



Economic structure and labor market in the state of Rio de Janeiro: impacts of extractive activities in its Northern Region

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Abstract

This article addresses the economic structure of northern Rio de Janeiro within the broader context of the state of Rio de Janeiro, Brazil, during the first decades of the 21st century. The primary objective is to analyze the impacts on the regional economy and labor market resulting from the transition from a developmentalist experiment to a context of ultraliberal inflection in Brazil. The methodology employs quantitative research through an analysis of secondary data based on municipal GDP (IBGE) and employment relationships and wage mass (RAIS) according to economic activities. This approach aims to identify changes in the industry, construction and services sectors. The results highlight the significant impact of the installation of oil and port complexes in the region and the subsequent inflection in the regional labor market within the context of transformations in Brazil's political, economic, and social scenario. The investments followed a development model based on the logic of resource extraction without fostering the growth of other productive sectors. This revealed an economic dynamic characterized more by fragmentation than by integration among activity sectors.

Keywords: Labor market. Regional economy. Urbanization.

Estrutura produtiva e mercado de trabalho no estado do Rio de Janeiro: impactos das atividades extrativas no norte fluminense

Resumo

Este artigo aborda a estrutura econômica do norte fluminense no contexto da economia do estado do Rio de Janeiro, Brasil, nas primeiras décadas do século XXI. O objetivo é analisar os impactos na economia regional e no mercado de trabalho da transição entre o período de um experimento desenvolvimentista no Brasil para um contexto de inflexão ultraliberal. A metodologia consiste em pesquisa quantitativa por meio da análise de dados secundários a partir do PIB municipal (IBGE) e dos vínculos empregatícios e massa salarial (RAIS) segundo as atividades econômicas, a fim de identificar as mudanças no setor da indústria, da

construção e dos serviços. Os resultados mostram o expressivo impacto da instalação dos complexos petrolífero e portuário na região e posterior inflexão no mercado de trabalho regional num contexto de transformações no cenário político, econômico e social do Brasil. Os investimentos seguiram um modelo de desenvolvimento baseado na lógica da extração dos recursos, sem o adensamento de outros setores produtivos, revelando a configuração de uma dinâmica econômica operando mais pela fragmentação do que pela integração entre os setores de atividade.

Palavras-chave: Mercado de trabalho. Economia regional. Urbanização.

Estructura productiva y mercado laboral en el estado de Río de Janeiro: impactos de las actividades extractivas en la región norte

Resumen

Este artículo aborda la estructura económica del norte del estado de Río de Janeiro, Brasil, en el contexto de la economía del estado, en las primeras décadas del siglo XXI. El objetivo es analizar los impactos en la economía regional y en el mercado laboral de la transición del período de un experimento de desarrollo en Brasil a un contexto de inflexión ultraliberal. La metodología utilizada fue la investigación cuantitativa a través del análisis de datos secundarios del PIB municipal (IBGE) y número de empleados y salarios (RAIS) según actividades económicas, con el fin de identificar cambios en la industria, construcción y servicios. Los resultados muestran el impacto significativo de la instalación de los complejos petrolero y portuario en la región y la posterior inflexión del mercado laboral regional en un contexto de transformaciones en el escenario político, económico y social de Brasil. Las inversiones siguieron un modelo de desarrollo basado en la lógica de la extracción de recursos, sin la densificación de otros sectores productivos, revelando la configuración de una dinámica económica que opera más por medio de la fragmentación que por medio de la integración entre sectores de actividad.

Palabras clave: Mercado Laboral. Economía regional. Urbanización.

1 Introduction

This paper examines the changes in the economic structure and labor market of the Northern Region of the state of Rio de Janeiro (RNSRJ) during the first decades of the 21st century. The analysis is conducted at the state level within the context of deepening extractive industry activity and, at the national level, it considers the transition from an economy based on a "developmentalist experiment" (RIBEIRO; CLEMENTINO, 2016) in Brazil to the challenges imposed by an "ultraliberal inflection" (RIBEIRO, 2020) in the country's political, economic and social context. Concurrently, these regional and national changes are linked to global transformations, such as the intensification of neoliberalization and neoliberal restructuring projects (BRENNER, 2018; PECK; THEODORE, 2019).

The aim is therefore to analyze the impact on the regional economy and the labor market in Rio de Janeiro resulting from the transition from a period of developmentalism to a context of ultraliberal inflection in Brazil. More specifically, it seeks to examine the evolution of northern Rio de Janeiro's participation in the state economy between 2006 and 2018, as well as the changes in formal employment

according to the distribution across sectors and branches of economic activities. The methodology consists of quantitative research through the analysis of secondary data on population and municipal GDP (Gross Domestic Product), provided by the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística / IBGE), and employment relationships and wage mass provided by RAIS. The territorial section considers the Northern Region, encompassing the immediate regions of Campos dos Goytacazes and Macaé-Rio das Ostras, a section made up of 12 municipalities. This approach allows for a deeper look at the changes that have occurred in the regional scenario because of the major projects underway.

To this end, the paper is structured into three sections. The first section addresses the economic dynamics in the state of Rio de Janeiro and the country's social, political and economic context in the first decades of the 21st century, presenting conceptual foundations on the political and institutional dimensions of this context. It also analyzes the interventions carried out in northern Rio de Janeiro and the formation of an oil economy and oil revenues in this scenario. The second section discusses the methodological strategies adopted regarding temporal limits, spatial boundaries, sources, and data treatment. The third section specifically analyzes the transformations in the productive structure and labor market in northern Rio de Janeiro in the light of the previously presented dimensions and conceptions.

This type of analysis and reflection is considered essential for understanding recent transformations and contemplating the directions of urban and regional development in the current scenario.

2 Economic dynamics in the state of Rio de Janeiro and the extractive activities in northern Rio de Janeiro: between the developmentalist experiment and the ultraliberal inflection

The state of Rio de Janeiro holds the second position in the national economy, a historical position in relation to the state of São Paulo. Despite facing economic decline, especially during the 1980s and 1990s, the state continued its efforts to reverse the stagnation process as it transitioned from the 20th to the 21st century (OLIVEIRA; OLIVEIRA, 2020, p. 43). Various reasons are cited for the state's economic and regional articulation problems, such as the transfer of the country's capital from Rio de Janeiro to Brasília in the 1960s, the economic crisis of the 1980s-1990s, the decline of agriculture and agro-industry, low investment in modernization, the huge inequalities between the metropolis and the interior, among others (CRUZ; TERRA, 2020; NATAL; CRUZ, 2021).

Simultaneously with the deepening of the neoliberalization process on a national scale from the 1990s onwards, and Brazil's greater insertion into the logic of financial accumulation, significant changes occurred in the state's economic scenario. These changes were marked by the decline of the manufacturing industry alongside the growth of certain branches of the services sector and the dynamization of the extractive and mineral industry, which also gained greater importance in national employment (RIBEIRO; BOA NOVA; MUNIZ, 2020, p. 249).

Ribeiro, Boa Nova and Muniz (2020) also point out that the productive sector in the state of Rio de Janeiro was oriented towards the production of intermediate

goods that "supplied the domestic demand represented by the national industrial park, mainly located in the state of São Paulo" (RIBEIRO et al., 2020, p. 248). Hasenclever, Paranhos and Torres (2012), when comparing performance and employment indicators for Rio de Janeiro's industrial, services and trade economic activities in relation to São Paulo and

Brazil, emphasize the state's consistently controversial position regarding the industrial sector from 1996 to 2007. Concerning the state of Rio de Janeiro, the authors make the following observations:

The significant changes that affected the economy of Rio de Janeiro can be summarized in three points: the decentralization of industry from the municipality of Rio de Janeiro (metropolis) to the interior of the state; the inability of traditional industries to attract new complementary investments that would make them more dynamic; and the loss of the relative importance of the services sector, one of Rio's major vocations. [...] but the decisive event to explain these changes was the growth of the extractive industry based on oil and gas in the Campos basin, shifting growth to the interior of the state (HASENCLEVER et al., 2012, p. 705-706).

Offshore oil and gas production in the state of Rio de Janeiro has been underway since the 1970s, particularly in the northern region of the state. This development was anticipated to help counter the decline observed in other sectors of economic activity. However, the rapid growth of this sector had many impacts on the production structure and the regional and state labor market. Thus, the position of the state of Rio de Janeiro in the national and even global economic scenario has become closely linked in recent decades to the establishment and growth of the industrial sector in the state's interior, especially the oil activities in the northern region (SIQUEIRA, 2015). Concurrently, "northern Rio de Janeiro's economy was subordinated to the realization of state investments - given the size and complexity of the oil projects - and to the dictates of the external conjuncture" (OLIVEIRA; BRANDÃO; WERNER, 2022, p. 7).

In the northern municipalities of the state, both an oil economy and an oil revenue economy were established, as pointed out by Pessanha and Oliveira (2018). The oil economy was fundamentally developed with the implementation of an offshore Oil and Gas Exploration and Production Complex in the Campos Basin, which has been operational in Macaé since the 1970s. This activity led to the formation of spatial production circuits around the oil industry: "The greater extraction of oil demanded naval-port support, infrastructure facilities, industries and services that together multiplied their effects due to their enormous interconnection" (PESSANHA; OLIVEIRA, 2018, p. 1119). More recently, this circuit was strengthened with the implementation of another major project, the Açu Industrial and Port Complex (Complexo Industrial e Portuário do Açu - CIPA). The favorable external environment for commodity prices boosted the construction of the Port of Açu, which emerged as a project between 2005 and 2006.

The status of being an oil-producing municipality or even bordering production areas also led to the creation of an income economy, as several municipalities in Rio de Janeiro began to receive oil royalties and special shares, a process resulting from the neoliberal reforms of the 1990s. "Petrobras, the state oil

company, had a monopoly on exploration and production until 1997, when it was abolished by federal law" (CRUZ; TERRA, 2020, p. 190). The legislation included municipalities among the beneficiaries of oil revenues (in addition to the states and the Union), but without a rigid definition of the application of resources.

These revenues were quite high and significantly increased municipal income, especially in the northern municipalities of Rio de Janeiro, leading to the phenomenon known as petro-rentism. However, studies have highlighted the weak articulation of these revenues with urban and regional planning, the occurrence of one-off investments, overbilling for projects, events and various types of services, as well as the low level of supervision in the application of resources (PESSANHA; OLIVEIRA, 2018; CRUZ; TERRA, 2020). Additionally, there is a noted fragility of the logic of "compensating for environmental damage and socio-economic impacts" (SERRA, 2018).

Aligned with this dynamic, we observe the presence of large transnational companies in the region, employing strategies based on the paradigm of major investment projects (GPIs). These projects often have little connection with regional or national realities (VAINER, 2007), remaining distant from the possibility of fostering a regional economic dynamic orchestrated by the state, aimed at national development.

According to Cruz and Terra (2020, p. 191), "these investments are primarily facilitated by federal resources, either independently or in partnerships with private capital, and are part of Brazil's strategy of insertion into the international economy". Despite the numerous and voluminous investments made by the state, this insertion takes place through the affirmation of a dependent and peripheral economy, coupled with a "subordinate integration into the international monetary and financial system" (RIBEIRO et al., 2020, p. 47) and the insertion of peripheral economies into the new international division of labor (CRUZ; TERRA, 2020).

This process was intensified in the first decade of the 21st century by the "developmentalist experiment" implemented in the country, which had a strong impact on the regional economic structure. According to Ribeiro and Clementino (2016), this experiment led to a "reconfiguration of the socio-spatial division of labor in Brazil", associated with "structuring processes", among which "the deindustrialization of the Brazilian economy, the reprimarization of exports and the economic-territorial deconcentration stand out" (RIBEIRO; CLEMENTINO, 2016, p. 9). As these authors state, these processes had already been underway since the 1990s but took on new forms in the 2000s, combined with the adopted macroeconomic policy. The country experienced considerable economic growth, driven precisely by the increase in exports, the relationship with China and the demand for agricultural and mineral products, as well as the increase in government spending (RIBEIRO; CLEMENTINO, 2016).

Historically, the developmentalist experiences in Brazil up until the 1980s can be summarized as a set of structural changes carried out under the direction of the national state, which promoted investments in infrastructure and incentives for the country's industrialization, aiming to modernize it (FONSECA, 2015). After the 1990s, when the developmentalist debate was influenced by neoliberalism, Brazilian economic thought once again raised concerns about major national issues such as regional integration, sovereignty, international division of labor, innovation and

income distribution. Thus, in the 21st century, economic development takes on different configurations, based on the concept of "new developmentalism".

Bastos (2012) states that "new developmentalism" can be divided into two currents: private sector export development and state-orientated distributive development. Among the intellectuals who consolidated private sector export development was Bresser-Pereira, who proposed a new economic development based on three pillars: greater openness to international trade, increased private investment in infrastructure and concern for economic stability (BRESSER-PEREIRA, 2020).

On the other hand, Bastos (2012) also notes that state-led distributive development lacks specific academic systematization but is based on the set of social policies implemented during the period of the Workers' Party (Partido dos Trabalhadores – PT) governments, with "emphasis on the domestic market and the role of the state in influencing income distribution and investment allocation" (p. 794). In both cases, commodity exports took center stage in the national economy. Furthermore, Boito Jr (2016) points out that this division served to intensify conflicts between the big domestic bourgeoisie and the interests of international capital. The author also points out that the consequent crisis in Brazil was caused by the confrontation between class fractions aligned with new development and those aligned with orthodox neoliberalism.

In any case, the logic of reprimarization focused on commodity exports reinforced the dependent nature of the Brazilian economy in this scenario. Although it stimulated the dynamization of certain sectors of the economy, it also led to the "disintegration of several of the country's production chains, as less competitive branches were replaced by the importing sector" (RIBEIRO; CLEMENTINO, 2016, p. 10). In the case of the state of Rio de Janeiro, this scenario contributed to the fragility of regional territorial articulations due to the focus on external demand, which reinforced more internationalized and less regionalized connections.

Sobral (2020) has been advancing the thesis of the formation of a "hollow structure" and low productive linkage in the state of Rio de Janeiro. The productive base of Rio de Janeiro has developed to meet national interests and international insertion, focusing on a metropolitan economy with little interregional articulation. Political and institutional changes have also contributed to the performance of the Rio de Janeiro's economy being directly associated with the national deindustrialization trajectory, despite its specific characteristics. This entire process has led to a lack of densification of production chains, setting the trend towards a hollowed-out production structure with the idleness of various resources in the territory and difficulties for the processing industry to become a central sector of economic growth and technical progress (SOBRAL, 2020).

Therefore, the notion of a "hollow structure" is associated with a dispersed set of sectoral specialization in a region, with little coherence from the perspective of a territorial division of labor. As a result, it reveals an economy highly dependent on exploiting certain already revealed advantages, which decision-making elites come consider its "vocations", sometimes provoking situations of exaggerated euphoria about its potential. Although there are opportunities for some gains in competitiveness within isolated sectoral niches, structural problems

remain unaddressed, preventing the emergence of new, more systemic competitive advantages. This means that while it is possible to identify a set of dynamic activities, these are not leading sectors capable of generating significant inductive effects and driving economic growth power (SOBRAL, 2020, p. 4).

This also applies to the dynamization of the extractive industry in northern Rio de Janeiro. Major investments in the sector do generate expansive cycles, but they do not profoundly transform regional economies and are more susceptible to the effects of national and international crises.

In addition, the entire operation of extractive industries has a profound impact on the social, territorial and political dynamics of places. Arboleda (2018) also discusses the impacts of the extractive industry around mining in the cities of northern Chile, describing a "logistical urbanization" promoted much more to meet the demands of capital, the flows of production and much less the needs of the population, incorporating territories previously little integrated into global capitalism and producing significant impacts on the environment, economy, labor market, human relations, and everyday social practices. In the case of northern Rio de Janeiro, the social, economic, political and environmental impacts of the oil and port complexes are numerous, as summarized by Cruz and Terra (2020, p. 199-201). All these transformations also affect the population's conditions of social reproduction, political-institutional arrangements, local culture, everyday practices, commuting for different types of activities, as well as expectations and effective insertion into the labor market - the subject of this article - through new social and territorial demands and dynamics.

The period for analyzing the evolution of the economic structure of northern Rio de Janeiro covers precisely the intensification of oil activities allied to port activities in the state economic scenario already described. The advancement of extractive activities in the country, such as mining and oil extraction, shows a significant connection with the "developmentalist experiment".

However, the crisis in the oil sector, coupled with a global economic crisis, has shaken the foundations of this project. The problems can be traced back to the international crisis of 2008 and the slowdown in the world economy, as well as the decrease in Chinese demand for mineral and agricultural products and the sharp drop in international oil barrel prices due to its commodity nature on the international market. Although the period immediately following the 2008 crisis was controlled by anti-cyclical policies in Brazil, the effects deepened. Ribeiro and Clementino (2016, p. 12) also point out that the "unsuccessful policies to encourage private investment and reduce the government's role in public investment spending" were fundamental in shaping this situation.

The current scenario following the onset of the "crisis" in Brazil and the in the state of Rio de Janeiro, along with the context of the ultraliberal inflection (RIBEIRO, 2020), is fundamental for understanding the changes in the productive structure and labor market of northern Rio de Janeiro, making the previously described logic even more complex. The adverse economic scenario is coupled with a political environment marked by the breaking of the social pact and the coalitions of forces built up until then, intensified by corruption investigations at Petrobras and the rise of a far-right government in the country. According to Ribeiro (2020), the thesis that

supports viewing this period as one of ultraliberal inflection is that there was a rupture that "radically altered the correlation of forces that had been forming within the power bloc, towards more effective control by conservative forces" (RIBEIRO, 2020, p. 2).

The economic and political crisis in Brazil impacted the extractive industries sector, which was fundamental to the export agenda of the developmentalist experiment. The economy of the state of Rio de Janeiro was deeply affected, as it had become highly dependent on the oil industry (CRUZ; TERRA, 2020, p. 190). In northern Rio de Janeiro, the oil economy and the oil revenue economy also suffered significant impacts. It is possible to state that the low diversification of productive activities, combined with the absence of long-term planning with the resources obtained, has aggravated the unemployment situation and the restriction of social policies in the region, making it difficult to deal with this scenario.

Next, the aim is precisely to analyze how the labor market is shaped in the Northern Region of Rio de Janeiro in the context of the state and its own internal production structure, in the light of the issues raised and the emphasized periods concerning the developmentalist experiment and the ultraliberal inflection.

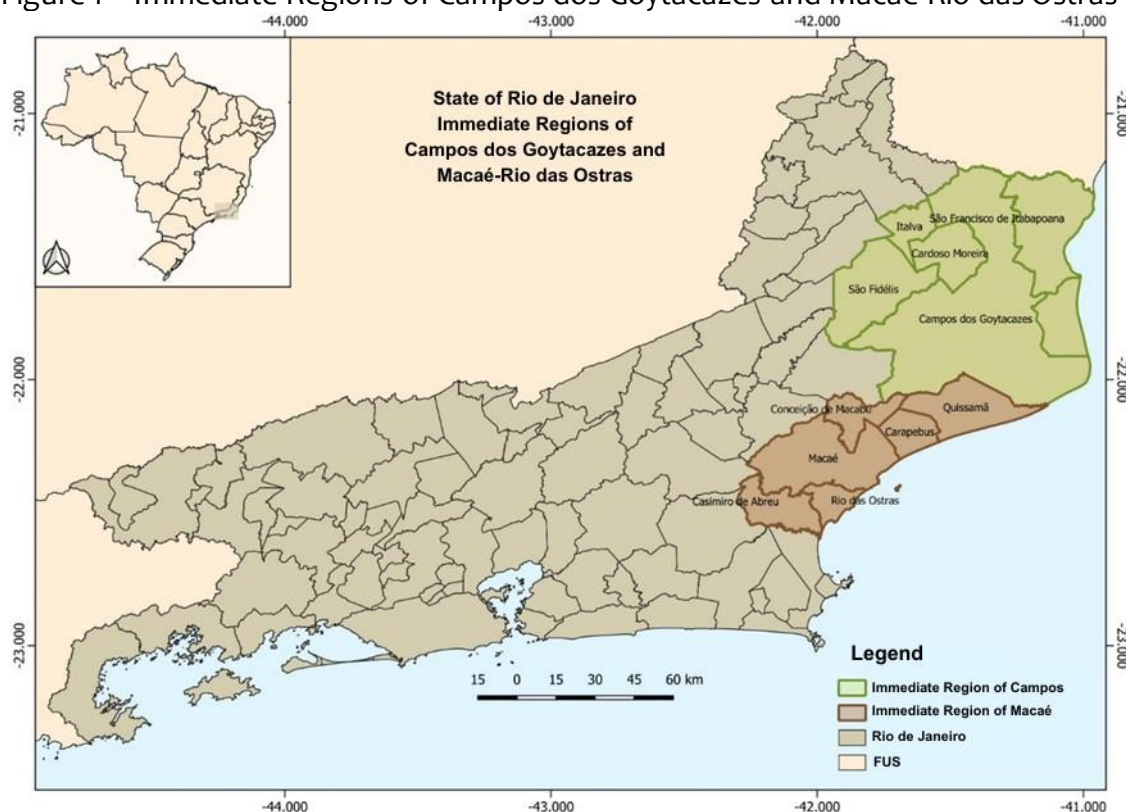
3 Methodological strategies adopted to process and analyze the data

The methodological strategies used for the analysis engage with the very transformations that are the subject of the investigation. The methodology is based on quantitative research through secondary analysis of data from official sources on the population, economy, labor market and employment in Brazil. Regarding time limits, the period of analysis aims to dialogue with the transformations in the political, economic, and social context that Brazil has undergone since the 2000s, with most of the data spanning from 2006 to 2018.

As for the territorial delimitation, given the changes in the articulation between the municipalities of the northern axis in the interior of the state, including the impact of oil and port activities, this study focuses on the immediate regions of Campos dos Goytacazes and Macaé-Rio das Ostras (Figure 1), according to a study by the IBGE (2017). It is worth noting that these regions encompass the nine municipalities of the traditional Northern Mesoregion of the state of Rio de Janeiro, along with the municipality of Italva (Northwest) and Casimiro de Abreu and Rio das Ostras (Coastal Lowlands).

The current regionalization based on the immediate regions is more in line with the transformations analyzed here, mainly due to the incorporation of Rio das Ostras into Macaé's urban dynamics, a phenomenon also expressed in the identification of the regional urban arrangement named after the municipalities, through another study by IBGE published in 2016.

Figure 1 – Immediate Regions of Campos dos Goytacazes and Macaé-Rio das Ostras



Source: IBGE, 2017. Own elaboration.

In addition to the temporal and territorial cut-off, the main variables used in this study come from GDP data provided by the IBGE through the Gross Value Added (GVA), at municipal level and by economic activity sectors, and employment links and wage mass (remuneration in December of each analyzed year) provided by RAIS. We also used data on population (IBGE) and oil revenues from the municipalities in the mentioned immediate regions - royalties and special shares, compiled by the Inforoyalties website.

To analyze economic activities, we used a categorization and regrouping of the divisions and groups of the National Classification of Economic Activities (Classificação Nacional das Atividades Econômicas / CNAE) version 2.0, which is the classification officially used in the National Statistical System in Brazil and in administrative records. The new classification is based on the proposal by Araújo et al. (2018), also used by Ribeiro et al. (2020). In this proposal, the researchers perform a "regrouping of the economic activities of the CNAE 2.0 with a focus on the technological intensity of primary and secondary activities and on the urban-real estate complex, the metropolitan tourism sector and the properly urban tertiary sector", also taking into account the processes related to "deindustrialization, reprimarization of exports, industrial deconcentration, urban accumulation, and financialization (ARAÚJO et al., 2018, p. 774).

This classification proved to be very interesting for the study presented here as it dialogues with the transformations that are the object of the investigation. Due to the focus on the interior of the state, small adjustments were made in the reorganization of branches and activity sectors to separate activities related to agriculture and extractive activities, as well as industries derived from these sectors.

This was necessary because in the interior, although it has decreased, there is still a relative weight of agricultural activities and, in the case of the northern Rio de Janeiro, the oil and natural gas sector is very significant and is classified under extractive activities.

4 Productive structure and labor market in northern Rio de Janeiro

This section analyzes the economic structure and labor market of the northern Rio de Janeiro within the context of the state's economy, considering the transformations that took place in the first decades of the 21st century, as outlined in the previous section. The economic structure and the insertion of workers in different sectors of activity were also analyzed to understand how the region has been restructuring in the context of the crisis.

In the case of the regional economy, a large part of the changes highlighted here are based on the installation of the offshore Oil and Gas Exploration and Production Complex in the Campos Basin and the Açú Industrial and Port Complex (CIPA), located in the Northern Region of Rio de Janeiro. Although the municipalities that concentrate the activities of the mentioned complexes are Macaé and São João da Barra, all the municipalities in northern Rio de Janeiro were impacted to a greater or lesser degree.

Before presenting and analyzing the data regarding economic dynamics, it is important to contextualize the organization of the region in terms of its territorial division and population dynamics. As shown in Table 1, the Macaé-Rio das Ostras region experienced significant growth in the 2000s, with intense population mobility for the region and among the municipalities throughout the northern Rio de Janeiro (SOUZA; TERRA, 2020).

Table 1 – Population of the municipalities in the immediate regions of Campos dos Goytacazes and Macaé-Rio das Ostras (cutout adopted for the Northern Region of Rio de Janeiro) – 2000 and 2010

Municipalities	2000	2010	Growth Rate 2000-2010
Immediate region of Campos dos Goytacazes			
Campos dos Goytacazes	407,168	463,731	1.3
Cardoso Moreira	12,595	12,600	0.0
Italva	12,621	14,063	1.1
São Fidélis	36,789	37,543	0.2
São Francisco de Itabapoana	41,475	41,354	0.0
São João da Barra	27,682	32,747	1.7
Immediate region of Macaé-Rio das Ostras			
Carapebus	8,666	13,359	4.4
Casimiro de Abreu	22,152	35,347	4.8
Conceição de Macabu	18,782	21,211	1.2
Macaé	132,461	206,728	4.6
Quissamã	13,674	20,242	4.0
Rio das Ostras	36,419	105,676	11.2

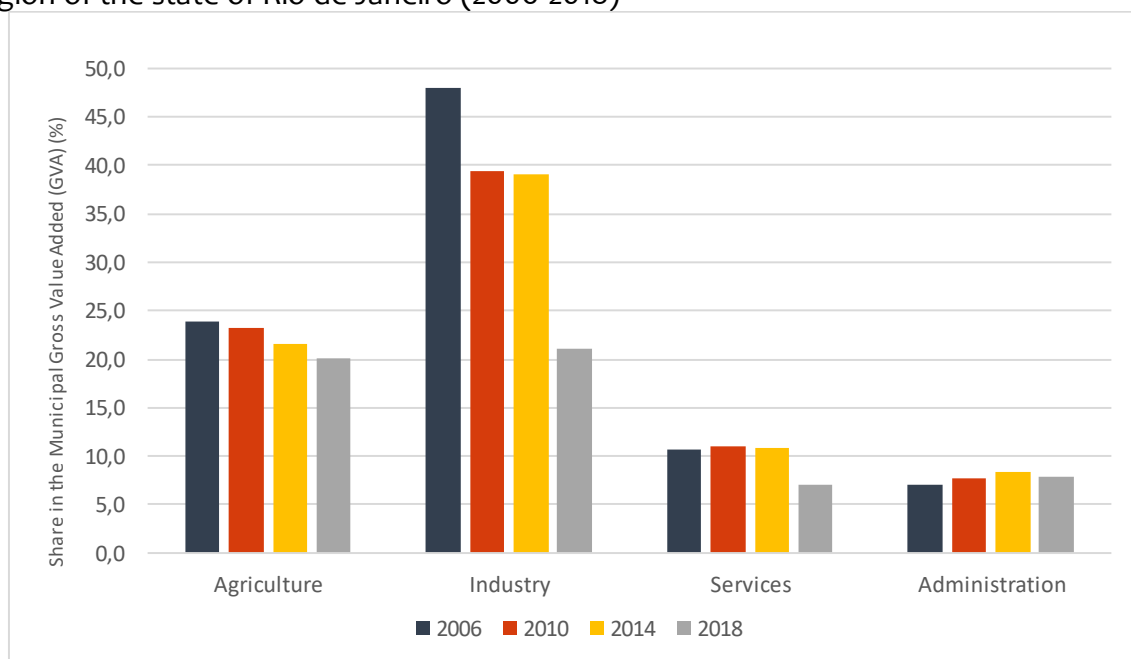
Source: IBGE. Demographic Censuses of 2000 and 2010.

With the exception of Conceição de Macabu, all municipalities in the immediate region of Macaé-Rio das Ostras grew at more than 4% per year between 2000 and 2010, with the municipality of Rio das Ostras experiencing the highest population growth rate, among the largest in Brazil, with 11.2% per year. Although the Campos region did not experience the same growth, Campos "benefited" directly from this dynamic by being strategically located between the two municipalities, crossed by an important highway in the country, the BR-101, having an urban structure with a more diversified network of commerce and services, and being a regional hub for higher education institutions and research centers.

In the context of the state economy, when considering the wealth produced in the northern Rio de Janeiro through the Gross Value Added (GVA), it is noted that the region accounted for 19% of the state GVA in 2010, although it had 6.3% of the state population in the same year, which highlights its importance in the state scenario. Among the major sectors of activity, as shown in Figure 1, the one with the highest share over time is the GVA related to Industry, followed by the Agriculture, Services and Public Administration sectors. It is important to mention the historical weight of sugar and alcohol production in the region, which, despite changes in recent decades, remains significant in the state context (SIQUEIRA, 2015). During the period analyzed, there was a decrease in the share of all sectors in the state GDP, except for the Public Administration sector.

There is a considerable decline in the share of the industrial GDP, reaching a level close to that of Agriculture in 2018 (Figure 2). This shows how the impact of the economic crisis, probably to a greater extent in the Extractive Industries sector itself, affected the region's economy – which was reflected in the evolution of labor market indicators, as will be seen below.

Figure 2 – Gross Value Added (GVA) by sectors of activity: share (%) of the Northern Region of the state of Rio de Janeiro (2006-2018)

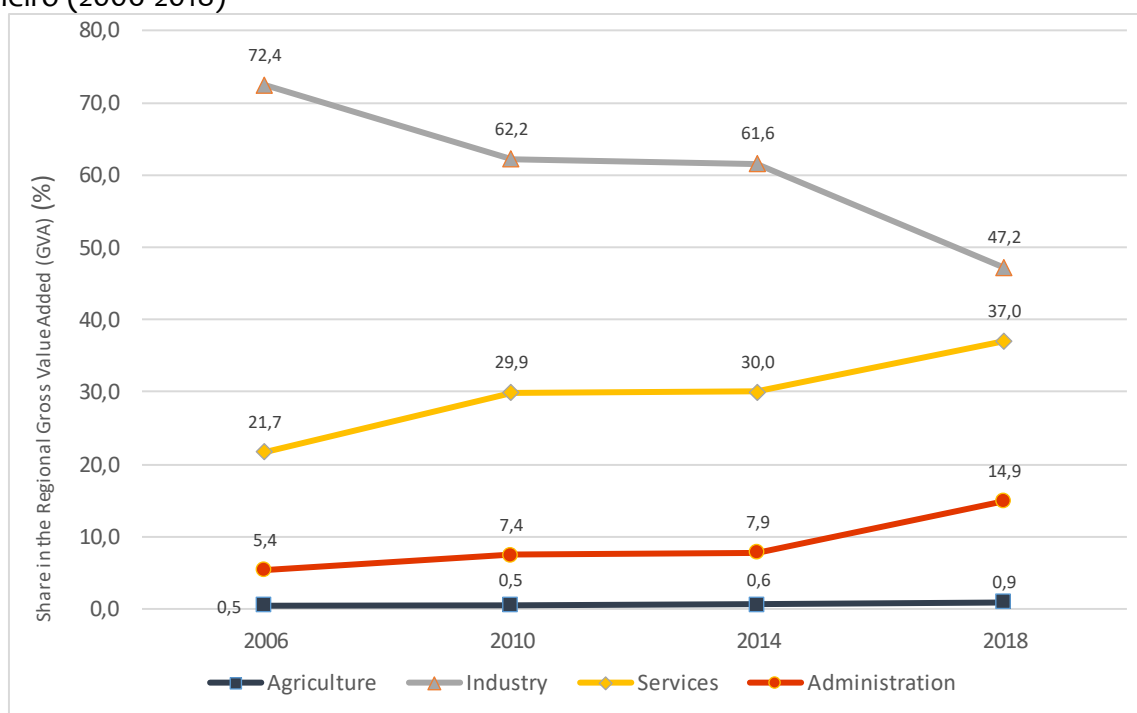


Source: IBGE – Municipal GDP.

When considering the Northern Region of the state and the organization of its economy internally, it is observed that the GVA related to industry is the one with the largest share, but it decreased considerably in 2018 (Figure 3). Meanwhile, the GVAs of the Services and Public Administration sector showed an increase in their share of the region's total over the analyzed time series, with the Services sector reaching 37% of the region's GVA in 2018.

To contrast this share in relative terms, it is noted that the Gross Value Added (GVA) of the industrial sector, in absolute terms, also showed a more considerable reduction. In 2006, the industry produced approximately R\$ 42 million, while in 2018 the value was about R\$ 32 million (in thousand reais at current prices). If we adjust the values by the General Price Index – Internal Availability (IGP-DI) index, in 2018, it is possible to state that the decrease in the value added by the industry was 63%. In this sense, it is identified that the reduction in share is not only due to a proportional relationship in relation to the state of Rio de Janeiro, but also to effective changes in the industrial scenario in the region itself, in the context of an ultraliberal inflection.

Figure 3 – GVA by activity sectors and share in the regional GDP of northern Rio de Janeiro (2006-2018)



Source: IBGE – Municipal GDP.

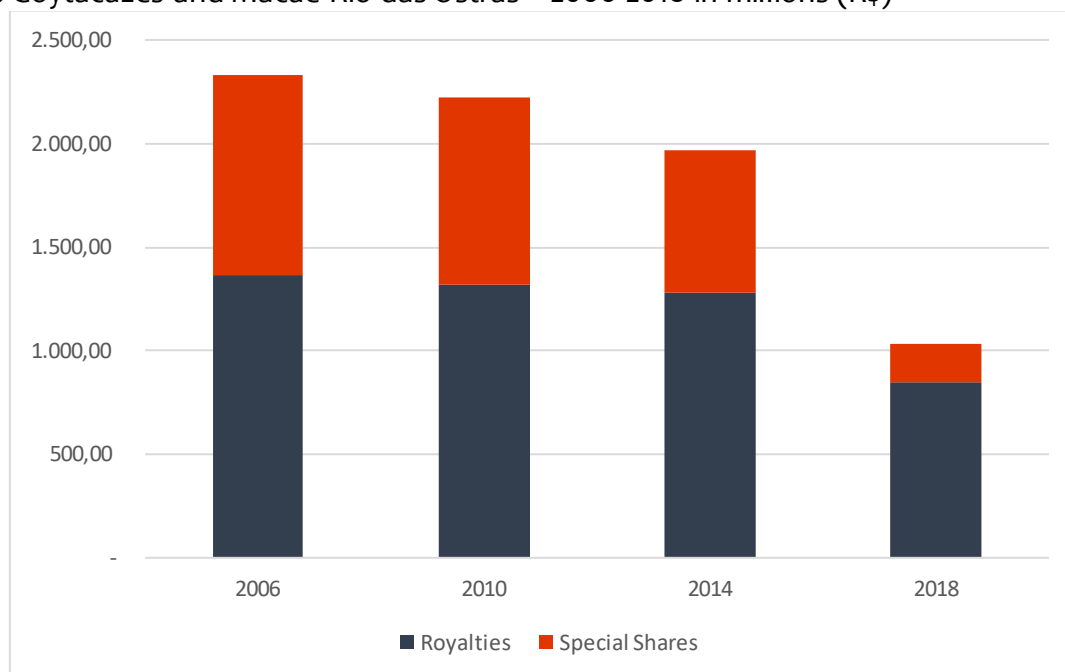
Several studies address the establishment of an oil revenue economy in several municipalities of the state of Rio de Janeiro. Throughout this period, the impact of these revenues in the municipalities of the Northern Region was significant, especially on governance mechanisms, since "the application of the obtained revenues is not directed to investments in capital goods and human capital. It can also be justified by the fragility of institutions and the loss of competitiveness, due to the relative comfort that income provides" (REIS; SANTANA, 2015, p. 6).

The differences between the municipalities are enormous. Although there has been a significant decrease as a result of the economic crisis, the values can still be

considered very high, especially when comparing the total revenues of these municipalities with those that do not benefit from the same sources of income.

In Figure 4, it is possible to observe the transformation in the volume of oil revenues between 2006 and 2018, driven by changes in oil extraction and production scenario, as previously discussed. In addition, after 2010, there was a significant shift in oil exploration with investments in the pre-salt layer by Petrobras, with emphasis on the Santos Basin with high production levels (RIDELENSKY; SANTOS, 2022). The result is a drop in the volume of special shares received by the municipalities of the Northern Region in 2018, although the amount remained substantial.

Figure 4 – Oil revenues of the municipalities in the immediate regions of Campos dos Goytacazes and Macaé-Rio das Ostras – 2006-2018 in millions (R\$)



Source: Inforoyalties, Values adjusted by the GPI-IA.

In this context, the drop in oil revenues since 2006 coincides with the transformations observed in the composition of the region's GDP, where the Industry sector has shown a decreasing trend in share in the same period. Therefore, the Extractive Industry sector emerges as a key sector to understanding the changes in the regional economy. These changes fuel the debate about the region's dependence on extractive activities, as its economic structure is significantly affected by changes that extend far beyond its regional borders.

To investigate the insertion of the Northern Region in the economy of the State of Rio de Janeiro, based on the limits of the immediate regions of Campos dos Goytacazes and Macaé-Rio das Ostras, their share in terms of employment links and wage masses was analyzed. This analysis considers the respective economic activity sectors in relation to the state, as shown in Table 2.

Although the total share of the Northern Region in the state economy was around 6% to 7% of the employment links between 2006 and 2018 and oscillated between 7.5% and 9.5% for the wage mass during the same period, the share rates across different economic activity sectors show significant variations. This disparity

highlights the region's strong specialization in activities related to the Extractive Industries.

The highest share of the northern Rio de Janeiro in employment links was in the Extractive Industry, Agriculture and the Construction sector. The Extractive Industry has a very high share (63.9%), certainly because it concentrates on the activities of exploration and production of oil in the Campos Basin. The high share of the northern Rio de Janeiro in this sector stands out, being both in employment links and in the wage mass above 50% of the total of the state throughout the period. There is also considerable growth between 2006 and 2010, which may be related to the expansion of exploration activities in the pre-salt layer.

Until 2012, according to Cruz and Terra (2020), production in the Campos Basin accounted for about 80% of national production, a scenario that changed considerably over the course of the decade (RIDELENSKY; SANTOS, 2022). This shift was probably already related to changes in the national and international economic contexts, which affected the region and the strength of other oil basins. Although there was a decline in the share of the northern Rio de Janeiro from 2010 to 2014, it stabilized by 2018. It is also worth noting that, at the beginning of the series, the share of employment links and wage mass was more equitable, around 50%. Over the following years, while both shares increased, the wage mass share consistently remained higher than that of employment links, suggesting an increase in income concentration among those employed in the sector.

Although agriculture remains the second highest sector in terms of employment links and wage mass, its values in 2018 were lower compared to the onset of the series. This indicates a trend of declining share of the region in the state in this sector of activity, as well as the industries derived from agriculture. These industries also show a significant reduction in their share.

In relation to industry, it is observed that, while the sectors of industries derived from Agricultural Activities and Industries derived from the Extractive Industry had their share reduced in terms of employment and wage mass, the other industrial sectors showed a higher share in terms of employment links in 2018 than in 2006. When comparing the wage mass and the employment links in each year, it is observed that, while the sectors of industries derived from agriculture and extractive industries had greater share in employment links to the detriment of the wage mass, the Low and Medium-low technology Industry and the Medium-high and High technology Industry had a greater share in the wage mass. In addition, although at much lower levels, the share of northern Rio de Janeiro in these technological industrial sectors showed a considerable increase in employment links and even more in the wage mass.

The Construction sector deserves special attention due to the Infrastructure Works and Specialized Services for Construction branches, which saw an increase in employment links. It is important to note that the period analyzed comprises the implementation of Large Investment Projects that took place throughout the state, as pointed out by Cruz and Terra (2020) and Ribeiro et al. (2020). Despite some fluctuations, the sector in the Northern Region of the state of Rio de Janeiro maintained a stable share within the context of the state economy.

Through Table 2, it can be seen that the activities related to the Services sector have a minor share in the studied region within the state, unlike the sector's share in

the Metropolitan Region, which concentrates most of the state's services, as presented by Ribeiro et al. (2020). The Industrial Services and Public Utility sector lost share in employment links and wage mass. In the Distributive Services sector, the share of employment links increased, as well as the share of the wage mass; Productive Services, on the other hand, showed some stability. The employment links and the wage mass related to Personal Services showed a small increase until 2014 but decreased slightly in 2018.

Table 2 – Share of the Northern Region in the state – Employment Links and Wage Mass by sector – 2006-2018 (in %)

Sector	2006		2010		2014		2018	
	E.L. %	W.M. %	E.L. %	W.M. %	E.L. %	W.M. %	E.L. %	W.M. %
Agriculture	24.3	20.8	19.6	18.7	20.9	19.1	16.8	14.5
Industries derived from agriculture	9.0	6.2	5.7	3.8	5.0	3.6	4.7	3.3
Extractive Industry	50.0	50.8	66.0	71.1	62.9	67.9	63.9	67.7
Industries derived from the Extractive Industry	11.6	2.9	9.2	1.3	10.7	1.5	8.6	1.0
Low and medium-low technology Industry	3.3	3.6	4.7	7.7	4.6	7.5	6.5	10.1
Medium-high and high technology Industry	4.3	6.7	3.6	6.8	5.4	8.3	6.4	8.5
Construction	11.8	14.1	9.1	9.4	11.0	13.3	12.4	13.6
Industrial public utility services	4.3	3.3	4.4	3.2	4.8	4.6	3.8	3.2
Distributive services	5.2	4.6	6.0	7.2	6.6	8.5	6.3	7.9
Productive services	4.7	4.5	4.4	5.5	4.6	5.1	4.7	4.2
Social Services - Education, health, assistance, etc.	5.2	5.6	4.6	3.0	5.6	4.8	4.8	3.4
Social Services - Public Administration	6.4	3.7	6.5	4.3	7.1	5.9	7.4	6.1
Personal Services	3.4	2.8	4.0	3.7	4.7	4.3	4.3	3.6
Total	6.1	7.5	6.2	8.1	6.9	9.5	6.6	8.1

Source: Ministry of Labor and Employment (MTE) and Annual Social Information Report (RAIS), 2006, 2010, 2014, 2018.

The share of the Social Services sector stands out, exhibiting fluctuations in both employment links and wage mass share. While services related to Education, Health and Assistance have decreased their share in the state context, Public Administration services have shown a consistent increase.

Although there was an expansion of the role of the State and the public sector during the developmental experiment throughout the country, it is worth noting that the oil revenue economy promoted major changes in public administration in the municipalities of the region. Despite the fact that royalty revenues cannot be used for personnel payment, as they cover many other expenses, personnel hiring

increased significantly. The public sector in the region showed a significant increase in both permanent and outsourced employees – in some municipalities, the sector even became the main employer. However, with the decrease in royalties and special shares and in the context of the ultraliberal inflection in the country, there was a reduction in the hiring of public employees, restriction of public tenders and dismissal of many outsourced employees in the municipalities of northern Rio de Janeiro.

It is important to emphasize that the analysis of this evolution so far considers the share of the Northern Region in the state context according to the sectors of economic activity. The increase or decrease in share in the state economy does not necessarily mean an increase or decrease in the region itself – this will be presented below. In a general context, it can be observed that until 2014 the studied region increased its share in the state economy, but in 2018 the values of both employment links and wage mass decreased. What the data on the region's share in the state economy (Table 2) point out as the most relevant factor is the strong presence of extractive industries in northern Rio de Janeiro, which has become the region's hallmark in the state. Although the specific exploration activity carried out by oil companies is not so labor-intensive, due to its concentration in the territory, the sector ends up revealing greater share when compared regionally.

To understand the changes produced in terms of jobs and income in the context of the region itself, its internal structure was analyzed in relation to employment links and mass wage, as shown in Table 3. Regarding employment links, the five sectors with the highest share in 2018 were: 1 – Distributive Services; 2 – Social Services – Public Administration; 3 – Social Services – Education, health, assistance, etc.; 4 – Productive Services; 5 – Personal Services. It is observed, therefore, that the Services sector concentrated most of the employment links in 2018.

In addition, two more observations are worth noting. The first refers to the changes in employment share scenarios during the observed period, because until 2014, when the foundations of the developmental experiment were already showing signs of decline and fraying, the Construction and Extractive Industry sectors were among the five activities with the highest share in the region. This scenario has significantly changed since then. The second observation regards the share of the region's employment links in the Services sector within the state of Rio de Janeiro. In the state context, the share is small (none of the Services sector exceeds 7.5% share in the state – Table 2). However, the Services sector in the region encompasses the majority of jobs, especially in the distributive, social, and productive services (Table 3). Distributive services involving trade activities continue to be the largest employers, followed by public administration.

Thus, in the context of the state of Rio de Janeiro, the extractive industry in northern Rio de Janeiro has had and continues to have significant weight. However, within the region itself, the social, economic and territorial impacts are substantial. While the revenues obtained from this sector are considerable, it is not the sector that employs the most people.

Table 3 – Economic structure of the Northern Region – distribution within the region – Employment Links and Wage Mass by sector – 2006-2018

Sector	2006		2010		2014		2018	
	E.L. %	W.M.	E.L.	W.M.	E.L. %	W.M.	E.L. %	W.M.

	%		%		%		%	
Agriculture	3.1	0.9	1.7	0.5	1.5	0.5	1.3	0.4
Industries derived from agriculture	2.1	0.9	1.2	0.4	0.9	0.3	0.9	0.3
Extractive Industry	9.3	40.8	10.8	37.9	9.8	34.8	8.0	30.5
Industries derived from the Extractive Industry	1.4	0.3	1.4	0.4	1.4	0.5	1.0	0.4
Low and medium-low technology Industry	3.0	2.2	4.1	4.5	3.5	3.7	4.2	4.7
Medium-high and high technology Industry	1.3	2.5	1.0	2.1	1.3	1.9	1.4	2.1
Construction	8.9	7.1	8.5	5.6	11.1	8.3	7.6	5.3
Industrial public utility services	1.0	1.0	1.0	1.0	0.9	0.9	0.8	0.9
Distributive services	22.0	11.2	25.4	16.2	25.5	17.0	26.2	18.7
Productive services	10.1	8.9	10.1	10.1	8.7	7.7	8.9	7.2
Social Services - Education, health, assistance, etc.	9.8	7.7	8.2	4.2	9.8	6.0	10.2	5.7
Social Services - Public Administration	21.2	14.0	19.2	14.2	17.5	15.4	21.3	20.4
Personal Services	6.7	2.5	7.4	2.9	8.2	3.1	8.3	3.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Ministry of Labor and Employment (MTE) and Annual Social Information Report (RAIS), 2006, 2010, 2014, 2018.

In relation to the wage mass, which represents the income produced in the region and earned by the employees in each sector, there is a noticeable difference in share compared to employment links (Table 3). The main shares in 2018 were: 1 – Extractive Industry; 2 – Social Services – Public Administration; 3 – Distributive Services; 4 – Productive Services; 5 – Social Services – Education, health, assistance, etc. The disparity in wage mass share underscores the fact that the average remuneration in the Extractive Industry is significantly higher than in other sectors. While this sector encompassed around 8% to 11% of the region's employees, at the beginning of the period it was the sector responsible for 40.8% of the income generated. Although this share decreased to 30.5% of the wage mass in 2018, it still held the highest percentage among all sectors. Conversely, the Distributive Services Sector, despite having the largest share of employment links, showed a lower percentage of generated remuneration. In other words, these data reveal the significant wage inequalities between the activity sectors, once again pointing out the intensity of the Extractive Industry in expressing these disparities.

In general terms, the evolution of jobs related to formal employment in the Northern Region of the state of Rio de Janeiro reveals a considerable increase in workers between 2006 and 2014 and a reduction from 2014 to 2018. Obviously, one cannot disregard the effects of political instability in Brazil after the 2014 elections, the drop in international oil prices and the impacts of Operation Car Wash on oil activities, civil construction, and even oil revenues.

The intensification of the country's political instability after the 2014 elections, the economic downturn in the following years, the drop in international oil prices, and the effects of the Operation Car Wash, led to serious consequences for strategic sectors of the economic structure of the state of Rio de Janeiro and the Metropolitan Region of Rio de Janeiro. Highlights include the stoppage of COMPERJ works, the decline of the Naval Industry, the reduction of royalties and special shares from oil and gas exploration – which ended up impacting the fiscal crisis that the state government went through. This triggered a series of layoffs in industry, civil construction and even in service activities, raising unemployment rates and aggravating the weaknesses of the economic structure and inter-regional articulation that were already underway (RIBEIRO; BOA NOVA; MUNIZ, 2020, p. 254).

In this last part, only the employment relationships of the sectors are analyzed according to the branches (subdivisions) of the sectors related to industry, construction, commerce and services.

The number of employees in the industrial sector jumped from 35 thousand to 54 thousand between 2006 and 2014, while from 2014 to 2018 there was a reduction to 41 thousand, probably due to the economic crisis, especially in the oil sector, as can be seen in Table 4. A greater number of jobs in the Extractive Industry of oil and gas, coal and other fuels in the three years analyzed stands out, followed by the increase in the number of jobs in the Medium-Low Technological Intensity Industry sector, since the share of this branch more than doubled in the period analyzed. The Medium-high technology Industry also increased in 2018 in relation to the beginning of the series. On the other hand, the High Technology Industry, Low Technology Industry, Industry linked to the Extractive Industry and Industry linked to Agriculture recorded a decrease in the number of employment links.

Table 4 – Employment Links in the Industrial Sector of the Northern Region of Rio de Janeiro – 2006, 2014, and 2016

Branches	2006		2014		2018	
	E.L. %	W.M. %	E.L. %	W.M. %	E.L. %	W.M. %
Mineral Extractive Industry	583	1.7	670	1.2	585	1.4
Extractive Industry of oil and gas, coal, and other fuels	18,438	52.6	30,856	57.0	20,719	50.5
Industries linked to agriculture	4,397	12.6	2,797	5.2	2,266	5.5
Industries linked to the extractive industry	2,787	8.0	4,569	8.4	2,773	6.8
Low technology Industry	1,814	5.2	1,777	3.3	988	2.4
Medium-low technology Industry	4,282	12.2	9,410	17.4	10,112	24.6
Medium-high technology Industry	2,621	7.5	3,729	6.9	3,544	8.6
High technology Industry	101	0.3	291	0.5	57	0.1
Total	35,023	100.0	54,099	100.0	41,044	100.0

Source: Ministry of Labor and Employment (MTE) and Annual Social Information Report (RAIS), 2006, 2014, 2018.

The behavior of the Construction sector in the northern Rio de Janeiro (Table 5) followed the trend of increased employability in the first interval analyzed (from 144,979 to 226,678 employees from 2006 to 2014) and subsequent decline in the following interval (with 200,587 workers in 2018). This occurred in all branches of this sector, except for specialized services for construction. The branch with the highest share in the sector during the entire period was Infrastructure Works, although with a drop in share between 2014 and 2018 from 61.5% to 49.4% – a period that corresponds to the end of the construction works of the Port of Açu in São João da Barra and the drop in oil revenue collections.

The Building Construction and Real Estate Development branch, although with a smaller number of employees, showed a significant increase in share between 2006 and 2014, probably related to the growth of residential and commercial real estate developments in the region. Nevertheless, this branch also experienced a decline in 2018. Only the Specialized Construction Services branch grew during this period, jumping from 18.4% share in 2006 to 35.6% in 2018, in addition to an increase in absolute numbers between 2014 and 2018.

Table 5 – Employment Links in the Construction Sector of the Northern Region of Rio de Janeiro – 2006, 2014, and 2016

Branches	2006		2014		2018	
	E.L. %	W.M. %	E.L. %	W.M. %	E.L. %	W.M. %
Incorporation and own real estate activities	319	1.8	1,826	5.1	964	4.8
Building construction	4,082	22.5	6,995	20	2,182	10.9
Infrastructure works	10,408	57.3	21,925	62	9,933	49.4
Specialized construction services	3,342	18.4	4,897	14	7,029	35
Total	18,151	100	35,643	100	20,108	100

Source: Ministry of Labor and Employment (MTE) and Annual Social Information Report (RAIS), 2006, 2014, 2018.

On the other hand, the Services sector, due to its diversity, contains the largest number of branches of activity (Table 6). Nearly half of the employment links (48%) are concentrated in the Public Administration or Retail Trade, together accounting for more than 96 thousand employment links. Throughout the period, Retail Trade maintained a stable share, representing around 20% of the employment links. Additionally, the share of the Public Administration branch within the services sector reinforces previous observations about the prominence of the public sector in the regional labor market. This branch concentrated 30% of the employees in the services sector in the region in 2006 and 28.1% in 2018. Also noteworthy is the Transport, storage and distribution sector, which must have been influenced by the activities of the Port of Açu, which began operations in 2013 in São João da Barra. Furthermore, the Accommodation and Food branch saw an increase with the arrival of workers from other regions of the country and even from abroad.

Table 6 – Employment Links in the Service Sector of the Northern Region of Rio de Janeiro – 2006, 2014, and 2016

Branches	2006		2014		2018	
	E.L. %	W.M. %	E.L. %	W.M. %	E.L. %	W.M. %
Industrial public utility services	2,134	1.5	2,911	1.3	2,145	1.1
Trade and repair of automobiles	2,493	1.7	4,002	1.8	2,998	1.5
Wholesale trade	3,004	2.1	6,931	3.1	5,590	2.8
Retail trade	28,980	20.0	45,584	20.1	40,180	20.0
Transport, storage, and distribution	10,102	7.0	24,207	10.7	19,387	9.7
Telecommunications and communication (except radio and TV activities)	495	0.3	1,099	0.5	1,182	0.6
Financial services	1,673	1.2	2,852	1.3	2,752	1.4
Real estate administration and trade	98	0.1	597	0.3	456	0.2
Technical-professional and scientific services	4,043	2.8	8,429	3.7	8,478	4.2
IT services	988	0.7	1,228	0.5	1,685	0.8
Production support and personal services	13,812	9.5	14,930	6.6	10,289	5.1
Education	6,915	4.8	11,214	4.9	12,618	6.3
Health and social assistance services	9,543	6.6	16,164	7.1	11,251	5.6
Associative organizations and international bodies	3,608	2.5	4,055	1.8	3,051	1.5
Public administration	43,456	30.0	56,105	24.8	56,410	28.1
Accommodation and food services	8,115	5.6	18,001	7.9	14,210	7.1
Artistic, cultural, sports, and radio and television activities	978	0.7	1,515	0.7	1,388	0.7
Other personal services activities	4,484	3.1	6,814	3.0	6,462	3.2
Domestic services	58	0.0	40	0.0	55	0.0
Total	144,979	100.0	226,678	100.0	200,587	100.0

Source: Ministry of Labor and Employment (MTE) and Annual Social Information Report (RAIS), 2006, 2014, 2018.

Other sectors also recorded increases in share during the observed period, namely: Financial Services, Professional and Scientific Technical Services, Education and Wholesale Trade. Only the branch of Production Support services and personal services showed a gradual reduction during the period.

Despite the strong presence of the branches related to Public Administration or Retail Trade in the large services sector, it can be pointed out that, even in the scenario of crisis installed in the region, some sectors continued with a certain trend of dynamism between 2014 and 2018. Although in percentage numbers they do not cover so many workers, some branches of activity such as Financial Services, Real

Estate Administration and Trade, Technical-Professional and Scientific Services, Telecommunications and Communication, IT Services, Education and Health and Social Assistance Services showed a considerable increase in the number of employees in the period analyzed. Thus, it is observed that some sectors linked to the real estate-financial market, technological services and personal services showed a growth trend.

5 Final considerations

The industrial activity in the Northern Region of the state of Rio de Janeiro, particularly related to extractive activities in the Campos Basin, significantly contributed to the economic growth of the state during the first decade of the 21st century. Despite the strong specialization in this sector, other sectors such as some branches of construction and services, also experienced some growth, as evidenced by employment links and the wage mass of workers.

Although extractive activities related to the oil industry had been present in the region since the 20th, the transformations during the developmental experiment period at the beginning of the 21st century were profound. Initially, these large projects generated high expectations and led to an effective expansion of the formal labor market in the industrial sector and others, such as construction, services and public administration. However, the port complex, combined with the pre-existing oil complex, transformed the region into a scenario marked by a series of contradictions.

The investments adhered to a development model focused solely on the logic of resource extraction, without reinforcing other productive sectors, revealing the configuration of an economic dynamic operating more through fragmentation than through integration between sectors of activity.

During the period of ultraliberal inflection, the national economic and political crisis significantly impacted the state of Rio de Janeiro, mostly due to the adverse conditions in the national and international oil sectors. After a visible increase in employment, there was a considerable decline, leading to widespread unemployment as many jobs were lost. This scenario confirms that the trajectory of the developmental experiment in the region did not create the conditions necessary to withstand a crisis.

There was also a change in the employability sector. Between 2010 and 2014, when the foundations of the developmental experiment were still upheld, Distributive Services related to trade, Productive Services and the Social Services connected to Public Administration, along with the Construction and Extractive Industry sectors, were among the activities with higher employability in the region. In 2018, despite a generalized decline, the sector composition shifted due to a greater concentration in the broad service sector – the Education, Health, Assistance, etc. and Personal Services sectors gaining prominence, likely catering to a public that maintained its income even in the adverse context. Despite the reduction in the region's industrial share in the state context, some branches of activity related to financial, real estate, scientific and technological services managed to sustain themselves even amid the crisis.

This article demonstrates a clear relationship between the trends in economic structure and the regional labor market during the highlighted periods. It reveals how

big capital appropriates territorial resources and transforms social and economic relations. Some of these impacts on the labor market were analyzed, emphasizing the need for future studies to consider other dimensions, such as the production of space, urban governance, the environment, and other social relations and daily practices.

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