3 INTEGRATING COMPETITION AND INDUSTRIAL POLICIES IN BRAZIL: PATHWAYS TO FOSTER A DYNAMIC DIGITAL ECONOMY THROUGH ANTITRUST AND INNOVATION[1]

INTEGRANDO POLÍTICAS CONCORRENCIAIS E INDUSTRIAIS NO BRASIL: CAMINHOS PARA A PROMOÇÃO DE UMA ECONOMIA DIGITAL DINÂMICA POR MEIO DO ANTITRUSTE E DA INOVAÇÃO

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STRUCTURED SUMMARY

Context: This article explores the intricate relationship between industrial and competition policies in

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the digital economy, with a particular focus on Brazil. It examines the resurgence of industrial policy approaches designed to promote innovation and competitiveness while addressing the evolving role of competition policy in maintaining market neutrality. Highlighting the key role of Brazil's Administrative Council for Economic Defense (Cade), the study emphasizes how antitrust measures intersect with regulatory governance and industrial initiatives in fostering a dynamic digital economy.

Objective: The main objective is to analyze the interaction between industrial and competition policies in Brazil, highlighting their complementary and conflicting aspects. By exploring the country's regulatory framework and its implications for the digital economy, the article seeks to identify strategies for achieving policy integration that supports innovation, competition, and contestability in these markets.

Methodology: The study employs a literature review approach, subsequently analyzing emerging trends in Brazil. It develops a research agenda focusing on the interplay between industrial and competition policies, offering preliminary insights rather than definitive conclusions. The structure includes a historical overview, an exploration of policy intersections, and an analysis of Brazil's regulatory practices and their economic impacts.

Conclusion: The article highlights the need for alignment between policies to address the challenges of the digital economy, such as innovation bottlenecks, regulatory inefficiencies, and market concentration. By integrating these policies, Brazil can create a digital environment that is more conducive to innovation and competitiveness. In this regard, the study highlights the development of the Pix payment system, along with other initiatives, as an example of effective policy integration that balances state-led actions with market dynamics. It also emphasizes the role of Cade in ensuring conditions that foster innovation and competition throughout the economy.

Keywords: competition policy; industrial policy; digital platforms; market governance; innovation; digital public infrastructures.

JEL: L40; L52; O31; O33; O52.

RESUMO ESTRUTURADO

Contexto: este artigo explora a intrincada relação entre políticas industriais e concorrenciais no âmbito da economia digital, com foco particular no Brasil. Examina-se a ressurgência de abordagens de política industrial voltadas para promover inovação e competitividade, ao mesmo tempo em que se aborda o papel em evolução da política de competição na manutenção da neutralidade de mercado. Destacando o papel-chave do Conselho Administrativo de Defesa Econômica (Cade), o estudo enfatiza como medidas antitruste se cruzam com a governança regulatória e iniciativas industriais na promoção de uma economia digital dinâmica.

Objetivo: o objetivo principal é analisar a interação entre políticas industriais e concorrenciais no Brasil, destacando seus aspectos complementares e conflitantes. Ao explorar o arcabouço regulatório do país e suas implicações para a economia digital, o artigo busca identificar estratégias para alcançar uma integração política que apoie a inovação e a concorrência e contestabilidade nestes mercados.

Método: o estudo utiliza uma abordagem de revisão de literatura, analisando posteriormente tendências emergentes no Brasil. Busca-se o desenvolvimento de uma agenda de pesquisa focada

na interação entre políticas industriais e concorrenciais, oferecendo *insights* preliminares em vez de conclusões definitivas. A estrutura inclui uma revisitação da relação histórica entre as políticas, uma exploração das interseções existentes e uma análise das práticas regulatórias do Brasil e seus impactos econômicos.

Conclusões: o artigo destaca a necessidade de alinhamento entre as políticas para enfrentamento dos desafios da economia digital, como gargalos de inovação, ineficiências regulatórias e concentração de mercado. Ao integrar essas políticas, o Brasil pode criar um cenário digital mais propício à inovação e competitivo. O estudo ressalta o desenvolvimento do sistema de pagamento Pix, além de outras iniciativas, como um exemplo de integração política eficaz que equilibra ações lideradas pelo Estado com dinâmicas de mercado, e enfatiza o papel do Cade em garantir condições para a promoção da inovação e da concorrência em toda a economia.

Palavras-chave: política concorrencial; política industrial; plataformas digitais; governança de mercado; inovação; infraestruturas públicas digitais.

1 INTRODUCTION

The growing prominence of new theories on industrial policy in recent years underscores a shift toward strategic government intervention aimed at promoting innovation, driving technological progress, and strengthening economic resilience. This approach differs from traditional forms of industrial policy, which often relied on protectionism and direct state intervention. Instead, modern industrial policy seeks to shape the economic environment to facilitate innovation, sustainability, and competitiveness. As noted by Evenett *et al*. (2024), "*strategic competitiveness is the dominant motive governments give for taking action, followed by climate change and supply chain resilience, with geopolitical and national security concerns accounting for a smaller share*". This broader approach reflects an expanded rationale for industrial policy beyond the traditional focus on correcting market failures or fostering innovation alone. Instead, modern industrial policy seeks to shape the economic environment to foster resilience, sustainability, and competitiveness in response to the complex demands of the 21st century.

In tandem with this resurgence, the role of competition policy has also evolved. Traditionally focused on solely ensuring market efficiency and preventing monopolistic practices, competition policy now assumes a central role in being a priori embedded in the design of industrial policies. This integration is essential to ensure that the pursuit of strategic objectives – such as technological leadership and sustainability – does not come at the cost of market contestability. This function is particularly critical in the context of digital markets, where platform dominance pose unique challenges

to maintaining open and competitive environments. However, tensions persist between these two policy areas, as the pursuit of industrial development – whether for innovation, sustainability, security, or competitiveness – can sometimes conflict with competition goals, particularly when state intervention is involved. In this regard, one of the key challenges lies in finding a balance that promotes technological growth without compromising competitive neutrality. Accordingly, the digital economy presents new challenges for both industrial and competition policies. The market power of digital platforms, their network effects, and data control issues have blurred the lines between the need for regulation and the need to promote innovation. This is particularly relevant in Brazil, where the government has recently undertaken multiple initiatives aimed at regulatory governance, competition enforcement – even advancing toward a direct debate regarding the role of antitrust enforcement in digital affairs[4] –, and industrial policy in the digital sector. In this context, the Administrative Council for Economic Defense (Cade) has emerged as a key actor. Cade's role spans across these fronts, balancing antitrust enforcement, contributing to regulatory governance, and supporting industrial initiatives aimed at improving Brazil's position in the global digital economy.

Methodologically, this study employs a literature review, subsequently analyzing emerging trends in the Brazilian context aiming to open a research agenda focused on the interface – both positive and negative – between industrial and competition policies. Its purpose is not to deliver conclusive findings but to provide preliminary insights into the interplay between these two policy domains, guiding potential avenues for further investigation, with a special focus on the digital economy.

The structure of the article is as follows. The first section provides an overview of the new industrial policies in the 21st century, exploring their evolution and current dynamics. The second section delves into the interface between industrial policy and competition policy, examining their relationship before and after the digital age. This includes an analysis of the tensions and complementarities that arise when these two policy domains intersect. The third section presents a preliminary look at the Brazilian case, highlighting the role of various government entities, mainly Cade, in shaping a dynamic digital economy through regulatory, competitive, and industrial policies. Finally, we summarize the findings and discuss key policy recommendations to improve the integration of competition and industrial policies in Brazil.

2 THE NEW INDUSTRIAL POLICY OF THE 21ST CENTURY

The resurgence of industrial policy in the 21st century has redefined its role as a crucial instrument for economic growth, technological development, and national resilience. In short, industrial policies can be defined as government initiatives that explicitly target the transformation of economic activity to achieve public goals such as stimulating innovation, productivity, climate transition, and economic growth (Juhász; Lane; Rodrik, 2024). These policies, in turn, aim to shape the economic structure by exercising discretion in favoring certain sectors (or economic behaviors/outcomes) over others.

4 For more information, refer to the working paper prepared by the Ministry of Finance based on input gathered regarding competition issues in digital markets (Ministério [...], 2024).

As Juhász, Lane and Rodrik (2024) notes, traditionally, critiques point out that industrial policies were characterized by protectionism and direct state intervention to support national industries. These arguments often focus on informational shortcomings and political capture. Regarding the first, governments may lack sufficient knowledge about market failures to make effective decisions, while the latter suggests that industrial policy can be susceptible to lobbying and influence, leading to decisions that benefit private interests without enhancing overall social welfare (Juhász; Lane; Rodrik, 2024). Another point of contention is that the resurgence of industrial policy is closely linked to a more protectionist and nationalist global environment. This shift has prompted concerns that industrial policy might be used to prioritize national interests at the expense of international cooperation[5].

Although these arguments are valid in many respects and should be background concerns in any context of industrial policy formulation/implementation, economic theory has increasingly made room for the use of new industrial policy strategies, focusing on well-designed and evidence-based policies to foster competitiveness, innovation, and broader welfare gains. Unlike traditional protectionist approaches – often focused on developing foundational industries, such as durable and non-durable goods sectors, to mitigate competitive disadvantages – these new industrial policy frameworks emphasize creating an environment conducive to innovation, technological sovereignty, and sustainability. This shift is driven by challenges in the digital economy, geopolitical uncertainties, and the need to address climate change, among other vectors.

In this regard, new industrial policies must balance state intervention with market dynamics, leveraging government support to stimulate innovation in the private sector (Rodrik, 2004; Aiginger; Rodrik, 2020; Juhász; Lane; Rodrik, 2024). Delving deeper into this concept, Mazzucato and Rodrik (2023) argue that industrial policies should be accompanied by conditionalities, tying government support to objectives that maximize public value, such as fostering local innovation ecosystems and ensuring fair competition.

The recent "Draghi Report" emphasizes that industrial policy should focus not on picking winners, but on fostering an environment where innovation can flourish across all sectors. Rather than direct intervention, this approach focuses on aligning incentives to foster private sector growth in key areas. Investments in digital infrastructure, green technologies, and skills development are crucial to maintaining competitiveness in a rapidly changing global landscape. By shaping markets through strategic investments and partnerships, this policy model seeks to develop markets that encourage technological advancement and sustainability[6]. The report highlights the need to align industrial policy with broader social goals, such as reducing inequalities and promoting sustainability, ultimately building market structures that support innovation without heavy-handed intervention (Draghi, 2024).

5 As highlighted by Evenett *et al*. (2024), the recent wave of industrial policy measures has been largely driven by advanced economies and is frequently motivated by strategic competitiveness, climate objectives, and national security. These trends have led to a notable increase in tit-for-tat dynamics: "*a subsidy for a given product by one major economy is met with a subsidy for the same product by another within one year*" in nearly 74 percent of cases. Such dynamics raise important questions about the sustainability of the multilateral trading system and point to the urgent need for greater transparency, dialogue, and coordination in the governance of industrial policies.

6 Perspectives like this regarding the role of the state in the process of structuring markets and incentives align with the perspective of a state-market interaction role that goes beyond the regulatory paradigm, advancing towards understanding the state as an agent of "marketcraft", "marketcreating" or "marketshaping." In this context, it is assumed that for this set of policies, and consequently for the development of this state role, greater interaction (and often complementarity) between various spheres of public policy is required, whether related to inclusion, sustainability, foreign trade, competition, regulation, or industrial policy actions. These assumptions imply viewing market governance as a way to rebalance power and as a form of distributive policy. For further debates on this model of action, see: Mazzucato (2016) and Vogel (2018, 2023).

A central feature of this new wave of industrial policies is the creation of an environment conducive to sustained innovation. This entails fostering synergies between the public and private sectors, with government initiatives laying the groundwork for private enterprise innovation – for instance, through public investments in digital infrastructure and education that help reduce entry barriers for startups. This ensures that industrial policy does not merely protect existing industries but actively promotes new technologies and business models (Rodrik, 2004; Aiginger; Rodrik, 2020). Moreover, industrial policy must keep up with the pace of rapid technological change, as traditional tools such as subsidies and tariffs often fall short – lacking the speed and flexibility needed to meet the evolving demands of the digital economy. Instead, policies should emphasize agility and focus on developing capabilities that allow economies to swiftly seize emerging opportunities and address evolving challenges. This includes investing in human capital, particularly in digital skills, to ensure the workforce can benefit from the digital transformation (Draghi, 2024).

In this context, the adoption of new industrial policies can be better understood through the lens of technological development, which has become a central focus in recent policy debates (Mazzucato; Entsminger; Kattel, 2021). Aiginger and Rodrik (2020) argues that the state has a pivotal role in providing a strategic framework for economic restructuring, particularly in promoting technological dynamism and diversification. In the digital age, this role becomes critical as countries build digital infrastructures and address systemic challenges such as global competition and the dominance of digital platforms (Mazzucato; Entsminger; Kattel, 2021; Tirole, 2024).

Tirole (2024) adds that traditional market-based approaches, which prioritized minimal intervention, are increasingly seen as inadequate in the face of market power concentrations. Instead, modern industrial policies recognize the need for government involvement to overcome market failures, especially in areas with high barriers to entry, network effects, and data control issues (Draghi, 2024; Tirole, 2024). This perspective emphasizes the state's role not only in regulating but also in actively fostering the conditions for private sector innovation and competition.

Exemplifying this approach, the European Union has been developing policies and initiatives that help illustrate part of this process of formulation and implementation, focusing on both sustainability and technological development. The European Green Deal aims to decarbonize the economy while fostering innovation in green technologies, demonstrating the evolving role of industrial policy in achieving sustainability goals (European Commission, 2024a). Similarly, the EU Digital Strategy seeks to maintain European competitiveness by investing in digital infrastructure, promoting skills, and reducing reliance on foreign technology providers (European Commission, 2024b). These initiatives exemplify how well-designed, evidence-based policies can address global challenges like climate change while also driving economic growth, aligning with the broader objectives of modern industrial policy.

The United States' CHIPS and Science Act is another example of interventionist industrial policy that aims at fostering the conditions for private sector innovation and competition. The policy is focused on boosting semiconductor production and reducing reliance on foreign suppliers and reflects a commitment to technological sovereignty, which can be a double-edged sword (Fact [...], 2022). On one hand, technological sovereignty is crucial for national security, as it ensures control over critical technologies and reduces vulnerabilities associated with dependence on foreign technology giants (Tucker *et al*., 2023). On the other hand, the focus on sovereignty can easily lead to

protectionist measures that prioritize domestic interests at the expense of international cooperation and open markets. This tension highlights one of the key nuances of industrial policy: while it aims to enhance national resilience, it also risks fostering protectionism that could stifle global competition and innovation. Such potential negative effects must be carefully considered in the formulation of industrial policies to strike a balance between national security and open, competitive markets.

Beyond these dimensions, there are also central concerns regarding the effects of industrial policies on competition and, conversely, how competition can influence the design of incentives and mechanisms to facilitate the entry of innovative agents. The OECD (2024) highlights the importance of pro-competitive industrial policies, which ensure that technological development is pursued in an environment where markets remain open to new entrants. This pro-competitive approach prevents dominant players from stifling innovation, promoting the development of a more contestable digital economy. Caffarra and Lane (2024) also emphasize integrating competition elements into industrial policies to avoid technological dependencies and promote diversity in digital markets.

These examples underscore how new industrial policies must foster both innovation and competitiveness while avoiding pitfalls such as monopolization and technological lock-ins. This debate opens up space for a deeper focus on the relationships between antitrust policy and industrial policies - and on the role of competition policy in designing economic incentives. Such relationships have often been marked by tensions arising from the sometimes antagonistic objectives of both sets of public policies.

3 THE INTERPLAY BETWEEN INDUSTRIAL POLICY AND ANTITRUST BEFORE AND AFTER THE DIGITAL AGE

The interplay between industrial policy and antitrust is often characterized by both complementarity and conflict[7]. As Sokol (2014) explains, the fundamental tension between industrial policy and antitrust is rooted in their divergent goals: while traditional industrial policy promotes government intervention to support certain industries or achieve specific economic outcomes, traditional competition policy is primarily concerned with ensuring competition and consumer welfare.

This dichotomy can lead to conflicting outcomes when industrial policy interventions create market advantages for certain firms, potentially clashing with antitrust objectives of maintaining competitive neutrality and preventing monopolistic behavior (Sokol, 2014). The resurgence of industrial policies in the 21st century – particularly in the context of a more protectionist and nationalist global environment – has further intensified these tensions, underscoring the need for a careful balancing of policy instruments to achieve both industrial and competitive policy goals. This more nuanced and strategic approach stands in contrast to traditional industrial policy models, which have historically been criticized for leading to inefficiencies and distorting market outcomes (Ordover, 1987).

On the one hand, such policies can be instrumental in addressing market failures and fostering technological development, especially in sectors where private investment is inadequate

7 Generally speaking, some scholars argue that competition policy is, in itself, a form of industrial policy. Viewed through the lens of the economics of industrial organization, these concepts (the interaction between market failures and public policies) are understood as distinct elements that, as Tirole (2015, 2024) points out, comprise a set of four central aspects: (i) the regulation of public utilities; (ii) competition policy; (iii) consumer protection measures; and (iv) industrial policies.

due to high risks or significant positive externalities (Rodrik, 2004; Mazzucato, 2016). On the other hand, the use of industrial policy can be problematic, as it may foster protectionist tendencies that lead to market distortions and hinder international competition (Ordover, 1987; Sokol, 2014). This dual nature – balancing the role of government support with the risks of market manipulation – remains a central challenge in integrating industrial and antitrust policies effectively[8].

The rise of the digital economy has further reshaped the tensions between industrial policy and antitrust. Tirole (2017, 2024) highlights how technological advancements, particularly the growth of digital platforms, have blurred the lines between regulation and antitrust enforcement. Digital platforms often exhibit characteristics similar to public utilities, including high fixed costs, network externalities, and low marginal costs, which complicates the distinction between sectors requiring industrial support and those that need antitrust oversight. The evolving nature of digital platforms has led to calls for treating them like public utilities, suggesting stricter regulations, breaking them up, or utilizing tougher antitrust enforcement (Tirole, 2024). Indeed, the complexities of digital platforms and their dominance create challenges for antitrust authorities, especially when addressing issues related to the sharing of sensitive information and technologies among competitors for the purpose of fostering sustainability and environmental preservation.

Furthermore, the geopolitical tensions of recent years have added to the complexities, with industrial policy gaining renewed interest as a mechanism to ensure technological sovereignty (Pasquale, 2017). Policies like the already mentioned European Digital Strategy and the US's CHIPS and Science Act exemplify the complexity of balancing strategic autonomy with open competition. While these industrial policies aim to enhance sovereignty, they inherently risk reducing space for external competition, potentially leading to market concentration and undermining fair competition. This interplay between fostering national strategic interests and ensuring a competitive digital marketplace represents one of the nuanced challenges of integrating industrial and antitrust policies effectively, as industrial policy must address strategic vulnerabilities while avoiding anti-competitive outcomes.

The Digital Markets Act (DMA), in contrast, serves as an example of a competition policy that adopts a regulatory model aimed at enhancing contestability and fairness within digital markets[9]. The DMA targets major digital platforms – often seen as gatekeepers – with the intention of mitigating bottlenecks and reducing barriers to entry for smaller players. Tirole (2024) emphasizes that the DMA addresses the need to improve access to critical services by imposing obligations on gatekeeper platforms, ensuring they provide fair conditions for businesses relying on these platforms. By promoting greater contestability, the DMA aims to counterbalance the concentration of power and improve the functioning of digital markets, recognizing that platforms often act as essential utilities and bottlenecks. The focus on contestability and fairness aims to ensure that digital platforms remain open to new entrants and foster a competitive environment, yet it also reflects the potential for

8 As previously mentioned, a potential approach to aligning industrial policy with antitrust objectives is through the use of conditionalities. Mazzucato and Rodrik (2023) argue that government support for industries should be contingent on conditions that ensure public value creation, such as fostering local innovation ecosystems and maintaining competitive dynamics. By incorporating these conditionalities, this approach aligns industrial policy interventions with the broader goal of market efficiency, helping to prevent monopolistic outcomes while promoting sectoral growth.

9 The DMA, despite its importance, should not be considered as an "ideal type" for all jurisdictions – mainly due to its high regulatory costs and the significant state capacity required for implementation –, but rather as an example of a competition policy/regulatory design that has broad implications and interfaces with industrial policy. This is because it reshapes the incentives and organizational structures of large platforms (and consequently of the service sectors in which they operate and dominate) with competition goals in mind, while also generating significant industrial repercussions.

regulatory measures to have unintended protectionist effects, particularly when targeting specific firms with significant market influence (Crémer *et al*., 2023).

Draghi (2024) advocates for a "joined-up approach" that aligns industrial and competition policies, especially in strategic sectors like digital and green technologies. By integrating competition considerations into industrial policy, governments can support sectoral development without undermining market contestability. This approach is particularly important in the context of emerging technologies, where state intervention is often necessary but must be balanced with measures that ensure competitive markets. Antitrust policy plays a critical role in fostering innovation by maintaining open and contestable markets, which is crucial for the successful implementation of such joined-up approaches[10].

As previously noted, the rise of large digital monopolies poses significant challenges for the integration of industrial and antitrust policies, especially in an increasingly digitalized and data-driven economy. The dominance of digital platforms has direct effects on multiple industrial sectors, as these platforms often serve as essential infrastructure for a wide range of economic activities. In this context, transformations like the rapid development of artificial intelligence (AI) (Acemoglu; Restrepo, 2018; Acemoglu, 2021; Acemoglu; Autor; Johnson, 2023) and the need to build comprehensive digital infrastructure have become central contentious points linking antitrust policies - focused on controlling economic power in digital markets - to broader industrial policies focused on the development of markets, technologies, and incentives, as well as governance and regulatory frameworks for these new technologies. These three dimensions - competition, technological innovation, and regulatory governance - often overlap and intersect, being directly linked to many other areas of economic public policy.

Thus, the challenge is not merely to regulate monopolistic power but also to ensure that the use of AI and other digital technologies contributes to general welfare and aligns with socio-economic objectives involving a diverse group of stakeholders, including workers, communities, families, and businesses, rather than solely benefiting the dominant corporate giants. The leverage that large digital platforms derive from their market dominance allows them to finance foundational infrastructure, creating a complex landscape where monopoly rents are reinvested to further entrench their position. This dynamic exacerbates entry barriers for potential competitors, making the role of competition policy even more crucial. Antitrust measures must not only prevent anti-competitive practices but also ensure that industrial policies create a balanced ecosystem where innovation and socio-economic objectives can thrive without leading to entrenched monopolistic power (Acemoglu, 2021; Draghi, 2024; Tirole, 2024).

The coordination between industrial and antitrust policies in the context of digital platforms can offer significant mutual benefits. Caffarra (2024a, 2024b), for example, advocates for a more sector-specific approach, where competition enforcement is closely aligned with industrial strategies at the sector level, considering broader macroeconomic conditions and trade developments. Current approaches, however, often lack a nuanced understanding of investment and innovation dynamics,

10 In terms of the sustainability discussion, considerations of this kind are already being brought before antitrust authorities, particularly in debates over the exchange of sensitive information and technologies between competitors to foster environmental preservation/with sustainability concerns. The European Green Deal is another example, aiming to promote sustainable industries, it provides a relevant example of how antitrust measures can effectively complement industrial policy. By ensuring that green technologies do not become monopolized, the policy helps prevent market concentration, thereby encouraging broader innovation and adoption (European Commission, 2024a).

relying too heavily on narrow market definitions and incremental market share assessments. Effective coordination requires moving beyond these formulaic analyses to develop a more comprehensive understanding of the broader landscape, ensuring that public investments in research and development (R&D) and infrastructure foster genuine innovation and support new entrants, rather than being captured by dominant players (Caffarra, 2024a, 2024b; Caffarra; Lane, 2024).

Consequently, the key challenge lies in designing antitrust frameworks that effectively prevent predatory behaviors while aligning it with industrial policies aimed at strategic growth and incentives realignment. This approach requires a nuanced understanding of both competition and industrial strategies to ensure they complement each other, fostering a balanced environment conducive to innovation and equitable growth. This integrated approach is crucial for ensuring that both competition policy and industrial policy work in tandem to create a balanced ecosystem that supports innovation, economic growth, and equitable opportunities for all market participants.

Given the various tensions and complexities in the relationship between competition and industrial policies – particularly within the digital economy – it is useful to explore the Brazilian case, a relevant example of a developing economy with distinctive structural characteristics. Like many other countries, Brazil faces the significant challenge of designing policies that enable smaller players to innovate and compete in markets shaped by dominant digital gatekeepers. An integrated policy approach that aligns industrial and competition objectives could help lower access barriers and create more equitable market conditions for emerging firms. In addition, Brazil risks falling into a "middle/low-technology trap," where incremental technological progress fails to translate into sustained competitiveness and economic growth. Addressing these challenges calls for a coordinated, evidence-based policy framework that not only limits the market power of entrenched players but also fosters innovation and technological advancement across the broader economy.

4 GOVERNANCE, COMPETITION, AND INDUSTRIAL POLICY IN BRAZIL: A BRIEF ANALYSIS OF CADE'S ROLE AT THE INTERSECTION OF COMPETITION AND INDUSTRIAL POLICIES

The "middle technology trap" refers to the stagnation experienced by countries that have successfully developed mid-range technologies but struggle to transition to high-tech sectors. The concept, as discussed by Fuest *et al*. (2024) and Tirole (2024), is predominantly presented in the European context, where it highlights the difficulties of advancing beyond incremental innovation to achieve technological leadership. However, this discussion can be extended to Brazil, a large developing economy with significant particularities. Brazil not only plays an important role as a platform for digital governance but also faces a more extreme version of the middle technology trap – what might be characterized as a "low technology trap." This condition reflects a reliance on incremental innovation in traditional sectors without sufficient advancement into disruptive technologies, leaving the country vulnerable to falling behind in an increasingly digital and AI-driven global economy.

Brazil may be experiencing a challenge similar to that of the European Union, though at an even earlier stage – facing not a middle-technology trap, but rather a "low/middle-technology trap". To overcome this, the country must prioritize innovation policies that support high-risk, high-reward projects, instead of focusing primarily on established mid-tech sectors. Following the

recommendations made for the EU, adopting an "ARPA-like"[11] approach with strategic and well-defined public investments to enhance advanced technological capabilities could help Brazil break free from this stagnation (Fuest *et al*., 2024). This Brazilian "low/middle technology trap" is a major obstacle to economic growth, which requires coordinated policies that promote technological progress, transition from mid-tech to high-tech industries, and foster innovation in strategic areas. As previously mentioned, the development of technology hubs requires a mix of industrial policy, competition incentives, and regulatory governance of the digital economy. In this context, it is valuable to examine the historical development of governance mechanisms in Brazil.

Brazil has taken a relatively pioneering role in shaping a regulatory framework for the digital space that uniquely blends market-oriented principles, rights-based approaches, and state intervention within the context of a developing economy in the Global South. A key example of this is the "*Marco Civil da Internet*" (Internet Civil Framework), enacted in 2014, which established a set of rights, principles, and responsibilities for internet users and service providers, effectively serving as Brazil's "internet constitution." It represents a landmark achievement in terms of digital rights, ensuring net neutrality, privacy, and freedom of expression. Although the *Marco Civil* currently generates some controversies, it plays an important role as the first regulatory framework established by the Brazilian state to address the challenges of the digital economy. The *Marco Civil* also set an important precedent for involving multiple stakeholders in internet governance, including civil society, government, and the private sector.

This early initiative demonstrated Brazil's commitment to promoting an open and inclusive internet, highlighting the country's potential in shaping the digital landscape. However, challenges remain in translating such governance frameworks into broader innovation gains, particularly as the digital economy becomes increasingly dominated by global platforms. The lessons from *the Marco Civil da Internet* show that while legal frameworks are crucial for digital governance, they must be complemented by targeted innovation policies to fully leverage digital transformation opportunities. Additionally, these lessons highlight the need for regulatory and governance structures tailored to each specific area impacted by platform actions, requiring the establishment of specialized bureaucracies and techniques to address these issues effectively. Competition policy is just one of many fronts in this broader regulatory process.

In recent years, the Brazilian federal government has undertaken multiple initiatives aimed at regulating the digital economy. These include legislative proposals such as Bill 2338/2023, which seeks to regulate AI in Brazil by establishing guidelines for its ethical and transparent use while promoting technological innovation. Other initiatives include Bill 8889/2017, which proposes the regulation of streaming services, and Bill 12/2024, which addresses labor conditions for app-based transport workers. Additionally, the so-called "Fake News Bill" (PL 2630/2020) aims to combat disinformation, and Bill 2768/2022 assigns regulatory responsibilities over digital platforms to Anatel (National Telecommunications Agency). In relation to the broader scope of competition, a recent initiative by the Ministry of Finance further expands this debate, corroborating Cade's contribution to the public consultation organized by the Ministry, emphasizing the need to expand the powers of the Brazilian

11 The Advanced Research Projects Agency (ARPA) was founded in 1958 by the U.S. Department of Defense as a response to the Soviet Union's launch of Sputnik. Its primary mission was to avoid technological surprises by funding high-risk, high-reward research and development initiatives. ARPA was instrumental in breakthrough innovations like ARPANET – the forerunner of the internet – and laid the groundwork for what would later become DARPA.

competition authority to address issues of market power in the digital environment (Ministério [...], 2024).

These initiatives represent an effort to position Brazil as a significant player in the governance of the digital economy, structuring a comprehensive framework that addresses multiple regulatory aspects, including labor rights, content moderation, AI transparency, ethical standards, and fair competition in digital markets. However, despite these initiatives, none of these proposals have advanced in the national legislature, highlighting the difficulties in constructing effective governance mechanisms and the implications of a complex political economy that is challenging for both the executive branch and advocates of new regulatory instruments.

On the other hand, in terms of industrial policy, Brazil seems to be working towards developing a plan that aligns with international examples and the broader vision of the new role of industrial policy for technology in the 21st century. The Ministry of Development, Industry, Trade and Services (MDIC) is a key agent in shaping this process, focusing on fostering inclusive technological growth. A new dimension of this policy is emerging, emphasizing not only development through subsidies but also reducing barriers to entry for smaller players and repositioning Brazil within the competitive global technology landscape. The MDIC is committed to driving initiatives that support infrastructure development, education, and innovation, with particular attention to AI as a strategic area for technological advancement and economic competitiveness (MCTI, 2024).

In this sense, the Brazilian AI Plan, known as "*IA para o Bem de Todos*" (AI for the Benefit of All) (MCTI, 2024), represents a significant shift in strategy, emphasizing inclusive growth and reducing concentration in the tech sector. The plan outlines a broad range of strategic actions, such as fostering public-private partnerships, supporting the development of AI infrastructure, and promoting education and training in AI-related fields, thus creating opportunities for smaller companies to innovate and participate actively in the digital economy. The plan includes substantial investments in digital infrastructure, like constructing high-capacity data centers powered by renewable energy and developing one of the world's most powerful supercomputers. These initiatives aim to make the digital landscape more accessible and provide an environment that encourages new entrants, enhancing Brazil's competitiveness in the AI sector.

Furthermore, the Brazilian AI Plan focuses on building a sustainable and inclusive innovation ecosystem. With over R$ 23 billion in planned investments from 2024 to 2028, the plan's strategy revolves around infrastructure development, capacity building, and regulatory support for AI. Establishing a network of regional centers of excellence in AI, promoting the use of AI in public services, and ensuring data sovereignty through models that reflect Brazil's cultural diversity are key elements of the plan (MCTI, 2024). These efforts aim not only to enhance Brazil's technological competitiveness but also to integrate underserved regions and communities into the digital economy, contributing to a more equitable high-tech landscape.

Returning to the role and actions of Cade, it's understood that within this set of distinct initiatives, Cade can and should fulfill three distinct roles beyond its already established functions and its role as an organizer of antitrust public policy and competition advocacy.

First, Cade should strengthen its actions in structural analysis and conduct assessment through the ex post model already exercised by the authority. This would involve enhancing its current capabilities to effectively analyze and respond to anti-competitive behavior after it occurs, ensuring accountability and market fairness. Second, Cade should focus on developing initiatives on

the administrative level and work directly with the executive branch to establish a new regulatory framework. This framework would position Cade as the central regulator of competition in digital markets, using *ex ante* tools to prevent anti-competitive behavior before it takes place. By proactively shaping market conditions, Cade can help create an environment that deters monopolistic practices and encourages fair competition from the outset. Third, Cade should cooperate with other regulatory agencies and ministries to play an ancillary role in developing competition-promoting measures that align with broader public policies, such as the Brazilian AI program. This cooperation would ensure that these initiatives have pro-competitive foundations and effects, contributing to an environment where policies not only support innovation but also ensure a level playing field for all market participants, thereby fostering a more dynamic and inclusive digital economy.

An illustrative example of the complex interplay between industrial and competition policy in Brazil is the development of Pix by the Brazilian Central Bank (BCB). Pix is more than just a payment tool – it constitutes a form of digital public infrastructure and reflects a deliberate industrial policy intervention aimed at increasing competitiveness and efficiency in the banking and payments sectors. By introducing a low-cost, real-time, and universally accessible payment system, the state effectively entered the market with a transformative product that restructured incentives and business models, particularly impacting incumbents such as acquirers and card networks. This move underscores the dual nature of the state's role – not only as a regulator but also, in some sense, as a market participant.

This dual role introduces a unique tension in the application of competition policy. On one hand, competition enforcement authorities such as Cade must ensure that the scale and asymmetric power of state-led interventions – like Pix – do not inadvertently suppress competitive market structures or crowd out private innovation. On the other hand, Cade must also be prepared to shield such public innovations from retaliatory or exclusionary strategies by incumbent firms whose entrenched market positions are disrupted by these exogenous shocks. In this sense, the role of competition policy is ambivalent: it must safeguard the market from both the potential distortions introduced by state intervention and the anti-competitive reactions from dominant private actors.

To fulfill this dual function, competition policy must be embedded into the very design and rationale of industrial policy from the outset. This means incorporating competitive safeguards and market contestability goals into the initial policy framework – a "*quasi ex ante*" role – while also maintaining a formal *ex post* function of monitoring, enforcement, and remedial action. The case of Pix illustrates the need for greater institutional coordination: while the Central Bank leads the policy initiative, agencies such as Cade should be involved early in the process to help design mechanisms that mitigate potential harms to market dynamics and ensure the long-term sustainability of competitive conditions. This coordination could also extend to innovation-focused institutions like MDIC and the Ministry of Science, Technology and Innovation (MCTI), reinforcing a more integrated and strategic governance model for industrial and competition policies in Brazil's digital economy. By supporting these initiatives, Brazil aims to create an environment where innovation is accessible to a diverse set of players, regardless of size or capital capacity. The emphasis on infrastructure and training within the Brazilian AI Plan is vital to reducing barriers for new entrants and enabling smaller firms to compete effectively in a landscape often dominated by larger platforms. This inclusive approach may prove essential for creating a resilient digital economy that aligns with broader socio-economic goals. In this context, ongoing efforts to democratize AI development - if paired with a more proactive and adaptive regulatory stance from Cade - could potentially contribute to reshaping Brazil's competitive

landscape in ways that promote inclusive, sustainable growth. More broadly, a truly comprehensive competition policy must extend beyond traditional antitrust analysis, encompassing the unique challenges of the digital economy, sustainability, labor rights, and the competitiveness of small enterprises. By incorporating these diverse aspects, Brazil can build a regulatory framework that not only supports innovation but also protects consumer rights and promotes an equitable environment for all market participants. This inclusive approach is essential for creating a resilient digital economy that meets broader socio-economic goals.

CONCLUSION

In conclusion, this article underscores the evolving relationship between industrial and competition policies, highlighting the importance of a more integrated approach within the digital economy. The analysis of Brazil's areas of action - regulatory governance, competition enforcement, and industrial policy - demonstrates the complexity of balancing state intervention and market competition. Cade's role, as both a regulator and a promoter of innovation, is pivotal in maintaining this balance, showing how antitrust enforcement can align with broader industrial objectives without compromising competition.

These preliminary insights indicate that a comprehensive competition policy must go beyond traditional antitrust measures to address the challenges of the digital economy, sustainability, labor issues, and the competitiveness of small enterprises. By incorporating these diverse aspects, Brazil can create a regulatory framework that fosters innovation, protects consumer rights, and ensures fair competition for all market participants. This inclusive and forward-looking approach is crucial for building a resilient and dynamic digital economy that supports broader socio-economic objectives.

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