Foreign Trade, Production Structures, Employment and Income in the Brazilian macroregions (2004-2014)

Comércio internacional, estrutura produtiva industrial, emprego e renda nas macrorregiões brasileiras (2004 a 2014)

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Resumo: O artigo analisa as relações entre inserção internacional comercial e estruturas produtivas, emprego e renda das cinco macrorregiões brasileiras. Ele mostra como, no período de 2004 a 2014, o espaço econômico nacional se articulou, de forma heterogênea, à inserção comercial brasileira como exportadora de produtos intensivos em recursos naturais. Foram construídos indicadores regionais com base nos seguintes dados: comércio exterior; estrutura industrial; emprego e renda. Entre as principais conclusões, destacam-se os seguintes aspectos: as macrorregiões aumentaram as exportações de commodities, com maior intensidade nas regiões Norte, Sudeste e Sul; a inserção comercial se relacionou às mudanças nas estruturas de produção regionais, com aumento da participação das atividades intensivas em recursos naturais na composição do PIB; as atividades exportadoras intensivas em recursos naturais apresentaram baixa capacidade de geração de emprego, sendo que este se concentrou, predominantemente, nas faixas de menor remuneração.

Palavras-chave: estrutura produtiva regional; comércio internacional; desenvolvimento regional; emprego; desenvolvimento nacional

Abstract: *This paper analyses the relationship between the insertion of foreign trade and the productive structures, employment and income in the five Brazilian macroregions. It demonstrates how, during the period between 2004 and 2014, the national economic space was heterogeneously linked to the country's trade pattern as an exporter of natural resource-intensive goods. Regional indicators were developed based on the following data: foreign trade, industrial structure, employment and income. Amongst the main conclusions, the paper emphasises that: the macroregions increased their exports of commodities, particularly the North, the South and the Southeast; the trade insertion is related to changes in the regional production structures with an increased contribution from natural resource-intensive activities in the composition of the GDP; the natural resource-intensive export-oriented activities demonstrated a low capacity for creating employment, and which was predominantly concentrated in the lower income bracket.*

Keywords: *regional productive structure; foreign trade; regional development; employment; national development*

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1. INTRODUCTION

In Brazil, since the 1990s, there has been a tendency towards a regressive specialization in the productive structure, due to the fact that the natural resource- and labour-intensive sectors have grown in importance. This process intensified during the second half of the first decade of the 2000s when Brazil reaped the benefits of the commodities boom (CARNEIRO, 2008; ROCHA, 2012; MOREIRA & MAGALHÃES, 2014).

With regards to the country's regional dynamics, as Cano (2011) highlights, between 1989 and 2003, the agricultural and mineral frontiers expanded on account of the increasing exploitation of natural resources. After 2004, the mineral and agricultural complexes became well-established, with the extended use of territories destined for these economic activities, while at the same time, the internal market became strengthened (DELGADO, 2012).

Highlighting the complexity of Brazilian territorial dynamics even more, Araújo (2013) emphasized that despite the significant regional impacts from political incentives to encourage family farming, boost consumption, increase the minimum salary, and expand investments in infrastructure through the development bank – BNDES, especially in the Northeast, "the extent of inherited regional inequality is still reflected in all the socioeconomic indicators […] Equally challenging gaps remain between urban and rural Brazil, introducing differentials even in the very poorest regions" (ARAÚJO, 2013, p.50).[1]

1 Unless otherwise stated, all Brazilian citations hereafter have been translated by the author.

With regard to the territorial impacts of the commodities boom, Macedo (2010a, p.205) states that

> [...] despite the productive deconcentration of the benefitted areas, a strongly regional productive specialization was maintained throughout the country, which is evidenced by an equally strong specialization in the exportation patterns of the states, indicating a territorial division of labour that manifests itself both nationally and intra-regionally, and which has been reflectively reinforced by the external demand that expanded through the growth of world trade at the beginning of the century.

Based on both the more general movements of the Brazilian economy and its complex regional dynamics, the main objective of this article is to investigate the major transformations that have taken place in the Brazilian industrial production structure from the perspective of regional development, within a context where the insertion of foreign trade has intensified, mainly through a growth in the exports of basic natural resource-intensive goods (NRIGs). Thus, we have sought to investigate whether the major insertion of certain fractions of the national territory has reflected positively on the industrial productive structure, on creating employment opportunities and workers' income.[2]

2 With regard to the regional impacts of Brazilian foreign trade, please see, amongst others, relevant studies conducted by Macedo (2010a, 2010b and 2011).

The present article analyses the period between 2004 and 2014, which is considerably complex owing to: moments of GDP growth followed by retraction; the first years of the period being marked by the commodities boom so that the country's trade balance presented record trade surpluses; the impact of the 2008 crisis on the Brazilian economy; and, a slowdown in exports from 2012 onwards. It should be

noted that, during this period, the country consolidated regional export-oriented complexes that, even at the moment of deceleration and crisis, maintained significant momentum in the national and international scenario.

The article is structured in four sections, apart from the introduction and the final considerations. The first section briefly discusses the problematics of reprimarization and deindustrialization in Brazil. The second, presents the major transformations with the insertion of trade into the five Brazilian macroregions, indicating the primacy of the export patterns. The third section presents data from the Annual Survey of Industries (known in Brazil as the PIA) to demonstrate how the extractive industry has advanced within the regional industrial structures. In the fourth section, based on the National Household Sample Survey (PNAD) by the Brazilian Institute of Geography and Statistics (IBGE), we present information so as to understand the possible spatial transformations resulting from the regional foreign insertion, in terms of employment and income.[3]

3 For PIA data on regional productive structures and PNAD data on employment and income, growth rates were calculated based on a log-linear regression model that enabled us to determine growth rates over time, and not just between the two extremes of a time series.

2. BRIEF NOTES ON REPRIMARIZATION AND DEINDUSTRIALIZATION IN BRAZIL

The capitalist mode of production, with a nature fundamentally marked by the need to seek out new spaces to valorise capital, leads to a process of creation, destruction and recreation of spatiality, and, at the same time, embodies the capacity to create spatial inequalities (Harvey, 2004). These multiple movements of capital (exiting one place and arriving at another) lead to an uneven development between different territories and nations. They are nonetheless necessary for the life of global capital, since "[w]ithout uneven geographical development and its contradictions, capital would long ago have ossified and fallen into disarray. This is a key means by which capital periodically reinvents itself." (HARVEY, 2014, p. 147).

Based on this analytical perspective, it is important to highlight that in the late 1980s a process occurred involving the geographic reallocation of world production, which was directly influenced by the end of the Soviet bloc and by progressive transformations in the Chinese economy, increasingly linked to the process of valorising capital. Analysis of the new spatialities and the (constant, incessant) geographical reorganization of world capitalism must, in our view, be guided by the notion of the New International Division of Labour, which according to Charnock and Starosta (2016) is linked to (i) technological advances in the means of communications and transportation, and (ii) the increasingly fragmented production processes and the consequent simplification of tasks that thereby require unskilled, cheap labour. Neo-liberal reforms, directed towards labour market deregulation and financial deregulation to provide greater mobility to capital, provided the conditions that favoured this global reallocation of production.

The result of this has been a growth in the contribution of peripheral countries in exporting manufactured goods, although, as Pires emphasizes (2012), of all the stages involved in the production process (research and development, design, financial viability, marketing), peripheral countries, with the exception of the Asian Tigers and China, have only been included in the production stage (and even then, often only

involving assembly). In addition, Pires (2012) mentions that in world terms, the periphery has been lost in the process of relocating industries.

Within this process, according to Bastos (2015), during the 1990s Brazilian industry intensified its links with global value chains due to the trade liberalization and currency appreciation, leading to an expansion in "the rapid incorporation of imported technologies and a reduction of costs in the autonomous generation of technologies and the capacity to innovate" (BASTOS, 2015, p.31). This integration took place primarily as companies in Brazil intensified their role as importers of technology and inputs. The author emphasizes that, within the general transformations of contemporary capitalism, the sales of products from higher technology, and that have their productive systems commanded by big companies, intensified on the Brazilian domestic market (which expanded after 2004 by virtue of policies to valorise the minimum salary, income transfer, fiscal incentives, etc.) and on the Latin American market (due to both the global strategies of large foreign companies and the MERCOSUR trade agreements, as well as other bilateral agreements, for example the agreement between Brazil and Mexico for the automotive sector).

With regard to Brazil's trade insertion, during the 2000s, there was a very steep rise in the exports of primary commodities and minerals, bringing about a significant reduction in the contribution of manufactured goods, especially those of medium-high technology intensity. Moreover, trade balances became increasingly more dependent on commodities, in that these products presented foreign trade surpluses, as opposed to the growing deficits of segments with higher-technology content (NASCIMENTO, CARDOZO & CUNHA, 2009; MOREIRA & MAGALHÃES, 2014; PRATES, BALTAR & SEQUETTO, 2014). This process, however, should not be viewed as a growth in the exportation of commodities to the detriment of manufactured exports, but rather as changes in the relative contributions to the export pattern.

In turn, the increased contribution of primary products to exports should be interpreted as one of the main characteristics of Brazil's accumulation pattern, which, in generating trade surpluses, was one of its main supports. This discussion is entirely related to the pattern of Brazilian foreign trade and to the debate surrounding the possible reprimarization of Brazilian exports.[4] Nascimento, Cardozo and Cunha (2009) highlight that historically in Brazil, regardless of whether there was a greater or lesser share of primary commodities in the composition of exports, the foreign trade balance has always depended on the surpluses of primary products. During the commodities boom in the 2000s, the positive balances generated from the trade of commodities were extremely important in alleviating the historical international bottleneck and enabling an economy with a high degree of denationalization. In this respect, Delgado (2010) indicates that as Brazil's foreign insertion was dependent on natural resources, the argument for the primary route became "fragile as a structural solution for the foreign imbalance" (Delgado, 2010, 115).

The large share of primary products on the export list continued after the international crisis of 2008, although since 2012 Brazil has reduced the volume of commodity exports. In relation to trade balances of commodities, Prates, Baltar and Sequetto (2014) demonstrate that even after the crisis of 2008, commodities continued to generate trade surpluses, while other goods from the Brazilian exporting sector did not (PRATES, BALTAR, SEQUETO, 2014).

Macedo (2010) refers to a doubly regressive specialization in the Brazilian

4 In relation to this, please see a number of studies that address the debate on the reprimarization process of exports not necessarily through Dutch Disease, such as: Carvalho and Carvalho (2011); Gonçalves (2011).

economy, the foreign (herein referred to as reprimarization) and the industrial. With regard to the latter, part of the economic literature points to the possible process of deindustrialization, which may be characterized by a relative reduction in the contribution of industry to the GDP, and by a drop in overall employment of this economic sector. Although this debate has not generated a consensus on what has been occurring within Brazilian industry, Sampaio (2015) has provided an important study on the theme of deindustrialization in Brazil, indicating different schools of economic thought and methodologies.

For Carneiro (2008, p.20), the regressive specialization of the Brazilian productive structure originated from a process that has been ongoing since the 1990s, and may be witnessed by the fact that because there was "a reduction in the contribution of industry to the GDP; there has been a decrease in the density of productive chains, measured by the Industrial Transformation Value (ITV) and the Gross Value Added (GVA) ratio; and [in turn] there has been a greater contribution from the less technology-intensive sectors in the industrial structure".

By displaying further elements for interpreting the possible deindustrialization process, Rocha (2012) discusses the increased dependence on imported inputs, which has resulted in a productive disconnection within Brazilian industry in conjunction with higher exchange rates, trade openness and high interest rates. From this viewpoint, the deindustrialization process would not be explained through negative rates of industrial growth, but rather by an accelerated growth of the segments producing less sophisticated goods, a trend of assembling products in more technology-intensive segments and an increasing need for imports in order to make production more viable. The result of this combination of factors is the negative trade balances in the trade of industrialized products, explained by the increasing need for imports and by the low competitiveness of industrialized products on the international market.

In turn, Sarti and Hiratuka (2017) indicate several indicators of the deindustrialization process in Brazil over recent years. They believe that Brazilian industry became "more specialized, fragile, denationalized, technologically outdated and much more exposed to foreign competition when the financial crisis began in 2008-09" (SARTI; HIRATUKA, 2017, p.33). Neither the virtuous cycle of commodities during the previous period nor the public policies focusing on the productive sector were able to reverse this situation.

The processes thus far described, which have demonstrated the reinforced role of Brazil in the international division of labour as a commodities exporter, modified the interregional division of labour in Brazil and caused the Brazilian regional dynamic to become even more complex. Although discussion regarding the continuity of an industrial deconcentration process within this context is important, it has occurred because of a wide variety of factors ranging from social policies after 2003, through to the investment policies of the government's Accelerated Growth Programme (PAC), territorial policies, and on to the continuity of fiscal war.

Within this context, while foreign insertion appears as one element to explain the regional dynamics, it is not however, the only one. Herein, we recognize the importance of regional studies that have incorporated multi-factors in order to understand the recent regional dynamic forces. However, our focus is on the profile of trade insertion in the Brazilian macroregions, together with the possible changes in

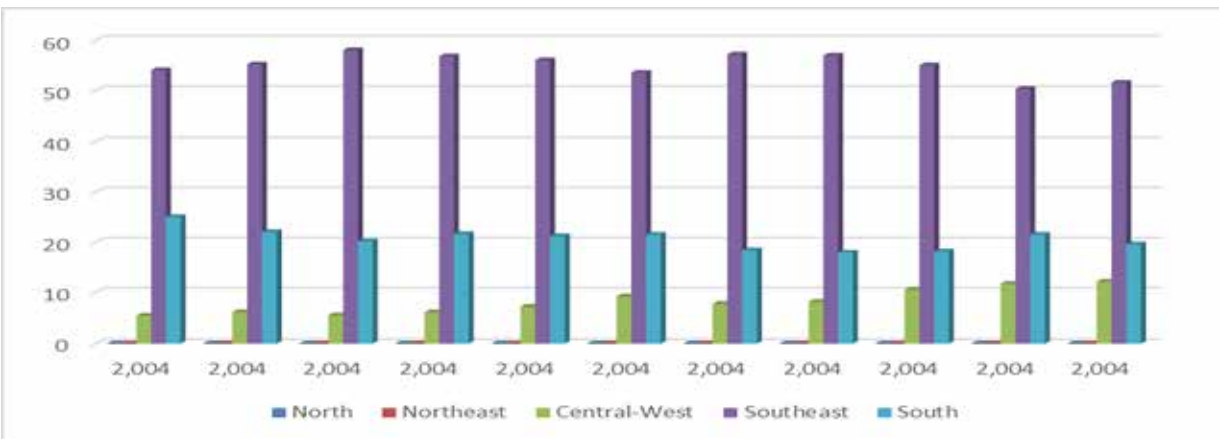
the industrial structure and the dynamics of employment and regional income in the most vigorous sectors of the international market. It is hoped that such an approach will assist in interpreting the recent processes experienced by the regional dimension of the Brazilian economy.

FOREIGN TRADE: THE PRIMARIZATION OF THE REGIONAL EXPORT AGENDAS

The aim of this section is to analyse the data on regional foreign trade so as to clarify the profile of trade insertion in each of the Brazilian macroregions. This analysis is fundamental in order to understand the main spatial transformations occasioned by this type of activity. In addition, it helps to understand the capacity of these activities in triggering a growth pattern that develops the deconcentration of productive activity, the generation of income and a reduction in regional economic inequalities. With this said, we begin the data analyses.

In 2014, reflecting the highest concentration of regional productive activity, the Southeast was responsible for approximately 50% of all national exports. However, this region presented a lower relative contribution to the total national exports during the period from 2004 to 2014, in contrast to the increased rates of the North (with gains of 2.4%) and the Central-West (with gains of 6.8%), during the same period. The Northeast and South also demonstrated a lower relative contribution to national exports, as presented in Figure 1.

Figure 1: The relative contribution of regional exports to the total of national exports, between 2004 and 2014 (in %).



Source: The Secretariat of Foreign Trade (SECEX) / The Ministry of Industry, Foreign Trade and Services (SECEX/MDIC). Produced by the author.

The growth trends of export activities and of a greater trade insertion of certain fractions of the national territory intensified in the middle of the first decade of the 2000s. This was due to a process that has been widely debated in the economic literature, which combined the increased demand for commodities and its impact on increasing the price of these products on the international market.

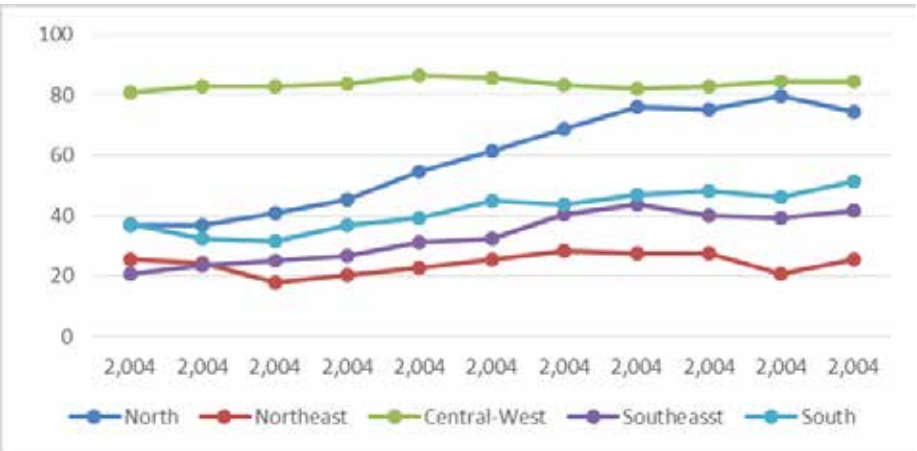
The growth of commodity exports strengthened the previously existing regional

productive structures and activated a process to seize new spaces, thereby intensifying their international links. Examples of this would be the growth of the extractive industry in the North of the country (in the state of Pará), the oil pellet plant in Espírito Santo, and oil extraction in Rio de Janeiro. The new possibilities of large foreign businesses have changed business strategies, such as that of the Vale do Rio Doce Company in intensifying the extraction of ores in Pará, thereby reducing the contribution of mineral extraction in the state of Minas Gerais to the national total. The expansion of the agricultural frontier continued through the Central-West and up to the North with soybeans and cattle. Soybean crops also expanded into the North-eastern region and into the states of Paraná and Minas Gerais. The cultivation of sugarcane intensified in the states of São Paulo and Minas Gerais.

The growth of commodity exports helped to redefine the role of foreign trade in the pattern of capital accumulation in Brazil and entailed, as observed in the abovementioned examples, important changes in the form of organizing space.

Figure 2 not only demonstrates that in the 2000s, the regions that presented the highest export growth rates experienced an intense process of primarization of their exports, but also that the South and South-eastern regions, which suffered a relative drop in their share of national exports, increased their foreign sales of basic products. This information confirms the trends indicated above.

Figure 2: The relative contribution of exporting basic products to the total exports of the Brazilian macroregions, between 2004 and 2014 (in %).



Source: The Secretariat of Foreign Trade (SECEX) / The Ministry of Industry, Foreign Trade and Services (SECEX/MDIC). Produced by the author.

There was less diversification of exported products in the Central-West region, and in 2014, around 45% of the region's exports corresponded to shredded soybean, except for seeding. The ten most exported products in 2014 included other products related to the production of soybeans, corn, cattle and poultry. This reflected the productive structure of the region, which was closely linked to agriculture and livestock farming. It should be highlighted that around 15% of exports were semi-finished goods, followed by a very small percentage of manufactured goods. Such data illustrate, on one hand, that this region was linked to foreign markets mainly in response to the demand for agricultural products, and on the other, that the Central

West strengthened its ties with the domestic market, since the main destinations for the industries located within the region are the regional and national markets.

In the North, there was an increase in the exportation of products from the extractive industry, especially in the state of Pará. This dynamism may be explained by heavy investments in the mining-metallurgical complex in the southwest of the state by the Vale do Rio Doce Company, which accounted for more than 60% of the region's exports in 2011. On the other hand, in the North, there was an expansion of the agricultural frontier in the states of Rondônia and Tocantins, thereby intensifying the links between these states and the foreign trade circuits. The state of Amazonas, on the other hand, portrayed a differentiated insertion, contributing with industrialized products from the Manaus Industrial Park (MIP). Since 2011, however, beverage exports have increased, in contrast to previous years when goods from MIP were amongst the main regional exports. Because of these trends, from 2004, the export of basic products increased significantly in the North, and after 2008 this level exceeded 50% of regional exports.

Although the Northeast is the region that presents the lowest contribution of basic products to the export agenda, it has nonetheless increased, and in 2014 reached 25%. The trade of basic products is related to the expansion of soybean crops towards the west of Bahia, the south of Maranhão and the southeast of Piauí. The states of Bahia and Maranhão have also excelled in exporting products from the extraction of non-metallic minerals and the metallurgical industry. The economic formation of the North-eastern economy was highly connected to the domestic market, unlike that of the North and Central-West regions.

Although most of the nation's industry is concentrated in the Southeast, São Paulo, which is considered the hub of the nation's industry, presented, amongst the top ten export products, goods from agriculture or from the extractive industry, such as sugar cane, other sugars, soy, crude oil, meat and orange juice. In the case of the state of Rio de Janeiro, the export of basic products accounted for about 60% of all exports in 2014, which demonstrates the influence of oil extraction, since crude oil accounts for almost 50% of the state's total exports. Exports from the state of Minas Gerais were concentrated on iron ore, coffee, soybeans, sugar cane and meat, which also demonstrates a major primarization of its export patterns. Finally, amongst the top ten products exported by the state of Espírito Santo are: iron ore, flexible iron and steel pipes, other semi-manufactured steel products, chemical wood pulp (related to the pulp and paper industry), granite, crude oil and coffee.

With regard to the South, in the state of Paraná, of the ten main products exported, eight were associated to soy, meat, coffee and maize. This state also exported automobiles, due to the automobile industry established in São José dos Pinhais. In the state of Rio Grande do Sul, the main exports included products from soy, tobacco, wood and meat products. This same trend is repeated in the state of Santa Catarina.

This information helps us to interpret certain changes that have occurred in the productive structure of the Brazilian macroregions in relation to the greater contribution of the extractive industry and to the lower contribution of the manufacturing industry in the regional industrial sector. It is important to emphasize that these data refer to relative contributions and that the pervading problematics surrounding the manufacturing industry are because of: a drop in the relative contribution of this economic activity to the GDP; a reduction in the number of

productive chains; an increased need to import inputs, spare parts, components, etc. This process of transformations in the national productive structure has resulted both from general movements inherent in the process of capitalist accumulation, and also from the pattern of accumulation established within the country (ROCHA, 2012).

Faced with this situation, some of the possible questions would be: although export activities appear to have influenced important transformations in regional productive structures, with the increased contribution of the extractive industry to the regional productive structures, do these activities, in fact, bring sufficient elements together to produce a development process for employment creation and income distribution? And, within this, do agricultural activities have a greater capacity to stimulate the generation of employment and income and contribute to a process of deconcentration? The following sections present information that enables a better understanding of these issues.

REGIONAL INDUSTRIAL PRODUCTIVE STRUCTURES: THE RELATIVE CONTRACTION OF THE MANUFACTURING INDUSTRY

The aim of this section is to understand some of the transformations that took place in the regional industrial productive structures between 2004 and 2014. The analysis spans into two directions: (i) the productive deconcentration of the extractive and manufacturing industries and (ii) the industrial composition within the regions. This analytical movement allows us, on the one hand, to observe the gains and losses of the contributions across the regions and offers an indication of some of the more general explanatory factors that may have influenced this process. On the other hand, it is also possible to analyse the contours assumed by the manufacturing industry and observe, from a regional viewpoint, whether national industry had a greater share of activities with more technological content, or whether its growth is due to simpler, more labour-intensive activities.

Since the end of the 1990s, the contribution of the extractive industry within the industrial sector has increased in Brazil, and in the period from 2004 to 2014 the average annual growth rate was 7.1% (Table 1). An analysis of the Brazilian macroregions reveals that they all presented a higher share of extractive industries, although in the South, this share was very low. The change, which occurred in the relative contribution to the composition of the industrial structure in the North, Northeast and Southeast is primarily related to a growth in the exports of iron ore and petroleum products.

Table 1: The relative contributions of the extractive and manufacturing industries in the industrial sector, Brazil and macroregions (IBGE), between 2004 and 2014 (in %).

		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	GR (% pa.) 2004/2014 (a)	
Brazil	Extractive Industries	7.5	8.6	8.3	8.1	9.9	9.6	11.7	13.6	13.8	13.6	13.4	7.1	***
	Manuacturing Industries	92.5	91.4	91.7	91.9	90.1	90.4	88.3	86.4	86.2	86.4	86.6	-0.8	***
North	Extractive Industries	17.1	18.6	16.6	16.2	22.6	22.8	36.9	40.6	36.4	37.8	31.4	10.1	***
	Manuacturing Industries	82.0	81.4	83.4	83.8	77.4	77.2	63.1	59.4	62.1	62.2	68.6	-3.3	***
Northeast	Extractive Industries	11.4	11.2	9.2	9.2	10.2	12.7	10.0	11.2	12.9	11.7	11.0	1.2	
	Manuacturing Industries	88.6	88.8	90.8	90.8	89.8	87.3	90.0	88.8	87.1	88.3	89.0	-0.1	
Central-West	Extractive Industries	3.4	3.1	3.3	7.6	7.3	4.6	5.5	5.7	5.7	5.1	5.0	4.3	*
	Manuacturing Industries	96.6	96.9	96.7	92.4	92.7	95.4	94.5	94.3	94.3	94.9	95.0	-0.2	
Southeast	Extractive Industries	8.3	9.7	9.7	9.3	11.4	10.8	12.9	15.3	16.2	16.1	16.8	7.8	***
	Manuacturing Industries	91.7	90.3	90.3	90.7	88.6	89.2	87.1	84.7	83.8	83.9	83.2	-1.1	***
South	Extractive Industries	0.8	0.9	0.8	0.8	0.8	0.9	0.8	0.9	1.0	1.2	1.4	5.0	***
	Manuacturing Industries	99.2	99.1	99.2	99.2	99.2	99.1	99.2	99.1	99.0	98.8	98.6	-0.1	***

(a) an estimate of the coefficient of a log-linear regression model with time. In this case, the t test indicates whether or not there is a trend in the data. ***, **, * signify respectively 5%, 10% and 20%. GR = Growth Rate. Source: PIA/IBGE. Produced by the author.

The Northern region, which, as we have observed, increased its contribution to national exports and presented a considerable growth in the contribution of basic products to its list of exports, was the region in which the extractive industry most expanded its relative importance in the regional industrial productive structure (Table 1), from 17.1% in 2004 to 31.4% in 2014. The extractive activity refers mainly to mineral extraction in the state of Pará.

The solid growth of the extractive industry in the North led to an increase in the region's contribution to domestic production, a tendency that increased in the years between 2007 and 2011. Nonetheless, extractive activities still remained highly concentrated in the Southeast (which accounted for more than 70% of the national production), indicating that despite the intensification of this activity in the North and in some locations in the Northeast, the concentration of production is far from being reversed. While a certain portion of the extractive activity was destined for the domestic market, the great impetus that led to the growth of these activities from 2003 was related to the commodities boom. Because this activity depends on whether or not the location contains natural resources that may be explored, it is therefore extremely difficult for deconcentration to occur.

The massive contribution of the Southeast is mainly related to the large amount of oil brought in from the states of Rio de Janeiro and from the south of Espírito Santo. The contribution of Minas Gerais to the extractive mineral industry was lost to the state of Pará when the Carajás complex was created, along with the strategy of the Vale do Rio Doce company to increase investments in the southwest of that particular state. Although the contribution of the North-eastern region began to decrease, its significant contribution to the national extractive industry was also related to petroleum. According to Macedo (2010) the urban dynamics of some cities in the states of Sergipe, Rio Grande do Norte and more recently Pernambuco, have undergone changes due to this activity.

Which problematics are therefore involved in this specific issue, i.e., of the increased relative contribution of the extractive industry in certain localities? On the one hand, this activity undoubtedly boosts local economies, generating royalties that may be used for social services and improvements in the urban space. However, on the other hand, it is a technology-intensive activity, limiting any significant increase in direct employment involving activities closely linked to foreign demands and, therefore, creating a situation whereby fractions of the territory become vulnerable to the expansion or retraction movements of foreign demand. Moreover, these activities also exploit non-renewable natural resources and are primarily under the command of large companies, which are responsible for the concentration and centralization of capital and investment decisions, employability and the direction that these localities must follow.

With regard to the manufacturing industry, from 2004 to 2014, the regions that presented the greatest deconcentration in this area were the Northeast, the South and most outstandingly the Central-West (Table 2).

Although the manufacturing industry is still highly concentrated within the Southeast (56.1%), the region has nonetheless decreased its relative contribution within the national context. This deconcentration process may be explained by several factors. The expansion of the agricultural and extractive frontiers, with the intensified exploitation of the productive bases of natural resources, has generated effects in the surrounding areas and stimulated urban activities, both of services and/or industrial.

The agricultural sector, which has grown with the expansion of the agricultural frontier, comprises mostly large farms with highly mechanized production and, therefore, mostly unable to generate new employment. However, as in the case of the Central-West, Southeast and South, some significant agri-industrial complexes have been formed, revealing important links between agriculture and the manufacturing industry and, in turn, the overspill effects to sectors outside agriculture (refrigerated food products, grain processing, the food industry in general), as clearly demonstrated in the case of the Central-West.

While part of the explanation for deconcentration may be explained by the indirect effects of the extractive and agricultural industries, this does not however provide a full explanation. Other explanatory elements are based within the fiscal war, from the direct actions of individual state governments in their attempts to attract investments, which includes for example, the auto industry, thereby promoting the deconcentration of this sector in Brazil. Additionally, also worthy of note is the expansion of public sector investment in infrastructure - intensified beyond the Southeast, chiefly through PAC -, income transfer policies (especially Bolsa Família) and an increase in the purchasing power of the minimum salary, which were both important factors that stimulated consumption and therefore, certain industrial segments (ARAÚJO, 2013).

Table 2: The relative contribution of the national manufacturing industry, five macro-regions (IBGE), 2004 to 2014 (in %).

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	GR (% pa.) 2004/2014 [a]	
North	5.0	5.2	5.6	5.5	5.3	5.2	4.9	4.7	4.4	4.7	4.9	-1.3	***
Northeast	8.6	9.0	9.8	9.5	9.6	9.4	9.5	9.5	9.6	9.6	10.2	1.0	***
Central-West	3.6	3.8	3.5	3.5	3.8	4.7	4.8	5.0	5.7	5.8	6.0	6.2	***
Southeast	62.7	62.8	62.1	61.7	61.2	59.8	60.1	59.7	58.6	57.5	56.1	-1.0	***
South	20.1	19.2	19.0	19.9	20.1	20.9	20.7	21.2	21.6	22.4	22.7	1.6	***
Brazil	100	100	100	100	100	100	100	100	100	100	100		

(a) an estimate of the coefficient of a log-linear regression with time. In this case, the t test indicates whether or not there is a trend in the data. ***, **, * signify respectively 5%, 10% and 20%. GR = Growth Rate. Source: PIA/IBGE. Produced by the author.

Data from the Annual Industrial Survey also enable us to recognise the activities with the highest relative contribution to the regional industrial structures. As from 2008, the North began to lose ground in terms of the national manufacturing industry (Table 2). With regard to the regional industrial structure, during the period from 2004 to 2014, the contribution of metalworks declined, which may be related to a drop in foreign demand, both because of the effects of the international crisis and of strategy changes in China, which began to process iron ore, thereby affecting metalworks in the state of Minas Gerais.

In the Northeast, there was a decline in the contribution of the food and beverage sectors, and an increase in fuel production – this latter trend was related to the expansion of oil extraction in the region. The chemical industry also gained prominence, largely due to the petrochemical complex in Camaçari. During the analysed period, there was an increase in non-metallic minerals, which may be explained by the expansion of civil construction, (a trend observed in almost all regions). There was a decrease in the contribution of automobile production, which may be related to a reduction of domestic consumption as of 2012.

In the Central-West, there was a strong contribution from the food industry, almost 50% of the regional ITV, which is closely related to the region's agricultural structure, where a significant part of this production was to meet both regional and national demands. Moreover, during this period, pharmaceutical products held a significant position, influenced by the presence of pharmaceutical companies, especially in the state of Goiás. The manufacture of motor vehicles was significant in the region, mainly because of the assembly lines in the state of Goiás, attracted to a large extent, by tax incentives. The contribution of motor vehicles however, started to decrease from 2012, which may also expose the drop in the domestic demand.

The South-eastern region is not only responsible for concentrating most of the national industry, but also the most complex segments. After an increase in the national production of petroleum products, basic metalworks and vehicle manufacturing - in the first two cases, these segments are linked to the extractive industry and exports -, from 2009, the production of basic metalworks began to decrease, due to, amongst other reason, the abovementioned China issue. The contribution of motor vehicles began to decrease as from 2012.

In the South, there was an increase in the contribution of food and beverages in the regional industrial structure. More than 20% of the state's ITV corresponded to food and beverage production, which demonstrated a growing trend during the studied period. The contribution of petroleum-derived products increased. The region suffered significant losses in the production of footwear, due to the fiscal war.

5. SECTORAL AND REGIONAL EMPLOYMENT AND INCOME: TO WHAT EXTENT MAY EXPORT ACTIVITIES INCREASE JOB OPPORTUNITIES?

We used the National Household Sample Survey (PNAD) from the Brazilian Institute of Geography and Statistics (IBGE) in order to analyse changes in the labour markets of the macroregions in Brazil, focussing on salaried employment, both official and unofficial,[5] and income (minimum salary).[6] This was not a matter of conducting a detailed study of the regional labour market, but of examining, as set out in the aims of this article, whether the major insertion of certain fractions of the national territory into the foreign market was reflected positively with regard to employment creation and workers' pay in the responsible sectors. Although we highlight certain tendencies in different sectors, attention is drawn to the two sectors of the Brazilian economy, which were most outstanding in the analyses of regional data on foreign trade, i.e., agriculture and extractive industries, and of the industrial production structure (the extractive industry that expanded its contribution to the ITV).

5 We preferred to use the PNAD because it not only enabled us to analyse official employment (as with RAIS/CAGED), but also unofficial employment (unregistered), thus allowing a comparative analysis of both.

6 It is also important to remember that there was no PNAD for 2010 since no census was conducted.

Table 3 presents the total number of salaried workers in each field of activity for the Brazilian macroregions. The table reveals that the North (where there was an expansion of the agricultural frontier - mainly soybean and livestock) and the Central-West (an important producer of grain and cattle, with an expansion of the agroindustry) were the only regions that did not present a drop in the total number of salaried workers in agriculture. In other regions where there was also an increase in the use of territorial areas for agricultural production, there was a decrease in the total number of salaried workers in this field.

The degree to which agricultural production expanded in the Brazilian economy during the period studied was largely linked to the processes involved in increasing the exports of goods from this sector, and the reprimarization of both the national and macroregional exports. However, this expansion was not reflected by an increase in the total number of workers, since it is an extensive (agriculture and livestock), mechanized (agriculture) activity and thereby labour saving. Maia and Sakamoto (2014) state that the almost generalized regional reduction of employment in agriculture is due to an intensification of mechanized productive processes. Furthermore, in the 2000s, one other explanatory factor was "the attraction of better employment and income opportunities in the urban centres, common to the development process of all regions" (MAIA and SAKAMOTO, 2014, p.597).

Table 3 also demonstrates that in the mineral extractive industry there was an increase in the total number of salaried workers in all regions. However, this table also allows us to infer that the relative contribution of this industry in the total number of workers in each region is noticeably lower, inasmuch as it is a highly-mechanized,

labour-saving activity. Notwithstanding, it should be noted that the North presented the highest growth rate (4.6% p.a.) for salaried workers in mineral extraction in relation to the other regions (and, as discussed in previous sections, this region also presented a strong growth in exports of basic products in addition to presenting the greatest increase in the contribution of the extractive industry in terms of the ITV).

These data reveal that the growth of exports (from the agricultural and extractive industries) has produced no differentiated effects on employment creation compared to other sectors. It is beyond the scope of this article to analyse the indirect effects that the agricultural and mineral extractive industries have produced in other economic activities (and their respective employment) - only with further research and another methodology would it be possible to identify such interactions. Nevertheless, on this aspect, Macedo (2010, p. 84) states that:

> New accumulation fronts have been opened along the frontier areas or in the small and medium-sized towns, supported mainly by the expansion of agribusiness and the growing extractive industry. Since the beginning of the twenty-first century, these factors have strengthened the productive deconcentration and demographic processes, influencing the pattern of migration, giving the country's spatial organization a more internalized character, directly linked to the pattern of Brazil's foreign trade.

In relation to the other sectors of activity (Table 3), as previously discussed, the regressive double specialization process in the Brazilian economy (reprimarization and deindustrialization) did not in counterpart present a drop, in absolute terms, of production in activities more closely linked to the domestic market. On the contrary, there was a specificity of these processes in Brazil: the reprimarization and deindustrialization occurred within the context of a stronger, growing domestic demand. In this sense, activities more closely linked to the domestic market - for example, in the manufacturing industry (or construction, trade, etc.), in which the production of goods and services focused on the final consumption -, have demonstrated a positive growth of the product and of salaried employment. The North was the only region that presented a decrease of total employment in the manufacturing industry, and this result may be related to the effects of the 2008 international crisis on the MIP.

Table 3: The evolution of official and unofficial salaried workers per sector of activity within each macroregion: 2002 to 2014 (absolute numbers, x 1.000).

Region / Fields of Activity		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	GR (% p.a.) 2004/2014(a)	
North	Agriculture	370.9	332.9	345.6	329.2	345.4	353.0	374.1	352.9	341.6	337.9	0.0	
	Extractive industry	23.0	21.6	27.6	27.0	30.3	24.6	30.2	37.9	33.7	34.1	4.6	***
	Manufacturing industry	482.0	480.6	400.1	497.0	477.6	444.7	392.3	400.3	401.0	390.6	-2.4	***
	SIUP	25.7	28.0	23.0	24.8	25.3	26.9	24.7	22.1	27.1	27.6	0.4	
	Construction industry	187.4	232.7	219.6	254.9	323.1	290.1	324.4	366.4	372.7	410.5	7.3	***
	Trade	484.0	540.5	586.1	592.4	673.0	661.7	660.1	727.9	736.3	793.3	4.4	***
	Services	1,032.8	1,103.2	1,084.0	1,134.0	1,187.4	1238.2	1,281.4	1,266.7	1,283.9	1,369.9	2.6	***
	Others	333.6	361.7	384.6	395.3	384.6	397.0	420.6	484.6	503.6	508.6	4.6	***
	TOTAL	2,918.3	3,080.5	3,128.8	3,262.4	3,450.5	3,456.0	3,587.8	3,665.9	3,700.4	3,871.2	2.6	***
Northeast	Agriculture	1,884.4	2,008.6	1,927.6	1,846.7	1,790.8	1,821.9	1,481.7	1,552.3	1,413.3	1,440.1	-3.6	***
	Extractive industry	61.4	60.3	69.4	63.1	70.6	62.2	69.6	63.2	71.6	60.9	1.6	*
	Manufacturing industry	1203.3	1,257.3	1,293.6	1,425.5	1,442.1	1,365.8	1,396.2	1,487.3	1,408.5	1,364.5	1.3	***
	SIUP	64.0	63.9	60.7	49.4	69.1	70.1	62.7	47.6	69.2	74.6	1.3	
	Construction industry	699.2	713.4	762.4	780.7	979.2	929.4	1,147.1	1,213.6	1,317.9	1,361.8	7.8	***
	Trade	1,659.1	1,708.4	1,770.4	1,924.9	2,020.6	2,136.8	2,251.46	2,386.6	2,331.6	2,506.6	4.6	***
	Services	3,622.2	3,609.2	3,600.9	3,909.4	4,100.7	4,211.2	4226.9	4,361.6	4,591.7	4,691.4	2.5	***
	Others	1,155.1	1,248.4	1,308.4	1,381.7	1,415.1	1,422.1	1,613.1	1,662.6	1,620.3	1,700.3	3.8	***
	TOTAL	10,204.7	10,734.7	11,022.4	11,410.4	11,984.3	12,116.8	12,288.8	12,714.0	12,893.1	13,270.1	2.4	***
Central-West	Agriculture	461.6	467.7	420.4	466.7	455.5	457.6	441.6	446.9	446.0	472.0	0.2	
	Extractive industry	17.0	15.4	17.9	20.8	21.2	22.3	26.9	28.0	24.8	27.7	6.9	***
	Manufacturing industry	423.0	423.6	462.1	490.4	483.6	526.2	521.0	601.4	576.1	551.1	3.2	***
	SIUP	17.3	23.7	20.8	19.0	22.0	25.7	28.4	21.2	26.9	26.9	2.4	*
	Construction industry	233.1	217.8	230.4	238.5	304.6	281.2	363.7	316.5	400.1	402.3	6.9	***
	Trade	704.0	703.2	726.7	766.0	831.6	840.3	911.0	975.4	930.6	1,000.2	3.6	***
	Services	1,289.1	1,302.7	1,328.3	1,399.6	14,389.0	1,504.3	1,614.0	1,622.2	1,663.2	1,683.0	2.9	***
	Others	597.1	498.4	520.6	546.6	583.4	622.6	706.6	746.6	764.0	732.1	4.9	***
	TOTAL	3,642.4	3,700.9	3,808.5	3,944.7	4,123.8	4,259.9	4617.2	4,739.6	4,839.6	4,930.1	3.3	***
Southeast	Agriculture	1,701.1	1,682.7	1,676.2	1,627.2	1,720.6	1,633.4	1,442.5	1,365.3	1398.2	1,268.6	-2.9	***
	Extractive industry	163.2	120.1	158.1	167.1	169.9	193.6	177.3	204.3	191.2	194.5	3.6	***
	Manufacturing industry	4,755.7	4,773.8	4,954.5	5,349.5	5,547.7	5,250.3	4,881.9	5,273.5	4,922.9	4,790.8	0.1	
	SIUP	130.7	149.3	159.3	134.9	137.4	142.9	131.4	130.4	130.4	139.0	-0.9	**
	Construction industry	1,249.6	1,247.9	1,337.6	1,348.7	1,585.9	1,627.1	1,789.2	1,873.2	2,006.0	1,894.7	5.2	***
	Trade	3,943.8	4,283.8	4,425.1	4,546.1	4,625.4	4,812.6	5,028.5	5,030.3	5,200.0	5,288.0	2.7	***
	Services	6,339.6	6,589.2	6,859.1	6,909.3	9,225.6	9,590.1	10,015.5	9,890.6	10,042.6	10,196.3	2.0	***
	Others	3,076.1	3,215.7	3,380.3	3,473.0	3,706.7	3,658.3	4,451.9	4,534.9	4,411.3	4,484.0	4.3	***
	TOTAL	23,359.1	24,077.6	25,029.1	25,662.8	26,718.0	26,898.4	27,618.2	28,317.5	28,305.0	28,256.0	2.0	***
South	Agriculture	553.5	504.7	469.9	534.1	502.0	521.8	483.8	481.1	456.4	451.5	-1.3	***
	Extractive industry	15.6	22.8	19.4	28.6	21.2	25.9	29.0	23.4	23.0	19.4	1.7	
	Manufacturing industry	2,030.1	2,054.0	2,003.4	2,089.2	2,197.4	2,179.2	2,200.1	2,371.0	2,224.9	2,335.8	1.6	***
	SIUP	52.5	41.2	56.5	50.0	44.8	51.7	47.0	39.8	41.5	42.2	-2.0	**
	Construction industry	366.6	367.3	386.4	417.0	482.6	495.9	614.4	646.0	700.4	664.0	7.6	***
	Trade	1,379.7	1,483.5	1,507.2	1,610.7	1,640.6	1,673.7	1,809.2	1,700.6	1,801.2	1,901.2	3.0	***
	Services	2,478.2	2,484.2	2,523.4	2,647.4	2,783.0	2,834.7	2,887.5	2,885.2	3,020.0	3,062.0	2.1	***
	Others	876.6	846.33	882.4	938.7	965.2	1,010.4	1,165.1	1,103.6	1,109.6	1,171.2	3.6	***
	TOTAL	7,751.4	7,792.9	7,928.5	8,350.6	8,672.9	8,771.2	9,306.2	9,400.5	9,548.9	9,647.6	2.5	***

(a) n estimate of the coefficient of a log-linear regression with time. In this case, the t test indicates whether or not there is a trend in the data. ***, **, * signify respectively 5%, 10% and 20%. SIUP: Public Utilities. GR = Growth Rate. Source: PNAD/IBGE Microdata. Produced by the author.

In summary, with regard to job creation, the activities most connected to foreign trade performed in the following manner: the contribution of agriculture decreased within the regional structures, which is related to the declining trend in absolute terms of employment within this sector; the extractive industry increased in importance in the total employment of the North, Central-West and Southeast, although the relative contribution of total employment was very low, and did not even reach 1%.[7]

From the viewpoint of official employment (with a formal, registered contract), the agricultural activity presented a low level of official employment, and was the economic activity, across all regions, that presented the lowest number of officially contracted workers. The highest numbers of official salaried workers in agriculture occurred in the Central-West, South and Southeast, of which the Central-West presented the greatest increase in the number of official salaried workers in this sector. Even in the South-eastern region, where a significant part of the nation's modern, mechanized agriculture is located, just over 50% of its workforce is employed on an official basis. While the extractive industry, on the other hand, in comparison to agriculture (and even to most other sectors) presented the highest proportion of official workers, it nonetheless generated little employment.

Tables 4 and 5 enable a clear evaluation of the deepening impact from the foreign connection of the Brazilian macroregions, which was mainly due to the intensified use of the national territory for extractive mineral industries and agriculture for production primarily aimed towards exports. The tables also demonstrate the distribution of official and unofficial workers by income brackets (calculated in minimum salaries).[8]

In relation to the income of salaried workers, in Table 4 it is possible to observe the reduction trends in the relative contribution of incomes for those earning up to three minimum salaries (thereby signifying an increase for those earning above three minimum salaries) in the extractive industry, with the exception of the North and the

7 Due to the constraints of space, it is not possible to present tables with the contribution information related, for example, to a particular sector in an income bracket (official or unofficial or total) within each region.

8 The values were deflated for September 2014 (the PNAD reference month). The consumer price index was used as the deflator.

South. It may also be observed that the maximum income of more than half of the respective salaried workers is still up to the abovementioned income bracket.

Table 4: The evolution of the relative contribution (%) of official salaried workers in the *extractive industry* in the macroregions in Brazil, in income brackets (in minimum salaries), 2004 to 2014.

Region	Income Brackets in Minimum Salaries	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	GR (% pa.) 2002/2014(a)	
North	0 to 2 m.s.	19.4	12.1	36.7	19.5	23.2	21.7	32.8	27.4	8.7	14.4	-2.5	
	0 to 3 m.s.	46.6	51.6	50.6	55.7	47.7	53.3	61.2	43.5	52.4	52.9	0.5	
Northeast	0 to 2 m.s..	66.8	65.4	56.6	51.8	47.9	49.3	62.9	49.1	47.0	44.1	-3.0	***
	0 to 3 m.s.	75.7	73.5	69.3	71.8	63.2	62.1	76.1	67.4	67.5	66.8	-0.8	
Central-West	0 to 2 m.s..	67.7	80.4	62.3	59.9	42.7	44.6	40.1	50.2	38.3	40.5	-6.1	***
	0 to 3 m.s.	80.6	96.1	83.4	92.5	73.3	71.3	61.1	77.9	76.8	61.9	-2.9	***
Southeast	0 to 2 m.s.	53.8	54.2	44.4	44.0	40.5	33.7	38.4	33.2	32.6	30.8	-5.4	***
	0 to 3 m.s.	71.7	72.1	67.0	71.0	64.7	61.6	61.5	53.8	57.1	58.1	-2.7	***
South	0 to 2 m.s..	90.7	75.9	63.7	75.0	57.4	62.2	61.6	66.1	47.6	36.2	-5.9	***
	0 to 3 m.s.	97.6	88.6	76.5	92.9	87.7	87.8	84.7	76.3	78.2	78.9	-1.6	***

(a) an estimate of the coefficient of a log-linear regression with time. In this case, the t test indicates whether or not there is a trend in the data. ***, **, * signify respectively 5%, 10% and 20%. GR = Growth Rate. Source: PNAD/IBGE Microdata. Produced by the author.

Amongst the unofficial salaried workers employed in the extractive industry, significant, similar trends (to those of official workers) may also be observed (Table 5) regarding a decline in the relative contribution of income of up to two minimum salaries - the only exception being in the Northeast, which demonstrated (statistical) stability. One difference noted between the two types of salaried workers (Tables 4 and 5), is that during most years in the analysed time series, amongst the unofficial workers, there was a significantly elevated concentration of incomes within the bracket of up to two minimum salaries in all macroregions (Table 5).

Table 5: The evolution of the relative contribution (%) of unofficial salaried workers in the *extractive industry* of the macroregions in Brazil, according to income brackets (in minimum salaries), 2004 to 2014.

Region	Faixas de Salários Mínimos	2004	2005	2006	2007	2008	2009	201,000	2011	2012	2013	GR (% aa.) 2004/2014(a)	
North	0 a 2 s.m.	80.9	71.9	86.0	88.2	81.3	82.7	50.9	69.1	50.3	59.5	-4.4	***
	0 a 3 s.m.	92.8	78.3	92.4	89.6	81.3	91.8	56.3	78.8	59.9	84.0	-2.7	*
Northeast	0 a 2 s.m.	97.6	100.0	95.3	84.9	98.8	95.0	97.2	90.3	100.0	96.1	0.0	
	0 a 3 s.m.	97.6	100.0	100.0	86.7	98.8	97.9	100.0	90.3	100.0	100.0	0.1	
Central-West	0 a 2 s.m.	96.3	90.0	86.3	94.6	82.7	88.7	63.6	71.4	67.9	64.6	-4.1	***
	0 a 3 s.m.	96.3	90.1	86.3	100.0	91.4	100.0	72.7	100.0	86.8	82.2	-1.0	
Southeast	0 a 2 s.m.	85.4	95.7	83.6	74.1	82.6	84.4	83.4	83.1	68.0	47.9	-3.7	***
	0 a 3 s.m.	94.3	100.0	95.5	80.9	82.6	84.4	93.5	83.1	82.2	60.4	-2.8	***
South	0 a 2 s.m.	90.7	83.5	100.0	89.4	91.1	93.3	83.9	71.1	91.0	55.0	-3.1	**
	0 a 3 s.m.	100.0	91.6	100.0	100.0	95.6	100.0	83.9	95.2	94.2	55.0	-3.1	**

(a) an estimate of the coefficient of a log-linear regression with time. In this case, the t test indicates whether or not there is a trend in the data. ***, **, * signify respectively 5%, 10% and 20%. GR = Growth Rate. Source: PNAD/IBGE Microdata. Produced by the author.

The case of agriculture is much less encouraging, compared to the extractive industry. Although agriculture, as analysed above, took in relatively more salaried labour than the extractive industry, in all macroregions, the earnings of salaried workers were strongly concentrated in the income bracket of up to two minimum salaries (Table 6, official salaried workers), a situation, which is even more pronounced among unofficial salaried workers (Table 7). This particular agricultural group exhibited a very significant relative contribution to the above-mentioned income bracket during most of the years analysed.

Table 6: The evolution of the relative contribution (%) of official salaried workers in *agriculture* in the macroregions in Brazil, according to income brackets (in minimum salaries), 2004 to 2014.

Region	Income Brackets in Minimum Salaries	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	GR (% pa.) 2004/2014(a)	
North	0 to 2m.s.	96.3	93.4	93.8	95.6	90.0	91.3	85.8	87.7	82.2	83.0	-1.5	***
	0 to 3 m.s.	98.7	98.4	98.1	97.4	98.2	98.0	94.8	94.5	92.3	96.9	-0.5	***
Northeast	0 to 2m.s.	97.8	97.6	99.1	96.2	96.6	94.5	96.6	95.4	95.6	93.9	-0.4	***
	0 to 3 m.s.	98.8	99.0	99.7	98.2	98.5	98.8	98.7	98.2	98.7	97.7	-0.1	**
Central-West	0 to 2m.s.	91.4	83.2	83.4	82.3	78.2	79.0	74.3	67.5	63.6	61.6	-3.5	***
	0 to 3 m.s.	96.2	94.6	94.9	93.8	93.5	94.0	91.4	89.9	88.7	87.0	-0.9	***
Southeast	0 to 2m.s.	97.5	95.4	93.6	91.9	89.7	89.7	85.8	83.7	79.3	79.4	-2.0	***
	0 to 3 m.s.	99.3	98.6	97.9	97.9	96.6	96.8	95.3	93.2	94.6	94.4	-0.6	***
South	0 to 2m.s.	92.5	95.5	91.2	91.9	89.2	91.7	88.3	83.6	81.5	79.0	-1.6	***
	0 to 3 m.s.	96.5	99.1	97.9	96.1	95.0	98.3	95.9	95.7	95.1	95.5	-0.3	**

(a) an estimate of the coefficient of a log-linear regression with time. In this case, the t test indicates whether or not there is a trend in the data. ***, **, * signify respectively 5%, 10% and 20%. GR = Growth Rate. Source: Microdata PNAD/IBGE. Produced by the author.

In the case of both official workers and unofficial workers, the highest income in agriculture occurred in the Central-West, which also exhibited the lowest number of workers in the income bracket of between 0 to 2 minimum salaries and 0 to 3 minimum salaries (Tables 6 and 7). The Central-West presented the biggest decrease

in the proportion of workers in the income bracket of 0 to 2 minimum salaries both official and unofficial workers.

Table 7: The evolution of the relative contribution (%) of unofficial salaried workers in *agriculture* in the macroregions in Brazil, according to the income brackets (in minimum salaries), 2004 to 2014.

Region	Income Brackets in Minimum Salaries	2004	2005	2006	2007	2008	2009	201,000	2011	2012	2013	GR (% pa.) 2004/24014(a)	
North	0 to 2m.s.	97.0	98.1	98.7	99.0	98.5	97.5	97.4	95.9	95.9	94.4	-0.3	***
	0 to 3m.s.	98.3	99.6	99.4	99.4	99.0	98.9	98.8	98.4	98.7	98.7	-0.1	
Northeast	0 to 2m.s.	99.8	99.9	99.9	99.8	99.6	99.6	99.4	99.7	99.3	99.3	-0.1	***
	0 to 3m.s.	100.0	99.9	100.0	99.9	99.9	99.9	99.8	99.8	99.8	99.9	0.0	***
Central-West	0 to 2m.s.	96.9	95.7	96.6	94.3	94.0	91.8	92.3	89.9	89.1	80.0	-1.4	***
	0 to 3m.s.	99.0	98.3	98.5	97.9	96.8	96.5	96.6	95.1	98.8	94.9	-0.3	***
Southeast	0 to 2m.s.	99.1	98.5	98.4	97.8	98.7	98.2	96.1	95.9	95.6	94.7	-0.4	***
	0 to 3m.s.	99.7	99.2	99.6	98.9	99.4	99.5	97.5	98.3	98.6	98.3	-0.2	***
South	0 to 2m.s.	98.4	96.8	98.1	96.1	97.7	96.0	96.0	94.5	93.1	91.8	-0.6	***
	0 to 3m.s.	99.2	99.5	99.2	98.5	99.3	98.5	98.3	98.2	97.7	96.3	-0.2	***

(a) an estimate of the coefficient of a log-linear regression with time. In this case, the t test indicates whether or not there is a trend in the data. ***, **, * signify respectively 5%, 10% and 20%. GR = Growth Rate. Source: PNAD/IBGE Microdata. Produced by the author.

In light of these observations, it is necessary to consider, on the one hand, Bourguignon's (2012) cautionary advice that growth in countries that export labour-intensive products with unskilled labour contradicts the classic theories of foreign trade, in which, due to an increase in demand for these types of goods, the unskilled labour force would benefit most, with salary increases and changes in income distribution, in terms of increasing the appropriate share for workers. On the other hand, it should be noted that the domestic policy of valorising the minimum salary, income transfer policies and policies to encourage domestic investment may have been responsible for avoiding an even worse situation for the salaries of workers in these sectors.

In summary, this section has explained the limitations of the extractive and agricultural activities in terms of creating employment and generating income. These limitations suggest that regional development may not depend exclusively on the manner in which the economic sectors are connected to foreign trade; it needs a broad set of social policies, linked by being simultaneously sectoral and territorial. In the case of sectoral regional economic policies, there is a need to stimulate the expansion of productive chains and activities that have major ramifications in terms of generating employment and income, along with policies to strengthen the internal market. A new profile of foreign trade is also necessary, one that may overcome the Brazilian heritage of primary exports.

FINAL CONSIDERATIONS

This article has examined the changes that have taken place in the industrial structure of the Brazilian macroregions within a context of the growing exports of basic natural resource-intensive goods. It has also investigated whether the major

trade insertion of certain fractions of the national territory has reflected positively on creating employment and generating income for the workforce.

It was discovered through the analysis that the exportation of basic products increased in all macroregions, with a primarization of exports in the Central-West (the increased exports of agricultural products) and the North (intensification of iron ore exports), which in 2014 presented an 80% share of total exports. For the same year, the South and Southeast presented a 40% share of basic products in total exports. These were followed by the Northeast with a share of around 20%.

The extractive industry demonstrated a relative increase in the composition of the ITV, mainly in the North and Southeast, triggered by the increased exportation of products from extractive minerals.

Foreign trade generated important points of dynamism throughout the various Brazilian regions, with significant changes in the productive structure, illustrated by the advances offered by agriculture and extractive minerals. However, the exporting activities that grew the most, i.e., the extractive and agricultural industries, presented limitations in employment creation and a concentration of workers in the lower income brackets.

It is not within the scope of this article to analyse the quality of the employment generated by the investigated activities and of the effects on the municipalities caught up the process of exploiting iron ore and agriculture. Further studies need to be conducted in order to obtain a more detailed understanding of the socioeconomic transformations, the effects on the environmental, the impact on cities and the indirect effects on other sectors that result from the exportation activities herein examined.

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