

## TRADE POLICY, PROTECTION AND INDUSTRIAL PRODUCTIVITY IN BRAZIL

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**Abstract:** This article provides a literature review of the impact of protectionist trade policies on industrial development, with a particular focus on productivity, using the case study of Brazil. It examines the historical context of Brazil's industrial development and the use of trade protectionist measures. The article then presents a theoretical contextual review of the economic literature of trade policies and industrial productivity. Finally, the article provides a literature review on the effects of protectionist trade policies on industrial productivity in the case of Brazil through the lens of total factor productivity, within-firm productivity, and gains of productivity from reallocation. The results of the study suggest that protectionist measures exerted negative impact both on total factor productivity, on within-firm productivity, and divided conclusions on the impact on productivity from reallocation. The article concludes by pointing to the necessity of reevaluating Brazilian trade policy and increasingly considering empirical evidence on the design of public trade policy in Brazil in order to promote productivity growth and contribute to the country's industrial development. The findings of this paper may be particularly relevant to policymakers in Brazil and shed light on the reasons why some of past policies failed to attain the desired outcomes.

**Keywords:** Brazil. Trade policy. Industrial Development. Productivity. Trade protection.

**Resumo:** Este artigo fornece uma revisão da literatura sobre o impacto das políticas comerciais protecionistas no desenvolvimento industrial, com foco particular na produtividade, utilizando o estudo de caso do Brasil. Ele examina o contexto histórico do desenvolvimento industrial brasileiro e o uso de medidas protecionistas de comércio. O artigo apresenta então uma revisão teórica contextual da literatura econômica

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sobre políticas comerciais e produtividade industrial. Por fim, o artigo faz uma revisão da literatura sobre os efeitos das políticas comerciais protecionistas na produtividade industrial no caso do Brasil, por meio da perspectiva da produtividade total dos fatores, da produtividade dentro da firma e dos ganhos de produtividade provenientes da realocação. Os resultados do estudo sugerem que as medidas protecionistas exerceram impacto negativo tanto na produtividade total dos fatores, na produtividade dentro da firma, quanto deixaram conclusões divididas sobre o impacto na produtividade proveniente da realocação. O artigo conclui apontando para a necessidade de reavaliar a política comercial brasileira e considerar cada vez mais evidências empíricas no desenho da política comercial pública no Brasil, a fim de promover o crescimento da produtividade e contribuir para o desenvolvimento industrial do país. As descobertas deste artigo podem ser especialmente relevantes para os formuladores de políticas no Brasil e lançar luz sobre as razões pelas quais algumas políticas passadas não alcançaram os resultados desejados.

**Palavras-Chave:** Brasil. Política comercial. Desenvolvimento industrial. Produtividade. Proteção comercial.

## 1. Introduction

The relationship between industrial development and trade policy measures has long been object of debate in the literature, either through a more developmental and interventionist perspective or through a more liberal one. A vast body of literature has examined the impact of protectionist trade policies and liberalization on industries, providing a solid foundation for further research. Yet, this debate remains contentious and ongoing, with divergent views on the optimal trade policy approach for promoting industrial development.

Trade policy measures can have complex and multifaceted impacts on industrial development. The way in which a country defines its trade policies can have far-reaching effects on both the performance of individual firms and the broader industrial landscape. Trade policies create incentive to increase or decrease import or export of goods and services, which in turn can affect firms' sales, costs, markups, productivity, and innovation, as well as influence labor markets through wages, employment, and resource reallocation across different sectors.

Brazil has a unique trajectory in its industrial development and a long-standing history of implementing a range of trade measures, aimed primarily at fostering inward industrialization growth<sup>2</sup>. Brazilian's experience with trade interventions can provide thoughtful insights into how the effects of trade protection affect industrial development, particularly productivity. Such policies intended to increase industrial production capacity and incentivize the industry to become competitive. Did such policies achieve its ultimate objective? Did Brazil industry become more competitive as a result of trade policies aimed at shielding the domestic market from imports? More specifically, what were the effects of trade policy measures, as well as Brazil subsequent trade liberalization in the firm level and total factor productivity? This paper aims to perform a deep dive in the literature and discuss how evidence can help to understand the interaction between trade policies and industrial development, particularly zooming in the productivity spectrum, utilizing the Brazil case.

Brazil has implemented different industrial policies over time and faced an intense industrialization from 1950 to 1980. The manufacturing sector's share of the GDP doubled in the period, and, by the mid-1980s, Brazil was considered to have an integrated and diversified industry<sup>3</sup>. From then until 2020, Brazil lost space in the world stage. Its transformation industry grew by 24%, while the global industry increased by 204%, from 1980 to 2017, indicating a significant lag in Brazil's industrial growth compared to the rest of the world<sup>4</sup>. Despite the implementation of more recent industrial policies, the Brazilian manufacturing sector has been unable to sustain its contribution to the country's total GDP, resulting in a negative impact on per capita GDP. Brazilian deindustrialization, though, is not due to a change in the composition of demand in favor of the services sector, as has happened

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<sup>2</sup> SILBER, S. D. Trade Policy from the 1930s to the Present. In: AMANN, E.; AZZONI, C. R.; BAER, W. (Eds.). *The Oxford Handbook of the Brazilian Economy*. [s.l.] Oxford University Press, 2018.

<sup>3</sup> SUZIGAN, W.; FURTADO, J. Instituições e políticas industriais e tecnológicas: reflexões a partir da experiência brasileira. *Estudos Econômicos (São Paulo)*, v. 40, p. 7–41, mar. 2010.

<sup>4</sup> MORCEIRO, P. C.; TESSARIN, M. *Desenvolvimento industrial em perspectiva internacional comparada*. Aug. 6<sup>th</sup>, 2019.

in developed countries in the same period, rather it is a symptom of a loss of manufacturing competitiveness<sup>5</sup>.

From 1950s onward, Brazil employed an import-substitution industrialization strategy in varying degrees, when trade-restrictive measures were an unequivocal feature motivated at first by the desire to foster industrial learning opportunities, creating an environment conducive to innovation, which could potentially lead to enhanced competitiveness. This infant industry argument, as nominated in economic theory, posits that, over time, the manufacturing sector would become competitive and no longer require protection. By replacing imports of certain products by domestic production, the economy may begin to be more independent, resilient and diversified<sup>6</sup>. Counterintuitively, what the vast literature has already concluded is that trade protectionist measures negatively affect productivity, which hampers competitiveness.

In order to evaluate the impacts of the protectionist trade measures on industrial development, the article intends to use an extensive literature review and supporting data. The article is divided in three sections: the first will provide a theoretical framework supporting the analysis and demonstrating the links between trade measures and effects on industrial development; the second will provide a historical overview from the period of 1950 to 1990 and briefly review important literatures regarding Brazilian industrial development, trade restrictive measures implemented; the third will evaluate the outcomes of trade policies implemented, particularly after 1990s, the period of trade liberalization. The results of this paper will be particularly relevant to policy makers, as it will provide a new reflection on the effectiveness of Brazil's trade policies in relation to its industrial policies over time and shed light on the reasons why some of past policies failed to attain the desired outcomes.

## **2. Trade Policies and Industrial Development: Theoretical**

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<sup>5</sup> MORCEIRO, P. C. Evolution and Sectoral Competitiveness of the Brazilian Manufacturing Industry. In: AMANN, E.; AZZONI, C. R.; BAER, W. (Eds.). *The Oxford Handbook of the Brazilian Economy*. [s.l.] Oxford University Press, 2018.

<sup>6</sup> BRUTON, H. Chapter 30 Import substitution. In: *Handbook of Development Economics*. [s.l.] Elsevier, 1989. v. 2p. 1601–1644.



## Insights

### 2.1. *A theoretical perspective on the effects of trade policies*

From 1950s until 1980s, Brazil employed an import-substitution industrialization strategy in varying degrees, which involved cultivating an excessive shield of tariffs, non-tariff barriers (quantitative import restrictions, import licensing requirements, national production exam), and exchange rate devaluations <sup>7</sup>. Brazil also employed other tools to encourage particular industries to perform, such as: subsidies, regulations stimulating the use of domestically produced inputs, tax credits and subsidized financing conditions. While such policies intended to increase production capacity and incentivize the industry to become competitive through a stimulus in demand, the literature explains that such interventions have deleterious effects, such as imbalances and externalities to production, economy, and welfare.

Each type of trade instrument affect competition conditions in the domestic market or influence the allocation of resources among different activities <sup>8</sup>. High tariffs and quantitative import restrictions aim to encourage domestic production by increasing the price of a similar competitor, leaving space for the domestic producer to increase its own prices and margins, consequently stimulating the private sector to dedicate additional resources (land, labor, and capital) into the protected sector, regardless of its natural comparative advantages. Tariffs will also affect the total welfare of the society, through a distributive effect, as consumers will pay higher prices transferring this compensation in the direction of the domestic production. The outcomes of quantitative import restrictions or import licensing requirements are similar, stimulating the increase in price of the import and leaving room for the domestic substitute to compete in better conditions.

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<sup>7</sup> FRANCO, A. M. DE P.; BAUMANN, R. A substituição de importações no Brasil entre 1995 e 2000. *Brazilian Journal of Political Economy*, v. 25, p. 190–208, sept. 2005.

<sup>8</sup> CASTILHO, M. DOS R.; MIRANDA, P. Tarifa aduaneira como instrumento de política industrial: a evolução da estrutura de proteção tarifária no Brasil no período 2004-2014. <https://repositorio.ipea.gov.br/handle/11058/8712>, 2018.

Another tool utilized in trade to stimulate local production is to include regulatory local content requirements, when firms are compelled to adhere to predetermined quotas of domestically produced components during the assembly of their products in order to access specific incentives. The objective is to foster domestic production and augment the density of the production chain. Nonetheless, these requirements impose additional production costs on companies since imported inputs often exhibit more favorable pricing or superior quality compared to the locally sourced inputs that firms are compelled to employ. The imposition of such requirements can introduce distortions in the realm of perfect competition, thereby elevating costs for firms, consequently impacting the final consumer price and potentially compromising the quality of the end product <sup>9</sup>.

Despite the primary objective of import containment inherent in trade policy measures, their consequences extend beyond initial expectations. As firms ramp up production in protected industries, resources such as labor, capital, and other domestic inputs are redirected from more competitive sectors to the sheltered industry. This resource reallocation results in an imbalance within the sector providing these resources, leading to reduced output or employment <sup>10</sup>, ultimately impacting the overall total factor productivity of the economy.

Another often-overlooked consequence of trade restrictive interventions is the adverse effect on the export aspirations of industries. The reallocation of resources towards protected industries, coupled with incentives to use domestic inputs that may not have the same quality or price, can drive up costs for companies and hinder their ability to compete globally. As a result, companies may be unable to achieve the level of competitiveness required for exports and, thereby, fail to realize the benefits of economies of scale.

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<sup>9</sup> TAKACS, W. E. Protective Regimes and Trade Reform. In: LUKAUSKAS, A.; STERN, R. M.; ZANINI, G. (Eds.). *Handbook of Trade Policy for Development*. [s.l.] Oxford University Press, 2013. p. 301-334.

<sup>10</sup> JEHLE, G. A. Instruments of Trade Policy. In: LUKAUSKAS, A.; STERN, R. M.; ZANINI, G. (Eds.). *Handbook of Trade Policy for Development*. [s.l.] Oxford University Press, 2013. p. 145-183.

## 2.2. *What about productivity?*

Productivity is a key factor to economic growth and development and can be defined as the efficiency through which a firm can transform inputs into outputs. While internal factors such as management efficiency, innovation, and R&D play a significant role in productivity growth, external drivers such as trade exposure can also affect productivity growth. According to Syverson, trade exposure can impact both what the author calls “within” and “between” components of aggregate productivity growth. The within component refers to individual producers increasing efficiency, while the between component relates to more efficient producers growing faster than less efficient ones, or more efficient entrants replacing less efficient exiting businesses. In an extensive literature review, the author observed a strong correlation between the average productivity level of an industry’s plant and that industry’s trade exposure. However, the evidence on the impact of firms starting to export on domestic plants is less clear. The literature on the “learning-by-exporting” hypothesis suggests that exporting can lead to productivity gains through learning and knowledge transfer effects, but this finding was not consistently supported by empirical evidence in the author’s study <sup>11</sup>.

Various studies have sought to examine and provide empirical evidence on the relationship between trade and productivity and the mechanisms through which one affects the other. One commonly employed methodology is the evaluation of ex-post effects of aggregate productivity of a country once it engages in trade liberalization. The means through which productivity will be affected is also debated, both in total factor productivity and in within firm productivity and can be summarized in the following aspects: i) reallocation of firms towards more productive firms or sectors; ii) within firm increase of productivity efficiency, through an increase in competition originating from imports and/or greater access to imports of intermediate and capital goods. The main and robust finding of research in this area is that a reduction of trade policy barriers leads to an unambiguous increase in industry

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<sup>11</sup> SYVERSON, C. What Determines Productivity? *Journal of Economic Literature*, v. 49, p. 326–365, 2011.

revenue productivity<sup>12</sup>. The specific mechanisms through which trade-oriented competition is postulated to increase productivity vary from quality upgrading within plants and greater availability of intermediate inputs to heightened selection across plants<sup>13</sup>.

### **3. Industrial Development and Trade Policies until the 1980s**

This section aims to provide a historical overview of the Brazilian industrial development and trade policies, with a critical review of relevant literature, particularly regarding trade restrictive measures implemented throughout Brazilian economic history. A comprehensive understanding of Brazil's industrial development and trade policies is essential to understand the origins of its protectionist stance and its persistence among Brazilian policymakers. Through the identification and examination of key policy instruments utilized during the relevant period, and by providing relevant literature support, the article aims to offer contextual background to enable subsequent analyses.

This analysis seeks to draw parallels between industrial and trade policies in Brazil, focusing on two distinct periods: 1950 to 1990 and the 1990s onward. The division is based on the intuitive notion that the first period represents the golden years for the Brazilian industry, which gained relevance in the country's economic landscape. In contrast, the second period is marked by a decrease in the industry's participation. Both periods faced exogenous shocks that required proportional responses in internal decision-making. These shocks included wars and credit crises, which impacted trade policies and the Brazilian economy as a whole. Additionally, internal factors such as critical trade policy design decisions also played a crucial role in shaping the trajectory of the Brazilian industry during these periods.

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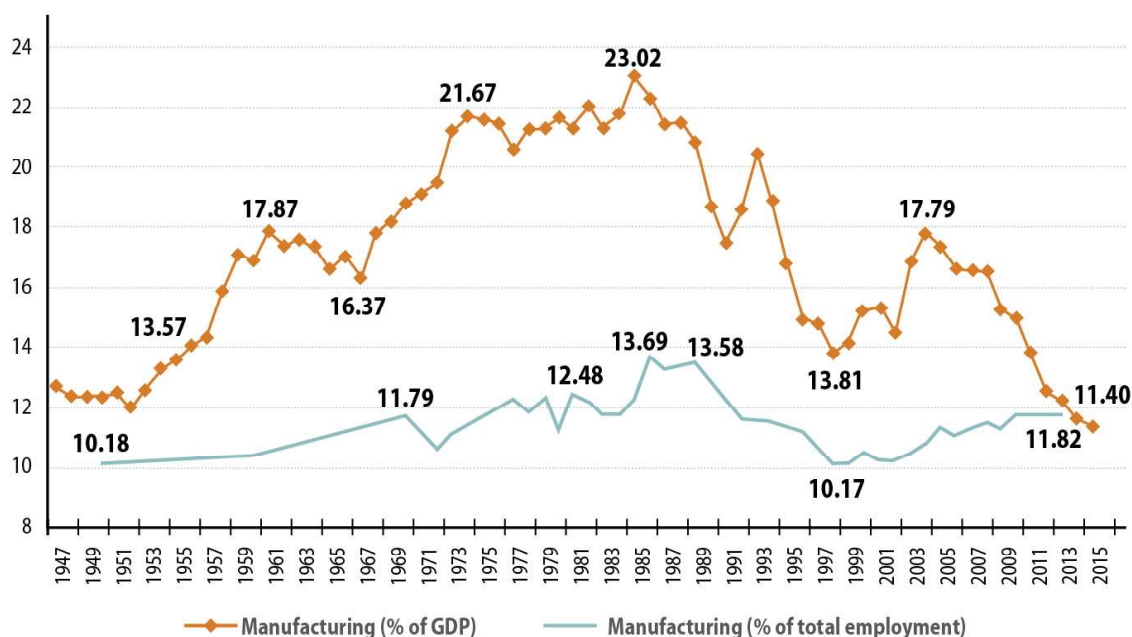
<sup>12</sup> GOLDBERG, P. K.; PAVCNIK, N. *The Effects of Trade Policy*.: Working Paper Series. National Bureau of Economic Research, feb. 2016. Available In: <<https://www.nber.org/papers/w21957>>. Accessed in: 22 jun. 2023.

<sup>13</sup> SYVERSON, C. What Determines Productivity? *Journal of Economic Literature*, v. 49, n. 2, p. 326–365, 2011.

### 3.1. A unique trajectory in industrial development

Brazil has a unique trajectory in its industrial development. Brazil faced an intense industrialization from 1950 to 1980, while several government initiatives and industrial policies were implemented. This period was marked by an intense industrialization in Brazil, with the manufacturing sector's share of GDP doubling. Between 1950 and 1980, Brazil's GDP experienced a significant annual growth rate of 7.4%, which was nearly 3 percentage points higher than the global average growth rate. The Brazilian government played a key role in this process, implementing strong state planning initiatives such as the Plano de Metas (Goals Plan, 1956-1960) and the Second National Development Plan (1975-1979).

**Graph 1. Manufacturing in Brazil  
(% of GDP and of total employment)**



Source: Paulo César Morceiro, “Evolution and Sectoral Competitiveness of the Brazilian Manufacturing Industry”.

The Goals Plan (*Plano de Metas*), implemented between 1956 and 1960 by the President Juscelino Kubitschek, aimed to achieve fifty years of development in five years through investments in various sectors, such as energy, transportation, industry, and education. Suzigan observes that it was the first effective experience of industrial development planning as a central element of a comprehensive



economic development strategy and consisted in a program of public and private (national and foreign) investment<sup>14</sup>. The Second National Development Plan implemented between 1975 and 1979, aimed at promoting economic growth and social development and invested in key sectors such as transportation, energy, agriculture, and industry. Despite facing challenges such as inflation and a global oil crisis, both plans led to progress in various sectors, including the construction of highways and power plants, the expansion of the mining and steel industries, and the modernization of the agricultural sector.

Both initiatives resulted in the establishment of plants for durable, intermediate, and capital goods, which were considered the most challenging sectors to develop domestically. The industrial policy was focused on constructing sectors and seeking to convert Brazilian industrial structure to those of the industrialized economies, based on metal mechanics and chemistry. The construction of the industrial structure and infra-structure was established as a tripod: State (infrastructure and base industry), foreign capital (durable consumer goods industries) and national capital (consumer goods industries)<sup>15</sup>. By the mid-1980s, Brazil was considered to have an integrated and diversified industry<sup>16</sup>.

### 3.2 *A history of strong government interventions in trade*

As Brazil entered the 1950s, it relied heavily on coffee exports as a key driver of foreign trade and faced significant challenges in managing its exchange rate, increasing pressure in international price of commodities. Recent experience has highlighted the complexities of exchange rate control and has underscored the need for a trade policy that could support the country's economic development goals, namely its industrial development. According to Silber, it had become clear to the government that ties the economy to commodities exports would

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<sup>14</sup> SUZIGAN, W. Experiência histórica de política industrial no Brasil. *Brazilian Journal of Political Economy*, v. 16, p. 3–19, jan. 1996.

<sup>15</sup> SUZIGAN, W.; FURTADO, J. Política industrial e desenvolvimento. *Revista de Economia Política*, v. 26, n. 2, p. 163–185, jun. 2006.

<sup>16</sup> SUZIGAN, W.; FURTADO, J. Instituições e políticas industriais e tecnológicas: reflexões a partir da experiência brasileira. *Estudos Econômicos* (São Paulo), v. 40, p. 7–41, mar. 2010

leave the country vulnerable to balance of payment crises, foreign debt service defaults and radical downturns in economic growth<sup>17</sup>.

The first stage of the import substitution strategy had already been implemented by the 1950s but consistently remained at the core of the country's industrial policy. Through ISI, governments sought to nurture growth of a more competitive and self-sufficient industry through the isolation of the domestic market from international competition. Key policy tools involved, from one pillar, cultivating an excessive shield of tariffs, non-tariff barriers, import licensing requisites, import prohibitions, and exchange rate devaluations; and from another, through government investment, subsidies and the control of state-owned firms. While this approach was consistent with the ideas of the Economic Commission for Latin America and the Caribbean (ECLAC), the consequences of the isolation generated a range of externalities.

The Brazilian government also directly managed the exchange rate consistently with the objective of developing the industrial sector. Policy based on an overvalued exchange rate became a pillar of Brazilian economic policy after 1946<sup>18</sup>. In that sense, industry would benefit from greater access to inputs and capital good purchased with an overvalued exchange rate and would enjoy absolute protection due to import controls and prohibitions. However, as the overvalued exchange rate provided incentives for imports and promoted competitiveness through greater access, it undermined the export competition of Brazilian industrial products. In 1957, a tariff reform was implemented to simplify the import tariff system. The reform established a single ad-valorem duty with escalating rates up to 150%, favoring lower rates for capital goods and raw materials and higher rates for consumer goods. The goal was to promote industrialization and import substitution by restricting foreign competition through the application of the "Law of

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<sup>17</sup> SILBER, S. D. Trade Policy from the 1930s to the Present. In: AMANN, E.; AZZONI, C. R.; BAER, W. (Eds.). *The Oxford Handbook of the Brazilian Economy*. [s.l.] Oxford University Press, 2018

<sup>18</sup> DE ABREU, M. P.; BEVILAQUA, A. S.; PINHO, D. M. Import Substitution and Growth in Brazil, 1890s–1970s. In: CÁRDENAS, E.; OCAMPO, J. A.; THORP, R. (Eds.). *An Economic History of Twentieth-Century Latin America: Volume 3: Industrialization and the State in Latin America: The Postwar Years*. St Antony's Series. London: Palgrave Macmillan UK, 2000. p. 154–175.

the Similar”, that gained a new status to prohibit imports of products that had similar domestic industrial production.<sup>19</sup>

Significant shifts towards a more open economy implemented after 1964 achieved results in increasing the rate of growth and diversification of manufactured exports through extensive policy reforms aiming to remove or reduce distortions. These measures included the abolition of state export taxes, simplification of administrative procedures for exporters, and introduction of tax incentives and subsidized credits for exporters.<sup>20</sup> The novel approach to trade policy relied on incentives for manufactured exports, with subsidies equivalent to a devaluation of over 70% of the ruling foreign exchange rate<sup>21</sup>. The results of these policy changes were impressive, with the rate of growth of manufactured exports twice that of overall exports between 1965 and 1975, and well above the rate of expansion of international trade. Exports which expanded the most in the period were precisely those of sectors which were either established or consolidated during the postwar ISI: motor vehicles, communications and transport equipment, shipbuilding, iron, steel, basic chemicals and aircrafts<sup>22</sup>.

Despite the impressive expansion of manufacturing exports during the post-1964 period, sustained growth proved to be elusive. By the late 1970s, ISI had resulted in the creation of a diversified industrial structure producing a wide range of good which included motor cars, aircraft, armored vehicles, and most types of capital goods. Many projects promoted during these years proved, nonetheless, to be unable to survive when in 1980s government support was reduced and some degree of competition was fostered by the opening up of the economy<sup>23</sup>. Export subsidies were an explicit and transparent tool of export promotion that gathered increasing opposition from developed countries, being regarded as an unfair trade policy. This policy was

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<sup>19</sup> SILBER, S. D. Trade Policy from the 1930s to the Present. In: AMANN, E.; AZZONI, C. R.; BAER, W. (Eds.). *The Oxford Handbook of the Brazilian Economy*. [s.l.] Oxford University Press, 2018.

<sup>20</sup> CARDOSO, E. A Brief History of Trade Policies in Brazil: From ISI, Export Promotion and Import Liberalization to Multilateral and Regional Agreements. Apr. 1st 2009.

<sup>21</sup> DE ABREU, M. P.; BEVILAQUA, A. S.; PINHO, D. M.

<sup>22</sup> DE ABREU, M. P.; BEVILAQUA, A. S.; PINHO, D. M.

<sup>23</sup> DE ABREU, M. P.; BEVILAQUA, A. S.; PINHO, D. M.

discontinued during the 1980s due to fiscal deficits and international trade disputes and was compensated by two “maxi-devaluations” of the Brazilian currency in 1979 and 1983 <sup>24</sup>, which contributed to a significant increase in inflation and further economic instability.

The next few years qualified in Brazilian history as the period of hyperinflation and the focus of the Brazilian economic policy was to contain its inflation, leaving trade policies relegated to the backstage. From 1986 to 1995, inflation in Brazil largely varied and reached three-digit indexes as the country faced significant economic challenges due to an accumulated large external debt, global high interest rates and falling commodity prices, which affected Brazil’s export earnings. In response to these challenges, Brazil entered a phase of balance of payments adjustment under the International Monetary Fund (IMF) conditionality. This involved implementing a range of austerity measures to reduce government spending, in order to restore financial stability and address the country’s external debt crisis. This period also represents a huge decline in manufacture representativeness over GDP.

#### **4. Trade Liberalization and Productivity: Evidence from the Post-1990s**

##### *4.1. Industry after 1980s*

From the late 1980s until 2020, Brazilian manufacturing sector lost space in the world stage. Brazilian transformation industry grew by 24%, while the global industry increased by 204%, from 1980 to 2017, indicating a significant lag in Brazil’s industrial growth compared to the rest of the world <sup>25</sup>. Facing a rough macroeconomic instability in the period post 1980, institutions accountable for establishing and implementing industrial policies as well as science and technology faced a budget decrease and loss of technical expertise <sup>26</sup>.

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<sup>24</sup> SILBER, S. D. Trade Policy from the 1930s to the Present. In: AMANN, E.; AZZONI, C. R.; BAER, W. (Eds.). *The Oxford Handbook of the Brazilian Economy*. [s.l.] Oxford University Press, 2018.

<sup>25</sup> MORCEIRO, P. C.; TESSARIN, M. *Desenvolvimento industrial em perspectiva internacional comparada*. Aug. 6th 2019.

<sup>26</sup> SUZIGAN, W.; FURTADO, J. Instituições e políticas industriais e tecnológicas:



After a period of industrial policy inertia, in 2003, President Lula announced the Industrial, Technological and Trade Policy (*Política Industrial, Tecnológica e de Comércio Exterior*, PITCE), and industrial policy returned to the Brazilian economic agenda. The PITCE has set targets and prioritized innovation, nevertheless, was susceptible to various shortcomings, in particular its incongruity with macroeconomic policies, namely the interest rates and tax structure. The deficient infrastructure, weaknesses in the science, technology, and innovation system, and fragility in the command and coordination of policy implementation procedures were also decisive to its lack of concrete results.

Responding to critics over PITCE, the Brazilian government launched in 2008 the Productive Development Policy (*Política de Desenvolvimento Produtivo*, PDP), broadening the number of sectors benefited to 24 and establishing short-term goals, taking into consideration the electoral process. The sectors were grouped in i) consolidating and expanding Brazil's leadership; ii) strengthening competitiveness; iii) strategical areas to develop. The PDP did not increase the manufacturing participation of Brazil in its GDP and incentivized companies, not to foment innovation and productivity, but to grow due to mergers and acquisitions creating internationally competitive large groups <sup>27</sup>. In 2011, the Brazilian government announced the Greater Brazil Plan (*Plano Brasil Maior*, PBM) that combined one horizontal approach and one sectorial one, that concentrated the efforts in 19 sectors. The PBM had a horizontal and defensive character and concentrated efforts in fiscal exemptions, tax reductions, and public financial contributions, lacking the adequate focus on innovation and productivity, and consequently reinforcing the current production structure.

Despite these efforts, the country was unable to effectively implement these policies and as a result, the manufacturing sector was unable to maintain its share in the country's overall GDP. This lack of sustained growth had a negative impact on Brazil's per capita GDP. The failure to effectively implement industrial policies may have been due to

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reflexões a partir da experiência brasileira. *Estudos Econômicos (São Paulo)*, v. 40, p. 7–41, mar. 2010.

<sup>27</sup> ABDAL, A. Contribuição à crítica da política industrial no Brasil entre 2004 e 2014. *Novos estudos CEBRAP*, v. 38, p. 437–456, sept. 5th 2019.



a range of factors, such as poor governance, inadequate infrastructure, and a lack of investment in education and training. These factors may have limited the ability of the manufacturing sector to innovate and compete effectively in the global marketplace.

#### 4.2. *Brazil's trade liberalization experience*

By the end of the 1980s, high tariffs and non-tariff barriers remained dysfunctional and represented an important harm to investment, productivity growth, and competition in the Brazilian economy. The country's isolation from the world market was causing high costs for the industry and the society due to distorted resource allocation, reduced economic welfare, and hindered economic growth<sup>28</sup>. In response, Brazil engaged in a series of trade liberalization efforts, marked by: i) a unilateral liberalization effort implemented in waves; ii) a multilateral initiative, with the establishment of the World Trade Organization; and iii) a regional.

The first wave of unilateral liberalization occurred in 1988, when the Brazilian government eliminated part of the non-tariff barriers, as well as tariff redundancies, surcharges and simplified special tax regimes. The second and last waves of liberalization occurred in 1990 and 1993, reducing the average tariff rate from 57,5% in 1987 to 13% in late 1993<sup>29</sup>.

During the same period, the World Trade Organization was established, providing a platform for negotiating tariff reductions in a non-discriminatory manner. Brazil's trade negotiation efforts during the following years prioritized the multilateral route. One exception to this strategy was the formation of Mercosur, the most profound trade initiative Brazil historically has been part. While the goal of Mercosur was to become a common market, it still presents numerous gaps. Despite these shortcomings, Mercosur has played an important role in promoting trade and economic integration among its member countries.

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<sup>28</sup> SILBER, S. D. Trade Policy from the 1930s to the Present. In: AMANN, E.; AZZONI, C. R.; BAER, W. (Eds.). *The Oxford Handbook of the Brazilian Economy*. [s.l.] Oxford University Press, 2018.

<sup>29</sup> VEIGA, P. DA M. *Brazil's Trade Policy: Moving Away From Old Paradigms*. Brookings, 30 nov. 1DC. Available In: <<https://www.brookings.edu/research/brazils-trade-policy-moving-away-from-old-paradigms/>>. Accessed in: 23 jun. 2023.

Brazilian liberalization policies were characterized by a sudden and decisive implementation, but trade protectionism and the import substitution tradition left a few footprints in the Brazilian economy and trade policy. The Brazilian trajectory firmly entrenched the idea that trade protection is required for industrial policy to succeed, and liberalization initiatives were interrupted. After the unilateral trade reform and the establishment of Mercosur initiatives in the beginning of the 1990s, no other significant trade policy liberalization moves can be identified<sup>30</sup>. Instead, through the years, while other developing countries continued to reduce import tariffs, Brazilian tariffs remained virtually unaltered (see Graph 2). From 1995, after the implementation of Mercosur, an External Common Tariff was employed between its members which inhibited further across the board reforms in Brazilian tariffs, leaving the country in the present days with one of the highest tariff rates between emerging and developed countries, particularly on inputs and capital goods<sup>31</sup>. The political economy of Brazilian trade policy attests to the centrality of private interests that seek and commonly succeed in influencing the country's trade policy agenda, both regarding the use of protectionist measures such as increasing import tariffs, as well as in the negotiation agenda.<sup>32</sup>

#### 4.3. *Trade and productivity*

In order to evaluate Brazilian trade policies impacts on productivity, this section intends to perform a literature review that explores trade measures and subsequent trade liberalization effects on three variables: i) total factor productivity; ii) within-firm efficiency; iii) gains of productivity originating from reallocation. While efforts have been made to document Brazil's past trade measures, comprehensive and structured data regarding trade policies only became available in

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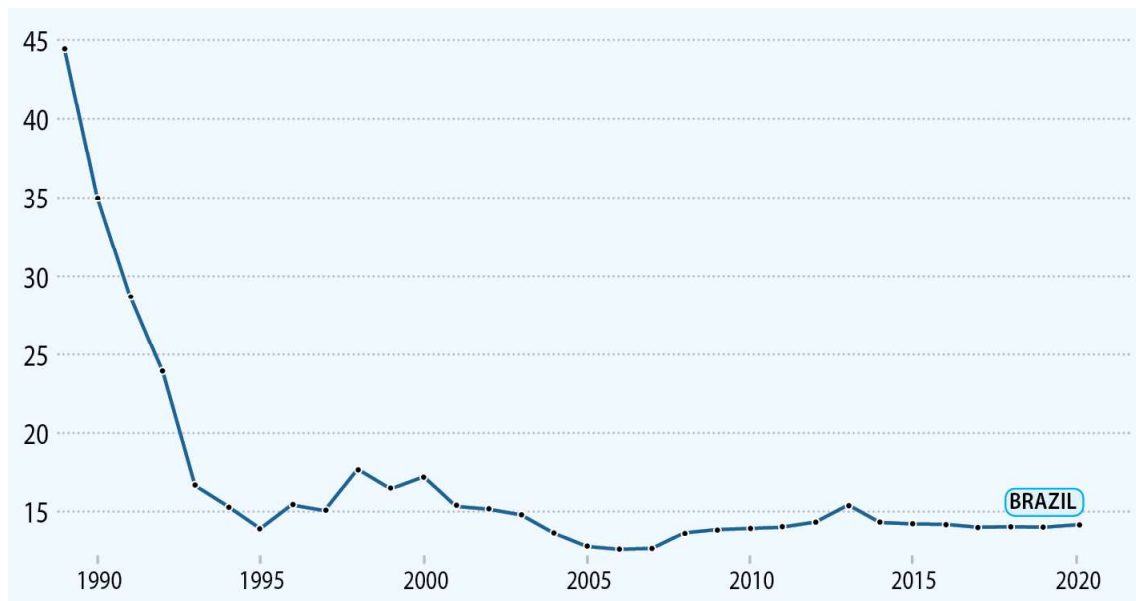
<sup>30</sup> SILBER, S. D. Trade Policy from the 1930s to the Present. In: AMANN, E.; AZZONI, C. R.; BAER, W. (Eds.). *The Oxford Handbook of the Brazilian Economy*. [s.l.] Oxford University Press, 2018.

<sup>31</sup> OECD. *OECD Economic Surveys: Brazil 2020*. Paris: Organisation for Economic Co-operation and Development, 2020.

<sup>32</sup> OLIVEIRA, I. T. M. Ideias e interesses na política comercial brasileira: efeitos sobre as negociações entre o Mercosul e a União Europeia. <https://repositorio.ipea.gov.br/handle/11058/4426>, apr. 2014.

the late 1980s. An examination of tariff data in isolation before the 1980s would provide limited insight, as non-tariff barriers and other methods of import controls that could not be registered in a systematic way were prevalent before that period. The steep decline in the tariff rate applied to manufactured products after 1989 reflects the Brazil's effort on trade liberalization described in the last section.

**Graph 2. Tariff rate, applied, simple mean, manufactured products (%).**



Source: World Bank

Quantifying the impacts of trade protection poses challenges due to the intricate nature of trade barriers and their wide-ranging consequences on multiple aspects of production. Given the minimal fluctuations in trade tariffs post-1995, the examination of the trade liberalization period spanning from 1989 to 1995 assumes paramount importance. This period's dynamic variations in trade policy measures allow researchers to effectively isolate and discern the effects of policy changes on diverse dimensions of production, including productivity. In this analysis, we will combine empirical evidence pertaining to both trade protection and trade liberalization measures, with a specific emphasis on productivity.

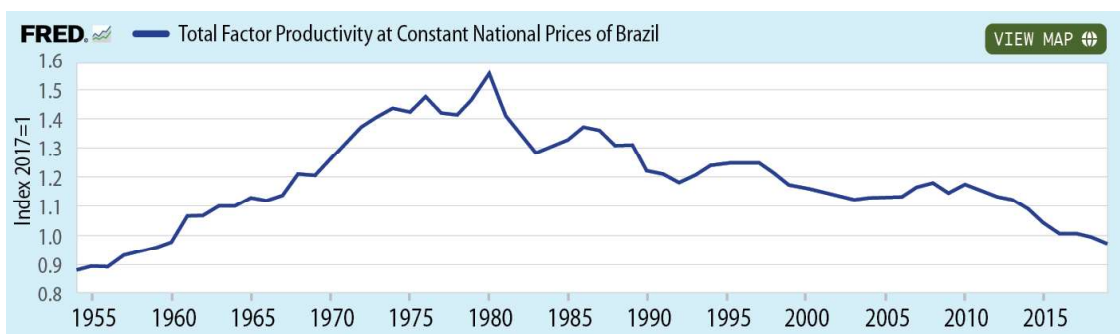
A comprehensive study by Abreu yielded significant findings on the outcomes of trade liberalization in Brazil, including: i) import penetration, particularly in industrial sectors dealing with capital goods;

ii) enhancements in productivity, with an estimated increase of 58% in total factor productivity; iii) inconclusive effects on distributive outcomes, with disparate findings across various studies; and iv) reduced prices of imported inputs and capital goods <sup>33</sup>.

#### 4.4. *Effects on total factor productivity*

Total factor productivity (TFP) can provide signals on the efficiency with which inputs, such as labor and capital, are used in production, and reflects the technological progress and knowledge spillovers that are not accounted for by the inputs alone. In the case of Brazil, the peak TFP occurred in the 1980s coinciding with the period of more participation of the industry in total GDP, after which the TFP reduced steadily until the most recent years. Through a less efficient use of labor and capital, less value added was introduced in the final products and, thus, less productivity output was generated. Instead of deindustrializing in the path of developing the services sector, as has happened in developed countries, Brazil deindustrialized and generated less productivity and less value added.

**Graph 3. Brazil total factor productivity**



Source: <https://fred.stlouisfed.org/series/RTFPNABRA632NRUG> in 17/06/2023

Rossi Júnior and Ferreira analyzed the evolution of the industrial productivity from 1985 to 1997. Their regression concluded that trade protection policies represented by high nominal tariffs or effective tariffs exerted negative pressure to the rate of productivity growth of 16 sectors of the transformation industry in the period. On the other hand,

<sup>33</sup> ABREU, M. D. P. Trade Liberalization and the Political Economy of Protection in Brazil since 1987. Apr. 1st 2004.

the increase in the rate of imports/GDP imposed a benefic effect in the increase of productivity<sup>34</sup>. Messa's findings went in the same direction, when analyzing the impact of trade barriers on the productivity of the Brazilian industry TFP at firm level throughout the period between 1999 and 2012. He concluded that while the increase in the relation of capital-work influenced positively the PTF of Brazilian firms in the period, trade barriers exerted a negative effect on the work productivity and undermined the positive effect of the greater relation capital-work<sup>35</sup>.

Hay's conclusion is that the major Brazilian industrial firms responded to the trade liberalization process after 1990 with impressive productivity growth<sup>36</sup>. However, part of this growth can also be attributed to the general liberalization of the economy and a recovery from the adverse effects of the 1990/91 recession. The growth in total factor productivity played a vital role in improving efficiency and technological development, but the author suggests that the nature of the behavioral response of companies remains to be fully understood. Silber also reaffirmed the empirical evidence on the effects of the Brazilian trade reform on productivity growth and competitiveness, mainly through the effects of total factor productivity growth<sup>37</sup>.

#### 4.5. *Effects on gains of productivity from reallocations*

Divergent conclusions exist regarding the productivity gains resulting from firm or sector reallocations in Brazil. According to Nassif's study on the Brazilian manufacturing industry from 1988 to 1998, improvements in productivity and reductions in average costs were observed<sup>38</sup>. The research indicated that employment reduction

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<sup>34</sup> ROSSI JÚNIOR, J. L.; FERREIRA, P. C. Evolução da produtividade industrial brasileira e abertura comercial. <http://ppe.ipea.gov.br>, apr. 1999.

<sup>35</sup> MESSA, A. *Impacto das barreiras comerciais sobre a produtividade da indústria brasileira*.

<sup>36</sup> HAY, D. A. A Liberalização comercial brasileira após 1990 e o desempenho das grandes empresas industriais. <http://ppe.ipea.gov.br>, aug. 2000.

<sup>37</sup> SILBER, S. D. Trade Policy from the 1930s to the Present. In: AMANN, E.; AZZONI, C. R.; BAER, W. (Eds.). *The Oxford Handbook of the Brazilian Economy*. [s.l.] Oxford University Press, 2018.

<sup>38</sup> NASSIF, A. A Eficiência Técnica da Indústria de Transformação Brasileira Após a Liberalização Comercial: Evolução, Decomposição e Mensuração de Seus



accounted for over 50% of the productivity gains, while innovations, changes in production techniques, imports of machinery and equipment, and other factors collectively contributed to approximately 40% of the gains. The study also highlighted a decline in real average costs, primarily driven by workforce reductions. Overall, all sectors of the manufacturing industry experienced productivity gains during the period, with notable advancements in steel, electronic equipment, non-ferrous metals, vegetable oil refining, and meat processing. The study suggested that low and stable inflation, along with a reduction in the real exchange rate, likely played a role in facilitating productivity gains in conjunction with the direct impacts of trade liberalization.

Other findings suggest that Brazil experienced a structural change from 1950 to 1970 due to industrialization. Morceiro concludes that manufacturing growth observed in Brazil was mainly achieved through the massive incorporation of new formal workers, as consequence of Brazilian move towards urbanization<sup>39</sup>. There was no increase in the stock of per capita capital, technological advances, or human capital performing in higher status roles. Instead, there was an increase in employment, given Brazil's abundance of relatively cheap labor. Morceiro also states that, despite the increase in production, a lower physical/ chemical/biological transformation per product unit, increase in jobs paying smaller wages in comparison with higher salary positions, and widening technological "gap" when compared with leading countries are indicators that suggest that the Brazilian manufacturing sector has performed fewer manufacturing and more assembly operations, with low value added.

According to Nassif *et al.*, despite negative microeconomic shocks, several studies provide strong empirical evidence of significant annual average growth rates in labor productivity in Brazil between 1990 and 1998, reversing the low and stagnant growth rates of the previous decade<sup>40</sup>. The authors note that the gains in productivity

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Fatores Causais. *Anais do XXXI Encontro Nacional de Economia [Proceedings of the 31st Brazilian Economics Meeting]*, Anais do XXXI Encontro Nacional de Economia [Proceedings of the 31st Brazilian Economics Meeting]. 2003.

<sup>39</sup> MORCEIRO, P. C. Evolution and Sectoral Competitiveness of the Brazilian Manufacturing Industry. In: AMANN, E.; AZZONI, C. R.; BAER, W. (Eds.). *The Oxford Handbook of the Brazilian Economy*. [s.l.] Oxford University Press, 2018.

<sup>40</sup> NASSIF, A. A Eficiência Técnica da Indústria de Transformação Brasileira

resulting from the Brazilian trade liberalization process were primarily due to a static reallocation of resources, rather than dynamic change, which differed from what had been observed between 1950 and 1979. In this context, static reallocation refers to a shift in the allocation of productive resources from one sector to another, but which did not result in significant changes in the structure of production or technological processes.

Subsequent productivity growth in the Brazilian economy appears to have been driven primarily by within-sector productivity gains, attributable to the adoption of more efficient technologies and the employment of highly educated workers. Descriptive data suggests that the trade liberalization of the 1990s did not lead to significant structural change. Instead, it likely played a crucial role in driving productivity growth within sectors.<sup>41</sup>

#### 4.6. *Effects on within-firm productivity*

Lisboa *et al.* concluded that a reduction in input tariffs was the main factor responsible for the productivity growth in the period, instead of the reduction in output tariffs<sup>42</sup>. The result goes in the same direction as<sup>43</sup>, which aimed to estimate the impact of tariff changes on the productivity of Brazilian firms between 1997 and 2007, isolating the effects of import tariffs on products and inputs. The results suggested that tariff reductions for inputs would increase firm productivity,

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Após a Liberalização Comercial: Evolução, Decomposição e Mensuração de Seus Fatores Causais. *Anais do XXXI Encontro Nacional de Economia [Proceedings of the 31st Brazilian Economics Meeting]*, Anais do XXXI Encontro Nacional de Economia [Proceedings of the 31st Brazilian Economics Meeting]. 2003.

<sup>41</sup> RESEARCH INSTITUTE (IFPRI), I. F. P. *Structural change, productivity growth, and trade policy in Brazil*. Washington, DC: International Food Policy Research Institute, 2017. Available in: <<https://ebrary.ifpri.org/digital/collection/p15738coll2/id/131181>>. Accessed in: jun. 25, 2023.

<sup>42</sup> LISBOA, M. B.; MENEZES FILHO, N. A.; SCHOR, A. The effects of trade liberalization on productivity growth in Brazil: competition or technology? *Revista Brasileira de Economia*, v. 64, p. 277–289, sept. 2010.

<sup>43</sup> Alexandre (Organizador) Messa e Ivan Tiago Machado (Organizador) Oliveira, “A Política comercial brasileira em análise”, <http://www.ipea.gov.br>, 2017, <https://repositorio.ipea.gov.br/handle/11058/8184>.

with robust results across different specifications, albeit with varying magnitudes.

According to Rossi Junior and Ferreira, the results indicate that, regardless of the concept used, a higher nominal tariff, effective protection rate, and exports-to-GDP ratio are associated with lower growth rates in labor productivity. In contrast, imports have a positive and significant effect on labor productivity<sup>44</sup>. Thus, there is strong evidence that trade protection policies act in a way that decreases the rate of labor productivity growth.

## 5. Conclusion

The article performed a literature review on the main effects of trade protectionist policies in industrial development, with a particular cutoff to industrial productivity. This debate remains contentious and ongoing, yet some conclusions may be extracted. The results of this paper may be particularly relevant to policy makers as it provided a new reflection on the effectiveness of Brazil's trade policies in relation to its industrial policies over time and shed light on reasons why past policies did not attain the desired outcomes.

Brazil's strong interventions in the economy using trade policy tools aimed primarily at fostering inward industrialization growth. Through ISI, the Brazilian government sought to nurture growth of a more competitive and self-sufficient industry through the isolation of the domestic market from international competition, and Brazil faced an intense industrialization from 1950 to 1980. Manufacturing growth, nonetheless, is correlated with the massive incorporation of new formal workers, given Brazil's abundance of relatively cheap labor, and did not sustain over the next decades. There was no increase in the stock of per capita capital, technological advances, or human capital performing in higher status roles<sup>45</sup>.

The consequences of a strict isolation generated a range of externalities. While such policies intended to, through an increase in

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<sup>44</sup> ROSSI JÚNIOR, J. L.; FERREIRA, P. C. Evolução da produtividade industrial brasileira e abertura comercial. <http://ppe.ipea.gov.br>, apr. 1999.

<sup>45</sup> MORCEIRO, P. C. Evolution and Sectoral Competitiveness of the Brazilian Manufacturing Industry. In: AMANN, E.; AZZONI, C. R.; BAER, W. (Eds.). *The Oxford Handbook of the Brazilian Economy*. [s.l.] Oxford University Press, 2018.

demand of the products, increase production capacity and become competitive, the economic literature attested that protection could lead to imbalances and externalities to production, economy, and welfare. The article focused on the accumulated effects of Brazilian trade protection over the years in firm productivity through: i) reallocation of firms towards more productive firms or sectors; ii) within firm increase of productivity efficiency, through an increase in competition from imports and/or greater access to imports of intermediate and capital goods.

The review of the studies suggests that tariffs on average have not been able to attain increased productivity in the Brazilian manufacturing sector. Instead, the literature analyzed concluded that high nominal tariffs or effective tariffs exerted negative pressure to the rate of productivity growth on the Brazilian industry during the period, and a negative effect on work productivity. The review of another set of papers focusing on the trade liberalization experience in Brazil contributed to the findings by attesting increases in total factor productivity and markups by the greater access to lower priced imported inputs and capital goods, though divided conclusions were verified in the analysis of reallocation consequences.

This reflection points to the direction of the necessity of reevaluating Brazilian trade policy and realigning its principles to match with those of the more recent scientific and economic literature. Such a reevaluation will require significant political will and commitment, as decisions involving trade policies usually affect some industries more than others. Nonetheless, promoting productivity growth is a crucial step in seeking industrial development, particularly in the case of Brazil. By better aligning policies in the direction of empirical evidence, Brazilian policymakers can create a more conducive environment for businesses and contribute to the country's industrial development. Failure to do so risks perpetuating the lack of productivity and hindering Brazil's potential for further economic development.

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