characterized by a deliberate strategy of experimentation, in which the functionality of selected liberal practices was tested in carefully chosen and geographically bounded contexts. Some of these measures bore clear similarities to policies adopted in neighboring countries, while others resembled reforms observed in other economies transitioning away from centrally planned systems. Yet across all these initiatives, there existed a dense proliferation of practices and institutional arrangements that were specific to China's own historical and political context. Accordingly, a one-size-fits-all blueprint imposed from the outside was never accepted.

In this sense, China's remarkable economic performance was driven by business activity that was both attracted to and generated within these experimental zones and organizations, most notably the Special Economic Zones (SEZs), the Township and Village Enterprises (TVEs), and the Joint-Ventures (JVs) with MNEs where the majority of shares were owned by the Chinese part – often an SOE or another form of state-led organization. These spaces were deliberately designed to function as instruments of economic growth through experimentation, operating effectively as laboratories for development policy trials and errors followed by goal-oriented ameliorations.

There are a few dominant theories of international order, such as power transition theory, hegemonic war theory, and long cycles theory. These theories suggest that rising powers either assimilate into the existing order or challenge it. More recently, some authors have articulated the

argument that this binary view is limited. Barma et al. (2009), for instance, propose a third possibility: the emergence of an alternative international order where rising powers create new patterns of behavior and interaction distinct from the Western-led liberal order.

In many circumstances of the shifting global power dynamics, emerging economies are not merely passive recipients of technology but are actively shaping the innovation landscape, challenging the traditional dominance of Western automakers. Moreover, emerging economies are increasingly trading and coordinating politically and economically with each other, independent of Western powers. This is evident in the growing economic interconnectivity among non-Western countries and the crescent institutionalization of forums such as the BRICS and their New Development Bank (NDB).

Following the backlash against globalization, current attempts by developed countries to manage globalization in different ways, brought industrial policy in a much clearer way to the agenda. For instance, Aghion, Antonin and Bunel (2021) defend that rather than protectionism and trade wars the downsides of globalization are better fought by establishing a social safety net, subsidies to R&D by domestic firms, industrial policy, and a smart policy for attracting immigration.

4.8. Industrial Policies in Brazil

Between 2003 and 2014, the Workers' Party (PT) governments in Brazil undertook a series of comprehensive industrial policies aimed at transforming the country's economic landscape. These policies were designed to address the challenges of globalization, enhance the competitiveness of Brazilian industries, and foster technological innovation. The three key policies during this period

were the Industrial, Technological, and Foreign Trade Policy (PITCE), the Productive Development Policy (PDP), and the Greater Brazil Plan (PBM).

The PITCE (2003-2007) was the first of these policies and laid the foundation for Brazil's industrial strategy in the early 21st century. It focused on stimulating innovation, supporting strategic sectors like information technology, biotechnology, and nanotechnology, and improving Brazil's integration into global markets. The policy also aimed at reducing the technological gap between Brazil and developed nations by encouraging investments in research and development (R&D) and promoting exports.

Following the PITCE, the PDP (2008-2010) was introduced, building on the achievements of its predecessor while expanding its scope. The PDP sought to increase Brazil's productive capacity by targeting specific sectors for growth, including capital goods, pharmaceuticals, and defense industries. It emphasized the need for higher value-added production and aimed to increase Brazil's global market share in these key industries. The PDP also placed a strong focus on the development of small and medium-sized enterprises (SMEs) and regional development.

The Greater Brazil Plan (PBM) (2011-2014) was the third policy and represented an ambitious effort to address the structural challenges faced by the Brazilian economy. The PBM aimed to boost industrial competitiveness through a combination of tax incentives, financial support, and investments in infrastructure. It also sought to enhance Brazil's innovation capacity and reduce its reliance on imported goods by encouraging local production. The plan included measures to protect domestic industries from unfair competition and to promote sustainable development practices.

5. The role of public policies in automotive upgrading

In this transition to a data-driven and ICT-controlled knowledge economy in which finance and digitech are increasingly merging, the fate of automotive production is varying according to different arrangements that multinationals have built in the places where they are located. This chapter seeks to explore variation within Brazil in the way in which the automotive sector is supported by public policies, paying attention to how technological change at large and the pursual of carbon-efficient vehicles in specific is occurring. Looking at how public policies were conceived and how variation in institutional arrangements since 1988 induce transfer, incorporation, and local spillovers of technologies from multinationals, this chapter examines how these combinations thicken cooperation networks for innovation and socio-environmental sustainability, across time, across Brazilian states, and in relation to different multinational firms.

In the beginning of 2023, the Brazilian automotive industry was in disarray. Many were the factories with operations temporarily suspended (Agência Brasil, 2023). Among the various factors contributing to the crisis, one can highlight the increase in the price of automotive parts – especially semiconductors, following on one hand the digitalization of products and processes, and weak demand due to high interest rates, stagnant wages, and inflation on the other hand. The partial shutdown also served as a strategy to raise awareness of the sector's demands and to engage the then recently inaugurated Lula administration in negotiations. Throughout cycles of boom and bust, the automotive sector – particularly automakers – has consistently managed to renegotiate the terms of its production and distribution processes with governments in Brazil. These (re)negotiations frequently result in the formulation of public policies tailored specifically to the sector. Therefore, it is not surprising that this pattern persisted during the years 2023 and 2024, when the new sectoral

policy for the automotive industry, known as Mover, was negotiated, submitted to Congress for approval, and subsequently implemented.

Mover aimed to address pressing issues such as the transition to carbon-efficient vehicles, other technological upgrades, and the integration of local supply chains, reflecting both the sector's demands and the government's priorities for economic and environmental sustainability. Overall, the tax benefits conditionally provided by the policy were substantial enough to stimulate automotive production to new heights, while also attracting a surge of new investments aimed at renovating and expanding the sector. These incentives not only reinforced the industry's capacity to modernize but also laid the groundwork for enhanced competitiveness, even though still more focused on the insulation of the domestic market than in forcing exports to increase participation in international markets.

A close observation of the policy negotiation process highlighted the intricate interplay between the industry and policymakers, where concessions and strategic alignments paved the way for Mover's final approval and execution. As a whole, this process underscored the enduring influence of the automotive sector in shaping public policy, as well as its capacity to align its objectives with broader governmental agendas—provided that the administration in place is willing to use industrial policy to advance Brazil's industrial base. As this chapter will demonstrate, players in Brazil's automotive sector are not only highly dependent on industrial policy but also highly sensitive to qualitative variations in these policies over time. Moreover, although the study of the broader process of successive public policies directed at automotive upgrading clearly demonstrates that history is shaped by a multitude of factors beyond the actions of pivotal individuals, highlighting

their influence can still hold explanatory power, as sometimes their decisions and leadership shape trajectories and accelerate key developments.

For instance, Mover was drafted in 2023, during the first year of President Luiz Inácio Lula da Silva's third non-consecutive term, serving as a replacement for the much weaker Rota 2030 policy, which was implemented during Michel Temer's presidency (2016–2018). Notably, having worked as a blue-collar metalworker in the automotive industry for several years, Lula brings a unique perspective to that sector, along with a clear commitment to leveraging this industry as a driver of economic multipliers for the broader economy. It is also noteworthy that Mover not only replaced the much less ambitious Rota 2030 but was also designed after years of neglect toward industrial policy during the Jair Bolsonaro administration (2019–2022). During this period, officials overseeing Brazil's economic management, planning, and development were ideologically opposed to industrial policies. Moreover, as the automotive sector has historically been one of the main beneficiaries of such policies, Bolsonaro's administration specifically targeted it by denying public support.

A clear example of the consequences of the absence of industrial policy for the automotive sector during the Jair Bolsonaro administration emerged in January 2021, when Ford announced the closure of its manufacturing operations in Brazil, ending near a century of production in the country. At that time, public officials under Finance Minister Paulo Guedes attributed the decision to the unsustainability of subsidies for the automotive industry, suggesting that Ford's departure was influenced by the withdrawal of such incentives. In a revealing conversation with supporters, then-President Bolsonaro commented on Ford's decision to close its factories in Brazil after a century of car production in the country: "But what does Ford want? Ford failed to tell the truth, didn't they?"

They want subsidies. Do you want me to keep giving them R\$20 billion, like they received in recent years? Your money, your taxes, to manufacture cars here? No. They lost the competition. I regret it." (G1, 2021).

Tellingly, when Lula defeated Bolsonaro in the 2022 presidential election, one of the central themes of his political platform was the 'reindustrialization' of Brazil, to be achieved through a set of measures, including industrial policies. In January 2024, the Brazilian government launched the Nova Indústria Brasil (NIB) initiative, marking a significant step toward revitalizing the nation's industrial sector. Drafted and negotiated throughout 2023, NIB is an overarching, multisectoral industrial policy with a ten-year horizon, within which sector-specific policies — such as robust measures for the automotive industry — are embedded. The program prioritizes innovation, industrial modernization through digital transformation, clean energy, and advanced manufacturing to ensure Brazil remains competitive in the global economy. With an ambitious investment plan based on collaboration between the public and private sectors, NIB aims to drive substantial investment in digitech and green technologies—such as biofuels and low-carbon industries—while strengthening incentives for the continuous improvement of Brazil's industrial base, particularly in sustainable and technological advancement.

This strategic push for industrial modernization is particularly relevant when considering the close interplay between multinational enterprises (MNEs) operating in Brazil's automotive sector and the country's broader economic policies. Therefore, this chapter also examines the deep entanglement between the strategies of MNEs in Brazil's car-making sector and the country's economic directives. While the MNEs operating in Brazil's car-making sector are entirely foreign-based, they have an intrinsic relationship with Brazilian industrial policy. Despite their headquarters

being in countries such as the United States, Germany, Italy, Japan, France and South Korea, these companies have established deep roots in Brazilian society, largely through the cultivation of a class of highly influential Brazilian executives that largely run these subsidiaries in the country. Ensclosed as intermediaries between multinational headquarters and local operations, Brazilian middle managers play a crucial role in sustaining the state's commitment to the sector but remain structurally constrained by the strategic priorities of their parent companies, limiting their ability to drive autonomous industrial development—one of the factors contributing to a situation resembling a "middle-income trap" within the Brazilian automotive industry relative to the global automotive industry.

This apparent "middle-income trap," sustained by Brazilian middle managers in necessary association with — and under the protective wing of — the state, might resemble a well-furnished waiting room rather than a trap for many: comfortable enough to linger in indefinitely, even if there's no clear path to the CEO suite. Of course, reaching middle-income status is far better than being stuck at low or no income. After all, even if Brazil's automotive production has not only been kickstarted but also has always been dominated by MNEs, one could argue that, without them, the country might have lagged further behind in the global automotive industry and missed the associated multiplier effects. On the other hand, the question of how necessary automotive MNEs are for the early and following stages of catching up therefore merits discussion, especially since it is clear that they are not sufficient on their own.

Still, as long as relatively well-off middle managers and engineers remain aligned with multinational priorities rather than pursuing and/or supporting an independent trajectory, the industry in its Brazilian version risks remaining a perpetual mid-level player focused almost entirely

on Brazil, and unable to fully realize what one could see as Brazil's potential to move up the value chain and capture a larger share of the capital that flows through and accumulates within the automotive industry. Ultimately, being positioned in the middle may offer relative comfort and stability, with sufficient benefits to deter individuals from seeking alternatives, despite the lack of a clear path to development beyond that middle-income position.

Therefore, it is no mere coincidence that the situation in Brazil's automotive sector – one of the flagships of the country's industrial base, which has ripple effects across society – mirrors the very definition many researchers use to describe Brazil's broader condition: a nation caught in a middle-income trap.

This connection, when viewed in light of the broader academic literature on the topic, is crucial for deciphering the role, constraints, and impacts of public policies on automotive upgrading in middle-income countries. While a comprehensive survey of the middle-income trap can be found in Glawe and Wagner (2016), a contribution more directly aligned with the present discussion is offered by Doner and Schneider (2016). They analyze the path-dependent nature of the trap, emphasizing how the very factors that facilitated the rise of a country like Brazil to middle-income status—namely “informality, high FDI stocks, inequality, and low levels of human capital” (p. 635)—not only reinforce one another but also act as barriers to further advancement, as they create cleavages that are both combined and divisive, “fragmenting business and labor” (p. 635). Meanwhile, in this chapter, the focus is on one of those factors in particular: the reliance on high levels of FDI, as reflected in the dominance of MNEs in Brazil's automotive sector and the structural limitations that come with it.

This dynamic is further shaped by the varying degrees of autonomy granted to local executives, which depend on a few factors such as the management culture of each multinational enterprise, as well as the relative importance of the Brazilian branch within the company's global operations. The degree to which a subsidiary's operations are managed by Brazilians varies significantly based on the culture of the MNE. For example, French MNEs often prefer to send French nationals to oversee operations beyond a certain level, whereas German and Italian MNEs are more inclined to integrate Brazilians into higher-ranking positions within their organizational structures. In all cases, however, these Brazilian executives play a dual role: they fiercely advocate for the interests of their respective MNEs in Brazil, ensuring alignment with corporate strategies, while simultaneously defending the autonomy and viability of their Brazilian branches. Their efforts are particularly evident in opposing potential corporate strategies that might prioritize serving the Brazilian market through imports rather than local production, a shift that would threaten the operations of Brazilian branches and, by extension, their own professional roles. This dynamic underscores the intricate balance these executives maintain between global corporate goals and their local economic and social realities, reflecting broader theoretical insights into the operation of MNEs.

What takes place in Brazil's automotive sector, aligns with the understanding that MNEs function as interorganizational networks where subsidiaries must often reconcile competing priorities (Prahalad and Doz's, 1987), while playing varying strategic roles that are influenced by both global headquarters and local contexts (Ghoshal and Bartlett, 1990). This class of Brazilian executives who act as intermediaries between their MNEs and the Brazilian government often make efforts to defend local production over import-based strategies. Considering the institutional and

relational forces at play, as discussed by Kostova and Roth (2002), these executives leverage local embeddedness to negotiate outcomes that preserve the autonomy and relevance of their branches, ensuring the perception of their continued contribution to both the local economy and the global network of the MNE, something that demonstrates the agency of subsidiaries in shaping their own operational roles (Birkinshaw and Morrison, 1995).

While navigating the fact that perception gaps between headquarters and subsidiary managers are common in MNEs and might lead to conflicts (Schmid and Daniel, 2007), this class of Brazilian executives tend to emphasize the importance of local cultural nuances in shaping various aspects of managerial interactions and decision-making processes. Moreover, these nuances serve as a rationale to sustain their critical role in mediating and negotiating various relationships within the Brazilian automotive sector, spanning both private and public-private aspects. This demonstrates that cultural differences can indeed be leveraged to influence the dynamics between headquarters and subsidiaries (Williams, 2011).

These Brazilian executives, championing the interests of their respective MNEs – or, as is often the case, collectively representing the interests of MNEs as a group, by advocating for preferences orchestrated beforehand through coordinated efforts within industrial associations such as the influential ANFAVEA²⁷ – constitute one side of the policy-making process. Meanwhile, the other side comprises officials, both career bureaucrats and elected representatives, from the Brazilian government. However, this distinction is more theoretical than practical, as a form of symbiosis has developed over time between these automakers' executives and the public servants who play critical

²⁷ ANFAVEA (Associação Nacional dos Fabricantes de Veículos Automotores) is Brazil's National Association of Motor Vehicle Manufacturers, representing the interests of automakers that produce cars, trucks, buses, and agricultural machinery in the country.

roles in designing and implementing sectoral policies. This close relationship reflects the deeply intertwined nature of public and private interests within the Brazilian automotive industry, as well as the undeniable role of public policies, not only in driving automotive upgrading in the country but also in establishing the necessary institutional framework for the sector’s day-to-day operations.

This chapter covers the main sectoral policies for the automotive industry from 1988 until 2024 in Brazil. Specifically: 1992 (Automotive Sectoral Chamber), 1995 (New Brazilian Automotive Regime), 2013 (Innovate-Auto), 2018 (Route 2030), and 2024 (Mover). By providing a comparative perspective of these policies, I illustrate how automotive industrialization has evolved, while pointing to some reasons why it has evolved the way it did. As I examine the overarching industrial policies implemented for the automotive sector over the past 36 years, this chapter also explores the role of ancillary policies – or their absence – under administrations that did not establish a comprehensive industrial policy for the sector during this period. Table 5.1. provides an overview of the evolution of Brazil’s automotive production over this time as marked by the different political periods.

Table 5.1 – Evolution of Brazil’s Automotive Production by Political Period (1990-2024)

	Old paradigm (1990)	Sectoral Chamber (1992)	New Auto. Regime (1995)	New Macro. Policies (2000)	Lula 1 (2003)	Lula 1 to Lula 2 (2006)	Lula 2 (2010)	Inovar-Auto (2013)	Rota 2030 (2018)	Mover (2024)
Passenger Cars	665	816	1,299	1,375	1,562	2,205	2,924	2,955	2,388	1,895
Light Commercial Vehicles	183	201	237	221	160	267	485	547	359	486
Trucks	52	32	70	72	79	107	192	190	116	149
Buses	15	24	22	23	27	35	46	45	32	31
Total	914	1,074	1,629	1,691	1,828	2,613	3,647	3,739	2,895	2,561
Factories	42	35	34	43	50	49	51	55	65	52

Source: Author with data from Anfavea (2025)

From 1990 to 1995, there was a gradual yet consistent increase in production, facilitated by the cross-class coalition supporting the Sectoral Chamber, even in the midst of a trade shock. This was subsequently followed by a prolonged period of near-stagnation from 1995 to 2003, despite a proliferation of industry participants, as evidenced by the increase in the number of factories from 34 to 43, as well as despite Brazil's successfully taming its inflation problem through the implementation of the Real Plan, which served as the foundation for Cardoso's electoral success that gave him two presidential terms (1995-2002).

From 2003 onward, output begins to expand rapidly, reaching a peak toward the end of Lula's second administration (2010). At that point, total production reached what was then a historic high of 3.647 million units, of which almost 3 million were passenger cars, supported by macroeconomic stability and the credit conditions associated with the Lula era. Production continued to be high through 2013, when, under Dilma Rousseff's first term, Brazilian vehicle production (passenger cars, light commercial vehicles, trucks, and buses) reached a record 3,739,525 units in the first year of Rousseff's flagship sectoral policy, Inovar-Auto. At the time, "we hoped to reach 4 million cars per year," recalled Fernando Pimentel, who served as Rousseff's Minister of Development, Industry, and International Trade, in an interview for this chapter. From then on, production began to decline. A decline that reached its lowest point in 2020, when 2,020,229 vehicles were produced.

Initially, the decline was partially cushioned by Inovar-Auto, even as the country entered a severe crisis between 2014 and 2017. When Inovar-Auto expired on December 31, 2017, Brazil nonetheless had the largest number of automotive plants in its history (65), a result directly linked to the local-content requirements embedded in the program. After 2017, however, the downturn

accelerated. Between 2018 and 2023, years marked by timid or absent industrial policy, the contraction was substantial. In 2024, Lula's third administration launched Mover, and production increased by roughly 9.7% relative to 2023, allowing the country to return to eighth place in the global production ranking. From 2024 to 2025, production continued to rise.

Even so, it is important to note that total output in 2024 (2.561 million units) remains below the level observed in 2006 (2.613 million units), despite a higher number of plants (52 versus 49). This gap reinforces two aspects of the argument advanced here: on the one hand, the recent trajectory is consistent with persistent idle capacity, constantly necessitating supportive public policy, and an erratic and inefficient catch-up process, in which expanded installed capacity from various world-class automakers does not translate into proportionate increases in realized output with relevant participation of exports and state-of-the-art embedded technologies. However, on the other hand, there is variation, both quantitative and qualitative, explained by alternative coalitions in power: the automotive industry fares much better during the periods in which cross-class coalitions that incorporate the working class are in power, thus supporting progressive industrial policy.

Since this research was conducted during the negotiation and implementation of Mover, I had the opportunity to interview some of the most influential stakeholders and decision-makers involved in its various stages. This allowed me to observe firsthand how many details of the process unfolded, with all the tensions, complexities and contradictions involved. Additionally, I reached out to decision-makers and other stakeholders involved in each of the previous policies to gather their insights and perspectives on the formulation, implementation, and effects of those policies, providing a comparative understanding of key factors that have shaped the development of the sector, with a well-grounded take on the impact of its sectoral policies over time.

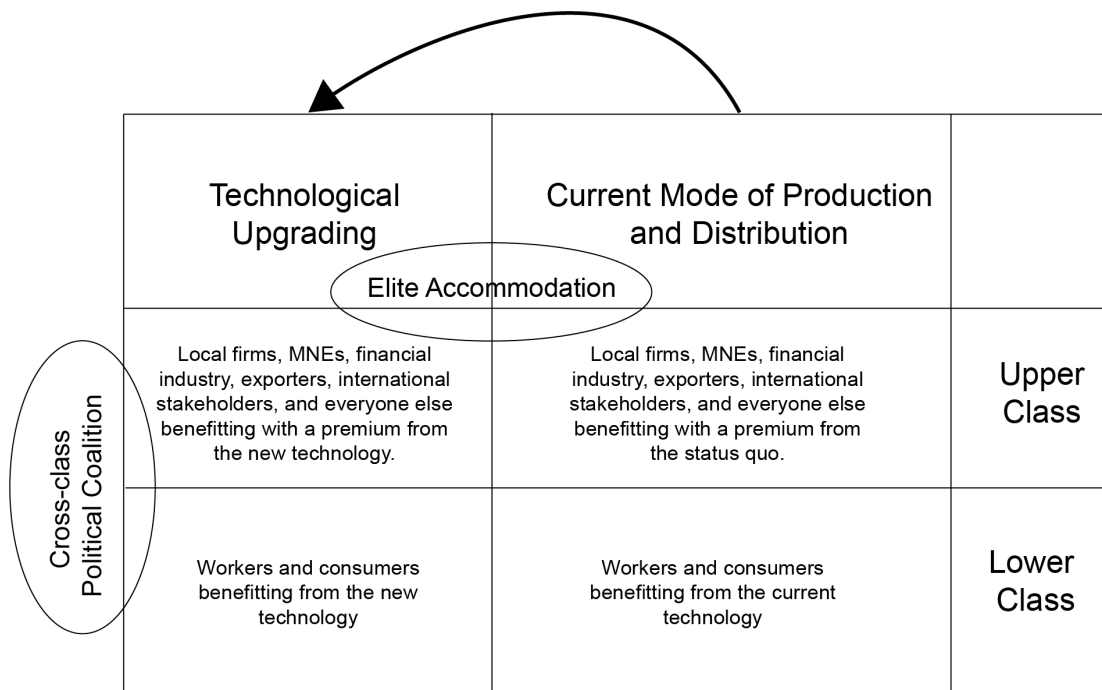
5.1. Structuring a Supportive Coalition in the Brazilian Automotive Sector

The argument here is that the development potential of the automotive sector is intrinsically linked to the economic effects of public policies, which in turn both shape and are shaped by the composition of the elite, the incorporation of the working class, and the coalitions that emerge to support or resist technological upgrading. These political dynamics are not static; they have the power to reshape the structures of influence and decision-making within society. As De Mesquita and Smith (2011, 20) note — and previously mentioned in Chapter 4 —, governments that rely on “a particularly small number of essentials drawn from a very large group of interchangeables and, usually, a relatively small batch of influentials” must strategically assemble coalitions to implement new public policies. The composition and durability of these coalitions determine whether catching-up and technological upgrading can be sustained. While this process often unfolds within domestic political arenas, international factors—such as foreign investment, trade agreements, and geopolitical pressures—can also play a critical role in shaping policy outcomes.

Public policy formation begins as a problem of social choice, in which key stakeholders — ranging from industrial and financial elites to political influencers and voting constituencies — determine the trajectory of economic transformation. Once the overall winning coalition is in place, public policy formation becomes a matter of intra-state politics and the dynamics among various factions within the coalition, particularly regarding the specific policy issue and its potential trade-offs with other policy priorities. In the Brazilian automotive sector, policy incentives for technological upgrading and other industrial improvements can only take place when a coalition emerges that is strong enough to push forward the necessary policy shifts.

The framework in Figure 5.1. – which is the same as Figure 4.2. and is placed again here for convenience – illustrates two primary pathways for achieving this. In some cases, upgrading occurs through an accommodation among industrial and political elites when the issue does not carry enough electoral weight to necessitate a broader coalition. However, when the discourse around policy reform is politically salient – framing, for instance, technological advancement as a means to impact employment, promote redistribution, impact environmental sustainability, or affect national competitiveness and/or resilience – it becomes advantageous or even necessary to secure support from a broader cross-class coalition, incorporating influentials and, in some cases, a majority of voters.

Figure 5.1. – Two modes of promoting or stalling upgrading through policy



The success of this strategy depends on how effectively policymakers can align the interests of different social groups, balancing economic incentives with political feasibility to sustain long-term sectoral development. Accordingly, in analyzing the possibilities illustrated by Figure 5.1., one can see two primary pathways for coalition formation applicable in the context of automotive policy and industrialization: ‘elite accommodation’ and ‘cross-class political coalitions’. These pathways determine not only whether the status quo in production and distribution persists or whether technological upgrading occurs, but also the quality of the transformation in terms of inclusiveness and the distribution of its benefits. The upper class – comprising local firms, transnational corporations (TNCs), the financial industry, exporters, and international stakeholders – can either benefit from maintaining the current production model or from transitioning to a more technologically advanced one. Likewise, the lower class, consisting of workers and consumers, may either align with the existing technology (if it sustains jobs and affordability) or support new technology (if it offers better wages, job security, or improved products).

One possible scenario for ‘technological upgrading’ is when key players in the upper class reach an accommodation among the elites. This occurs when major firms, investors, and exporters find it economically beneficial to adopt new technology due to efficiency gains, international competitiveness, or top-down regulatory incentives, either without the need for broader social mobilization or without the willingness to seek it. In this case, the transition happens without a political mobilization that goes beyond the players from the upper class, as the issue does not generate enough electoral relevance, public opposition, or other major resistance by opposing interest groups. For example, from the 2010s onward, global automotive firms manufacturing in Brazil increasingly shifted their focus from popular smaller cars to SUVs, driven by higher profit

margins, evolving consumer preferences, and the global industry trend toward larger vehicles. This transition occurred with minimal political friction, as it aligned with automakers' interests and consumer demand, particularly from upper-middle-class and wealthier social groups. Moreover, it did not trigger significant resistance from labor unions or regulatory pushback.

Alternatively, when changes in automotive policy affect a broader spectrum of society, 'cross-class political coalitions' become necessary. This happens when workers and consumers perceive the technological shift as a matter of economic or social interest, requiring political alignment between influentials from both the upper and lower classes. For instance, in the early 1990s, during negotiations within Brazil's Automotive Sectoral Chamber, policymakers, labor unions, and industry leaders debated new regulations aimed at modernizing local production, in a way that was linked to strategies to boost demand and domestic supply. As Brazil embarked on overall global trade liberalization, hand in hand with the trend of establishing Regional Trade Agreements (RTAs) – specifically Mercosur in this instance – the dual novelty of this integration, which was more liberalized globally than in the 1980s or earlier, but even more so regionally, pressured domestic manufacturers to upgrade technology and adapt a series of more up-to-date practices. These negotiations were crucial in balancing competitiveness with job protection, ensuring that technological shifts did not disproportionately harm workers in traditional manufacturing roles. This effort included reskilling programs, employment guarantees, and subsidies for local firms, ensuring that the lower class saw the benefits of the transition rather than resisting it to protect existing jobs. In such cases, achieving industrial upgrading depends on whether policymakers can craft incentives that align elite and worker interests, mitigating potential conflicts over job displacement or cost burdens.

There are also cases that are more nuanced. Even though they materialize through an apparently smooth accommodation within the upper class, their origins can often be traced back to broader social mobilization at an earlier stage. For example, when global automotive firms manufacturing in Brazil finally saw an advantage in adopting flex-fuel vehicle (FFV) technology in the 2000s – due to government incentives and the declining cost of ethanol production – technological upgrading proceeded with minimal political friction, as existing policies, such as tax benefits and fuel infrastructure support, aligned with this shift. However, while the adoption of flex-fuel technology in the 2000s appeared seamless at the time, it was, in fact, the result of a long-term evolution rooted in the Proálcool program, which was launched in 1975 as a response to the global oil crisis. Moving forward, it also benefited from the influence of political leadership committed to social inclusion or even originating from the working class and that reached positions of power starting in the 1990s, especially since the 2000s.

Be that as it may, the relationships in Figure 5.1 can be categorized as either horizontal or vertical, each leading to distinct combinations that subsequently result in outcomes with varying characteristics. When rising and declining elites find it feasible and beneficial to establish accommodating horizontal relations while excluding lower classes from those upper-class accommodative interactions, arguably such rejection of cross-class coalitions will yield outcomes that are generally less constructive for development purposes than those achieved through cross-class coalitions based on inclusive vertical relations. Such is the case because these inclusive relations often incorporate lower-class groups "on the basis of more progressive distributive and productive relations and more democratic political processes" (Schneider, 2025, 8).

This framework will be used to evaluate several automotive policies from 1988 onward. The analysis will focus on two key scenarios: 'technological upgrading' driven by an upper-class agreement with narrow participation of non-upper-class agents, called here 'elite accommodation', on one hand, and 'cross-class political coalitions' involving broader societal engagement, on the other hand. By examining policies implemented since 1988, we can assess how these scenarios played out in Brazil's automotive sector, particularly in response to global trade liberalization, regional integration through Mercosur, and the adoption of new technologies like flex-fuel engines, as well as the current emergence of EVs and the widespread adoption of data-driven and ICT-controlled technologies in vehicles. This approach will provide insights into the dynamics of industrial policy formation, the role of various stakeholders, and the effectiveness of different strategies in promoting technological advancement while addressing socioeconomic concerns. The framework will help identify patterns in policy development, implementation challenges, and the long-term impacts on Brazil's industrial competitiveness, workforce adaptation and resilience, the political economy of development, and the overall evolution of capitalism.

With this framework, I seek to analyze how international capital mobility manifests in technological forms within the Brazilian automotive sector and what spillover effects this international capital has on the local economy, as mediated by auto sector institutions. In doing so, I focus on how the policy process and its outcomes depend on the balance of national capital, multinational enterprises (MNEs), other class forces, institutional arrangements, and reform processes. Building on Aaron Schneider (2012), who examines how different state-building balances among these forces shape tax regimes to be more or less progressive, universal, and capable, this study focuses on how different policy-building balances generate automotive regimes that are more

or less progressive, resilient, and innovative. By analyzing how industrial policy is discussed, designed, and implemented in Brazil's most recent democratic period, this study explores how and why policy outcomes have varied over the past three and a half decades.

The research design aims at comparing cases that have every circumstance in common save one, which is the Coalition Type. This way, I can argue that variation in Coalition Type, which comes together with its associated Policy Type for the automotive sector, is the key cause of Investment and Technological Upgrading in the automotive sector, which is the core phenomenon under investigation. When certain Coalition Type, accompanied by its Policy Type, is present the phenomenon under investigation occurs, while in other instances it does not occur as in the place of the key explanatory variable we observe a Rent-seeking Coalition leading to industrial stagnation.

In order to synthesize the logic behind this research design based on comparative inquiry, Table 5.1 displays the way that I will operationalize the Method of Difference as derived from the 'Most Similar Systems Design' (MSSD) logic, updated by Adam Przeworski and Henry Teune (1970) from J.S. Mill's original Method of Difference.

The second column in Table 5.1 basically displays the clustering of the cases shown in the first column. The argument is that this comparison-set column is grouping cases where key background conditions are treated as broadly constant. Beyond the fact that controlling is made more efficient as all cases pertain to the same country during the same broad political paradigm established by the 1988 Constitution, also known as the Sixth Republic, by grouping cases into temporal sets (Comparison Sets A, B, and C), the design attempts to additionally control for the "noise" of global economic shifts and business/technological cycles, allowing the key independent variable (policy breadth/coalition type) to be isolated as the driver of the dependent variable (DV),

which, in turn, is divided in two parts: investment posture and upgrading posture. In other words, this isolation allows me to attribute the variance in industrial outcomes (the DV) to the specific configuration of the political coalition and policy design (the key IV as described in the third column), rather than exogenous economic shocks.

Table 5.1 – Method of Difference Design Logic

Case	Comparison set (controls held broadly constant within the set)	Key IV (policy breadth/supporting coalition)	Controls (background conditions to hold constant within the set)	DV part 1 (investment posture)	DV part 2 (upgrading posture)	What the Difference shows
1992 – Automotive Sectoral Chamber	Set A: early 1990s trade opening, monetary stabilization attempts and turbulence	Hybrid; tripartite coordination; some reciprocity	Large market; existing MNE footprint; competitive shock from trade opening; persistent MNE demand for policy	Preservation / reorganization	Limited to moderate upgrading	Within Set A, more coordinated policy, including labor, is associated with less severe retrenchment and significant adaptation
1995 – New Brazilian Automotive Regime	Set A: early 1990s trade opening, monetary stabilization and turbulence	Hybrid, investment-attracting; absent tripartism; weaker conditionality	Same Set A baseline: market size, MNE presence, trade opening pressures; improved stabilization context followed by turbulence	Liberal expansion through diversification of players	Moderate, dependent, upgrading framed by monetary strength (first) and turbulence (second)	Within Set A, changing the policy design while abandoning tripartite talks, misaligns State-Labor-Capital coordination and represents a transition

						from defensive maintenance to liberal expansion through the diversification of players. Yet, this model proved vulnerable, as the resulting dependent upgrading was framed by monetary strength which was eventually hindered by turbulence
2003–2010 – Lula I and II	Set B: 2000s upgrading pressure and global competitive shift	Progressive developmentalist coalition; conditionalities and coordination aimed at upgrading through strong demand with continuous supply-side support	Large market; high embeddedness; persistent MNE demand; more supportive political and fiscal environment	Expansion	Clear upgrading	In Set B, stronger reciprocal, long-term policy aligns with expansion plus upgrading
2013–2017 – Inovar-Auto	Set B: 2010s upgrading pressure and global competitive shift	Progressive with explicit upgrading conditionality and LCR mandate and use of tariff proxies	Large market; high embeddedness; same upgrading pressures; tightening macro constraints	Expansion and new-entrants	Partial to significant upgrading; more sophisticated players	Compared to weaker-policy cases in Set B, conditionality is associated with relatively stronger upgrading signals, but

						trade-off in relation with Lula I and II seems unfavorable in key aspects
2018 – Route 2030	Set B: same decade and similar technology-cycle pressure	Conservative or weak reciprocity; low enforcement	Large market; high embeddedness; same tech pressures; post-recession austerity constraints	Restraint	Limited upgrading	In Set B, weaker reciprocity aligns with containment of investment and lower upgrading
2019–2022 – Bolsonaro administration	Set C: climate/EV pressure plus digital/IoT shift	Policy absence or strongly submissive stance	Large market; MNE footprint; climate and EV pressures; fiscal constraint context. OBS: pandemic shock (explicit perturbation) would justify even more easily a supportive policy	Retrenchment / withdrawal	Low upgrading; race-to-bottom risk	This could be perceived either as an extreme Set B or Set C case as considered here: Still, it is always unique in its absence of policy, aligning with the worst investment and upgrading posture
2023–2025 – Mover program	Set C: climate/EV pressure plus digital/IoT shift	Emerging progressive reset; conditionality still forming	Large market; MNE footprint; climate and EV pressures; fiscal constraint context	Early expansion signals	Upgrading intent (preliminary signals align)	Observation case: as IV shifts toward progressive design, DV should begin to improve if the

						mechanism holds
--	--	--	--	--	--	--------------------

It is also important to note that in Table 5.1, I consider MNE demand for industrial policy and Brazil's market size as background conditions (controls). This approach aligns with the basic hypothesis that, while existing trade barriers justify the attraction of tariff-jumping FDI, the demand for policy support remains constant. Such being the case, variations in outcome cannot be attributed to a lack of demand, but rather to the political mediation of that demand. Additionally, the key independent variable is the type, or breadth, in terms of goals, and enforceability of sectoral policy. While throughout the chapters I may use mixed terminology to refer to the key IV as it varies sometimes with some nuance, they all pertain to characteristics that are attributed to one of the poles of the proposed dichotomy differentiating "Progressive (Developmentalist)" vs. "Conservative (Rent-Seeking)". Moreover, by "Progressive (Developmentalist)" I mean a policy based on a Progressive Coalition (Developmentalist) presenting high(er) State-Labor-Capital alignment, and, quite importantly, incorporating labor preferences. Meanwhile, by "Conservative (Rent-seeking)" I mean a policy based on a Conservative Coalition (Rent-seeking) presenting low(er) State-Labor-Capital alignment, referred simply as misalignment, and, quite importantly, being capital-dominant.

Regarding the outcomes, the DV is separated into investment posture and upgrading posture to match the theory about technological cycles and produce a better grasp about the quality of each outcome. Moreover, hopefully the utility of these cases extends beyond simple covariation, and they will demonstrate a specific heuristic function (Lijphart, 1971), as interpretive cases that make some novel use of established theory around developmentalist versus laissez-faire coalitions to explain specific historical deviations and possibilities, both missed and fulfilled. In this context, the final

case of the Mover program (2023–2025), for instance, serves here also as a "plausibility probe". This is because the program was designed and put in place once this research, with its core hypotheses, had already reached an advanced stage, thereby being useful for testing whether the re-emergence of a progressive, cross-class, State-Labor-Capital aligned IV yields the predicted shift in the DV.

Finally, Table 5.2 clarifies how the concepts of interest manifest in variables that present what are mainly qualitative indicators, which will be obtained through specific observations as detailed in the table.

Table 5.2 – Research Strategy: Concept-Variable-Indicator-Observation

Concept	Variable (Dimension)	Qualitative Indicator	Observation
FDI Strategy	Level of Investment: Expansion/Restraint/Withdrawal	Firm positioning with respect to Brazilian market, exports, rival firms, GVC	Interviews with decision-makers, company reports, newspaper reports, expert opinions, interviews with labor leaders
FDI Strategy	Approach to technology: Upgrading/Race to the bottom	Firm strategy in terms of technology, tech transfer, transfer of know-how, management, labor	Interviews with decision-makers, company reports, newspaper reports, expert opinions, interviews with labor leaders
State Strategy	Approach to attracting capital: Strategic/Crony Capitalist/ Submissive	State positioning with respect to World market, international trade,	Interviews with officials from ministries and governmental agencies, government

		competing states, GVC	reports, newspaper reports, expert opinion, labor leaders
State Strategy	Approach to tech upgrading: Strategic/Passive/Submissive	State positioning with respect to Technological Change, international trade, competing states, GVC	Interviews with officials from ministries and governmental agencies, government reports, newspaper reports, expert opinion, labor leaders
Labor Strategy	Approach to tech upgrading: Strategic/Passive/ Submissive	Labor positioning with respect to Technological Change	Interviews with labor leaders, DIEESE, newspaper reports, expert opinions
Labor Strategy	Level of Organization and Strength: Strong/Weak	Labor positioning with respect to Unionization and Union activities	Interviews with labor leaders, DIEESE, newspaper reports, expert opinions
Local capital Strategy	Approach to FDI Strategic/Crony Capitalist/ Submissive	Participation in MNEs' supply-chain, Existence of partnership such as Joint-Ventures	Interviews with decision-makers, company reports, newspaper reports, expert opinions, interviews with labor leaders
Local capital Strategy	Approach to State Partnership/Passive/Libertarian	Local capital positioning with respect to alliance with the state	Interviews with decision-makers, company reports, newspaper

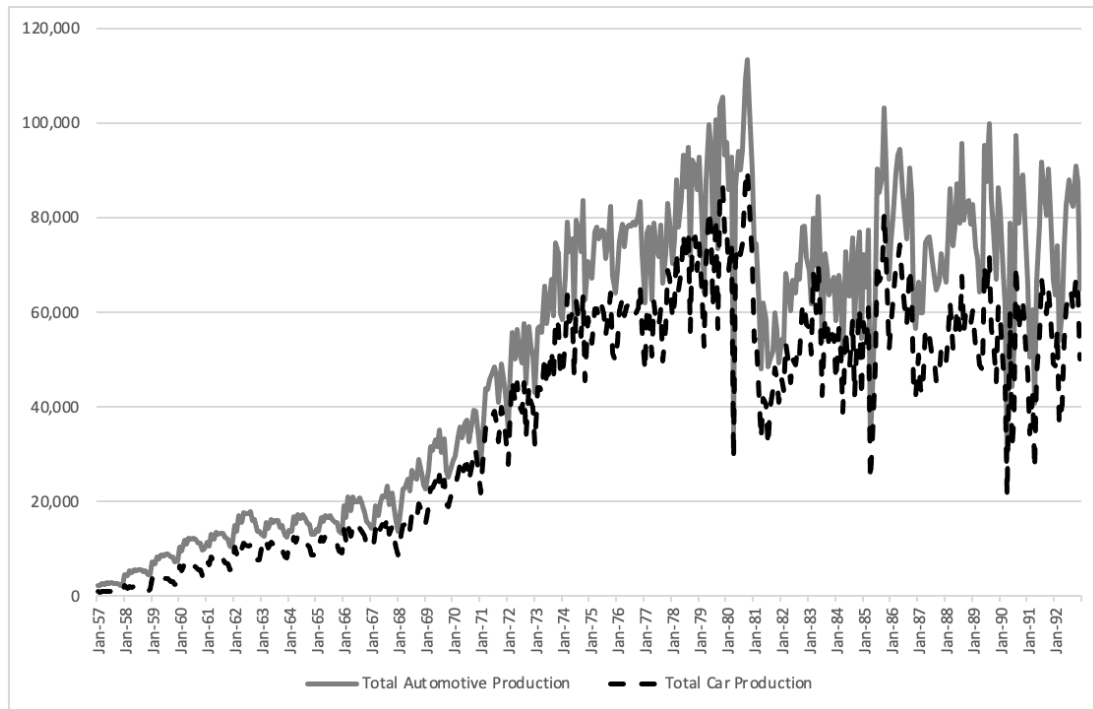
			reports, expert opinions, interviews with labor leaders
Local capital Strategy	Approach to Labor Partnership/Passive/Oppressive	Local capital positioning with respect to Labor	Interviews with decision-makers, company reports, newspaper reports, expert opinions, interviews with labor leaders

5.2. Automotive Sectoral Chamber

In the early 1990s the automotive sector in Brazil entered its deepest crisis since the beginning of automotive industrialization in the 1950s. In April 1990 production levels went below values not seen since 1969 (Figure 5.2). Moreover, the state was in a crisis of its own, and therefore incapable of enforcing top-down solutions. In this scenario the Automotive Sectoral Chamber emerged as a conciliatory forum bringing together labor, capital, and the state, to coordinate compromises and solutions for the automotive crisis. The agreements reached at the Automotive Sectoral Chamber were also critical to promote technological change in the sector. This was the case because one of the main verdicts about the roots of the crisis had to do with the lower quality of the automobiles produced in Brazil.

Levels of employment in the automakers were also in decline. From 133 thousand employees in 1980 it declined to 105 thousand in 1992. This situation stimulated a revision in the way the unions were pushing forward their demands.

Figure 5.2. — Total Automotive Production in Brazil (1957-1992)



Source: ANFAVEA, 2022.

5.2.1. Tripartite Dynamics: The Empowerment of Workers in Industrial Policy

To tell the story of the Automotive Sectoral Chamber it is critical to provide some background on the Brazil's broader industrial and political transformations in the 1980s. This decade was marked by the country's transition from a military dictatorship (1964-1985) to a democratic regime, a shift that deeply influenced both economic policy and labor relations. The process of *abertura* (political opening) began in the late 1970s, gradually loosening authoritarian control and allowing civil society, including trade unions, to play a more prominent role in public discourse. Simultaneously, Brazil faced severe economic challenges throughout the 1980s, including hyperinflation, foreign debt crises, and stagnant industrial growth. This context jeopardized the

argument of technical managerial competence used by the military to legitimize their rule and prompted debates over the direction of industrial policy.

It was within this context of political liberalization and economic instability that the foundations for collaborative mechanisms like the Automotive Sectoral Chamber were laid. The emergence of strong, organized labor movements—particularly in the automotive sector—combined with the recognition by the newly instated democratic government of the need for more inclusive policymaking, set the stage for tripartite negotiations involving the state, employers, and workers. In general, reliance on tripartite Sectoral Chambers was a defining characteristic of the first three administrations following the end of the military dictatorship in 1985: José Sarney (1985–1990), Fernando Collor (1990–1992), and Itamar Franco (1992–1994). The tripartite dynamics that unfolded in this period would prove crucial in shaping the institutional frameworks that governed Brazil’s automotive industry in the decades to follow.

The rise of labor unions in Brazil's automotive sector during the late 20th century played a pivotal role in shaping both industrial policy and broader socio-political dynamics. This period, marked by rapid industrial growth and political turbulence under military rule, saw the emergence of powerful trade unions that pushed not only for better wages and working conditions but also for democratization and social justice. Tellingly, the main leader of the workers’ movement in the 1980s, Luiz Inácio Lula da Silva, was not only a metalworker in the automotive industry but would later become the Brazilian president with the most terms in the twenty-first century up to the current decade²⁸.

²⁸ Lula served the following presidential terms until 2026: 2003-2006; 2007-2010; 2023-2026.

Workers' strikes in the late 1970s and early 1980s, particularly in São Bernardo do Campo, São Paulo, were instrumental in challenging authoritarian policies and fostering ad hoc, still informal tripartite negotiations among unions, employers, and the government. The negotiations to address these strikes, though conducted under an authoritarian framework, set a precedent for future tripartite dialogues that, once Brazil's democracy was restored, would deeply influence the country's industrial policies, linking economic development with labor rights.

In an interview for this research, Vicente Paulo da Silva, a labor leader currently serving as a congressman and known as Vicentinho, shared insights on how the unions and the broader workers' movement began pushing not only for improved labor conditions but also took on an increasingly active role in influencing public policies for the automotive sector. As a metalworker at a Mercedes-Benz factory in São Bernardo do Campo, Vicentinho developed a relevant involvement with the São Bernardo do Campo Metalworkers' Union since 1977, becoming its vice-president in 1981 and then its president from 1987 to 1993. In 1993, the São Bernardo do Campo Metalworkers' Union was transformed into the ABC Metalworkers' Union, expanding its reach to cover a broader region of São Paulo's industrial heartland²⁹. Vicentinho was the first president of the ABC Metalworkers' Union before, in the same year of 1994, becoming president of CUT (Central Única dos Trabalhadores), which is the largest trade union federation in Brazil, representing about one-third of Brazilian workers at their highest level of labor representation.

²⁹ The “B” in ABC stands for São “Bernardo” do Campo, while “A” stands for Santo “André”, and “C” for São “Caetano” do Sul. The ABC region is historically recognized as the first center of the automotive industry in Brazil. São Bernardo do Campo is the largest city in the region, which also includes four smaller municipalities not represented in the acronym, which focuses on the three cities with saints' names. Due to the concentrated presence of large-scale industries, the region became the cradle of the contemporary labor movement in Brazil. It was there that major workers' strikes took place in the late 1970s and early 1980s, which, along with the rise of the Workers' Party (PT) and the Unified Workers' Central (CUT) in the early 1980s, exerted significant pressure on Brazil's military dictatorship, contributing to its end in 1985.

In the process of expanding the unions' reach to advocate for broader labor rights, Vicentinho and other working-class leaders from his generation advocated for a new unionism, which aimed at a democratic, bottom-up organization with a broader focus on various aspects of workers' lives. After all, "the worker lives on salary," he says, but also on "culture, leisure, a decent living, the environment, health, and so on [...]" Moreover, our struggles from 1978 until 1988, with the arrival of the 1988 Constitution of Brazil, were instruments of awareness for the working class."³⁰

Indeed, Brazil's 1988 Constitution was written from scratch with the direct participation of representatives from the working class, many of whom were elected to the Brazilian Constituent Assembly through the Workers' Party (PT). One of these representatives was Luiz Inácio Lula da Silva himself. This landmark constitutional process marked a significant shift in Brazilian politics, empowering previously marginalized groups to have a voice in shaping the country's future. The return to multiparty politics created space for working-class representatives to play a more influential role in the Constituent Assembly. This was part of a broader movement toward democratization and social justice in Brazil following the end of the military dictatorship, a process that would continue in the years after the promulgation of the new constitution³¹.

The emergence of innovative governance structures at the sectoral level reflected this spirit of the times in the late 1980s and early 1990s. One such notable development was the creation of sectoral chambers, which represented a novel approach to addressing economic challenges through collaborative efforts between the state, employers, and labor unions. First as Minister of Labor in

³⁰ Vicente Paulo da Silva, interview with the author, February 4, 2025.

³¹ Brazil's 1988 Constitution is one of the most extensive and complex constitutions in the world, encompassing a broad range of social, political, and economic provisions. Since its independence in 1822, Brazil has had seven Constitutions: those of 1824, 1891, 1934, 1937, 1946, 1967, and 1988. The transitions from one constitution to another are marked by moments of institutional rupture that create the need to establish a new political, economic, and social order for the country.

the Sarney government and later as Secretary of the Economy during the Collor government, Dorothea Werneck had a leading role in the creation and the conduction of sectoral chambers from the side of the state. Among all sectoral chambers, the one for the automotive sector achieved the highest recognition and yielded the most significant results.

In an interview for this research, former Minister Werneck recollected the challenges faced by the working groups within the sectoral chambers, which had to focus on strategies to enhance productivity and competitiveness in the context of the sweeping international trade reforms implemented under the Collor administration. The central challenge was how to transition domestic companies—previously operating under a highly protectionist system characterized by stringent import controls and trade barriers—into a competitive landscape where they had to rapidly adapt to an open market, contend with imported products, and simultaneously develop export capabilities.

In order to coordinate this transition, each sectoral chamber was designed to encompass the entire production chain of its respective industry. Taking the automotive sector as an example, its scope extended beyond auto parts, steel, and core manufacturing activities to include areas such as vehicle commercialization, car sales, and financial institutions involved in automotive financing, including consortiums for vehicle purchases. In essence, any aspect related to the automotive market was incorporated, ensuring a comprehensive approach to fostering industrial competitiveness in a newly liberalized economic environment.

Remarkably, notwithstanding the turbulent and controversial trade liberalization promoted by President Collor, we observe here a critical juncture that introduces a new form of working-class incorporation — one that aligns with the pivotal moments that reshape key societal parameters and have protracted reverberations, as analyzed by Collier and Collier (2002). At this point there is a

renewed, enduring, and at least partially effective effort by the state to legitimize and work together with an institutionalized labor movement. Following the collapse of an authoritarian regime, during which such a movement had been outright suppressed, this new incorporation was made possible, in part, by two contradictory movements: the weakness of the Collor administration across various areas of its own government, which created openings for political actors advocating for this incorporation, and the newfound strength of legitimate worker representation in Congress and other bodies shaping Brazilian institutions. After all, it was an amendment proposed by a PT congressman, Aloizio Mercadante of São Paulo³², that formally included worker representatives in the negotiations, thereby giving the Sectoral Chamber the tripartite character for which it would later become known.

5.2.2. Meso-corporatism: industry-specific deals for the automotive sector

The sectoral chambers are widely regarded as a case of European style meso-corporatism brought to the Brazilian context (Martin, 1996; Zauli, 1997). Tripartite-arrangements between state, employers' associations, and unions that moved from a national (macro) focus to an industry-specific (meso) focus. Beyond the industry-specific focus, the main novelty was the active participation of labor in the arrangements to rescue the economic activity. Important unions that were affiliated to CUT, the largest trade union federation in Brazil, represented labor interests in the talks. The main one, in the case of the Automotive Sectoral Chamber, being the São Bernardo do Campo

³² Following his tenure in Congress, first in the Chamber of Deputies and later in the Senate, Mercadante served as a minister in a handful of key portfolios across successive Workers' Party administrations. Most recently, he served as president of the BNDES during President Lula's third term, from 2023 to 2026.

Metalworkers' Union, which was in the process of becoming the ABC Metalworkers' Union, both of which were then presided over by Vicentinho.

Behind the novelty that effective tripartite sectoral chambers were, there were two important events in 1991 that provided support for its success. First, legislation was approved in Congress including the unions in the sectoral chambers. Second, a significant national event occurred with the closure of a Ford factory, which established a foundation for tripartite negotiations. Beyond its substantial economic implications, the closure of the Ford factory had a symbolic impact and served as a catalyst for broader political dialogue and cooperation. Although these chambers had been established since 1988, this event marked the first instance in which they became central actors in relevant political processes.

As background for the second event cited above, President Collor's decision to liberalize the Brazilian economy by reducing import tariffs and other protectionist measures redefined the perception of the significance of public policies and government intervention in the automotive sector. Within the context of an administration focused on facilitating access to globally competitive products and enhancing local productivity through economic liberalization – while disregarding industrial policy –, it became evident that this was a critical juncture necessitating a broader coalition to negotiate the terms of the free trade measures that were transforming Brazil's industrial landscape. Upon the inclusion of unions in the automotive sectoral chamber, their representatives arrived with a perspective on the multifaceted factors contributing to Ford's factory closure that was oriented towards collaborative efforts with business executives and the State to address the various issues that led to the shutdown. Moreover, the union leaders demonstrated the capacity to work cooperatively while ensuring the protection of the direct interests of the working class.

During this period, the establishment and enactment of the tripartite initiative involving workers, employers, and the government were instrumental in addressing the automotive industry's crisis in the early 1990s, a crisis that threatened to be exacerbated by the substitution of domestic production with imports. By facilitating unprecedented collaboration among these three stakeholders, the initiative aimed to stabilize the automotive sector and preserve workers' rights within the context of market liberalization and increasing global competition. This collaborative effort worked as a concerted attempt to safeguard domestic production and employment while adapting to the new economic landscape within a short period.

One of the key outcomes of this tripartite cooperation was the development of comprehensive strategies to modernize production facilities and upskill the workforce. These strategies encompassed investments in advanced manufacturing technologies, the introduction of lean production methods, and the establishment of training programs to equip workers with the skills needed to operate in a more technologically advanced environment. The government's role in this process was crucial, as it provided policy support, financial incentives, and regulatory frameworks that encouraged innovation and investment in the domestic automotive sector while ensuring that workers' rights and interests were protected throughout the industry's transformation.

Technological upgrading is fundamental for the development of countries and their populations. In the early 1990s, there was a consensus that technological change was necessary in the Brazilian automotive industry. The quality of the automobiles produced in Brazil consistently lagged behind those offered in Western Europe, Japan, and the United States. This change occurred through firms with significant impetus from the State and the workers. While almost all of these firms were MNEs, they had been operating with considerable embeddedness in the Brazilian market.

Furthermore, although it was an oligopolized market, in the 1990s Brazil was signaling its willingness to welcome new foreign entrants to its automotive industry, a movement that somewhat increased competition in the market and served as an incentive for upgrading investments by the established MNEs.

Considering that different societal groups have partially conflicting preferences, inclusive development often occurs through political processes that are capable of incorporating and forming cross-class coalitions. These coalitions utilize and foster opportunities created by periods of technological change to enhance the country's position in the global economy through improving the integration of lower classes in the domestic economy. This common ground established between lower and upper classes was a distinctive feature of the Automotive Sectoral Chamber.

Technological upgrading in the Brazilian automotive industry during the 1990s commenced as a response to the quality disparity in relation to the products the same firms were manufacturing abroad. The necessity for technological advancement was essential not only to enhance Brazil's competitiveness in the global market but also to provide superior products in the domestic market. Notably, the latter priority consistently maintained precedence.

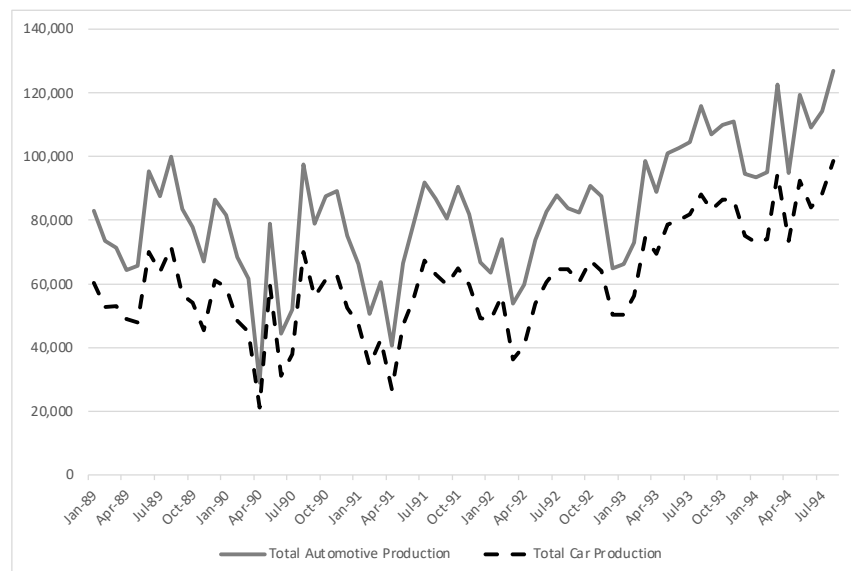
Established as a means to strategize a response to a broad policy shift, the Automotive Sectoral Chamber emerged as a unique platform that facilitated inclusive development by fostering cross-class coalitions. This collaborative approach enabled the integration of diverse societal groups, encompassing both lower and upper classes, in the pursuit of technological advancement and improved practices in the factories. By aligning the interests of various stakeholders, Brazil was able to capitalize on the opportunities presented by a highly controversial, contradictory, and abrupt

policy shift, ultimately improving its position in the global automotive economy while simultaneously enhancing the integration of the lower classes into the domestic economic landscape.

It is imperative to note that the assessment of the transformation in the 1990s as having improved Brazil's position in the global automotive economy is solely relative. This relativity is in comparison to the outcomes experienced by many other industries that faced the same policy shift towards trade liberalization and subsequently suffered severe consequences. Concurrently, the Brazilian automotive sector navigated the policy shift, emerging stronger, larger, and more diversified – albeit exacerbating the characteristic of being increasingly controlled by foreign companies.

As for the Automotive Sectoral Chamber, it successfully negotiated significant agreements, including wage increases, job stability, and reduced vehicle prices, which had a clear impact on generating new employment opportunities and increasing production.

Figure 5.3. – Total Automotive Production in Brazil (1989-1994)



Source: ANFAVEA, 2022.

The recovery that commenced in mid-1991 demonstrates this phenomenon. The production bounced back quickly, with output more than doubling between January 1992 and mid-1994 (Figure 5.3.).

5.3. Brazilian Automotive Regime

In 1994 the sectoral chamber waned as a result of a transition of power that would see the emergence of a new administration. Already in 1995, in the end of the first year of the first term of the new Fernando Henrique Cardoso administration, the new Brazilian Automotive Regime was put in place.

The Brazilian Automotive Regime represented a departure from the previous experience with the Automotive Sectoral Chamber. It was negotiated between the government and the employers' associations with much more governmental sway. The context was one in which the economic stabilization plan that brought about the new currency, the Real, was the priority above all sectoral policies. In particular, there was a "rupture" in the process of valorization of the sector's employees (Vigevani and Veiga, 1997, 342-343). It also had a distinctive international character, as the negotiations involved the Mercosur partners (Uruguay, Paraguay, and Argentina), mainly Argentina, and also involved developed economies within the newly created World Trade Organization (WTO).

The policy was mainly focused on attracting foreign direct investment (FDI) and on redistributing this FDI to different regions in Brazil. To achieve the first goal, it basically used import-substitution strategies of raising import tariffs to 70% while allowing automakers producing in the

country to import vehicles with 35% tariffs. The second goal was fostered by differential tax regimes within the country that provided tax benefits to those who directed FDI to specific states outside the traditional route of investments in this sector.

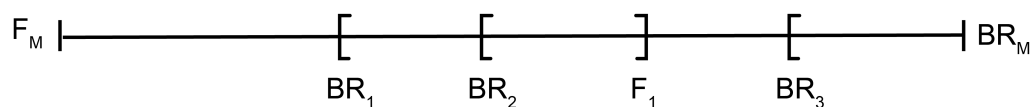
The French Renault and PSA Peugeot-Citroën, the Japanese Honda, Mitsubishi and Toyota, and the German Mercedes-Benz, all started car production in the late 1990s, early 2000s, stimulated by this regime and the recent stabilization of the Brazilian economy that left behind years of high inflation. From this point of view, the policy was very successful in attracting FDI. In terms of international context, from 1993 until 2001, FDI flows worldwide presented a very strong growth. Particularly towards the end of the 1990s, the scenario created was one matching preferences and appropriate conditions for cross-border Mergers and Acquisitions (M&As). According to Del Gatto (2017), “two factors played a key role in the reasons for this strong expansion. First, large MNEs were increasingly joined by smaller firms that became MNEs; second, the collapse of global bipolarism significantly increased the number of countries of both origin and destination. Furthermore, countries became aware of the economic benefits associated with FDI: governments favored the removal of obstacles to FDI flows, both inward and outward, and promoted deregulation and liberalization policies in various sectors” (p. 42).

At the time, Brazil had to simultaneously compete and negotiate with Argentina for this new FDI. They had just created a common market for their car productions, and the distribution of automaker’s plants between the two countries was a matter of competition and institutional arrangements. If Brazil could not jeopardize its relationship with Argentina while pushing forward with its policy to attract FDI, there were also other countries complaining about the Brazilian policy in the newly founded WTO. By exploring how MNE’s investment pattern is determined by

industrial policies in the home and in the host countries I apply the logic of two-level games from Robert Putnam (1988) at the firm-level and at the country-level.

At the firm-level, there is the case of the Japanese investment that took place after Japan being one of the countries that complained at the WTO about the Brazilian Automotive Regime. A similar situation took place with the French investment that followed a complaint by the European Union (EU). Brazilian negotiations at the WTO demanded win-sets that allowed for an overlap with Japanese and EU demands. The first level of the game was played at home between the stakeholders of the Brazilian Automotive Regime. Mainly the Executive and the Legislative on the governmental side, and the automakers with their employer's associations on the other side. Meanwhile, the second level was played between Brazilian negotiators and foreign negotiators at the WTO, and also regionally with Argentina. There were multiple games being played. Figure 5.4 helps to analyze the win-sets. BRM and FM represent the maximum outcomes for Brazil and Foreign country respectively. While BR1 and F1 represent the minimum outcomes that could be agreed upon. Let's say that F represents Argentina, and the Brazilian Automotive Regime could be written with language that allowed for outcomes BR1 and BR2 but not BR3 for an agreement with Argentina be successful.

Figure 5.4. —



Alternatively, in the discussions with the EU, a position BR1 would result in a larger area of win-set overlap with the EU's position F1, but the Brazilian Automotive Regime represented a move in the direction of BRM. Therefore, Brazil had to fine-tune negotiations and present outcome BR2 which had a smaller area of overlap, but had one, nonetheless.

The result of these negotiation games was distinctly favorable to Brazil. The country avoided the opening of a panel process for settling the dispute at the WTO while it maintained the negotiations with Argentina for the automotive regime of Mercosur. Meanwhile, Brazil consolidated its goal of attracting various new automotive foreign direct investments to the country. And that was achieved in an international context hostile to sectoral protectionist policies, such as the one Brazil was pushing forward.

Nonetheless, curiously there is a conservative-leaning ideological transition from the tripartite sectoral chamber at play in this period of the Brazilian Automotive Regime. Although the previous Collor administration was, on paper, certainly much more politically conservative and economically neoliberal than the following Cardoso administration, the fact is that the political turbulence and fragility of Collor's coalition was such that not only he would be impeached and substituted by a Vice-President, Itamar Franco, who had ideas quite different from those that animated Collor, but it was also a fact that there were porosity and apertures in Collor's team in various issue areas.

In the automotive sectoral chambers, for instance, the State was primarily represented by Dorothea Werneck, a pragmatic technocrat. A career public servant affiliated to IPEA, Werneck served under four administrations (from Sarney to Cardoso), and embodied the "pragmatic" perspective also during the rise of the coalition supporting Cardoso, advocating for the preservation

of the internal structure through sectoral agreements. The tension is aptly illustrated by the public criticism articulated by Gustavo Franco, who later became President of the Central Bank, against the tripartite nature of the initiative. Franco viewed tripartite agreements as inefficiencies or "distortions."

The Cardoso coalition, although formally rooted in Social-Democratic principles, experienced a significant neoliberal shift. Domestically, this shift was driven by the structural influence of the PFL (Liberal Front Party) within the governing alliance, as evidenced by the tranquil authority of Vice-President Marco Maciel and the congressional influence of Antônio Carlos Magalhães (ACM), which consistently pushed the coalition towards a conservative-leaning position mostly focused on transferring public assets to private managers. Internationally, this shift reflected a broader trend among Social-Democratic parties in the 1990s, many of which adopted market-oriented policies under the influence of the Washington Consensus and the global consolidation of neoliberal economic thought. The overall environment at that time was characterized by the widespread dissemination of unfettered liberal ideas in the economic sphere, as if no political economic alternative was possible (Fukuyama, 1992), while international conflicts were increasingly framed along purely non-economic lines (Huntington, 1996).

For Social-Democratic parties, the underlying trend of embracing unfettered liberal ideas in the economic sphere was arguably only partially counterbalanced by the eventual emergence of the so-called Third Way, most prominently articulated by Anthony Giddens (1998), who sought to reconcile social-democratic objectives with the prevailing market-oriented and capital-dominant neoliberal paradigm. Cardoso, for instance, actively engaged with this intellectual project, most

visibly at a 1999 Florence Summit hosted by Massimo D'Alema with Bill Clinton, Gerhard Schröder, Lionel Jospin, and Tony Blair.

However, the Third Way functioned more as an ex-post normative justification than as a substantive restraint. For some observers, this amounted to little more than a concern with finding theoretical formulations that could reconcile the contradiction of political leaders with left-wing origins who, at the time, governed with practices associated with the center-right. In the Brazilian context, the forces surrounding it ultimately moderated but did not reverse the coalition's deeper neoliberal trajectory. The outcome was that the "neoliberal" force prevailed and the Sectoral Chambers were dismantled in favor of market-driven dynamics, with labor participation subsumed and deliberate industrial policy avoided.

Notably, during this period, Brazil began to experience a substantial trade deficit in automotive parts and components, while the situation regarding the export of finished vehicles did not show sustainable improvement. These exports remained unpredictable, primarily functioning, for most automakers, as a 'pressure relief valve' when the domestic market faces hardship.

5.4. Lula's first two terms in power (2003-2010)

The Cardoso administration was followed by the ascension of the Workers' Party to power. Luiz Inácio Lula da Silva's presidency was inaugurated on January 1st, 2003. Not only was Lula the first blue-collar worker elected president, but he was also a former metalworker of the automotive industry who presided over the largest union of the sector, the São Bernardo Metalworkers Union. He was prepared to know the sector very well. Although there was no comprehensive policy for the

automotive sector during his presidency, there is a long list of policies that provided incentives to the automakers, their supply-chain, and most importantly to consumers.

One of the main channels of public policy during this period was the national development bank, BNDES. The bank provides low interest rate loans to automotive manufacturers, incentivizes research and development, as well as exports. Over the period 2002 to 2011 the amount destined by BNDES to the automotive sector was R\$51.6 billions, or 6% of total BNDES operations on average. In 2005 and 2006 around 10% of the development bank's resources was directed to the automotive sector. Most of the loans to carmakers in this period were directed to the modernization and launching of new vehicles rather than to the expansion of production as the productive capacity was still beyond demand levels (Barros and Pedro, 2012). Table 5.3 presents a distribution of these values in the period 2002-2011.

Table 5.3 – BNDES expenditures with the automotive sector

Year	Loans in 2011 values (R\$ millions)	% of total BNDES loans
2002	2,88	3.90%
2003	4,267	7.92%
2004	3,784	6.47%
2005	6,543	10.04%
2006	7,07	10.11%
2007	3,976	4.72%
2008	5,368	5.07%
2009	6,786	4.34%
2010	6,284	3.44%
2011	4,659	3.35%

Source: BNDES

There are many channels of financing provided by BNDES to the automotive sector. In 2006 two lines of credit for research, development and innovation (RD&I) were created. In 2007 support

to innovation became one of the main priorities of the bank according to its strategic directives. In the same year, the Automotive Engineering Support Program was created. Two years later the program would increase to embrace other sectors of the economy and was renamed Proengenharia (Proengineering). From 2007 to 2012 R\$1.3 billion were channeled to the automotive sector just by these two programs. Moreover, a bank product called Finem channeled almost R\$10 billion to the sector between 2002 and 2011 (Barros and Pedro, 2012).

Throughout 2007-2008 the global financial crisis brought panic to lenders. Worldwide, that “financial and economic crisis was associated with a decline in global FDI flows, particularly M&A flows” (Del Gatto, 2017, 45). In that context, the BNDES was instructed to step in with the Investment Support Program (PSI). The program was crucial for the automotive sector to keep its investments afloat. In terms of international trade, through BNDES Exim, the bank supports exports by the sector, which is one of the sector’s main vulnerabilities. Finally, the sector is also sustained by loans that BNDES directs to those who want to buy trucks and buses. Among other alternatives, the main funding for this purpose, Finame, provided almost R\$138 billions in the 2003-2011 period.

Another relevant measure taken by the second Lula administration was to extend the effects of the regional development aspects of Cardoso’s Brazilian Automotive Regime. With the extension, new investments were channeled to less developed regions in Brazil. The case of the highest success was Stellantis’s Jeep which inaugurated a very prosperous factory in Pernambuco in 2015. It was also in the first year of Lula’s presidency, 2003, that global automotive firms manufacturing in Brazil finally saw an advantage in adopting flex-fuel vehicle (FFV) technology. Volkswagen’s ‘Gol Power 1.6 Total Flex’ became Brazil’s first flex-fuel vehicle, capable of running on ethanol, gasoline, or any blend of the two. Just a few years later, in 2005, Volkswagen introduced the ‘Gol 1.0 flex-fuel’, the

first 1.0-liter engine vehicle in the country to offer this technology. At the time, 1.0-liter cars were synonymous with small, affordable models, making this innovation crucial in democratizing flex-fuel technology. This move ultimately led to the widespread adoption of flex-fuel vehicles across Brazil, with nearly all automakers in the country incorporating the technology into their offerings.

The flex-fuel engine, which can run on any mixture of ethanol and gasoline, promotes the use of ethanol—a renewable energy source with a lower carbon footprint than gasoline. For this reason, it receives government incentives, both for its environmental benefits and for its original purpose of enhancing Brazil’s energy security through diversification. As this technological upgrade aligned with existing policies that had been maturing over time—such as targeted tax benefits, support for the sugar-energy industry³³, and the national expansion of fuel infrastructure—it proceeded with minimal apparent political friction at that specific moment.

However, while the adoption of flex-fuel technology in the 2000s appeared seamless, it was, in fact, the result of a long-term evolution that involved struggles and the necessary inclusion of actors from the lower classes, whose participation helped break the stalemate within the upper class in a progressive manner. While its most obvious roots lay in the Proálcool program—launched in 1975 in response to the global oil crisis—its development and implementation were also shaped by the influence of political leaders committed to social inclusion, some of whom had working-class backgrounds themselves. From the 1990s onward, and especially with the first Workers’ Party (PT) administration at the federal level in 2003, these leaders played a key role in advancing the flex-fuel

³³ The sugar-energy industry, referred by the term ‘sucroalcooleiro’ in Brazil, encompasses the entire production chain related to sugar and ethanol, including sugarcane cultivation, sugar production, ethanol distillation, and bioenergy generation.

transition, as it generated broad benefits across various sectors in Brazil—not to mention its contribution to sustainability.

5.4.1. Ethanol and bioenergy diplomacy

Probably one of the most relevant efforts pushed forward by the two first Lula administrations (2003-2010) in the international area regarding an industry critically connected to the automotive sector was what Dalgaard (2017) calls Brazil's energy statecraft. These efforts materialized in the form of Brazil's international push for biofuel expansion, both bilaterally and multilaterally. While establishing causal strategic intent in international relations research, particularly within the domains of economic statecraft and geoeconomics, often proves challenging, the international promotion of biofuel expansion by Brazil during the initial two Lula administrations offers an opportunity to systematically trace the connections between "intentions, actions/tools, and outcomes"³⁴.

The main goal of Brazil's diplomatic efforts was ambitious: to develop a formal international commodity market for major biofuel transactions with standardized pricing, akin to the long-established global oil trade. Central to this ambition was promoting the use and international trade of ethanol as a standardized commodity, leveraging Brazil's competitive advantage in both

³⁴ See Breslin and Nesadurai (2023) for a recent overview of economic statecraft literature, where the authors point out that more frequently than when it comes from other states, "state intent behind commercial action for geopolitical reasons is more often assumed when that investment comes from China" and that "in the Chinese case, this causal link is often assumed rather than found and proven" (933). Arguably, this condition is affected by the centripetal force of a "preternatural fear of China, which now serves as the unifying threat in place of the erstwhile Soviet Union" (Wade, 2013, 33). In turn, due to this context, the literature – both academic and journalistic – tends to highlight economic statecraft as a tool to increase either hard power often in a zero-sum way or any form of nefarious soft power, which is hardly the case for most of what China and other relevant powers do, for economic statecraft more generally, or in this particular case of economic statecraft by Brazil. Nevertheless, the latter was also strongly resisted.

production and technological development in this area. This included showcasing and advocating for the adoption of automotive engines powered by ethanol and other biofuels—technology that powers nearly the entire Brazilian fleet by the 2020s, including cars and trucks, but remains limited in global use. These are not only technologies first developed in Brazil, but also those for which most ongoing research and refinement still take place in the country. As Dalgaard (2017) notes, this was a ‘soft power’³⁵ strategy grounded in using Brazil’s ethanol success to inspire emulation rather than impose compliance. The diplomatic efforts of Lula’s administration, in this view, sought to “get others to want what you want through imitation, rather than get others to do what you want through bribes or coercion” (42).

A strategic move that has placed strong emphasis on Africa, with Embrapa — Brazil’s state-owned non-profit agricultural research agency — playing a central role. In 2008, it established a regional office in Accra, Ghana, inaugurated by President Lula. The office focuses on sharing agricultural technologies and fostering sustainable development, energy security, and institutional ties across the continent. Embrapa also helps connect Brazilian firms and financial institutions with African governments. Backed by public funding and incentives from agencies like BNDES and ABC, several Brazilian companies have actively pursued biofuel partnerships in Africa, illustrating a coordinated public-private effort to promote South-South technological exchange. However, as these initiatives are fostered by the Brazilian government, they are shaped by variations in the composition of executive coalitions. Although Brazil has been able to establish enduring state policies that persist

³⁵ For a comprehensive discussion of soft power, see Nye (2004). In any case, it can be argued that soft power holds a disproportionately significant role in Brazil’s strategic considerations and perceptions, particularly when compared to hard power.

across different administrations, this has not yet become one of them — at least so far. Accordingly, this approach lost emphasis in the years in which the Workers' Party was not in power.

Anecdotally, in May 2025, Brazil hosted the Second Brazil–Africa Dialogue on Food Security, the Fight Against Hunger, and Rural Development, reestablishing the interest in this agenda as defended by the Workers' Party. The event brought together more than 40 delegations from African countries, along with representatives from research institutions, multilateral development banks, other international organizations, family farming cooperatives, and private sector organizations. It was the first such meeting since 2010, the final year of Lula's second term in office. This second edition thus revives a broad framework of cooperation policies directed toward African countries—initiatives that had been sidelined or even abandoned during the period between Lula's second and third terms, particularly from 2016 to 2022, years that constitute a real gap in interest and initiatives toward Africa³⁶. Tellingly, the Dialogue also encompasses partnerships aimed at developing the use and production of biofuels in African countries. Accordingly, the revival of this initiative after several years of inactivity exemplifies how different approaches to international cooperation and strategies to secure Brazilian interests are impacted by shifts in the composition of executive coalitions in Brazil. Anticipating this trend, the reactivation of Embrapa's activities in Africa took place early in Lula's third term, when the government also decided to establish a cooperation office dedicated to the continent, located within the Brazilian Embassy in the capital of Ethiopia, Addis Ababa, where the headquarters of the African Union are also located.

³⁶ Although he once stated in Johannesburg that, for Brazil, seeking closer ties with Africa were “a permanent priority,” the short-lived presidency of Temer (2016–2018) saw little practical action in that regard (G1, 2018). Bolsonaro (2019–2022), in turn, did not visit Africa even once, making his administration arguably the least engaged with the continent among Brazil's democratically elected governments since 1961, when the Africa Division was created within the Ministry of Foreign Affairs (Itamaraty). In some respects, the Bolsonaro administration remained more relatively detached from Africa than even certain periods of Brazil's military dictatorship (1964–1985).

5.5. Innovate-Auto

Inovar-Auto (or Innovate-Auto) was at the same time a comprehensive policy of its own and the culmination of a series of other policies targeting automotive development that were put in place over the 2000s. While the eight years of Lula administrations from 2003 to 2010 did not conceive a comprehensive policy for the automotive sector there were various provisions and policies that participated in the build-up of Innovate-Auto. The core novelty of Innovate-Auto was the protectionist measures via selectively steering domestic taxes instead of tariffs, import taxes, or customs duties within an import-substitution framework that established local content requirements, thus increasing the tax costs of foreign producers.

The first piece of legislation related to Innovate-Auto was Provisional Measure 540 from August 2, 2011. It aimed at deterring imports after December. The second piece of legislation was Provisional Measure 563 from April 3, 2012, which brought about Innovate-Auto with more detailed language regarding local content requirements and more effective to deter imports. Following Provisional Measure 563, Innovate-Auto was converted into Law, and on October 3, 2012 it became fully effective. Its stated objective was to “support technological development, innovation, safety, environmental protection, energy efficiency, and the quality of automobiles, trucks, buses, and auto parts” (Brasil, 2012).

On the part of the state, for then Minister of Development, Industry, and International Trade, Fernando Pimentel, the background strategic interest was to “bring sophisticated cars to be manufactured in Brazil” within a 4 years window of what was perceived as the ultimate opportunity to do so, as the diagnostic by then was that automakers were reserving for Brazil only the popular

cheaper car segment, in a moment of shifting investment cycle³⁷, while more sophisticated cars would be assembled in Latin America only in Mexico due to the unique links, geographic and institutional, with the United States. As Pimentel formulated in an interview for this chapter, the problem of not counting on luxury cars being manufactured in Brazil, is that "the luxury car is what pulls the high technology, the electronics, the digital sophistication of the cars, that's what interested us," while, "in parallel with this, we also put national content" to make sure that "it wasn't enough bringing the car to assemble in Brazil." Therefore, it was about deterring imports, as demanded by associations of MNE-led local producers, but it was also about bringing more sophisticated – and expensive – automotive vehicles to Brazil with a particular interest on their technological content and potential spillovers. In general lines, technological advancement was what interested the government "because that's what matters", so the government acted to block the original strategy of the MNEs and managed to steer and reorient their business.

The specific maneuver was as follows: a 30-percentage-point increase in the IPI tax³⁸ for the automotive sector was immediately followed by the granting of tax credits of up to the same 30 percentage points of IPI to domestic producers, under the conditions outlined in the paragraphs above. Therefore, this 30-percentage-point differential would provide further advantages to local products over imports – which was the original request made by Anfavea and Sindipeças, the two

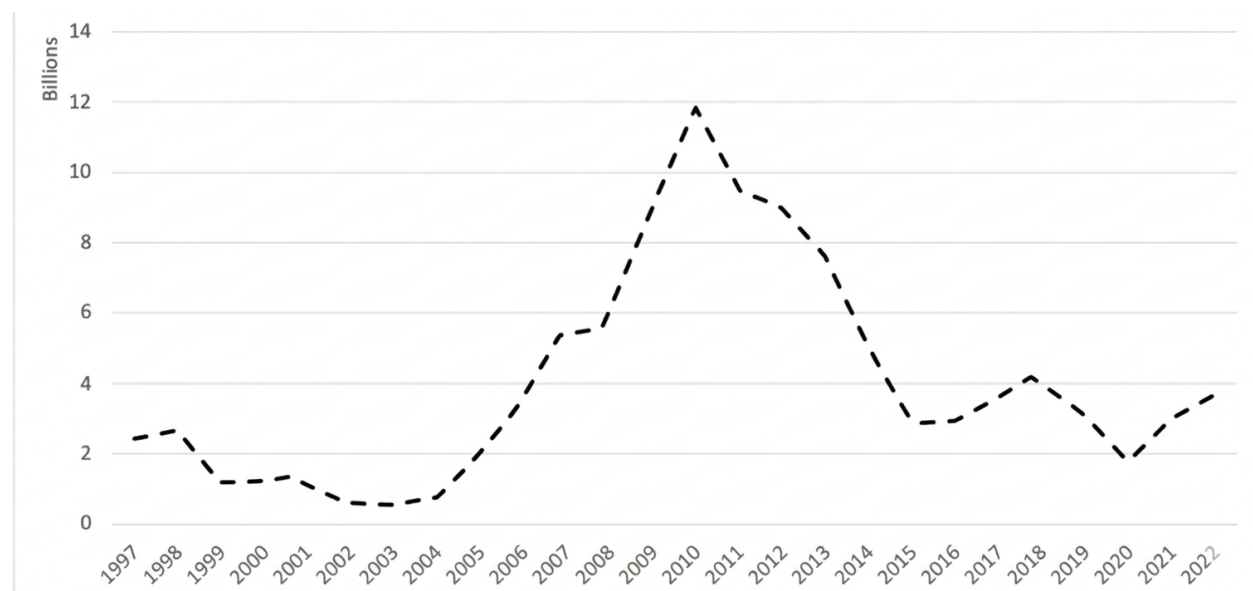
³⁷ Technically, the reference here is to the idea associated with Raymond Vernon's proposed pattern for several products: the international product life cycle, or IPCL (Vernon, 1966). From a policymaker's point of view, this is not only about paying attention to the temporal evolution of where different goods are produced and consumed, but also acknowledging that, in various cases, comparative advantages rather than static are dynamic, and thus they "can change dramatically over time," and "what a country once exported in large quantities, it may later mainly import" (Head, 2007, 48). Arguably, there are critical junctures where upgrading or degrading the relative position of a country's industry, such as the automotive, is more up for grabs, thus demanding focused policies, either to avoid degrading or to foster upgrading.

³⁸ IPI is a value-added tax on all industrialized products, consists of Brazil main federal tax directed specifically to industrial goods.

largest intermediary associations representing automotive firms producing in Brazil — alongside inducing more FDI.

Figure 5.5. shows two things. First that imports of passenger automotive vehicles peaked in 2011 and that Innovate-Auto was effective in diminishing the import levels since 2012. In this specific aspect Innovate-Auto was a policy put in place to counter a strong upward trend in car imports that started in 2006 and peaked in 2011 before Innovate-Auto's protectionist commands reversed the trend.

Figure 5.5. — Imports of passenger automotive vehicles (1997-2022)



Source: Comex Stat, 2023.

Most Local Content Requirements (LCR) in Brazil are in the automotive sector and, according to the Global Trade Alert database, Brazil is one of the most prominent users of LCRs in economic policy. From 2013 to 2017, Innovate-Auto was in place. This policy established LCRs that would be condemned by the WTO. The main goals of Innovate-Auto were: i) reducing/eliminating

the trade deficit in the Automotive industry; ii) generate incentives towards the production of modern (fuel-efficient and ecofriendly) vehicles. The overall goals are to increase the share of domestic value-added in the automotive sector by increasing both the produced volumes of cars and intermediate goods used by the automotive industry.

Beyond import-substitution strategies, innovate-Auto incentivized research and development, seeking to foster the densification of cooperation networks for innovation and socio-environmental sustainability. In the period 2013-2017 sixteen large-scale investments (with commitments of at least US\$190 million with expected job creation of at least 300 jobs) were announced.

Around these years, the global business columnist and associate editor at the Financial Times, Rana Foroohar, based in New York, where she has privileged access to Wall Street, compiled and presented substantial evidence showing how the financial sector has increasingly transformed into an end in itself. Arguably, with the growing hegemony of doctrines associated with shareholder value maximization, productive firms began to emulate banks and brokerage houses, while the financial sector gradually ceased to support the expansion of the productive spheres of society – industry, commerce, services, agriculture, and extraction – and instead specialized in schemes through which money generates more money without a meaningful connection to productive activity (Foroohar, 2016).

These shorter time horizons have become prevalent in the West, creating difficulties for both developed and developing countries. In significant ways, Inovar-Auto was an attempt to go against this current and induce medium- and longer-term investment horizons. For the sake of context, during the decades leading to this period between the 1980s and the 2010s, what was once a broader

conception of investment has increasingly been narrowed to an association with a discrepant pattern observed in Chinese financing, often described as “patient capital” — one that provides greater policy space to pursue counter-cyclical fiscal strategies and to foster genuine catching-up, upgrading, and broader development agendas that address longstanding structural constraints over the longer time horizons such strategies require (Kaplan, 2016; 2021). Moreover, by easing the Mundell–Fleming constraint linking exchange rate management, capital mobility, and monetary autonomy, patient capital carries important fiscal and financial implications, enabling developing countries to avoid the austerity pressures typically imposed by short-term capital seeking liquid rents.

Thus, the unorthodox tool underpinning Inovar-Auto emerged in a country where liquidity is queen³⁹, within a global context in which countries’ policy space has been increasingly constrained by GATT and WTO agreements. The strategy behind Inovar-Auto was to grant IPI tax reductions of up to 30 percent to accredited firms. To qualify, companies were required to allocate part of their expenditures within Mercosur and Mexico⁴⁰ and to carry out in Brazil at least three of the following activities, either directly or through third parties — except for item IV, which had to be undertaken directly by the firm itself: manufacturing and engineering infrastructure operations; investment in research, development, and innovation; expenditures on engineering, basic industrial technology, and supplier development; and (IV) the company’s adherence to the vehicle labeling program

³⁹ This would not be an issue if this preference was not associated with turning capital much more expensive for long-term investments; however, Keynes remarks that “the fetish of liquidity” is the more “anti-social” maxim of orthodox finance (1936, 136) remains accurate.

⁴⁰ In the case of Mexico, the situation was regulated separately through the new automotive agreement between Brazil and Mexico, which entered into force in March 2012, replacing a previous one that was expiring that same year. The agreement (re)established quotas for the volume of automotive imports between the two countries, which were also subject to rules of origin. Under these rules, the required level of local content in vehicles traded between the two countries was set at 30 percent in the first year, increased to 35 percent over the following three years, and reached 40 percent in the fifth year. Negotiating this agreement to keep the quotas and avoid a flooding of cars from Mexico was the first complicated task designated by President Rousseff to Fernando Pimentel during his time as Minister of Development, Industry, and International Trade, as Pimentel recollected in an interview for this chapter.

administered by the National Institute of Metrology, Quality, and Technology (Inmetro), except in the case of vehicles powered by compression-ignition piston engines (diesel or semi-diesel) (Brasil, 2012).

Brazil's interest rates are considered unrealistic, as they do not align with international interest rates when compared to various countries based on the most common criteria for determining interest rate levels. For instance, there is a significant asymmetry between real interest rates and the country's default risk when Brazil is compared to its peers, juxtaposing respective sovereign credit risks and real interest rates. In 2026, Brazil has the second-highest real interest rate in the world, having previously held the highest position for some time in 2025. Brazil is a dismal outlier in this regard, and this is simultaneously nonsensical and detrimental to development. Lamentably, the key explanation to such discrepancy is linked to the political force of rent-seekers, which over time are encompassing ever-larger sectors of society. Remarkably, counterintuitively, and perhaps surprisingly, a significant portion of the trade union high bureaucracy – including key segments linked to the PT –, once in power, became “‘financialized’ through occupying positions on the boards of pension funds and public banks,” thereby merging “their interests as a privileged social stratum⁴¹ with the accumulation cycle of financial capital” (Braga, 2017, 57). As they came to act as “administrators of capitalist investment in the country” (39), “the principal commitment of this group of unionists is to the liquidity and profitability of the funds’ financial assets” (42), thus serving largely not to transform but “to reproduce the current Brazilian development model” (43).

⁴¹ Privileged only in relative and circumstantial terms, since political-bureaucratic control does not “take the form of private ownership of capital” (Braga, 2017, 57), this is merely another facet of the precariousness that helps explain the country's erratic development.

Of course, Brazil is lucky to count on these large pension funds, especially with trade union leaders in preeminent positions on their boards, to maintain and create apertures conducive to development. Arguably, this setup brings some fresh air by being different in composition from other large capital allocators. Accordingly, sometimes, some of these pension funds allocate capital to investments that consist of longer-term and more strategic commitments than what is often observed coming from large private owners of capital. However, partially due to incentive structures that are hard to ignore as humans, the central commitment remains in seeking liquidity and profitability for the fund's assets. It is all too human to prefer maximizing profitability while maintaining liquidity.

Following her impeachment, in which a fiscal crisis was invoked as the political justification despite the absence of an actual crime, President Rousseff reflected in an interview: "I think I made an important mistake regarding the level of tax exemptions granted to Brazilian companies. We reduced, for them, social security contributions, the IPI, and a significant number of other taxes. As a result, we experienced a very large fiscal loss. [...] The mistake was the tax exemptions because, instead of investing, companies increased their profit margins at the cost of greater fragility in the public accounts. [...] The fiscal crisis did not stem from excessive spending, but this tax waiver was intended to benefit the broader economy, which did not occur" (Fernandes, 2017). A substantial share of the firms that benefited from these tax exemptions during Rousseff's administration belonged to the automotive sector.

5.6. Route 2030

Once Innovate-Auto was condemned by the WTO, discussions started about conceiving a new automotive policy regime. That was Rota 2030 (Route 2030), which was signed into law during Michel Temer's administration. The regime is supposed to last for fifteen years and it represented a departure from Innovate-Auto's protectionist stance.

Route 2030 seeks to "increase energetic efficiency, structural performance, and availability of technologies that assist steering of the vehicles commercialized in the country" (Lei N° 13,755). For that it stimulates investments in research, development and innovation that will foster productivity and the production of new technologies "in accordance with global trends". It also seeks to protect and expand employment in the sector while promoting the use of biofuels and other alternative propulsion technologies – such as electric vehicles. Differently from the agreement in the early 1990s' Automotive Sectoral Chamber, it is not clear how employment protection and expansion will take place.

Route 2030 tries to provide guidance for a sector facing rising costs and declining competitiveness. In a certain way, the automotive industry in Brazil is a mirror for the country's struggles in a middle-income trap. After all, "the middle-income trap refers to a situation whereby a middle-income country is failing to transition to a high -income economy due to rising costs and declining competitiveness" (Griffith, 2011, 39). This happens in part because the scale of production is limited to the size of the Brazilian market, with exports being "used mainly as a 'pressure relief valve' during downturns in the domestic market" (Sturgeon, Chagas, and Barnes, 2017).

While the general framework is one of middle-income trap both in the industry and in the country, which are the main players in 2023? Of the 20 carmakers with largest revenues in the

Brazilian market in 2022, only 4 players do not produce cars in Brazil. Of these four, two firms produce at least trucks and/or buses.

With the arrival of Bolsonaro, retrenchment occurred despite high embeddedness because the coalition completely fractured effectively forcing MNEs to rely solely on global strategy rather than local partnership. This fracture is basically symbolized by State withdrawal from any commitment to putting forward supportive policy for the automotive industry.

5.7. Mover

As mentioned at the beginning of this chapter, in early 2023, the Brazilian automotive sector faced a widespread crisis. The partial shutdown of car manufacturers signaled the severity of the situation, prompting President Lula – now in his third term and leading the Workers' Party return to power – to publicly express his intention to engage automakers in discussions to assess their needs and explore possible solutions. Given the historical trajectory of Brazil's industrial policy, this scenario raised expectations for the emergence of a new sectoral policy or a combination of measures aimed at revitalizing the industry.

In 2024, the PT government introduced the New Industry Brazil (NIB), signaling a restart in Brazil's industrial policy. The NIB builds upon the foundations laid by the previous policies but with a renewed focus on digital transformation, green technologies, advanced manufacturing, and inclusive growth. The policy seeks to position Brazil among the global leaders in these areas, building on previous strategies to ensure long-term economic growth and modernization. It sets goals for the country's enhanced industrial competitiveness and development through 2033. Specifically, the NIB

aims to strategically position Brazil in the global shift towards a more sustainable and technologically advanced economy. The NIB emphasizes the importance of innovation in emerging sectors such as renewable energy – one in which Brazil is a frontrunner with its hydroelectric and its ethanol –, artificial intelligence, and biotechnology, while also addressing the challenges posed by climate change and social inequality.

Within the NIB's scope there is the Mover plan for the automotive sector. It focuses on promoting the production of hybrid vehicles, enhancing the competitiveness of automakers located in Brazil, and investing in research and development for innovative automotive technologies.

Overall, these industrial policies reflect the PT's long-term vision for Brazil's economic development, emphasizing the importance of a robust and competitive industrial base as a cornerstone of national growth and inclusive prosperity.

The Mover program (Mobilidade Verde e Inovação) would emerge as the sectoral policy to address both the short-term challenges of the industry and its long-term sustainability. Its design reflected the broader objective of fostering innovation, reducing environmental impact, and ensuring competitiveness in the global market. While still in its early years, Mover clearly signaled a strategic response to the crisis, reinforcing the pattern of state intervention in the automotive sector that has historically shaped Brazil's industrial landscape. More importantly, Mover served as the focal point of a combination of measures that had a rapid impact on Brazil's automotive sector.

By 2024, Brazil had already achieved a historic peak in vehicle production and regained its eighth position in the global ranking of vehicle production. This development underscores the efficacy of well-designed industrial policies, such as Mover, in revitalizing the automotive sector. Nonetheless, it should also be noted that by 1975 – thus, five decades or the equivalent of half a

century before — Brazil was already occupying the ninth position among worldwide producers of vehicles. Therefore, if on the one hand the former milestone reflects the success of measures aimed at rescuing Brazil's automotive sector from a crisis by fostering innovation, enhancing competitiveness, and strengthening domestic manufacturing capabilities, on the other hand the latter mentioned milestone demonstrates that Brazil's automotive sector has been stuck for many decades just doing what it does since the 1950s: providing cars produced by MNEs for the large Brazilian market.

While the sector's recovery, following the crisis that emerged in early 2023, demonstrates how strategic intervention — through initiatives like Mover — can provide stability and drive sustainable growth in an industry crucial to Brazil's economic landscape, Brazil would need a more robust strategy in order to move beyond this reality of having an automotive sector that mostly supplies Brazil's domestic market and is increasingly dominated by MNEs. Considering that most of the time in these fifty years between 1975 and 2025 Brazil has displayed either the sixth or the fifth largest population on the planet⁴², the country's potential for automotive production goes higher than the eighth position in the global ranking of vehicle production. The Achilles' heel lies in the fact that automotive MNEs have poor export performance from Brazil.

Nonetheless, the role of Mover in shaping this recovery is significant, as its focus on green mobility and technological advancement has encouraged investment and adaptation among automakers operating in Brazil, as well as the attraction of new market entrants, with some of them even promising to use Brazil as export platform in the future. The alignment of public policy with industry needs has contributed to reaffirming Brazil's position as a key player in the global

⁴² Most precisely, every year from 1990 to 2008 Brazil has occupied the fifth position in terms of population. Meanwhile, from 2009 to 2018, Brazil's population was sixth in the world, the same position from 1979 to 1989.

automotive market, reinforcing the long-standing tradition of state involvement in industrial development. As the country consolidates its standing among the world's top vehicle producers, the Mover program exemplifies how proactive policymaking can translate into tangible economic gains and long-term sectoral resilience.

As previously mentioned, in a global context where the transition toward electric mobility is dominant, the widespread use of ethanol and biodiesel in internal combustion engines in Brazil and other Mercosur countries remains a distinctive advantage for the region in terms of preserving and expanding its own regional value chains.

This advantage persists and is further strengthened by the fact that the region holds many of the key inputs and technological capabilities required to make electric vehicles viable, such as abundant reserves of copper, cobalt, nickel, and especially lithium. In addition, Brazil's extensive yet largely untapped reserves of rare earth elements provide other essential components for modern automobiles and have themselves become instruments of geopolitical competition.

Taken together, these factors provide a strategic basis for linking regional value chains to the global automotive industry. Building on the success of Brazil's ethanol program, the country can combine convergence with strategic differentiation through the adoption of hybrid electric vehicles. Collectively, these features form a solid foundation for renewed industrialization anchored in regional value chains (Medeiros and Majerowicz 2025; Bruckmann 2022).

5.8. Concluding remarks on the role of public policy

This chapter presented the main sectoral policies for the automotive industry in Brazil since 1988. While in the start of automotive industrialization Brazil banned all car imports in 1956 (Shapiro, 1994), in the early 1990s the country was opening up its economy to the world. With that move at the aggregate level, sectoral policies became much more important to understanding the possibilities of specific industries in an overall liberal framework.

Nowadays there is a transition in the world toward a data-driven and ICT-controlled knowledge economy in which finance and digitech are increasingly merging and exerting great influence over production – in special over the automotive industry. In this context, automotive production, distribution and use are also changing according to different arrangements that different multinationals have built in the places where they are located. Sometimes referred as CASE (Connected, Autonomous, Shared, Electrified) technologies, they represent a number of innovations that will be each time more present in the fleet of automotive vehicles.

This chapter explored variation within Brazil in the way in which technological change and the pursuit of carbon-efficient vehicles is occurring. It looked at how public policies were conceived and how variation in institutional arrangements since the 1990s induce transfer, incorporation, and local spillovers of technologies from multinationals. This chapter examines how that leads to the densification of cooperation networks for innovation and socio-environmental sustainability, across time, across Brazilian states, and in relation to different multinational firms, across cycles of booms and busts.

As mentioned in the beginning of this chapter, the events of early 2023 underscored the vulnerabilities within Brazil's automotive sector. Fortunately for the sector, the partial shutdown of

automakers was alarming enough for President Lula, serving his third term, to immediately convene key industry stakeholders in search of solutions. This swift mobilization led to the emergence of another overarching sectoral policy, supported by a set of ancillary measures, which contributed to a rapid rebound in automotive production. This episode reaffirmed the critical role of state intervention in stabilizing and stimulating industrial activity in Brazil, demonstrating once again the close relationship between government policy and economic recovery in the sector.

However, despite this quick turnaround, some of the industry's structural fragilities remain unaddressed. Brazil continues to lack a major homegrown automotive player, leaving its industry heavily reliant on multinational enterprises (MNEs) that use the country primarily as a manufacturing hub directed to its own domestic market rather than a center for world-class innovation or decision-making, let alone capital accumulation. Additionally, the gradual decline of domestic suppliers within the value chain raises concerns about the country's long-term industrial autonomy, as this contrasts with the strategy adopted in the 20th century, when there were plenty of homegrown suppliers. These unresolved issues highlight a persistent pattern in Brazil's industrial development since 1988: while short-term policies may provide immediate relief, they often fail to foster deeper structural changes that could enhance national competitiveness and resilience.

Ultimately, the automotive sector's trajectory in Brazil exemplifies the broader characteristics of the country's capitalist model – one marked by a strong dependence on industrial policy and government intervention to sustain multinational operations that not necessarily contribute to capital accumulation and wider development. This reliance reinforces the notion that, rather than fostering an autonomous and globally competitive domestic industry, Brazil's industrial policies primarily serve to stabilize and accommodate foreign firms operating within its borders. The 2023

episode serves as yet another case study in how economic governance in Brazil is shaped by an enduring struggle between short-term stabilization and long-term strategic autonomy.

6. Case Studies: firm-level strategies and responses to macro-political environments and policy incentives

Having delineated the macro-political architecture and the evolution of sectoral regimes in Chapter 5, this chapter shifts the level of analysis to the micro-foundations of industrial change. It investigates how the broad institutional incentives previously described were internalized, navigated, or ultimately rejected by specific corporate actors. By examining the distinct trajectories of major automakers, this chapter argues that industrial policy is not a deterministic force. On the contrary, the fact is that its outcomes are mediated by firm-level corporate strategies, legacy constraints, and the capacity for institutional embeddedness.

To operationalize this analysis, the chapter presents a comparative study of three distinct strategic pathways – Exit, Embedded Adaptation, and Disruption – anchored by three paradigmatic cases.

First, the analysis turns to "The Exit Case," exemplified by Ford. This trajectory serves as a critical examination of the limits of conservative non-strategic industrial policies that shift between protectionism-enabled 'traditional' rent-seeking and total absence of state support that was in turn enabled by a short-term focused coalition that privileged rent-seeking in other, mainly non-industrial,

areas. The case illustrates how a reliance on subsidies, unaccompanied by enforced technological disciplining, fostered a path-dependent reliance on obsolescent platforms and too much dependence on public fiscal support. Despite a century of production history and substantial fiscal transfers, Ford's inability to align its local portfolio with its global "One Ford" strategy resulted in a decoupling from the domestic market, culminating in de-industrialization and market exit.

Second, the chapter examines "The Embedded Adaptation Case," represented by Fiat (now under the Stellantis umbrella). This trajectory highlights the efficacy of strategic regional integration and "tropicalized" innovation. Unlike its competitors, Fiat successfully navigated the volatility of the Brazilian policy environment by deepening its local roots — first through its historical stronghold in Betim (Minas Gerais) and subsequently through the greenfield expansion in Goiana (Pernambuco). This case demonstrates how firm-level agency can leverage federalist competition to secure competitive advantages, allowing for the development of a production ecosystem that is resilient to political oscillation.

Finally, the analysis considers "The Disruption Case," driven by new entrants such as BYD. This third perspective addresses the current restructuring of the market, where Chinese automakers are moving to occupy the industrial vacuum left by traditional Western firms. By responding directly to the incentives of the current Mover (Green Mobility) program, BYD validates the variables regarding the energy and digital transition established in Chapter 2. This case signals a structural shift in the sector, marking the transition from a mechanical-combustion legacy to an electrified/decarbonized, software-defined future.

One remark on embeddedness before we proceed is that the empirical analysis suggests that indeed embeddedness might function as a static backdrop that could be used as control, as it was cited in Table 5.1, however, embeddedness might as well function as a critical intervening variable.

In this second stance, embeddedness modulates the causal transmission between the political coalition and its policy (IV) and the investment outcome (DV). Arguably, in scenarios of 'conservative' or weak policy reciprocity, such as the Route 2030 period, high embeddedness acts as a structural anchor preventing capital flight despite the lack of incentives, effectively trapping MNEs in a posture of 'restraint' or 'maintenance' due to significant sunk costs. However, this mediating capacity is finite. As observed during the Bolsonaro administration, under conditions of total 'policy absence' and 'submissive stance' the institutional void might overwhelm the stabilizing force of embeddedness. In this context, the variable bifurcates outcomes: whereas deeply rooted firms are forced to a 'retrenchment' posture, the lack of a supportive policy framework becomes intolerable for other firms, proving that market size alone is insufficient to retain capital when the intervening glue of embeddedness is weak, even if circumstantially, and the key explanatory variable of supportive policy dissolves.

6.1. "The Exit Case": Ford Turns One Hundred and Fades Away

Starting in 1919, Ford had maintained deep ties with the state and the city of São Paulo, not only as an economic force but also as a social institution that became intertwined with the local communities. The first automobile assembly plant in Brazil was Ford's. The parts were imported, and the assembly was done locally at the plant in downtown São Paulo. The production model was

the Ford T, also known in Brazil as the "Ford Bigode" (Mustache Ford). In the 1920s, production increased significantly, and the plant moved to larger facilities still in the state's capital.

Ford was also among the first automakers to establish a fully operational automotive factory in the context of the governmental plan to nationalize automotive production in the 1950s. In 1953, the factory known as "Ford do Ipiranga" was inaugurated, located in what is today the Parque da Mooca neighborhood in the city of São Paulo. Later, Ford expanded its operations to the ABC region of São Paulo state. The São Bernardo do Campo plant, which Ford had owned since the late 1960s, occupied a vast 1 million m² site and became a symbol of the rise of Brazil's automotive industry. Originally built by Willys in the 1950s, the plant was acquired by Ford in 1967. At the time of the acquisition, Willys was collaborating with Renault on a project that would give birth to the Ford Corcel in 1968. At its peak in the 1980s, the São Bernardo do Campo factory employed around 12,000 workers and was responsible for producing iconic vehicles such as the Corcel, Pampa, Belina, Del Rey, Escort, and Ford Ka.

For decades, Ford was a symbol of industrial prowess and provided numerous jobs that helped shape the region's workforce and economy. From that state, Ford's production and services spread through Brazil in a decisive fashion, making the brand one of the most recognized and esteemed by local consumers. However, the century-old history of production in Brazil ended abruptly around its very hundredth anniversary. The COVID-19 pandemic in 2020 coincided with this pivotal moment for Ford's operations in Brazil. While the world was grappling with that global health crisis, the Michigan-based company decided to cease all production in the country. The complete termination of Ford's production in Brazil was preceded by the closure of its iconic plant in the ABC region a few months earlier. After more than five decades of operation, the São Bernardo

do Campo plant closed its doors in 2019. This full withdrawal from production shocked many, given Ford's long-standing presence in Brazil, where it had been assembling vehicles for a century.

Beyond its historical roots in São Paulo, Ford had also recently extended its footprint in other parts of Brazil, particularly in the Northeastern states of Ceará and Bahia. These states had entered into fresh political and economic agreements with the automaker, with promises of sustained production and job creation. The partnership seemed poised to strengthen Ford's presence in Brazil, positioning the company as a key player in the country's industrial future. It is important to notice that several observers argue that Fiat's success in Brazil is partially linked to the favorable fiscal conditions enjoyed by its operations in the Northeast, which counts on the Special Automotive Regime previously discussed. It is curious that this fiscal advantage was not enough to guarantee Ford's success in the most recent decades. However, when they were forged, the political agreements made with these Northeastern states were perceived as underscoring the company's commitments not only in the industrial heartland of São Paulo but also in regions where industrial development was less underpinned and yet critical for local economic growth.

One aspect of this story became contentious years later when Ford opted to terminate its industrial operations in Brazil. In 2007, Ford inadvertently set in motion one of the situations that would come to characterize M&A operations across different industries worldwide: the so-called killer acquisition, or 'embrace, extend, and extinguish' tactic, in this case deployed against Troller, the last Brazilian automotive company to be created and achieve national prominence.

Known as Troller Special Vehicles, the company was founded in the northeastern state of Ceará in 1997 and produced a couple of highly successful off-road models, especially the T4, a four-wheel-drive vehicle.

Troller became well known in Brazil and even gained international visibility through its participation and strong performance in important rally competitions. Over the course of these events, the company used competitive motorsport not only as a proving ground for its off-road engineering but also as a platform for signaling and reputation building in a segment where durability and reliability carry outsized marketing value. The Troller team entered high-profile international races, such as the Paris–Dakar Rally, and consistently completed demanding stages that function, in practice, as a public stress test of vehicle design with positive marketing consequences. In at least one edition, the team achieved a notable placement, finishing the rally as a runner-up in a competitive category, reinforcing the perception that its vehicles could compete credibly with more established global brands that traditionally dominate such competitions.

Domestically, Troller's success in the Paris–Dakar Rally together with victorious presence in Rally dos Sertões, Brazil's premier off-road rally, further consolidated its standing. Strong results in off-road racing events helped translate performance into brand recognition at home, while linking the company's brand identity to a distinctly national off-road culture and consumer base in Brazil. Collectively, these competitive accomplishments positioned Troller as potentially more than a niche manufacturer. While demonstrating technological proficiency and organizational capability, they were able to, crucially, also generate a form of product legitimacy that was socially anchored: the brand was able to credibly present itself as aligned with a Brazilian off-road culture that counted with a dispersed consumer base across the country, valuing this kind of vehicle for both symbolic and practical reasons.

Troller was able to translate all these inputs into effective marketing narratives and gain commercial traction throughout the country, converting performance on demanding rally courses

into campaigns that reinforced authenticity, differentiated the product from imported competitors in a positive way that was until then hard to sell, and ultimately supported sales growth. Arguably, these attributes, essential for commercial expansion and for the brand's perception, were also taken into consideration when it later became involved in Ford's corporate strategies and consolidation dynamics.

Nonetheless, a significant part of the rationale behind Ford's acquisition of Troller in 2007 was to set foot in Northeast's industrial base and gain access to tax incentives associated with factories already established in the region, as was the case with Troller. This strategic move allowed Ford to leverage economic benefits directed to promote regional development while including in its portfolio a brand that had its own market potential. If so desired, by integrating Troller's existing infrastructure, Ford could accelerate market entry in a niche that could be complementary to its established products, thus enhancing Ford's portfolio with locally adapted vehicles, and strengthening its competitive position in the Brazilian off-road segment.

That worked for a decade, until around 2020. Despite these long-standing ties and fresh agreements, Ford's decision to end production in Brazil highlighted the global challenges facing the auto industry during the pandemic as well as some sort of existential crisis that was particular to Ford. Faced with rising costs, shifting market demands, and the economic uncertainty brought by COVID-19, Ford ultimately prioritized its global restructuring efforts over its Brazilian operations, where it was a relevant employer and industrial partner. Since the late 2010s, Ford has undergone a contradictory global restructuring, which includes the decision to terminate production in Brazil in 2021. This was part of a broader cost-cutting strategy aimed at streamlining operations and focusing

on more profitable regions and product lines. The closure of plants in various countries and job cuts have tested Ford's identity as a global automaker and its commitment to its traditional markets.

Particularly, the exit from Brazil left a significant void that was rapidly occupied by its many competitors. However, Ford's refusal of sell Troller to another investor was noticed as demonstration of Brazil's weak framework to defend rising local brands from larger MNEs that might, for different reasons, use a M&A operation as an 'embrace, extend, and extinguish' tactic. Tellingly, in its analysis of the 2007 transaction, Brazil's M&A assessment authority, the Administrative Council for Economic Defense (CADE), simply concluded that the operation "posed no risk to competition, given Troller's small market share" (CADE, 2007). Without considering broader structural or strategic implications, the reporting commissioner voted, based only in this narrow assessment, to approve the transaction without restrictions, a position that was unanimously endorsed by CADE's full panel. Given Brazil's current institutional framework, combining lax merger policy without other tools to steer national investors away from their short-term high preference for liquidity, nothing could later be done to reverse the deal, even following Ford's decision to kill Troller's operations together with the rest of Ford's industrial production in Brazil.

Clearly, Ford's main objective in acquiring Troller in 2007 was to gain access to tax breaks directed to regional development. However, when Ford decided to close all its industrial operations in Brazil, basically killing Troller's existence, it did not go unnoticed that Ford could and would simply make the most recent Brazilian automotive company to be created and achieve national prominence disappear for good.

While Ford is undergoing a major global transformation, trying to shift from its traditional role as an automaker to becoming a more holistic tech-driven enterprise, its operations in Brazil

accompanied this shift. As the company pours billions of dollars into developing cutting-edge solutions that are increasingly integrated into everyday life inside an automobile, a significant amount of these innovations is developed in Brazil. It has been pointed out that Ford's team based in Brazil is responsible for developing a third of the technology found in Ford's current lineup (Exame, 2024)⁴³.

Though Ford no longer has a manufacturing plant in Brazil, the Michigan-based multinational kept and expanded its innovation hub in Salvador, Bahia, which is connected to its Development and Technology Center in Camaçari, a city in the metropolitan area of Bahia's capital. Those facilities, alongside its Testing Center in Tatuí, in the state of São Paulo, forms a critical part of the company's global research infrastructure. The Tatuí facility, in particular, is one of the largest and most advanced testing centers in Latin America, playing a crucial role in vehicle development.

As one of just nine Ford development centers worldwide, the Brazil-based team of over 1,500 specialists contributes to global projects, working on semi-autonomous technologies, electric vehicles, and connected cars. As around 85% of their work is focused on global initiatives, the innovations crafted in Brazil have a far-reaching impact on Ford's operations across the world, with their expertise being exported to key markets like the U.S., Europe, and China.

By harnessing the capabilities of its Brazilian engineering teams, Ford illustrates the value of regional technological hubs in accelerating automotive advancements and sustaining competitive advantages in an increasingly dynamic industry landscape where Brazilian engineers offer significant cost benefits. Underscoring the region's significance within the company's broader engineering ecosystem, the Brazilian team has been credited with shaping approximately one-third of Ford's

⁴³ Edition of September 10, 2024.

global technological advancements in key automotive technologies, including vehicle electrification, multimedia integration, and design evolution.

By maintaining and expanding its Brazilian engineering center even after discontinuing vehicle assembly in the country, Ford demonstrates its reliance on distributed innovation, enabling cross-border collaboration and leveraging regional expertise to address global challenges. This strategy not only optimizes development efficiency but also highlights the importance of fostering and gathering a diverse talent pool to drive innovation in next-generation automotive systems.

6.2. “Embedded Adaptation”: The Case of Fiat, the Italian ‘National Champion,’ and Its Remarkable Success Story in Brazil

The automotive industry in Brazil has undergone significant transformations driven by government policies, economic shifts, and strategic decisions by key industry players. These variations have significantly impacted the strategies of major automotive players such as Fiat, now part of Stellantis. This chapter analyzes the evolution of automotive policies in Brazil, focusing on the perspective of Fiat, examining the interplay between government incentives, regional development, and global competition.

As previously discussed, since the 1950s, the Brazilian automotive industry has been shaped by a series of government policies aimed at attracting foreign investment and fostering industrial development. These policies were essential in establishing Brazil as a significant player in the global automotive market.

6.2.1. Fiat's Beginnings, Expansion and Adaptation

Fiat's journey in Brazil has been marked by strategic adaptations to these evolving policies. The company's decision to establish a manufacturing plant in Betim, Minas Gerais, in the 1970s, laid the foundation for its long-term commitment to the Brazilian market. Fiat's success in Brazil can be attributed to its ability to navigate the complex policy landscape and leverage government incentives effectively.

Fiat did not establish production in Brazil in the 1950s alongside the key players that would transform the ABC region of São Paulo state in the Brazilian automotive heartland. In the 1950s Fiat chose Argentina over Brazil, which meant missing out on the benefits of the creation of GEIA (Grupo Executivo da Indústria Automobilística), which significantly influenced the automotive landscape in Brazil.

When Fiat finally decided to start production in Brazil, it chose instead to be located in the state of Minas Gerais, a decision influenced by a history of successful negotiations dating back to the 1960s. These negotiations were spearheaded by Minas Gerais Governor Rondon Pacheco and culminated in the signing of a memorandum of understanding with Fiat in Turin, that would be followed by agreements with the next Minas Gerais Governor, Aureliano Chaves. The agreement included a substantial partnership with the state government, which acquired a little over 45% stake in the venture.

Fiat would face a fierce competition from established players like Ford, General Motors, and Volkswagen, who already had a loyal consumer base in the Brazilian market. In the beginning, Fiat also faced opposition by Sindipeças, the National Association of Automotive Parts Manufacturers.

Sindipeças represented the interests of local auto parts manufacturers, who were concerned about the potential impacts of Fiat's arrival on their businesses and the broader industry dynamics. The association was particularly upset by Fiat's decision to be located away from the ABC region of São Paulo state, where most automotive parts manufacturers had their plants.

In response to the opposition from Sindipeças and the regulatory environment, Fiat made several strategic adaptations. The company worked to build strong relationships with local suppliers and comply with the local content requirements. This involved significant investments in the development of a local supply chain located around its ever-growing plant in Betim, a city in the metropolitan area of Minas Gerais's capital. Those investments would eventually lead to the integration of domestic manufacturers into Fiat's global value chain.

Jack Corrêa, who led Fiat's public relations from 1975 to 1979, noted in an interview for this chapter that "the unique partnership with Minas Gerais was a decisive factor for the foundations of Fiat's success story in Brazil. Additionally, the federal government's economic decentralization policy, supported by then-President Geisel, also played a significant role in allowing that arrangement to take place"⁴⁴. The contractual characteristics surrounding Fiat's beginnings in Brazil were unthinkable before and were never replicated after in the country. And in terms of decentralization of automotive production from São Paulo towards other regions, it would take another two decades for something with a similar impact to take place.

The journey leading to the launch of the inaugural Fiat 147 in September 1976 was fraught with challenges and milestones that highlighted the complexities of establishing a car manufacturing plant in Brazil for a new player, i.e., a company other than those that had embarked on the

⁴⁴ Jack Corrêa, interview with the author, August 09, 2022.

institutional framework provided by GEIA in the 1950s. The plan in the 1950s was to solidify São Paulo's position as the Brazilian industrial heartland. Indeed, many economies of scale and agglomeration could only be easily tapped by establishing plants around the intensively expanding São Paulo metropolis.

Fiat's strategic decision to establish its plant in Minas Gerais exemplifies the intricate interplay between strategic partnerships, government policies, and market conditions in the automotive industry's development in Brazil. The partnership Fiat formed with the state of Minas Gerais was a type of joint venture similar to what China would later impose on automakers seeking to invest there. The difference – beyond the state not holding 51% of the shares – was that once Fiat became self-sufficient, Minas Gerais divested its share, leaving the Italians with complete ownership of the then burgeoning operation. In China, the outcome of the joint venture process is invariably the opposite, with common spin-offs – either directly or somehow related to the original JV – being created with full Chinese ownership.

Fiat's arrival in Brazil occurred during a period of significant economic and social transformation. The early 1970s were marked by Brazil's push for rapid industrialization and urbanization under the so-called "Brazilian Miracle," a period when Brazilian GDP was growing at its fastest rate in the post-Second World War era. Concurrently, the country was also experiencing its "Years of Lead," the most repressive phase of the military dictatorship that governed Brazil between 1964 and 1985.

One of the initial challenges Fiat faced was the need to build a local supply chain to comply with the government's local content requirements (LCR). This policy aimed to reduce dependency on imports by encouraging domestic production through high tariffs and other protectionist

measures. For Fiat, entering the Brazilian market required navigating these protectionist policies while establishing a competitive foothold. As these regulations mandated that a significant percentage of a vehicle's components be sourced locally, thus fostering the development of domestic industries, Fiat's ability to establish strong relationships with local suppliers and integrate them into its production process was crucial for meeting these requirements and achieving production efficiency. And to do that, Fiat needed to convince suppliers – with the generous help of its state partner – to buy the idea of the potential superior gains from making cars in Betim.

In this sense, the establishment of the Betim plant also highlighted Fiat's ability to leverage government incentives effectively. Different levels of the Brazilian government – federal, state, and municipal – provided various incentives to attract foreign investment, including tax breaks, subsidies, and infrastructure support. These incentives were instrumental in reducing the initial investment costs and enhancing the plant's long-term viability. Moreover, Betim, located in the metropolitan area of Belo Horizonte, offered several advantages, including proximity to key markets, availability of skilled labor, and the already mentioned supportive government policies. Instead of being another car plant in the state of São Paulo, Fiat would be treated favorably as the car plant of Minas Gerais. Over the years, the plant became one of the largest and most advanced automotive manufacturing facilities in Latin America.

Beyond the industrial transformation that the arrival of the automotive business brought to the city of Betim, a whole social transformation got in motion with the arrival of Italian workers. In an interview for this chapter, Jack Corrêa – who directed Fiat's public relations from 1975 to 1979 – recalled that first externality that Fiat had to deal with in Betim was the overcrowding caused by the arrival of its workers in the city's maternity hospital. After dealing with the challenging situation

for some time, the city government demanded that the company build a new maternity hospital to accommodate the surge⁴⁵. Not only various workers got married and stayed around the town but also a handful of influential social organizations in Belo Horizonte and Betim would receive a growing and steady influx of Fiat workers, including Italians, Brazilians, and Italian Brazilians.

6.2.2. Strategic Adaptations and Product Innovation

Fiat's success in Brazil can be attributed to its original entrance with a public partnership, followed by strategic adaptations and continuous innovation. One of the key adaptations was the development of products specifically tailored to the Brazilian market. For example, the Fiat 147, launched in 1976, was the first car in Brazil to run on ethanol, aligning with the government's Proálcool program aimed at reducing dependency on imported oil. The program came in response to the 1970s international oil crisis, redirecting sugarcane production towards ethanol, significantly reducing oil imports and greenhouse gas emissions. This innovation not only catered to local consumer preferences and government interests but also positioned Fiat as a pioneer in the use of alternative fuels.

Proálcool led to economic competitiveness of ethanol compared to gasoline and positioned Brazil as a leader in renewable fuel production (Goldemberg, 2009). Over time, with the evolution towards flex-fuel vehicles that came to dominate the Brazilian market, ethanol yields kept increasing. Currently, future perspectives for car engines include a further increase in ethanol yields and the expanded use of hybrid vehicles. These hybrids combine combustible engines fueled with ethanol

⁴⁵ Jack Corrêa, interview with the author, August 09, 2022.

and electric batteries. Additionally, there are emerging combinations with upcoming automotive fuels such as hydrogen and carbon-neutral synthetic fuels. These advancements aim to enhance energy efficiency and diversification, while reducing greenhouse gas emissions and promoting sustainable transportation solutions. At the same time, the Brazilian industry might deviate from the rest of the world by not moving preferentially to fully electric vehicles.

In many ways, Brazil's response to the 1970s international oil crisis anticipated the country's commitment to developing technology that would later fit quite well in a world committed to reducing greenhouse gas emissions. And in that context, Fiat 147 was more than just a technological innovation; it represented a strategic adaptation to the unique economic and environmental conditions in Brazil. Ethanol, derived from sugarcane, was abundantly available in Brazil, making it a cost-effective and sustainable alternative to gasoline. By developing a vehicle that could utilize this resource, Fiat aligned its products with national energy policies and consumer needs, thereby securing a competitive advantage in the market. This strategic move introduced Fiat's ability to adapt to changing regulatory and consumer landscapes, reinforcing its role as a leader in automotive innovation in the Brazilian market. Somehow appearing as an unexpected future benefit, it is also used to exemplify the company's early regard for sustainability.

Another significant adaptation was Fiat's focus on producing compact and affordable cars, which resonated with the growing Brazilian middle class. Models such as the Uno, launched in 1984, and the Palio, introduced in 1996, became best-sellers due to their affordability, reliability, and fuel efficiency. Fiat's ability to understand and respond to local market demands, in ways that not always were being contemplated by competitors, was a key factor in its sustained success. The Uno, for

instance, became an iconic model in Brazil, praised for its simplicity, durability, and cost-effectiveness, which made it accessible to a broad segment of the population.

6.2.3. Navigating Economic Volatility and Political Changes

Throughout its journey in Brazil, Fiat had to navigate periods of economic volatility and political changes. The 1980s, for instance, were marked by hyperinflation and economic instability, which posed significant challenges for the automotive industry. Fiat responded by adopting flexible production techniques and other measures that ensured operational continuity despite the adverse economic conditions. In table 6.1 we see that total car production in Brazil fell from 1979 to 1987. During that time, even though Fiat suffered in some years, its production grew 17%. While its main competitors were experiencing a decline in production, Fiat was increasing its market share.

Table 6.1. — Automobile production by company in Brazil (1968-1987)

(Thousands)					
Year	Fiat	Ford	GM	Volkswagen	Total ⁴⁶
1968		11,8	3,9	128,1	165,0
1969		49,5	30,2	149,9	244,4
1970		43,9	46,5	202,8	306,9
1971		57,5	57,9	257,0	399,9
1972		75,7	70,9	307,9	471,1
1973		102,0	93,8	333,8	564,0
1974		119,7	133,3	406,6	691,3
1975		115,5	134,1	443,2	712,5
1976	8,4	126,0	143,5	463,4	765,3
1977	67,3	96,5	118,5	429,0	732,4
1978	98,5	124,7	163,7	487,0	871,2
1979	120,0	132,1	168,2	475,4	912,0
1980	145,2	123,4	187,0	468,0	933,2

⁴⁶ The difference between the total production and the sum of the production of the four companies corresponds to the production of Willys (until 1971), FNM (until 1977), and Chrysler (until 1980).

1981	123,7	99,4	126,5	255,4	585,8
1982	130,2	112,0	159,5	270,2	672,6
1983	115,2	134,8	187,3	310,8	748,4
1984	99,8	141,9	171,3	256,1	679,4
1985	114,4	146,4	190,7	307,5	759,1
1986	130,8	138,9	212,0	333,4	815,2
1987	169,8	89,7	153,8	270,4	684,0

Source: Guimarães, 1989, based on unpublished data compiled by Anfavea.

In the 1990s, Brazil underwent a series of economic reforms aimed at liberalizing the economy and reducing inflation. Several attempts at reducing inflation failed, until the Plano Real, introduced in 1994, stabilized the economy and restored consumer confidence. Fiat capitalized on this stability by expanding its product line and increasing production capacity. The launch of the Fiat Palio in 1996, a car designed specifically for emerging markets, marked a significant milestone in Fiat's strategy to capture an even larger share of the Brazilian market.

The Palio project, developed under the codename "Projeto 178," was a global initiative aimed at creating a family of cars that could be adapted to various markets. Brazil played a pivotal role in this project, with the Betim plant serving as a central hub for the production and export of the Palio and its derivatives. This strategic move not only strengthened Fiat's presence in Brazil but also integrated the Brazilian operations into Fiat's global value chain.

Global economic shifts have also influenced Fiat's strategies in Brazil. The financial crisis of the late 2000s, for instance, underscored the importance of flexible and resilient business models. Fiat's ability to adapt to these changing economic conditions has been crucial in maintaining its market leadership.

6.2.4. Local R&D, Integration into Global Value Chains, the Emergence of Transnational Organizational Complexity, and FDI Relevance to Headquarters

Fiat's integration into global value chains (GVCs) has been a critical aspect of its operations in Brazil. By leveraging its global network of suppliers and production facilities, Fiat was able to enhance efficiency, reduce costs, and maintain high-quality standards. Constant and cyclical increments in the Betim plant played a central role in Fiat's global production strategy, serving as a hub for the export of vehicles and components to other markets in Latin America and beyond.

The integration into GVCs also facilitated technology transfer and skill development. Fiat invested heavily in training programs and R&D activities in Brazil, fostering local expertise and innovation. This emphasis on local capacity building ensured that the Betim plant remained competitive and capable of producing advanced automotive technologies.

One recent example of Fiat's integration into GVCs is the production of the Fiat Toro, a compact pickup truck launched in 2016. The Toro, produced at the Goiana plant in Pernambuco, was developed with significant input from Fiat's global R&D centers and local engineers. The vehicle's design and engineering were tailored to meet the specific needs of Latin American consumers, showcasing Fiat's ability to leverage global resources while catering to local markets. By 2024, over 500,000 units of Toro had been produced at the Goiana plant.

Fiat's commitment to invest in local research and development (R&D) has been a crucial factor in its success. The company's investment in local R&D centers has facilitated the development of vehicles tailored to the Brazilian market, enhancing its competitive edge. Of course, government policies that support R&D, such as tax incentives for innovation, have been shrewdly used to further strengthen Fiat's position.

Regarding the global shift towards electric vehicles (EVs), it presents both opportunities and challenges for Fiat. While the company has made significant strides in EV technology now that it operates under the Stellantis umbrella, the adoption of EVs in Brazil has been slower compared to other markets due to factors such as high costs, lack of infrastructure, consumer preferences for traditional vehicles, and, most importantly, an existing and well-functioning production and distribution of ethanol. Fiat will need to navigate these challenges with the particularities of the Brazilian case to capitalize on the growing demand for sustainable mobility solutions.

The ongoing digital transformation also present new opportunities for innovation and market expansion. Fiat's investment in digital connectivity and its ability to leverage the connection with global partners while investing in local R&D and production, can drive technological advancements and meet the growing demand for sustainable and connected vehicles. Putting that together in advanced manufacturing capabilities that support local communities can be performed in ways that match with Brazil's new industrial development plan.

Of course, there is a clear return to this successful positioning in the Brazilian market for Fiat's headquarters in Italy. Fiat's overall financial stability is frequently bolstered by the profits generated from its operations in North and Latin America, with its leading position in Brazil playing a significant role. This reliance became particularly evident in the years following the downturn in the European market following the 2008 financial crisis. By 2012, the average level of unused production capacity in Europe was 25%, reaching up to 50% in Italy. For some time thereafter, the company's European, and particularly Italian, operations continued to operate at low capacity. In certain years, "Fiat's accounts in Italy would not have been sustainable without the deep pockets of

its American (and Brazilian) operations, which had already become significant within the group's consolidated results" (Navaretti, and Ottaviano, 2014).

As Navaretti and Ottaviano (2014) observed regarding the formation of Fiat Chrysler Automobiles (FCA), the group's initial commercial successes in the Americas did not immediately assuage the concerns of European observers, who viewed the transatlantic pivot with a degree of skepticism and fears of further deindustrialization. Fast-forward to 2025, and while we stand at a critical juncture with the potential ratification of the EU-Mercosur free trade agreement – one that has been under discussion for over 25 years – the strategic premise that transatlantic integration, whether with North America or, in this case, with South America, is an existential necessity for Europe's industrial future remains a contested subject.

Nonetheless, the transnational organizational complexity in the automotive industry has deepened significantly since the era of FCA. If the precursor group began by intertwining two distinct "national champions" – one Italian and one American – Stellantis has evolved into a far more intricate constellation of flagships, amalgamating French, German, Italian, and American legacies under a single corporate umbrella. This structure brings into direct contact distinct local cultures and industrial traditions, creating a multi-polar internal environment where brands must simultaneously cooperate on shared platforms and compete for capital allocation as well as market shares. Consequently, Stellantis functions not merely as a firm, but as a complex political arena where diverse national interests and industrial varieties interact within the high-stakes framework of the global automotive market. While complex to manage, this strategy, which began with FCA and earlier with Fiat's transatlantic FDI, demonstrates how essential geographic diversification is "in a

highly cyclical industry, where the cycles of different regions do not necessarily coincide” (Navaretti, and Ottaviano, 2014).

6.2.5. Government Policies and Industry Support

As already mentioned, some tailor-made government policies have played a pivotal role in shaping Fiat's operations in Brazil. However, Fiat also took advantage of the institutional framework established by different industrial policies, contemplating all players, to advance its business. The Brazilian government's industrial policies, such as the Innovar-Auto program introduced in 2013, provided incentives for technological innovation, fuel efficiency, and safety improvements in the automotive industry. These policies encouraged Fiat to invest in advanced manufacturing technologies and develop new models that met stringent environmental and safety standards.

The Stellantis Automotive Hub in Goiana, Pernambuco, stands as a prime example of the tangible benefits brought about by regional development policies, such as the “Special” Regional Automotive Regime. Launched in 2015, this plant represented a significant investment of R\$ 18.5 billion (or US\$3.6 billion). It has also expanded the production chain by bringing in 38 suppliers and creating more than 60,000 jobs, both directly and indirectly, within the automotive sector and its broader supply network. Since 2015, the hub has produced over 1.5 million vehicles. The tax incentives that Fiat/Stellantis receive because of the operation in that Northeastern state is very criticized by competitors, though. And many even claim that that alone is responsible for a large part of Fiat's superior performance in the Brazilian market.

6.3. Concluding remarks

Fiat's expansion and adaptation in Brazil illustrate the complex interplay between government policies, market dynamics, and strategic decisions. The company's ability to navigate a challenging policy landscape, leverage incentives, and innovate in response to local market demands has been instrumental in its success. The evolution of automotive policies in Brazil has had a profound impact on the operations and strategies of Fiat / Stellantis. The company's ability to adapt to changing government incentives, invest in innovation, and navigate global economic shifts has been central to its success. As Brazil continues to refine its industrial policies, Fiat / Stellantis demonstrates agility and forward-thinking to sustain its competitive edge in the dynamic automotive market.

7. FDI, Local Content Requirements and International Sourcing: transaction-level evidence from the Brazilian automotive industry – the case of Innovate-Auto⁴⁷

Final goods are made up of various components, which are typically imported as parts from different countries. Firms in a global value chain need to act strategically when faced by shocks targeting imports. This data-driven analysis aims at studying how firms react to the withdrawal of local content requirements (LCR).

The Brazilian automotive sector serves as a good arena in which to explore the relationship. It is the sector that generates the largest multipliers for the country's GDP, and it has been built and sustained by waves of import substitution policies, interspersed with liberalization shocks. The industry was structured over the years by public policies that attracted the largest international car producers through different institutional arrangements. Currently, over 20 automotive manufacturers have plants in the country.

Moreover, most local content requirements (LCR) in Brazil are in the automotive sector and, according to the Global Trade Alert database, Brazil is one of the most prominent users of LCRs in economic policy. In particular, from 2013 to 2017, a comprehensive sectoral policy for the automotive industry, called “Innovate-Auto”, was put in place by the Brazilian government. This policy established LCRs that would be condemned by the World Trade Organization (WTO). The

⁴⁷ This chapter is based on research conducted together with Massimo Del Gatto, Alireza Naghavi, and Noriaki Matsushima. I would like to thank them for graciously allowing parts of the work in progress titled “FDI protectionism and international sourcing: transaction-level evidence from the Brazilian automotive industry” by Massimo Del Gatto, Henrique Estides Delgado, Alireza Naghavi, and Noriaki Matsushima (2024) to be used in this chapter.

main goals of “Innovate-Auto” were: i) reducing/eliminating the trade deficit in the Automotive industry; ii) generating incentives towards the production of modern (fuel-efficient and ecofriendly) vehicles. The underlying goal was to increase the share of domestic value-added in the automotive sector by increasing both the produced volumes of cars and intermediate goods used by the automotive industry.

Innovate-Auto suddenly expired at the end of 2017. This work aims at exploring how the withdrawal of Innovate-Auto has affected the organization along the global value chains of car producers in Brazil. In particular, we are interested in understanding the impact along two dimensions: i) firms’ switching from locally produced to imported inputs (i.e., LCR-compliant shipments versus shipments from the rest of the world (ROW)); ii) intra-firm versus arm’s length (i.e., between unrelated parties) shipments.

The chance to study the above dimension is offered by the availability of detailed information on Brazil trade at the shipment level, provided by the Panjiva database. To our knowledge, this is the first study to employ this database for this type of analysis. This is an expedient manner to undertake detailed examination in a context in which further policy assessment is hindered by the unavailability of figures, for instance, on local content, which signals “a major flaw in the accountability and transparency of Brazil’s automotive industrial policy regime” (Sturgeon, Lima Chagas, and Barnes, 2017, v).

This analysis is therefore data-driven and suggests that the withdrawal of Innovate-Auto induced a shift from intra-firm to arm’s length shipment, on the one hand, and increased the number of shipments within the LCR mandate, on the other hand. However, intra-company trade become more ROW-oriented while arm’s length trade become more LCR-oriented.

In other words, this means that firms tend to comply with the LCR by creating an “internal” (to the company) and “local” (inside the boundaries of the LCR mandate) supply chain. Once the policy is removed, the economic incentives for an “internal” supply chain vanish while those (economies of scope) associated to importing from nearby, LCR, countries persist, so that firms: i) tend to switch to arm’s length trade (more outsourcing) from nearby (formerly LCR) countries (less “global” value chains).

These effects are robust to controlling for sector and country characteristics such as the institutional quality of the country of origin, its cultural similarity with respect to the country in which the company is headquartered, geographical distance between Brazil and the exporting country, the extent of routineness of the sector in which the shipment takes. The concept of routineness has been previously mentioned in the qualitative framework and will be further explained below, but it serves to organize different tasks performed by workers according to their level of standardization, repetition, and rule-based operations. It is observed that tasks with higher level of routineness are particularly amenable to automation through computers and robotics due to their very characteristics of being codified and predictable.

Such findings are of interest also given the advent of COVID-19 in the years following the removal of the policy. After all, the pandemic years were noticeable by the slowdown in international trade, and intrafirm trade was interestingly found to be more resilient to that shock.

From a certain perspective, this paper expands on Head, Mayer, and Melitz (2024) and investigates how heterogeneous firms operating within the Regional Trade Agreement (RTA) of Brazil-Mexico-Argentina respond to the withdrawal of rules of origin in 2017 when they face the choice of within-RTA or outside-RTA part sourcing for a large number of parts. Our investigation

also contributes to the literature on the linkages between trade liberalization and outsourcing (Ornelas and Turner, 2008), as well as to the literature on the impacts of rules of origin in the context of trade agreements (Ornelas and Turner, 2024).

7.1. The Panjiva Dataset

The Panjiva database, a collection of transaction-level data that feeds a global trade intelligence platform provided by Standard & Poor's, reports information on shipments for a diverse group of countries. Information on the value of the shipment is also provided, but the overall coverage is poor.

For the Brazilian car producers reported in Table 7.1., Panjiva provides us with information about their imports. We have details on number of shipments combined with their country of origin and the name of the exporting company.

Imports from Brazil, Mexico, and Argentina (BraMexArg) are dealt with as “local imports” from the point of view of the LCR policy. In the way that Innovate-Auto was designed, cars and auto parts not only from Brazil, but also from other Mercosur countries (Argentina, Paraguay, and Uruguay) as well as from Mexico – all countries with which Brazil has automotive trade agreements – were considered as “local”, and thus compliant with LCR. We opted for highlighting Mexico and Argentina because, from that group, these two countries are the origin of the vast majority of imports. Meanwhile, Brazil is also mentioned as a source of “local imports” due to some residual data on shipments from Brazil to Brazil.

Table 7.1. provides an overview of the dataset. Mercedes-Benz is the leader company, with almost 100% of shipments taking place intracompany. The overwhelming importance of

intracompany trade is a common characteristic to Nissan, Honda and, to a lesser extent, Audi and Renault.

Table 7.1. Automakers' shipments to Brazil, 2014-2022

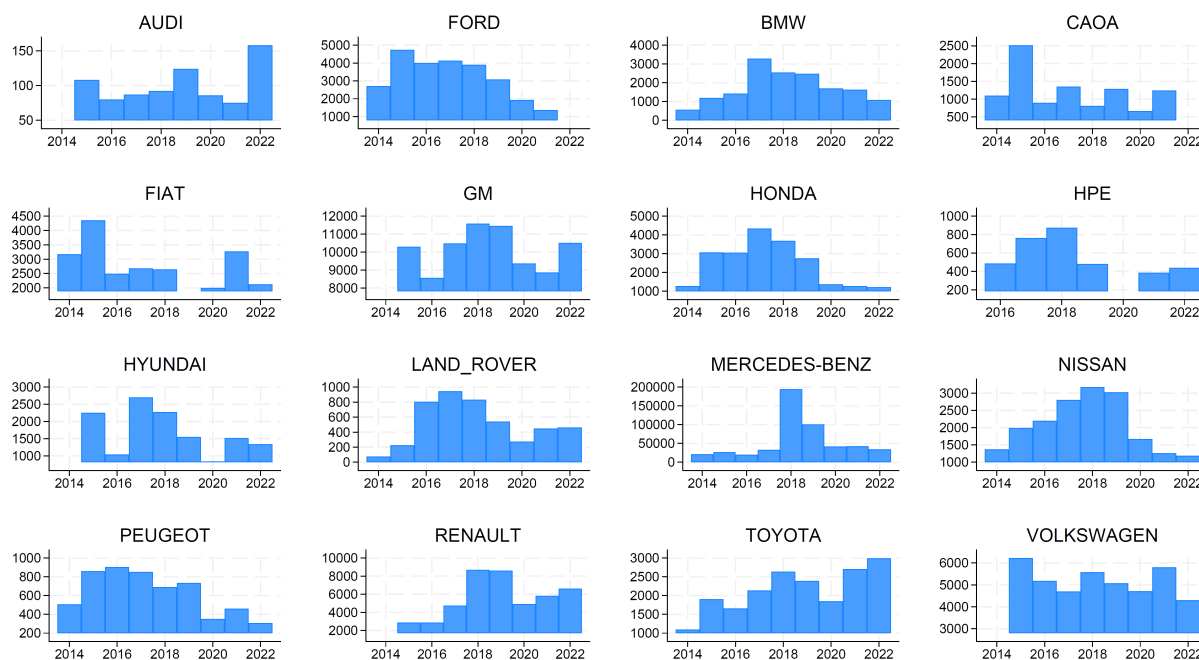
	# Shipments	# Shipments wrt Tot	# Intrafirm shipments	# Intrafirm wrt Tot	# LCR shipments	# LCR wrt Tot
AUDI	726	0.1%	637	87.7%	300	41.3%
BMW	9598	1.2%	6713	69.9%	635	6.6%
CAOA	10014	1.2%	0	0.0%	0	0.0%
FIAT	23153	2.8%	14456	62.4%	1788	7.7%
FORD	26214	3.2%	15003	57.2%	2093	8.0%
GM	83078	10.0%	17015	20.5%	10774	13.0%
HONDA	21306	2.6%	20967	98.4%	7553	35.5%
HPE	3228	0.4%	0	0.0%	2	0.1%
HYUNDAI	13671	1.6%	3794	27.8%	0	0.0%
LAND ROVER	1497	0.2%	0	0.0%	0	0.0%
MERCEDES-BENZ	513666	61.8%	513214	99.9%	283824	55.3%
NISSAN	17780	2.1%	17544	98.7%	12802	72.0%
PEUGEOT	5474	0.7%	1847	33.7%	1	0.0%
RENAULT	41597	5.0%	34972	84.1%	2522	6.1%
TOYOTA	17322	2.1%	15216	87.8%	213	1.2%
VOLKSWAGEN	43004	5.2%	21507	50.0%	19630	45.6%
Tot	831328	100.0%	682885	82.1%	342137	41.2%

Meanwhile, Figure 7.1. allows us to disentangle between pre and post policy withdrawal in terms of total number of shipments, highlighting a post-removal shrink in most cases.

To delve more into the differential effect played by the removal of “Innovate-Auto”, Figure 7.1. disentangles between LCR shipments (i.e., shipments from Brazil, Mexico and Argentina) and ROW shipments⁴⁸, while Figure 7.2. disentangles between intrafirm versus arm's length shipments.

⁴⁸ It is worth noting that LCR imports (i.e., imports from BraMexArg) only include inputs shipped and registered by customs. Thus, production can rise (or decrease) even though (BraMexArg + imports from ROW) is constant, due to a higher (lower) quantity of inputs bought from Brazilian firms, which were not “shipped”.

Figure 7.1. Total number of shipments



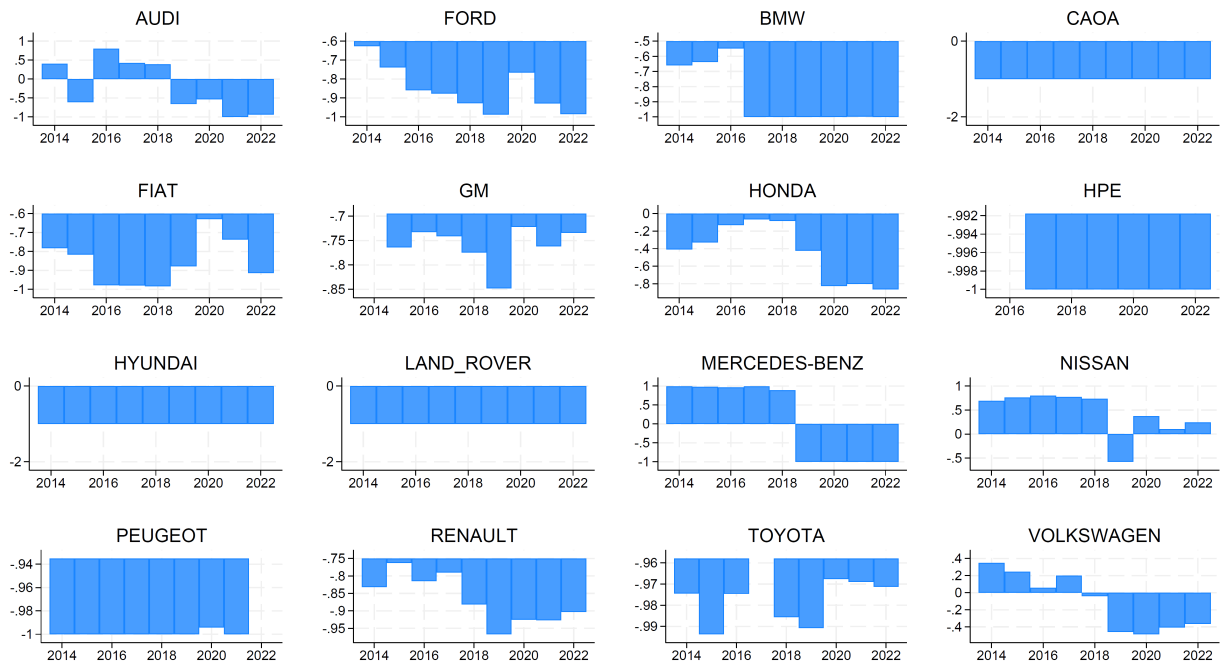
Comment: the index often gets negative, or more negative, after 2018

In particular, Figure 7.2. reports the ratio of the difference the number of LCR shipments and the number of ROW shipments to the sum of the two -- $(LCR-ROW)/(LCR+ROW)$. In some cases (CAOA, HPE, Hyundai, Land Rover), the index amounts to -1 (denoting the absence of LCR shipments) irrespective of the policy being in action or not. Quite interestingly, however, some companies increased the share of ROW shipments after the removal of Innovate-Auto (so that the index decreased substantially: this is the case for Ford, BMW, GM, Honda, Renault, Volkswagen and, notably, Mercedes-Benz, which completely switched from LCR (index=1) trade to ROW trade (index=-1).

Figure 7.3. focuses on whether the policy removal differently affected intrafirm and external (arm's length) shipments. With the share of intrafirm (with respect to total) shipments reported, the

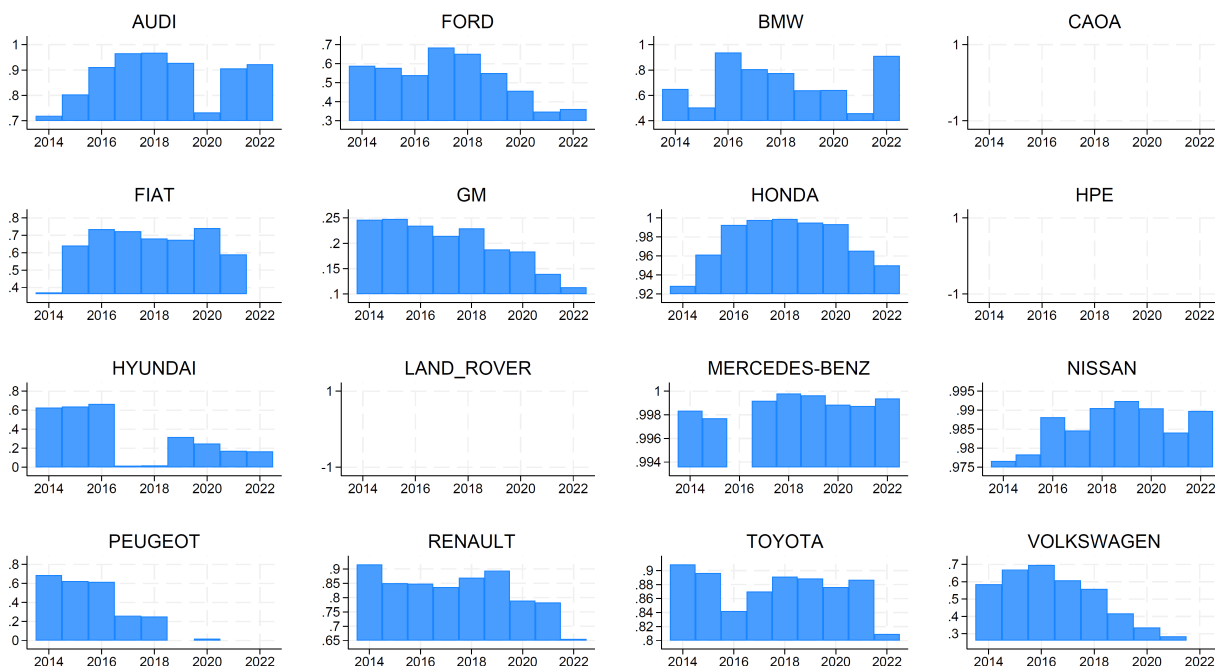
Figure shows that the majority of companies gradually reduced intrafirm trade, vis-à-vis arm's length, after the withdrawal of “Innovate-Auto”.

Figure 7.2. LCR versus ROW shipments $(LCR-ROW)/(LCR+ROW)$.



Comment: some companies increased the share of ROW shipments after the removal of Innovate-Auto.

Figure 7.3. Share of intra-firm (wrt total) shipments



Comment: a generalized shift from intra-firm to arm's length shipment after 2018.

7.2. Initial analysis

In this section we run probit regressions (in which the observation is the single shipment) of a dichotomic variable, taking value 1 if the given shipment characteristic is satisfied in year t , on:

- “**innauto**”: a dummy taking value 0 up to 2018 (included) and 1 after 2018⁴⁹;
- Routineness of the imported goods sector (sectoral measure, **COR_N**), Quality of institutions in the country of origin (year-country variable, **inst**), cultural similarity (bilateral country-level measure, **cult**) and geographic distance (bilateral country-level measure, **dist**);

⁴⁹ As the variable “innauto” is meant to capture the withdrawal of the Inovar-Auto policy, the coefficient is the effect of moving from pre to post (post relative to pre). Here we have used 2018 as cutoff on the argument that the industry may have needed at least one year to adapt to the new policy framework – which suddenly expired on the very last day of 2017. Moreover, even if not allowing this 1-year adjustment (0 through 2018; 1 from 2019 onward) does not change the coefficient's direction, as tested in other analyses of further versions of the Work in Progress related to this chapter, which used, instead, 2017 as the cutoff.

- Interaction term between innauto and, alternatively, routineness (**inn_COR**) , quality of institutions (**inn_inst**), cultural similarity (**inn_cult**), and geographic distance (**inn_dist**);
- A dummy controlling for shipments from the country in which the company is headquartered (**ROW_head**);
- firm **Production** in the same year (same value for same firm's observation in the same year);
- firm effects, year effects.

A first analysis is carried out in Table 7.3.1. In column (1), the characteristic of interest is whether the shipment took place in the form of intra-company or arm's length; in column 2, the characteristic of interest is whether the shipment originates in any country outside the LCR group.

Table 7.3.1. Overall effect (by type of shipping), with Mercedes-Benz

	(1) intra b/se	(2) LCR b/se	(3) ROW_intra b/se	(4) ROW_arms b/se	(5) LCR_intra b/se	(6) LCR_arms b/se
innauto	-0.050*** (0.002)	0.025*** (0.003)	0.111*** (0.002)	0.014*** (0.002)	-0.082*** (0.003)	0.047*** (0.001)
Production	-0.000 (0.000)	0.000*** (0.000)	0.000 (0.000)	0.000 (0.000)	0.000*** (0.000)	0.000*** (0.000)
ROW_head	0.088*** (0.001)	0.000 (.)	0.398*** (0.001)	-0.064*** (0.001)	0.000 (.)	0.000 (.)
COR_N	0.003*** (0.000)	0.000 (0.000)	0.002*** (0.000)	-0.002*** (0.000)	0.002*** (0.000)	-0.002*** (0.000)
N	816589.000	570365.000	816589.000	819817.000	565615.000	570365.000
r2_p	0.623	0.573	0.564	0.558	0.683	0.365
converged	1.000	1.000	1.000	1.000	1.000	1.000

Table 7.3.2. Overall effect (by type of shipping), without Mercedes-Benz

	(1) intra b/se	(2) LCR b/se	(3) ROW_intra b/se	(4) ROW_arms b/se	(5) LCR_intra b/se	(6) LCR_arms b/se
innauto	-0.123*** (0.005)	0.052*** (0.005)	-0.079*** (0.005)	0.027*** (0.005)	-0.063*** (0.004)	0.112*** (0.003)
Production	0.000* (0.000)	0.000*** (0.000)	-0.000** (0.000)	-0.000** (0.000)	0.000*** (0.000)	0.000*** (0.000)
ROW_head	0.230*** (0.002)	0.000 (.)	0.374*** (0.002)	-0.164*** (0.002)	0.000 (.)	0.000 (.)
COR_N	0.008*** (0.000)	-0.001*** (0.000)	0.005*** (0.000)	-0.005*** (0.000)	0.004*** (0.000)	-0.004*** (0.000)
N	302923.000	237625.000	302923.000	306151.000	232875.000	237625.000
r2_p	0.357	0.280	0.331	0.282	0.452	0.206
converged	1.000	1.000	1.000	1.000	1.000	1.000

* p<0.05, ** p<0.01, *** p<0.001

In general, we see a negative (positive) effect on intra-firm (arm's length) shipping and a positive (negative) effect on LCR (ROW) shipping. However, when the two forms of shipping are combined, we see that intra-firm shipping actually decreases irrespective of whether the shipment is from LCR or ROW countries.

To delve into this aspect more, we now focus on LCR and ROW trade separately, asking whether the shrinking (growing) effect on intra-firm (arm's length) shipping takes place is a common feature to ROW (Table 7.3.3) and LCR (Table 7.3.4) trade.

We here add in controls for: i) *sectoral routineness* (with reference to the sector in which the imported good is classified); ii) *quality of institutions* in the exporter country; iii) *cultural similarity* between the headquarter country and the exporters' country; iv) *geographic distance* between Brazil and the exporter's country.

The *Routineness index* is obtained by matching the categories listed in Costinot, Oldenski and Rauch (2011) with the product descriptions of each shipment imported by automakers to Brazil. The Routineness index quantifies how routine or repetitive certain tasks or jobs are, and the

products resulting from such tasks. It is based on the concept that some tasks are highly routine (e.g., factory assembly line work), while others are non-routine and require more judgment or problem-solving (e.g., managerial tasks). This index helps analyze the impact of technological change, automation, and trade on different sectors of the economy. Costinot, Oldenski, and Rauch (2011) specifically ranks 77 sectors by the degree of routine tasks required in each, using a routineness measure derived from task characteristics.

In our case, we started with 481 entries under the variable Product Description from our Panjiva dataset. These entries correspond to different products or goods, and we carefully assigned each product description to one of the 77 sectors listed in Costinot, Oldenski, and Rauch (2011). This association was based on the nature of the product and the industry to which it most closely belongs. Clearly, this required some judgment, as exact matches between product descriptions and sector categories may not always be perfectly clear. Nevertheless, we ensured that the associations were made as accurately as possible. By categorizing each product shipment into one of these 77 sectors, we can empirically assess how routine intensity influences the organizational decisions of firms in response to the withdrawal of Innovate-Auto. This allows us to capture shifts in the global supply chain, focusing on both the origin of imports and the nature of trade relationships.

Information on *institutional quality* is drawn from the World Bank's worldwide governance indicators⁵⁰. From the six indicators available, we begin by working with Regulatory Quality, a measure that seeks to capture "perceptions of the ability of the government to formulate and

⁵⁰ These indicators are both aggregate and individual governance indicators for six dimensions of governance: Voice and Accountability; Political Stability and Absence of Violence/Terrorism; Government Effectiveness; Regulatory Quality; Rule of Law; and Control of Corruption.

implement sound policies and regulations that permit and promote private sector development” (Kaufmann, Kraay and Mastruzzi, 2010, 4).

Cultural similarity is a bilateral index developed by Del Gatto and Mastinu (2021) and obtained as a weighted average of three distance measures: genetic, linguistic, and religious distance. The former is taken from Spolaore and Wacziarg (2009). The linguistic and religious distances are computed using information drawn from Ethnologue and the CIA World Factbook.⁵¹ Cultural similarity is taken between the headquarter country and the exporters’ country respect to the headquarter country, that is the country in which the headquarter of the firm is located.

Geographic distance is provided by the CEPII Gravity Database (Conte, Cotterlaz, and Mayer, 2023). Distance between the most populated cities in each country dyad is considered.

Cultural similarity index and geographic distance have been rescaled in such a way to have indexes varying between zero and one. Moreover, cultural similarity with respect to the headquarter country is set to one.

In Table 7.3.3, we observe, within ROW shipments, an overall reduction of intrafirm shipments associated to the removal of “Innovate-Auto”, with a quite small softening effect associated with routineness, cultural similarity (between the headquarter country and the exporters’ country), institutional quality (the exporter country) and geographical distance between Brazil and

⁵¹ The intuition on which the three measures are based is the same. For all of them, we use the approach conceived by Fearon (2003), also adopted by Desmet et al. (2009). This is based on two pieces of information: i) the international distribution of languages, ethnic groups, or religions (i.e., for each country, the percentage of population speaking each language, belonging to each ethnic group, or professing each religion); ii) a matrix of distance, including all possible language/religion/ethnic group pairs derived by a “tree.” The tree is a diagram that shows the relationship between groups derived from a single “family” and that allows measuring the similarity between two languages, ethnic groups, or religions in terms of the number of common “branches” (i.e., points at which languages, religions, or ethnic groups divide).

the exporter's country. In all these cases, the overall effect of "Innovate-Auto" remains negative (see the sum of the coefficients of innauto and inn_X, where X is the control variable).

Removing Mercedes-Benz from the analysis does not affect the above results, notwithstanding, as highlighted, Mercedes-Benz responded to the policy removal by switching to intracompany trade from the headquarter country (which actually explains the differences between panel A and Panel B).

The overall decrease in intrafirm shipping observed within the ROW category also emerges when LCR trade is considered (see Table 7.3.4.). In this case, an additional significative effect related to the degree of routineness is documented.

Table 7.3.3. ROW shipping (with and without Merc-Benz)
WITH MB

	(1) intra b/se	(2) intra b/se	(3) intra b/se	(4) intra b/se	(5) intra b/se
innauto	-0.056*** (0.003)	-0.059*** (0.005)	-0.055*** (0.003)	-0.191*** (0.004)	-0.049*** (0.003)
Production	-0.000** (0.000)	-0.000** (0.000)	0.000 (0.000)	-0.000*** (0.000)	0.000*** (0.000)
ROW_head	0.153*** (0.001)	0.153*** (0.001)	0.028*** (0.002)	0.158*** (0.001)	0.101*** (0.001)
COR_N	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)
inn_COR		0.000 (0.000)			
cult			0.215*** (0.003)		
inn_cult			0.020*** (0.003)		
inst				-0.001*** (0.000)	
inn_inst				0.002*** (0.000)	
dist					-0.315*** (0.002)
inn_dist					0.058*** (0.003)
N	474454.000	474454.000	465938.000	474454.000	474454.000
r2_noMBROW_p					
converged	1.000	1.000	1.000	1.000	1.000

* p<0.05, ** p<0.01, *** p<0.001

WITHOUT MB

	(1) intra b/se	(2) intra b/se	(3) intra b/se	(4) intra b/se	(5) intra b/se
innauto	-0.103*** (0.005)	-0.156*** (0.009)	-0.095*** (0.007)	-0.340*** (0.008)	-0.114*** (0.006)
Production	0.000 (0.000)	0.000 (0.000)	0.000** (0.000)	-0.000* (0.000)	0.000*** (0.000)
ROW_head	0.286*** (0.002)	0.287*** (0.002)	0.050*** (0.004)	0.298*** (0.002)	0.184*** (0.002)
COR_N	0.006*** (0.000)	0.005*** (0.000)	0.006*** (0.000)	0.006*** (0.000)	0.005*** (0.000)
inn_COR		0.001*** (0.000)			
cult			0.421*** (0.007)		
inn_cult			0.015** (0.006)		
inst				-0.002*** (0.000)	
inn_inst				0.003*** (0.000)	
dist					-0.610*** (0.005)
inn_dist					0.138*** (0.006)
N	244612.000	244612.000	236096.000	244612.000	244612.000
r2_MBROW_p converged	1.000	1.000	1.000	1.000	1.000

* p<0.05, ** p<0.01, *** p<0.001

Table 7.3.4. LCR shipping (with and without Merc-Benz)
WITH MB

	(1) intra b/se	(2) intra b/se	(3) intra b/se	(4) intra b/se	(5) intra b/se
innauto	-0.017*** (0.001)	-0.010*** (0.002)	-0.053*** (0.004)	-0.017* (0.007)	-0.033*** (0.003)
Production	-0.000*** (0.000)	-0.000** (0.000)	-0.000 (0.000)	0.000*** (0.000)	0.000 (0.000)
ROW_head	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
COR_N	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)	0.001*** (0.000)
inn_COR		-0.000*** (0.000)			
cult			0.820*** (0.021)		
inn_cult			0.082*** (0.006)		
inst				-0.001*** (0.000)	
inn_inst				-0.000 (0.000)	
dist					-0.158*** (0.004)
inn_dist					0.083*** (0.008)
N	342134.000	342134.000	342134.000	342134.000	342134.000
r2_noMBLCR_p converged	1.000	1.000	1.000	1.000	1.000

LCR – WITHOUT MB

	(1) intra b/se	(2) intra b/se	(3) intra b/se	(4) intra b/se	(5) intra b/se
innauto	-0.098*** (0.008)	-0.060*** (0.012)	-0.310*** (0.023)	-0.098* (0.043)	-0.192*** (0.018)
Production	-0.000*** (0.000)	-0.000** (0.000)	-0.000 (0.000)	0.000*** (0.000)	0.000 (0.000)
ROW_head	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
COR_N	0.008*** (0.000)	0.008*** (0.000)	0.006*** (0.000)	0.006*** (0.000)	0.006*** (0.000)
inn_COR		-0.001*** (0.000)			
cult			4.804*** (0.122)		
inn_cult			0.480*** (0.037)		
inst				-0.008*** (0.000)	
inn_inst				-0.001 (0.001)	
dist					-0.924*** (0.025)
inn_dist					0.487*** (0.046)
N	58310.000	58310.000	58310.000	58310.000	58310.000
r2_MBLCR_p converged	1.000	1.000	1.000	1.000	1.000

* p<0.05, ** p<0.01, *** p<0.001

Tables 7.3.5. and 7.3.6. focus on Intra-company and Arm's length shipping, respectively. The analysis points to intra-company shipping becoming more ROW-oriented and arm's length trade becoming more LCR-oriented.

All in all, the above analysis suggests that the withdrawal of "Innovate-Auto" has reduced intra-company shipments (and increased arm's length), which also become more ROW-oriented, and increased Arm's length trade, which instead become more LCR-oriented. While the reduction in intracompany shipments has interested both LCR and ROW trade, the overall effect on the number of LCR shipments is positive. The effect reveals robust to controlling for a number of sector and country characteristics (sectoral routineness, institutional quality, cultural similarity and geographic distance) as well to excluding Mercedes-Benz (the most represented company, which reacted to the policy removal by switching from LCR intra-company trade to ROW intra-company imports, namely from the headquarter country) from the analysis.

Routineness also plays a role. More routinary sectors tend to be more integrated (higher intra-company shipping) but also tend to be imported from outside the LCR mandate. The effect of the policy removal on intra-company is even higher in more routinary sectors, when trade occurs in the form of LCR and is instead lower in the case of ROW trade. This is consistent with the argument that, in order to upgrade and locally capture non-routine tasks – that are less prone to automation through computers and robotics –, adequate institutions are necessary to induce, through strategic policies, the local establishment of non-routine jobs that are stickier and associated with better remuneration.

Table 7.3.5. Intra-firm shipping (with and without Merc-Benz)

INTRA - WITH MB

	(1) LCR b/se	(2) LCR b/se	(3) LCR b/se	(4) LCR b/se	(5) LCR b/se
innauto	-0.114*** (0.004)	-0.266*** (0.006)	-0.058*** (0.004)	-0.046*** (0.004)	-0.008** (0.003)
Production	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)
ROW_head	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
COR_N	-0.000 (0.000)	-0.001*** (0.000)	0.000*** (0.000)	-0.000*** (0.000)	-0.001*** (0.000)
inn_COR		0.004*** (0.000)			
cult			-0.544*** (0.005)		
inn_cult			-0.156*** (0.006)		
inst				-0.006*** (0.000)	
inn_inst				-0.002*** (0.000)	
dist					-0.803*** (0.007)
inn_dist					0.021*** (0.006)
N	456597.000	456597.000	450786.000	456597.000	456597.000
r2_noMBLCR_p					
converged	1.000	1.000	1.000	1.000	0.000

* p<0.05, ** p<0.01, *** p<0.001

INTRA - WITHOUT MB

	(1) LCR b/se	(2) LCR b/se	(3) LCR b/se	(4) LCR b/se	(5) LCR b/se
innauto	-0.114*** (0.006)	-0.006 (0.011)	-0.022** (0.008)	0.077*** (0.009)	0.078*** (0.006)
Production	0.000*** (0.000)	0.000*** (0.000)	0.000 (0.000)	-0.000 (0.000)	0.000*** (0.000)
ROW_head	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
COR_N	-0.000 (0.000)	0.001*** (0.000)	-0.000** (0.000)	-0.000*** (0.000)	-0.001*** (0.000)
inn_COR		-0.002*** (0.000)			
cult			0.385*** (0.011)		
inn_cult			-0.265*** (0.012)		
inst				-0.004*** (0.000)	
inn_inst				-0.005*** (0.000)	
dist					-0.713*** (0.012)
inn_dist					-0.210*** (0.014)
N	124298.000	124298.000	118487.000	124298.000	124298.000
r2_MBLCR_p					
converged	1.000	1.000	1.000	1.000	1.000

* p<0.05, ** p<0.01, *** p<0.001

Table 7.3.6. Arm's lenght shipping (with and without Merc-Benz)

ARM'S LENGHT - WITH MB

	(1) LCR b/se	(2) LCR b/se	(3) LCR b/se	(4) LCR b/se	(5) LCR b/se
innauto	0.216*** (0.007)	0.320*** (0.010)	0.231*** (0.008)	0.284*** (0.010)	0.243*** (0.009)
Production	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
ROW_head	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
COR_N	-0.007*** (0.000)	-0.005*** (0.000)	-0.004*** (0.000)	-0.006*** (0.000)	-0.001*** (0.000)
inn_COR		-0.003*** (0.000)			
cult			0.905*** (0.007)		
inn_cult			-0.033** (0.011)		
inst				-0.003*** (0.000)	
inn_inst				-0.003*** (0.000)	
dist					-0.828*** (0.007)
inn_dist					-0.356*** (0.022)
N	113767.000	113767.000	111936.000	113767.000	113767.000
r2_noMBROW_p					
converged	1.000	1.000	1.000	1.000	0.000

* p<0.05, ** p<0.01, *** p<0.001

ARM'S LENGHT - WITHOUT MB

	(1) LCR b/se	(2) LCR b/se	(3) LCR b/se	(4) LCR b/se	(5) LCR b/se
innauto	0.217*** (0.007)	0.322*** (0.010)	0.232*** (0.008)	0.286*** (0.010)	0.246*** (0.009)
Production	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
ROW_head	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
COR_N	-0.007*** (0.000)	-0.005*** (0.000)	-0.004*** (0.000)	-0.006*** (0.000)	-0.001*** (0.000)
inn_COR		-0.003*** (0.000)			
cult			0.909*** (0.007)		
inn_cult			-0.033** (0.011)		
inst				-0.003*** (0.000)	
inn_inst				-0.003*** (0.000)	
dist					-0.829*** (0.007)
inn_dist					-0.365*** (0.022)
N	113326.000	113326.000	111495.000	113326.000	113326.000
r2_MBROW_p					
converged	1.000	1.000	1.000	1.000	0.000

* p<0.05, ** p<0.01, *** p<0.001

Table 7.3.7. Effect on intra-company shipping (with and without Merc-Benz)

	(1) intra b/se	(2) intra b/se	(3) intra b/se	(4) intra b/se	(5) intra b/se
innauto	-0.050*** (0.002)	-0.066*** (0.003)	-0.054*** (0.002)	-0.135*** (0.003)	-0.061*** (0.002)
Production	-0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	-0.000*** (0.000)	0.000*** (0.000)
ROW_head	0.088*** (0.001)	0.088*** (0.001)	0.002 (0.001)	0.103*** (0.001)	0.067*** (0.001)
COR_N	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)
inn_COR		0.000*** (0.000)			
cult			0.154*** (0.002)		
inn_cult			0.015*** (0.002)		
inst				-0.001*** (0.000)	
inn_inst				0.001*** (0.000)	
dist					-0.217*** (0.001)
inn_dist					0.062*** (0.002)
N	816589.000	816589.000	808073.000	816589.000	816589.000
r2_p	0.623	0.624	0.632	0.630	0.663
converged	1.000	1.000	1.000	1.000	1.000

* p<0.05, ** p<0.01, *** p<0.001

	(1) intra b/se	(2) intra b/se	(3) intra b/se	(4) intra b/se	(5) intra b/se
innauto	-0.123*** (0.005)	-0.167*** (0.008)	-0.129*** (0.006)	-0.331*** (0.007)	-0.161*** (0.005)
Production	0.000* (0.000)	0.000* (0.000)	0.000*** (0.000)	-0.000** (0.000)	0.000*** (0.000)
ROW_head	0.230*** (0.002)	0.230*** (0.002)	0.005 (0.004)	0.271*** (0.002)	0.172*** (0.002)
COR_N	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.008*** (0.000)	0.007*** (0.000)
inn_COR		0.001*** (0.000)			
cult			0.414*** (0.006)		
inn_cult			0.027*** (0.005)		
inst				-0.003*** (0.000)	
inn_inst				0.003*** (0.000)	
dist					-0.569*** (0.004)
inn_dist					0.168*** (0.005)
N	302923.000	302923.000	294407.000	302923.000	302923.000
r2_p	0.357	0.357	0.364	0.368	0.424
converged	1.000	1.000	1.000	1.000	1.000

* p<0.05, ** p<0.01, *** p<0.001

Table 7.3.8. Effect on LCR shipping (with and without Merc-Benz)

	(1) LCR b/se	(2) LCR b/se	(3) LCR b/se	(4) LCR b/se	(5) LCR b/se
innauto	0.025*** (0.003)	-0.129*** (0.005)	0.093*** (0.004)	0.116*** (0.004)	-0.035*** (0.003)
Production	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
ROW_head	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
COR_N	0.000 (0.000)	-0.001*** (0.000)	0.000 (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
inn_COR		0.004*** (0.000)			
cult			0.253*** (0.004)		
inn_cult			-0.163*** (0.006)		
inst				-0.006*** (0.000)	
inn_inst				-0.004*** (0.000)	
dist					-1.236*** (0.006)
inn_dist					0.138*** (0.008)
N	570365.000	570365.000	562723.000	570365.000	570365.000
r2_p	0.573	0.575	0.579	0.699	0.866
converged	1.000	1.000	1.000	1.000	0.000

* p<0.05, ** p<0.01, *** p<0.001

	(1) LCR b/se	(2) LCR b/se	(3) LCR b/se	(4) LCR b/se	(5) LCR b/se
innauto	0.052*** (0.005)	0.232*** (0.008)	0.080*** (0.006)	0.159*** (0.007)	0.028*** (0.006)
Production	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
ROW_head	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)	0.000 (.)
COR_N	-0.001*** (0.000)	0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
inn_COR		-0.004*** (0.000)			
cult			0.898*** (0.006)		
inn_cult			-0.087*** (0.008)		
inst				-0.005*** (0.000)	
inn_inst				-0.004*** (0.000)	
dist					-1.176*** (0.008)
inn_dist					0.070*** (0.014)
N	237625.000	237625.000	229983.000	237625.000	237625.000
r2_p	0.280	0.283	0.401	0.371	0.734
converged	1.000	1.000	1.000	1.000	1.000

* p<0.05, ** p<0.01, *** p<0.001

7.3. Conclusions

The removal of Innovate Auto has induced the following effects:

- **R.1** - reduction in intra-company (i.e., increase in Arm's length) shipments (see Table 7.3.2)
⇒ **more outsourcing**
- **R.2** - increase in LCR (decrease in ROW) shipments (see Table 7.3.2)
⇒ **the value chain becomes “less global”**
- **R.3a** – result R.1 is less pronounced in: i) routine-intensive sectors; ii) culturally similar (to the headquarter country) or iii) good institutions or iv) geographically distant (to Brazil) countries (Table 7.3.7)
- **R.3b** – result R.2 is less pronounced in: i) routine-intensive sectors; ii) culturally similar (to the headquarter country) or iii) good institutions or iv) geographically distant (to Brazil) countries (Table 7.3.8)
⇒ **lower share of non-routine tasks in intra-firm trade**
⇒ **higher share of non-routine tasks in LCR trade**
- **R.4a** - intra-company, as well as shrinking (R.1), also becomes more ROW-oriented (Table 7.3.5),
- **R.4b** - arm's length, as well as growing (R.2), also becomes more LCR-oriented (Table 7.3.6)
- **R.5a** – result R.4a is more pronounced in: i) routine-intensive sectors; ii) culturally similar (to the headquarter country) or iii) good institutions or iv) geographically distant (to Brazil) countries (Tables 7.3.5 and 7.3.6)
- **R.5b** – result R.4b is less pronounced in: i) routine-intensive sectors; ii) culturally similar (to the headquarter country) or iii) good institutions or iv) geographically distant (to Brazil) countries (Tables 7.3.5 and 7.3.6)

⇒ A higher share of LCR trade of non-routine tasks in intra-firm trade

⇒ A higher share of LCR trade of non-routine tasks in arm's length trade

- **R.6** – intra-firm shrinks irrespective of being ROW or LCR (that is, ROW and LCR both become more arm's length) => more outsourcing in general (tables 7.3.3 and 7.3.4)
- **R.7** – result R.6 is less pronounced in: i) routine-intensive sectors; ii) culturally similar (to the headquarter country) or iii) good institutions or iv) geographically distant (to Brazil) countries (Table 7.3.5 and 7.3.6)

⇒ Increasing share of non-routine tasks in both LCR and ROW intra-firm trade

In response to the policy removal, firms exhibited an increase in both outsourcing and imports from LCR countries. This dual effect indicates that firms outsourced relatively more to LCR countries, while intra-firm trade shifted towards a more ROW-oriented approach. Notably, following the policy withdrawal, firms began sourcing non-routine intensive tasks more from LCR countries compared to the period before the policy removal. This trend is evident in both i) intra-firm trade, which generally became more ROW-oriented but more LCR-oriented in non-routine-intensive sectors, and ii) arm's length trade, which generally became more LCR-oriented, particularly in less routine-intensive sectors. These shifts indicate a strategic unbundling following the removal of the Inovar-Auto policy. While the policy's expiration triggered a retrenchment of direct FDI, it inadvertently deepened the reliance on local suppliers for specific, high-skill activities. Accordingly, the post-policy retrenchment was selective and carried some spillovers from the policy effect. While routine production relatively declined locally, non-routine, skill-intensive tasks were outsourced

locally. This aligns with theories on the 'stickiness' of tacit knowledge, in which the remote management of complex tasks faces costly barriers, compelling MNEs to rely on the embedded local ecosystem even as they withdraw direct ownership. Therefore, the 'positive externality' observed in the delegation of skilled tasks to local firms should not be interpreted merely as the success of post-Inovar-Auto liberalization, but as a function of the very policies such as Inovar-Auto that created conditions for the technological upgrading directly linked to an increase in skilled tasks performed by local firms and by local labor. In other words, results suggest that the industrial capabilities – i.e., the supply side – built up during the developmentalist period became the necessary infrastructure that allowed MNEs to specialize and outsource during the liberal period that supports neither supply nor demand. Further polishing of this analysis consolidate results showing that the policy removal increased the probability of outsourcing and importing from LCR countries, in general, with an extra-effect associated with importing non-routine intensive goods and services. Moreover, the removal of Inovar-Auto increased the probability of outsourcing nonroutine activities to countries with better institutions⁵².

8. Conclusion

By integrating the macro-political analysis of coalition formation and the types of policies associated with different coalitions with the microeconomic evidence of firm-level supply chain adjustments, this Thesis presents findings that contribute to at least three distinct bodies of

⁵² On this point, it must be noted that the difference in institutional quality between Mexico and Argentina turned from positive to negative in 2016, with the former remaining with better institutions until the last year covered by the analysis (2022).

literature: studies on the role of industrial policies, with a particular focus on automotive industrialization; development studies; and research on the dynamics of FDI and its various aspects.

Arguably, the "erratic development" described in this research stems from a structural mismatch between the mode of regulation and the contemporary requirements for a regime of accumulation actively fostering the carving out of a better position for the country near and within the technological frontier. The 1988 Constitution, with all its advancements and good intentions, established a mode of regulation centered on social inclusion, labor rights, and democratic participation, while, somewhat contradictorily, conserving privileged positions for decaying elites and without proper incentives for rising elites to displace the former. Therefore, these essential political settlements that have a progressive social side — especially when comparatively analyzed within and across Brazil's exclusionary history of high inequality — have often conflicted with the prevailing global structural constraints and opportunities in terms of shaping and delivering the correct incentives for actions that would lead to more robust development. This tension has created a fragmented environment where the same institutional framework that fails to offer the long-term incentives needed to enhance and channel accumulation towards sustained research, innovation, and industrial investment has also managed to secure significant incorporation, various forms of social inclusion and improvements in the lives of the lower classes. This is particularly evident through actions taken by the cross-class winning coalitions that tend to lead to electoral success. Conversely, in the absence of such cross-class coalitions, patterns of regression become equally apparent both in terms of social inclusion, labor rights, and democratic participation, as well as in terms of research, innovation, industrial investment, and productive accumulation.

Building upon the discussions and findings presented in the preceding chapters, this section juxtaposes qualitative evidence concerning the misalignment of political coalitions, which have historically compromised policy consistency toward genuine industrial upgrading in terms of consistently moving up the value chain and competing in international markets, with quantitative results that reveal a combination of supply chain fragility following the cessation of industrial incentives, alongside some enduring positive impacts of those very policies promoting automotive industrialization. By examining the swift reversion to imports after the expiration of initiatives such as Inovar-Auto, the analysis highlights the limitations of costly interventions that yield short-term regulatory compliance rather than fostering structural transformation through policies sustained over an extended period, allowing for maturation, catching-up, and eventual innovation in subsequent technology cycles. Beyond exposing the precarious nature of localization when not underpinned either by genuine competitiveness or by frameworks that are indeed building-up such competitiveness, this study underscores the importance of cross-class coalitions that support so-called developmentalist policies. These policies, essentially real strategies to support an industrial sector benefitting more classes, and more people, than short-term preferences for quick financial gains, aim to facilitate economic catch-up and integrate development vectors within the country, thereby more effectively embedding competitiveness.

Although the competitiveness of Brazil's automotive industry remains insufficient when compared to international benchmarks that highlight its inefficient aspects (Sturgeon, Chagas, and Barnes, 2017), it is important not to disregard the industry's potential and its contribution. If, on the one hand, Brazil's automotive industry might be "characterized by low productivity, high prices, and low quality, which survives in its present form because of the renewed waves of protectionist

policies”(Ornelas and Puccio, 2020, 253), on the other hand, the fact is that, most likely, in the absence of industrial policies actively supporting the automotive sector, Brazil would not have developed an automotive industry of its current scale, one that today accounts for nine out of every ten vehicles sold domestically and has a significant capillarity generating multipliers and positive spillovers to the rest of the economy.

As with any fiscal policy, Brazil’s protectionist automotive policies, which have been a prominent feature of the economy since the 1950s, entail opportunity costs. The necessary critique should instead aim to understand why so much fiscal support, so much taxpayers’ money, both directly and indirectly, has been directed toward foreign players without any strategy to support sustainable upgrading of local firms in this critical industry, especially local Original Brand Manufacturers (OBMs), as other late developers such as South Korea, India, and China have done and are now extracting so much benefits in terms of value from the past strategic policy decisions. On the contrary, the dismal fact is that through the course of history, Brazil has lost even the most prominent ODMs and OEMs that it eventually placed as suppliers for the foreign OBMs in its ‘associated development’ framework. However, it is either naïve or reflective of crony finance-dominated rent-seeking to claim that the best alternative would have been to do nothing at all, withdraw support entirely, and rely exclusively on imports.

Within this framework, this Thesis re-evaluates the Brazilian automotive sector’s structural inhibition regarding the shifting global technological frontier – defined today by the convergence of digital and energy transitions. The central argument posits that the sector’s inability to fully internalize these paradigms and narrow the gap with global leaders does not stem from factor endowment constraints, such as insufficient market scale or economic viability. Rather, the

impediment is fundamentally political. The analysis identifies a recurring pattern of coalition maintenance where state and private actors prioritize short-term, liquid gains – either in the form of non-binding protectionist rents or finance-dominated rent-seeking in the form of fiscal containment – over the arduous, long-term institutional development required for sustained technological value capture and deep integration into global value chains.

Finally, this outlook helps to assesses the viability of the current Mover (Green Mobility) program through the lens of these historical liabilities, questioning whether the new regime, although much more robust and cross-class based than previous recent experiences, will be able to transcend the cycle of discontinuity and lack of clear upgrading goals other than keeping pace with global technological trends as well as keeping within Brazil's industrial park the outstanding majority of vehicles sold domestically.

While hopefully by now the demonstration of the systemic pitfalls seems robust, the outcomes delineated in this Thesis acknowledge that technological upgrading is not absent; rather, it occurs sporadically within specific segments and distinct temporal windows, often driven by isolated corporate strategies or regional incentives, but always with clear linkages to supportive public policies. This uneven trajectory cements Brazil's distinctive position within the "middle-income" tier of automotive industrialization: neither fully peripheral nor substantially at the technological frontline but situated in a persistent middle ground where islands of excellence coexist with structural vulnerabilities that, together, delineate its development.

References

- Abreu, Marcelo de Paiva. 2024. Investimentos diretos estrangeiros no Brasil, 1840-2024. Texto para discussão, No. 697, Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio), Departamento de Economia, Rio de Janeiro.
- Acemoglu, Daron, and Pascual Restrepo. 2018. "The Race between Machine and Man: Implications of Technology for Growth, Factor Shares and Employment." *American Economic Review* 108 (6): 1488–1542.
- Acemoglu, Daron, and Pascual Restrepo. 2018. "The Race between Machine and Man: Implications of Technology for Growth, Factor Shares and Employment." *American Economic Review* 108 (6): 1488–1542.
- . 2019. "Automation and New Tasks: How Technology Displaces and Reinstates Labor." *Journal of Economic Perspectives* 33 (2): 3–30.
- Adler, Emanuel. 2005. *Communitarian International Relations: The Epistemic Foundations of International Relations*. London: Routledge.
- Agência Brasil. 2023. "Montadoras paralisam produção e dão férias coletivas aos funcionários." March 21, 2023. <https://agenciabrasil.ebc.com.br/economia/noticia/2023-03/montadoras-paralisam-producao-e-dao-ferias-coletivas-aos-funcionarios>
- Aghion, P., Antonin, C., and Bunel, S. 2021. *The Power of Creative Destruction*. Harvard University Press.
- Amann, Edmund, and John Cantwell. 2012. "Innovative Firms in Emerging Market Countries." *Research Policy* 41 (4): 848-861.
- Amsden, Alice H. 1992. *Asia's Next Giant: South Korea and Late Industrialization*. Oxford University Press.
- Anfavea. 2023. *Anuário da Indústria Automobilística Brasileira*. São Paulo: Anfavea.
- Anfavea. 2025. *Anuário da Indústria Automobilística Brasileira*. São Paulo: Anfavea.
- Antràs, Pol. 2020. *Conceptual Aspects of Global Value Chains*. World Bank Policy Research Working Paper No. 9114, Available at SSRN: <https://ssrn.com/abstract=3523461>

- Antràs, Pol. 2022. De-Globalisation? Global Value Chains in the Post-COVID-19 Age. Mimeo. ECB Forum on Central Banking.
- Arbix, Glauco, and Mauro Zilbovicius. 1997. De JK a FHC: a reinvenção dos carros. São Paulo: Scritta.
- Baer, Werner. 2001. *The Brazilian Economy: Growth and Development*. Boulder, CO: Lynne Rienner Publishers.
- Baldwin, Richard, and Philippe Martin. 1999. Two waves of globalization. NBER Working Paper N° 6904.
- Baldwin, Richard. 2006. Globalization: the great unbundling(s). Economic Council of Finland.
- Baldwin, Richard. 2019. EAEA16 Keynote Address: The Future of Globalization. *Asian Economic Journal*, 33: 3-12. <https://doi.org/10.1111/asej.12168>
- Baldwin, Richard, Jan I. Haaland, and Anthony Venables. 2021. Jobs and Technology in General Equilibrium: A Three Elasticities Approach. Discussion Paper DP15739. London: Centre for Economic Policy Research (CEPR).
- Baldwin, Richard and Rebecca Freeman. 2022. Risks and Global Supply Chains: What We Know and What We Need to Know. *Annual Review of Economics* 14:1, 153-180.
- Barma, Naazneen, Giacomo Chiozza, Ely Ratner, and Steven Weber. 2009. "A World Without the West? Empirical Patterns and Theoretical Implications." *Chinese Journal of International Politics* 2: 525-544.
- Barros, Daniel Chiari, and Luciana Silvestre Pedro. 2012. *O papel do BNDES no desenvolvimento do setor automotivo brasileiro*. Rio de Janeiro: BNDES.
- Basso, Leonardo. 2012. "The Impact of Fuel Policies on the Brazilian Automobile Market." *Energy Economics* 34 (5): 1805-1814.
- Berger, Suzanne (Ed.). 1981. *Organizing Interests in Western Europe: Pluralism, Corporatism, and the Transformation of Politics*. London and New York: Cambridge University Press.
- Berger, Suzanne. 2005. *How We Compete: What Companies Around the World Are Doing to Make It in Today's Global Economy*. New York: Crown Business.
- Bielschowsky, Ricardo. 1988. *Pensamento econômico brasileiro: o ciclo ideológico do desenvolvimentismo*. Rio de Janeiro: IPEA/INPES.
- . 2001. "Eugênio Gudín." *Estudos Avançados* 15 (41).

- Birkinshaw, Julian, and Allen J. Morrison. 1995. "Configurations of Strategy and Structure in Subsidiaries of Multinational Corporations." *Journal of International Business Studies* 26 (4): 729–753.
- Boito Jr., Armando. 2018. *Reforma e crise política no Brasil: Os conflitos de classe nos governos do PT*. Campinas: Editora Unesp.
- Bourdieu, Pierre. 1995. *The rules of art*. Stanford University Press.
- Braga, Ruy. 2017. "Terra em transe: o fim do lulismo e o retorno da luta de classes." In *As contradições do lulismo: a que ponto chegamos?*, edited by André Singer and Isabel Loureiro. São Paulo: Boitempo.
- Brasil. 2012. Lei n. 12.715, de 17 de setembro de 2012. Dispõe sobre o regime automotivo, dá outras providências. Presidência da República, Casa Civil, Subchefia para Assuntos Jurídicos. https://www.planalto.gov.br/ccivil_03/_ato2011-2014/2012/lei/l12715.htm
- Braudel, Fernand. 1983. *Civilization and Capitalism, 15th–18th Century, Volume II: The Wheels of Commerce*. Glasgow: William Collins Sons & Co.
- Brenes, Esteban R., Jerry Haar, and Annabelle Requena. 2007. "Overcoming Institutional Voids in Latin America." *Journal of Business Research* 60 (5): 392–399.
- Breslin, Shaun, and Helen E. S. Nesadurai. 2023. "Economic Statecraft, Geoeconomics and Regional Political Economies." *The Pacific Review* 36 (5): 927–948.
- Bresnahan, Timothy and Manuel Trajtenberg. 1995. "General purpose technologies 'Engines of growth'?" *Journal of Econometrics*. Vol. 65(1): 83–108.
- Bruckmann, M. 2022. "El Pacto Verde Europeo y las Perspectivas de América Latina." In *La Geopolítica Ambiental de Estados Unidos y sus Aliados del Norte Global*, edited by F. Estensoro and J. P. V. Bustamante, 319–350. Buenos Aires: CLACSO.
- Brynjolfsson, Erik, and Andrew McAfee. 2014. *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies*. New York: W.W. Norton & Company.
- CADE. 2007. "Boletim da 395ª Sessão Ordinária do Conselho Administrativo de Defesa Econômica." Available in: <https://www.gov.br/cade/pt-br/assuntos/noticias/boletim-da-395a-sessao-ordinaria-do-cade>
- Capron, Laurence, and Will Mitchell. 2012. *Build, Borrow, or Buy: Solving the Growth Dilemma*. Boston: Harvard Business Review Press.
- Cardoso, Fernando Henrique. 1964. *Empresário Industrial e Desenvolvimento Econômico no Brasil*. São Paulo: Difusão Europeia do Livro.

- Cardoso, Fernando Henrique. 1973. "Associated-Dependent Development." In *Authoritarian Brazil: Origins, Policies, and Future*, edited by Alfred Stepan, 142–176. New Haven, CT: Yale University Press.
- . 2013. *Pensadores que inventaram o Brasil*. São Paulo: Companhia das Letras.
- . 2013. "Prefácio." In Antônio Ermírio de Moraes: *Memórias de um Diário Confidencial*, by José Pastore, 9–15. São Paulo: Planeta.
- Chang, Ha-Joon. 1994. *The Political Economy of Industrial Policy*. London: Macmillan.
- . 2002. *Kicking Away the Ladder: Development Strategy in Historical Perspective*. London: Anthem Press.
- Chor, Davin. 2019. Modeling global value chains: approaches and insights from economics. In: Ponte, Stefano, Gary Gereffi, and Gale Raj-Reichert. *Handbook on Global Value Chains*. Edward Elgar.
- Closset, Mathilde, Cecilia Plottier, and Zebulun Kreiter. 2023. "Chinese Foreign Investment Policy: Internationalization in Latin America and the Caribbean and Future Perspectives." In: *China, Latin America, and the Global Economy*, edited by Aaron Schneider and A. G. Teixeira. Cham: Springer Nature.
- Colantone, Italo, Ottaviano, Gianmarco I.P. and Stanig, Piero. 2021. *The Backlash of Globalization*. CESifo Working Paper No. 9289, Available at SSRN: <https://ssrn.com/abstract=3925321> or <http://dx.doi.org/10.2139/ssrn.3925321>
- Collier, Ruth Berins, and David Collier. 2002 [1991]. *Shaping the Political Arena: Critical Junctures, the Labor Movement, and Regime Dynamics in Latin America*. Notre Dame: University of Notre Dame Press.
- Collier, David, and Gerardo L. Munck, eds. 2022. *Critical Junctures and Historical Legacies: Insights and Methods for Comparative Social Science*. Lanham: Rowman & Littlefield.
- Collier, Paul. 2018. *The Future of Capitalism: Facing the New Anxieties*. London: HarperCollins Publishers.
- Collier, Paul, Colin Mayer, Alan Schwartz, Kristin Bresnahan, and Steve Pearlstein. 2020. "Columbia Law School Roundtable on the Future of Capitalism." Columbia Law School, June 10, 2020.
- Collier, Paul, Diane Coyle, Colin Mayer, and Martin Wolf. 2021. "Capitalism: What Has Gone Wrong, What Needs to Change, and How It Can Be Fixed." *Oxford Review of Economic Policy* 37 (4): 637–649.

- Conte, Maddalena, Cotterlaz, Pierre, and Mayer, Thierry. 2023. The CEPII Gravity Database. CEPII Working Paper N°2022-05.
- Dalgaard, Klaus Guimarães. 2017. *The Energy Statecraft of Brazil: The Rise and Fall of Brazil's Ethanol Diplomacy*. Brasília: FUNAG.
- De Mesquita, Bruce Bueno, and Alastair Smith. 2011. *The Dictator's Handbook: Why Bad Behavior is Almost Always Good Politics*. New York: PublicAffairs.
- De Negri, J. A. 1999. "O custo de bem-estar do regime automotivo brasileiro." *Pesquisa e Planejamento Econômico* 29 (2). Rio de Janeiro: IPEA.
- Del Gatto, Massimo. 2017. *Trends di economia Internazionale: Globalizzazione, investimenti e commercio estero*. Soveria Mannelli: Rubbettino.
- Del Gatto, Massimo, and Carlo S. Mastinu. 2021. "Geographical and cultural patterns in cross-border mergers and acquisitions: the role of experience," *Spatial Economic Analysis* 16(4): 487-505.
- Delgado, Ignácio. 2015. *Política Industrial para os Setores Farmacêutico, Automotivo e Têxtil na China, Índia e Brasil*. Brasília: IPEA.
- Deming, Edwards. 2000. *The New Economics for Industry, Government, Education*. 2nd ed. Cambridge, MA: MIT Press.
- Diniz, Eli, and Renato R. Boschi. 2007. *A difícil rota do desenvolvimento: empresários e a agenda pós-neoliberal*. Rio de Janeiro: IUPERJ.
- Doctor, Mahrukh. 2015. "Prospects for Deepening Mercosur Integration." *Journal of Latin American Studies* 47 (4): 669-697.
- Doner, Richard, and Ben Ross Schneider. 2016. "The Middle-Income Trap: More Politics than Economics." *World Politics* 68 (4): 608-644.
- Dulci, Luiza Borges. 2021. *O Sul de Minas Gerais e a governança da rede de produção global do café no século XXI*. PhD diss., Universidade Federal Rural do Rio de Janeiro.
- Dürr, Simon, Raphael Lamprecht, Matthias Kauffmann, Jörg Winter, Heinz Alexy, and Marco Huber. 2021. "Development of an Integrated Data-Driven Process to Handle Uncertainties in Multi-Variant Production and Logistics: A Survey." In *Advances in Automotive Production Technology – Theory and Application*, edited by Philipp Weißgraeber, Frieder Heieck, and Clemens Ackermann. Cham: Springer.
- Elias, Norbert. 1939. *The Civilizing Process*. Oxford: Blackwell.

- Evans, Peter. 1979. *Dependent Development: The Alliance of Multinational, State, and Local Capital in Brazil*. Princeton: Princeton University Press.
- . 1995. *Embedded Autonomy*. Princeton University Press.
- Fajnzylber, Fernando. 1988. "Technical Change and Economic Development: Issues for a Research Agenda." Presented at World Bank Seminar Technology and Long-Term Economic Growth Prospects, Washington, 16–17 November.
- Farrell, Henry and Abraham Newman. 2016. The new interdependence approach: theoretical development and empirical demonstration. *Review of International Political Economy*, 23(5): 713-736.
- Farrell, Henry and Abraham Newman. 2019. Weaponized Interdependence: How Global Economic Networks Shape State Coercion. *International Security*. 44(1): 42-79.
- Felser, K., and M. Wynn. 2023. "Managing the Knowledge Deficit in the German Automotive Industry." *Knowledge* 3 (2): 180–195.
- Fernandes, Florestan. 1975. *A Revolução Burguesa no Brasil*. São Paulo: Editora Globo.
- Fiori, José Luís. 2024. *Uma teoria do poder global*. Rio de Janeiro: Vozes.
- Forbes Brasil. 2025. "Bilionários Brasileiros 2025." Forbes Brasil. Available in: <https://forbes.com.br/listas/bilionarios-brasileiros-2025/>
- Fukuyama, Francis. 1992. *The End of History and the Last Man*. Free Press.
- Furtado, Andre, and Ricardo Carvalho. 2005. "Industrial Policy and Technological Innovation in Brazil." *Science and Public Policy* 32 (2): 151-163.
- Furtado, Celso. 1961 [2009]. *Desenvolvimento e Subdesenvolvimento*. Rio de Janeiro: Contraponto.
- Furtado, Celso. 1984. *Cultura e Desenvolvimento em Época de Crise*. Rio de Janeiro: Paz e Terra.
- . 1989. *A Fantasia Desfeita*. Rio de Janeiro: Paz e Terra.
- G1. 2018. "Temer fala em aproximação com a África e deixa Cúpula do Brics antes de reunião com africanos terminar." July 27, 2018. <https://g1.globo.com/politica/noticia/2018/07/27/temer-fala-em-aproximacao-com-a-africa-e-deixa-cupula-do-brics-antes-de-terminar-reuniao-com-africanos.ghtml>

- . 2021. "Bolsonaro Diz Que a Ford Queria Subsídios para Continuar Produção no País." January 12, 2021. <https://g1.globo.com/jornal-nacional/noticia/2021/01/12/bolsonaro-diz-que-a-ford-queria-subsidios-para-continuar-producao-no-pais.ghtml>
- Gainous, Jason, and Kevin Wagner. 2014. *Tweeting to Power: The Social Media Revolution in American Politics*. Oxford: Oxford University Press.
- Garcia, W. C., M. Kizior, and W. Simons. 2020. *Analysing Automobile Industry Supply Chains*. Brussels: European Commission, Directorate-General for Economic and Financial Affairs.
- Gereffi, Gary, John Humphrey, and Timothy Sturgeon. 2005. "The Governance of Global Value Chains." *Review of International Political Economy* 12 (1): 78-104.
- Gerschenkron, Alexander. 1962. *Economic Backwardness in Historical Perspective*. Cambridge, MA: Harvard University Press.
- Ghoshal, Sumantra, and Christopher A. Bartlett. 1990. "The Multinational Corporation as an Interorganizational Network." *Academy of Management Review* 15 (4): 603–625.
- Glawe, Linda, and Helmut Wagner. 2016. "The Middle-Income Trap: Definitions, Theories and Countries Concerned—A Literature Survey." *Comparative Economic Studies* 58: 507–538.
- Goldemberg, José. 2009. "The Brazilian Biofuels Industry." *Biotechnology for Biofuels* 2 (1): 1-7.
- Göppert, Amon, Esben Schukat, Peter Burggräf, and Robert H. Schmitt. 2021. "Agile Hybrid Assembly Systems: Bridging the Gap Between Line and Matrix Configurations." In *Advances in Automotive Production Technology – Theory and Application*, edited by Philipp Weißgraeber, Frieder Heieck, and Clemens Ackermann. Cham: Springer.
- Greenberg, Andy. 2015. "Hackers Remotely Kill a Jeep on the Highway—With Me in It." *Wired*, July 21, 2015. <https://www.wired.com/2015/07/hackers-remotely-kill-jeep-highway/>
- Griffith, Breda. 2011. "Middle-Income Trap." In *Frontiers in Development Policy*, edited by Raj Nallari et al. Washington, DC: World Bank.
- GTAI (Germany Trade & Invest). 2025. *The Automotive Industry in Germany – Issue 2025*. Berlin: Germany Trade & Invest, May 2025.
- Hall, Peter A., and David Soskice, eds. 2001. *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*. Oxford: Oxford University Press.
- Head, Keith. 2007. *Elements of Multinational Strategy*. Berlin: Springer.
- Head, K., T. Mayer and M. Melitz. 2024. The Laffer curve for rules of origin. *Journal of International Economics*. doi: <https://doi.org/10.1016/j.jinteco.2024.103911>.

- Helpman, Elhanan. 1998. *General Purpose Technologies and Economic Growth*. The MIT Press.
- Hirschman, Albert. 1980 [1945]. *National power and the structure of foreign trade*: Expanded edition. Berkeley: University of California Press.
- Hirschman, Albert. 1986. "In Defense of Possibilism". In: Albert O. Hirschman, *Rival Views of Market Society and Other Recent Essays*. New York: Viking.
- Hirschman, Albert. 1991. *The Rhetoric of Reaction: Perversity, Futility, Jeopardy*. Cambridge, MA: Harvard University Press.
- Ho, Chinh Q., and Alejandro Tirachini. 2024. "Mobility-as-a-Service and the Role of Multimodality in the Sustainability of Urban Mobility in Developing and Developed Countries." *Transport Policy* 145: 161-176.
- Humphrey, John. 2003. "Globalization and Supply Chain Networks: The Auto Industry in Brazil and India." *Global Networks* 3 (2): 121-141.
- Humphrey, John, and Olga Memedovic. 2003. "The Global Automotive Industry Value Chain: What Prospects for Upgrading by Developing Countries." UNIDO Report.
- Huntington, Samuel P. 1996. *The Clash of Civilizations and the Remaking of World Order*. Simon & Schuster.
- Ioris, Rafael R. 2014. *Transforming Brazil: A History of National Development in the Postwar Era*. New York: Routledge.
- Johnson, Chalmers. 1982. *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925-1975*. Stanford University Press.
- Kaplan, Stephen. 2016. *Banking Unconditionally: The Political Economy of Chinese Finance in Latin America*. *Review of International Political Economy*, 23(4): 643-676.
- Kaplan, Stephen. 2021. *Globalizing Patient Capital: The Political Economy of Chinese Finance in the Americas*. Cambridge: Cambridge University Press.
- Kaufmann, Daniel and Kraay, Aart and Mastruzzi, Massimo. 2010. *The Worldwide Governance Indicators: Methodology and Analytical Issues*. World Bank Policy Research Working Paper No. 5430, Available at SSRN: <https://ssrn.com/abstract=1682130>.
- Keynes, John Maynard. 2010. *Essays in Persuasion*. London: Palgrave Macmillan.
- Keynes, John Maynard. 2018 [1936]. *The General Theory of Employment, Interest, and Money*. London: Palgrave Macmillan.

- Kostova, Tatiana, and Kendall Roth. 2002. "Adoption of an Organizational Practice by Subsidiaries of Multinational Corporations: Institutional and Relational Effects." *Academy of Management Journal* 45 (1): 215–233.
- Krueger, Anne. 1975. *The Benefits and Costs of Import Substitution in India: A Microeconomic Study*. Minneapolis: University of Minnesota Press.
- Lake, David A. 2009. *Hierarchy in International Relations*. Ithaca, NY: Cornell University Press.
- Latour, Bruno. 1986. *Laboratory life: The construction of scientific facts*. Princeton: Princeton University Press.
- Latour, Bruno. 2005. *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press.
- Lee, Keun. 2021. "Economics of Technological Leapfrogging." In *The Challenges of Technology and Economic Catch-up in Emerging Economies*, 123–159. Oxford: Oxford University Press.
- Lessa, Renato. 2003. "A gramática política do Brasil, ou uma biografia do Brasil republicano." In: *A gramática política do Brasil: clientelismo e insulamento burocrático*, by Edson de Oliveira Nunes, 17–24. Rio de Janeiro: Garamond.
- Lijphart, Arend. 1971. "Comparative Politics and the Comparative Method." *American Political Science Review*, 65 (3): 682–693.
- Lipietz, Alain. 1989. *Mirages et miracles: Problèmes de l'industrialisation dans le Tiers Monde*. Paris: La Découverte.
- Lo, Dic and Yu Zhang. 2011. "Making Sense of China's Economic Transformation". *Review of Radical Political Economics*, 43 (1): 33–55.
- Luhmann, Niklas. 1995. *Social Systems*. Stanford: Stanford University Press.
- Martin, Scott. 1996. "As câmaras setoriais e o meso-corporativismo." *Lua Nova*.
- Martins, José de Souza. 2016. *Do PT das lutas sociais ao PT do poder*. São Paulo: Contexto.
- Marx, Karl. 1976 (1867). *Capital: A Critique of Political Economy, Volume I*. London: Penguin Books.
- Maslej, Nestor, et al. 2025. "The AI Index 2025 Annual Report," Stanford, CA: Stanford Institute for Human-Centered Artificial Intelligence (HAI)
- Mayer, Frederick W., and Nicola Phillips. 2017. "Outsourcing Governance: States and the Politics of a 'Global Value Chain World.'" *New Political Economy* 22 (2): 134–152.

- Mazzucato, Mariana. 2015. *The Entrepreneurial State: Debunking Public vs. Private Sector Myths*. New York: PublicAffairs.
- Mazzucato, Mariana. 2021. *Mission Economy: A Moonshot Guide to Changing Capitalism*. London: Allen Lane.
- McKenna, Elizabeth Carole. 2020. *The Revolution Will Be Organized: Power and Protest in Brazil's New Republic, 1988–2018*. PhD diss., University of California, Berkeley.
- Medeiros, Carlos Aguiar de, and Esther Majerowicz. 2025. "Contemporary Industrial Policy and Challenges to South America and Brazil." *Revista de Economia Política* 45 (1).
- Mendonça Filho, Kleber, and Juliano Dornelles, dirs. 2019. *Bacurau*. Brazil: Vitrine Filmes.
- Mendonça Filho, Kleber. 2020. *Três roteiros: O som ao redor, Aquarius, Bacurau*. São Paulo: Companhia das Letras.
- Meyer, Klaus E., and Evis Sinani. 2009. "When and Where Does Foreign Direct Investment Generate Positive Spillovers? A Meta-Analysis." *Journal of International Business Studies* 40 (7): 1075–1094.
- Moore, Barrington, Jr. 1966. *Social Origins of Dictatorship and Democracy: Lord and Peasant in the Making of the Modern World*. Boston: Beacon Press.
- Nayyar, Deepak. 2013. *Catch Up: Developing Countries in the World Economy*. Oxford: Oxford University Press.
- Navaretti, Giorgio Barba, and Gianmarco I. P. Ottaviano. 2014. *Made in Torino?: Fiat Chrysler Automobiles e il futuro dell'industria*. Bologna: il Mulino.
- North, Douglass. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge University Press.
- Nye, Joseph. 2004. *Soft Power: The Means to Success in World Politics*. New York: PublicAffairs.
- Nunes, Edson de Oliveira. 2017. *A gramática política do Brasil: clientelismo e insulamento burocrático*. Rio de Janeiro: Garamond.
- Olarreaga, Marcelo, and Isidro Soloaga. 1998. "Endogenous Tariff Formation: The Case of Mercosur." *World Bank Economic Review* 12 (2): 297–320.
- Oqubay, Arkebe. 2015. *Made in Africa: Industrial Policy in Ethiopia*. Oxford University Press.
- Oqubay, Arkebe, Christopher Cramer, Ha-Joon Chang, and Richard Kozul-Wright, eds. 2021. *The Oxford Handbook of Industrial Policy*. Oxford University Press.

- Ornelas, Emanuel, and John Turner. 2008. Trade liberalization, outsourcing, and the hold-up problem. *Journal of International Economics*. doi: <https://doi.org/10.1016/j.jinteco.2007.02.005>.
- Ornelas, Emanuel, and John Turner. 2024. The costs and benefits of rules of origin in modern free trade agreements. *Journal of International Economics*. doi: <https://doi.org/10.1016/j.jinteco.2023.103874>.
- Ornelas, Emanuel, and Laura Puccio. 2020. "Reopening Pandora's Box: In Search of a WTO-Compatible Industrial Policy? The Brazil Taxation Dispute." *World Trade Review* 19 (2): 249–266.
- Pastore, José. 2013. Antônio Ermírio de Moraes: Memórias de um Diário Confidencial. São Paulo: Planeta.
- Piketty, Thomas. 2019. *Capital and Ideology*. Cambridge, MA: Harvard University Press.
- Pitombo, João Pedro. 2024. "Força-tarefa Resgata 163 Chineses em Trabalho Análogo à Escravidão na BYD na Bahia." *Folha de S. Paulo*, December 23, 2024.
- Polanyi, Karl. 1944. *The Great Transformation: The Political and Economic Origins of Our Time*. Boston: Beacon Press.
- Pooler, Michael. 2025. "The Town That Welcomed a Chinese Car Plant—Only for a 'Slavery' Scandal to Hit." *Financial Times*, March 2, 2025.
- Prahalad, C. K., and Yves L. Doz. 1987. *The Multinational Mission: Balancing Local Demands and Global Vision*. New York: The Free Press.
- Prebisch, Raul. 1962 [1950]. "The Economic Development of Latin America and Its Principal Problems." *Economic Bulletin for Latin America* 7.
- Putnam, Robert. 1988. "Diplomacy and Domestic Politics: The Logic of Two-Level Games." *International Organization* 42 (3): 427–460.
- Przeworski, Adam, and Henry Teune. 1970. *The Logic of Comparative Social Inquiry*. New York: John Wiley and Sons.
- Robinson, William. 2024. "Global Capitalism after the Pandemic." In *Popular Sovereignty in a Digital Age: Lessons for the Global South and Working Classes*, edited by Aaron Schneider, 173–184. Albany: SUNY Press.
- Rodrik, Dani. 2001. *The Global Governance of Trade as if Development Really Mattered*. UNDP background Paper. Available at:

<https://drodrik.scholars.harvard.edu/sites/g/files/omnuum7106/files/dani-rodrik/files/global-governance-of-trade.pdf>

- Rodrik, Dani. 2004. "Industrial Policy for the Twenty-First Century." CEPR Discussion Paper No. 4767.
- Rodrik, Dani. 2021. Why Does Globalization Fuel Populism? Economics, Culture, and the Rise of Right-Wing Populism. *Annual Review of Economics*. Vol. 13:133-170.
- Ricardo, David. 1817 [2015]. *On the Principles of Political Economy and Taxation*. Cambridge, UK: Cambridge University Press.
- Sallum Jr., Brasílio. 1996. "State and Industrial Policy in Brazil: From Economic Nationalism to Economic Liberalism." *Journal of Latin American Studies* 28 (3): 635-655.
- Santos, Vitor, and Thiago Amaral. 2008. "R&D and Innovation in the Brazilian Automotive Industry." *International Journal of Automotive Technology and Management* 8 (2): 173-188.
- Schmid, Stefan, and Martin Daniel. 2011. "Headquarters-Subsidiary Relationships from a Social Psychological Perspective: How Perception Gaps Concerning the Subsidiary's Role May Lead to Conflict." In *Politics and Power in the Multinational Corporation: The Role of Institutions, Interests, and Identities*, edited by Christoph Dörrenbächer and Mike Geppert, 129-157. Cambridge: Cambridge University Press.
- Schneider, Ben Ross. 1999. "The Desarrollista State in Brazil and Mexico." *Theory and Society* 28 (5): 627-662.
- Schneider, Aaron. 2012. *State-Building and Tax Regimes in Central America*. Cambridge: Cambridge University Press.
- Schneider, Aaron. 2025. "Brazilian Agribusiness and Aviation: Intra-Elite Competition and Accommodation, Cross-Class Exclusion and Incorporation." In: *The Political Economy of Elites in Latin America*, edited by Jan Ickler and Rebeca Ramos Padrón. London: Routledge.
- Schumpeter, Joseph A. 1934. *The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest, and the Business Cycle*. Cambridge, MA: Harvard University Press.
- . 1942. *Capitalism, Socialism and Democracy*. New York: Harper & Brothers.
- Shackle, G. L. S. 1991. *Epistemics and Economics: A Critique of Economic Doctrines*. London: Routledge.
- Shapiro, Helen. 1994. *Engines of Growth: The State and Transnational Auto Companies in Brazil*. Cambridge: Cambridge University Press.

- Shapiro, Helen. 2016. "Industrial Policy and Growth." In *Handbook of Latin American Political Economy*, edited by Peter A. Kingstone and Deborah J. Yashar, 133-153. New York: Routledge.
- Sharma, Ruchir. 2025. "Sweden: A Socialist Paradise Overflowing with Billionaires." *Financial Times*, May 19, 2025.
- Singh, Jatinder. 2019. *Global Players and the Indian Car Industry: Trade, Technology and Structural Change*. London: Routledge.
- Singer, André. 2017. "A (falta de) base política para o ensaio desenvolvimentista." In: *As contradições do lulismo: A que ponto chegamos?*, edited by André Singer and Isabel Loureiro, São Paulo: Boitempo.
- Singer, André, and Isabel Loureiro (orgs.). 2017. *As contradições do lulismo: A que ponto chegamos?* São Paulo: Boitempo.
- Souza, Jessé. 2009. *A ralé brasileira: quem é e como vive*. Belo Horizonte: Editora UFMG.
- Souza, Jessé. 2018. *A classe média no espelho: sua história, seus sonhos e ilusões, sua realidade*. Estação Brasil.
- Souza, Jessé. 2022. *Brasil dos Humilhados: uma denúncia da ideologia elitista*. Civilização Brasileira.
- Starling, Heloisa Murgel. 1986. *Os Senhores das Gerais: os novos inconfidentes e o golpe de 1964*. Petrópolis: Vozes.
- Statistisches Bundesamt (Destatis). 2025. *Anzahl der Betriebe in der Automobilindustrie in Deutschland in den Jahren 2005 bis 2024 [Data set]*. <https://www.statista.de>
- Stepan, Alfred, ed. 1973. *Authoritarian Brazil: Origins, Policies, and Future*. Yale University Press.
- Stiglitz, Joseph. 2002. *Globalization and Its Discontents*. W.W. Norton & Company.
- Stiglitz, Joseph. 2021. Globalization in the aftermath of the pandemic and Trump. *Journal of Policy Modeling*. Volume 43, Issue 4: 794-804.
- Stopford, John, Susan Strange, and John Henley. 1991. *Rival States, Rival Firms: Competition for World Market Shares*. Cambridge: Cambridge University Press.
- Strange, Susan. 1996. *The Retreat of the State: The Diffusion of Power in the World Economy*. Cambridge: Cambridge University Press.
- Stellantis. 2025. "Stellantis Announces Antonio Filosa, 25-Year Veteran of the Company, to Be Its New Chief Executive Officer." Press release, May 2025.

<https://www.stellantis.com/en/news/press-releases/2025/may/stellantis-announces-antonio-filosa-25-year-veteran-of-the-company-to-be-its-new-chief-executive-officer>

- Sturgeon, Timothy, and Richard Florida. 2004. "Globalization, Deverticalization, and Employment in the Motor Vehicle Industry." In *Locating Global Advantage: Industry Dynamics in the International Economy*, edited by Martin Kenney and Richard Florida, 52–81. Stanford, CA: Stanford University Press.
- Sturgeon, Timothy, Johannes Van Biesebroeck, and Gary Gereffi. 2008. "Value Chains, Networks and Clusters: Reframing the Global Automotive Industry." *Journal of Economic Geography* 8: 297–321.
- Sturgeon, Timothy, Leonardo Lima Chagas, and Justin Barnes. 2017. *Inovar Auto: Evaluating Brazil's Automotive Industrial Policy to Meet the Challenges of Global Value Chains*. Washington, DC: World Bank.
- Sullivan, Dylan, and Jason Hickel. 2023. "Capitalism and Extreme Poverty: A Global Analysis of Real Wages, Human Height, and Mortality Since the Long 16th Century." *World Development* 161.
- Tavares, Maria, Stephen Young, and Maria Rodrigues. 2000. "The Competitiveness of Locations: The Automobile Industry in Brazil and Spain." *Transnational Corporations* 9 (2): 1-34.
- Touraine, Alain. 2013. *La fin des Sociétés*. Paris: Seuil.
- Trottier, Daniel, and Christian Fuchs. 2014. *Social Media, Politics and the State: Protests, Revolutions, Riots, Crime and Policing in the Age of Facebook, Twitter and YouTube*. New York: Routledge.
- Van der Marel, Eric. 2020. *Globalization isn't in decline: It's changing*. ECIPE Policy Brief No. 6/2020.
- Vernon, Raymond. 1966. *International Investment and International Trade in the Product Cycle*, *The Quarterly Journal of Economics*, 80(2): 190–207.
- UNCTAD-UNIDO. 2011. *Fostering Industrial Development in Africa in the New Global Environment*. Economic Development in Africa Report. Geneva: UNIDO and UNCTAD.
- UNCTAD. 2025. *Technology and Innovation Report 2025: Inclusive Artificial Intelligence for Development*. Geneva: United Nations Conference on Trade and Development.
- Wade, Robert. 2004. *Governing the Market: Economic Theory and the Role of Government in East Asian Industrialization*. Princeton University Press.

- Wade, Robert. 2013. "The Art of Power Maintenance: How Western States Keep the Lead in Global Organizations." *Challenge* 56 (1): 5–39.
- Wallerstein, Immanuel. 1979. *The Capitalist World-Economy*. Cambridge: Cambridge University Press.
- Wallerstein, Immanuel. 2004. *World-Systems Analysis*. Durham: Duke University Press.
- Wallerstein, Immanuel. 2011. *Historical Capitalism*. Verso Books.
- Wendt, Alexander. 1992. Anarchy Is What States Make of It: The Social Construction of Power Politics. *International Organization* 46 (2): 391-425.
- Wendt, Alexander. 1999. *Social Theory of International Politics*. Cambridge: Cambridge University Press.
- Wentland, Alexander. 2017. "An Automobile Nation at the Crossroads: Reimagining Germany's Car Society through the Electrification of Transportation." In: *Imagined Futures in Science, Technology and Society*, edited by Gert Verschraegen, Frédéric Vandermoere, Luc Braeckmans, and Barbara Segaert, 137–165. London: Routledge.
- White, Harrison C. 1992. *Identity and Control*. Princeton: Princeton University Press.
- White, Harrison C. 2002. *Markets from Networks: Socioeconomic Models of Production*. Princeton: Princeton University Press.
- White, Edward. 2025. "China's Emerging Multinationals Learn from Earlier Pitfalls." *Financial Times*, May 16, 2025.
- Williams, Christopher. 2011. "Subsidiary Manager Socio-Political Interaction: The Impact of Host Country Culture." In *Politics and Power in the Multinational Corporation: The Role of Institutions, Interests, and Identities*, edited by Christoph Dörrenbächer and Mike Geppert, 283–314. Cambridge: Cambridge University Press.
- World Bank. 1993. *The East Asian Miracle: Economic Growth and Public Policy*. Oxford: Oxford University Press.
- World Bank. 2001. *Rethinking the East Asian Miracle*, edited by Joseph Stiglitz and Shahid Yusuf. Oxford: Oxford University Press.
- World Bank. 2020. *World Development Report. Trading for Development in the Age of Global Value Chains*. World Bank.
- Zauli, Eduardo Meira. 1997. *As condições sociais da emergência e decadência da Câmara Setorial da Indústria Automotiva no Brasil*. São Paulo: AnnaBlume.

———. 2000. "Políticas Públicas e Targeting Setorial: Efeitos da Nova Política Industrial sobre o Setor Automobilístico Brasileiro." *Revista de Economia Política* 20 (3).

Zilbovicius, Mauro, Roberto Marx, and Glauco Arbix. 2002. "The Modernization of the Brazilian Automobile Industry." *Latin American Business Review* 3 (3): 59-80.

Zuboff, Shoshana. 2019. *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*. New York: PublicAffairs.