

## POLICIES OF ECONOMIC GROWTH IN BRAZIL AND THE SPATIAL DISTRIBUTION OF PRODUCTION

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### Abstract

*The Brazilian economic growth occurred in concentrated form in the Southeast and South. From 1950 it was undertaken some structural character of measures, targeting regional economic development with spatial distribution of economic growth. Some restructuring and promotion programs of reducing regional disparities were implemented with little or no success. Thus, the purpose of this article is to study the spatial distribution of production in Brazil in three sectors, namely industry, services and agriculture, among the five major regions: North, Northeast, Southeast, South and Midwest, from 1950-2009, using as variable the Gross Domestic Product - GDP. The empirical methodology is to construct indexes of location and specialization, from 2014 IPEADATA data. The results show a tendency to deconcentration of productive activities, with reduced participation of the Southeast. However, there is still strong concentration of production in this region, with only a slight tendency to increase production in other regions of the country. In fact, it is not known if there is devolution or sprawling growth, related to the spatial distribution of investment in other areas of the country.*

**Keywords:** Economic growth; Brazil; Production.

**JEL Classification:** O10, O18.

## **1. Initial considerations**

Economic growth is circular in shape and shoot in different parts of the territory (Boudeville, 1973). Due to the different characteristics of each region, there is usually trade comparative advantages between the parties, which tends to cause significant inequalities. Such disparities persist, specially in underdeveloped economies, for many decades. The redistributive activities in space is, thus, according to the state actions, with the purpose of promoting the reduction of disparities, from temporary or permanent and intervention measures and control.

The circular character and cumulative with that develops the economy tends to exacerbate inequality (Myrdal, 1960). The regions where come the economic centers are increasingly developed and the surrounding absorb part of the development because usually provide raw materials for these, but the most remote areas tend to stagnate or decrease, because they have no attractiveness to capital and end by operating only as labor supply, which tends to reduce the region's GDP (Perroux, 1955). In order to correct these imbalances, some theoretical currents indicate that the state should intervene in the market in order to balance the various forces and preserve the economic and social equality of the regions.

In Brazil, historically it occurred a fragmented economic settlement (Pacheco, 1996). The nearest coastal regions and greater abundance of precious metals and wood quality tended to be more explored and inhabited. In the long term, increasingly they formed regional economic development centers with a strong concentration in the dynamic regions with a strong appeal to attract productive capital, either because they are strengthened by natural factors, either by interventional measures.

This scenario provided strong concentration of capital in the Southeast, due to the abundance of precious metals, fertile land and ease of the flow of goods along the coast, as well as the creation of infrastructure for transport and distribution of logistics. Such attributes were consequently changing the economic dynamics of the most developed productive regions and the process of industrialization has become concentrated in these centers of greater economic scale. Similarly, some changes in the administrative geographical size of the country, such as the creation of the capital Brasília, in the Midwest of the territory, modified the production dynamics of the country. The settlement of regions

with economic potential growing has been consolidated from the political and administrative settings that were brought.

Given this context, this article aims to analyze the spatial distribution of Brazilian economic growth, in the context of changes in economic structures and dynamics of policies aimed at reducing of regional disparities. They are used as economic growth variable, the gross domestic product of the three main sectors of economic activities: industry, services and agriculture. The time frame covers the years 1950-2009 and the geographic scope covers the whole country, with breakdown by regions. Ipeadata data will be used (2014) and built location and distribution indicators.

To achieve this purpose, the article is well structured: beyond the initial considerations, the second section is a brief review of the literature about the state actions and their impact on the reduction of regional economic disparities; in the third section, to postulate some methodological procedures used in this study; the fourth section presents the regional and location measures under Brazilian macro-regions; Finally, in the fifth section, it is the final considerations.

## **2. Productive decentralization policies in Brazil 1950-2010**

Brazil has a large territory as one of its features. This implies a country with continental diversities, composed of regions with peculiarities of the most distinct possible, ranging from ethnic and social to productive and economic. By mid-1940, it is observed in the country a government concerning only part of the country. Consequence of historical formation and spread of this, which resulted in the predominance of targeted policies for the South and Southeast regions. Only after the various difficulties experienced at the beginning of the century, many of them due to the lack of a strong domestic consumer market, and the reliance on income earned from the export of a single product, coffee, and consequently the bad external situation, impacting the economic health of countries that demand, there were an interest in the Brazilian State to develop public policies that could strengthen the other regions of the country, productively.

The first policies aiming to decentralize productively occurred between 1930 and 1970, with the expansion of the agricultural frontier towards the South and the Midwest. Initially, in the 1940s, commissions were created and superintendents, aimed at reporting technical and objective difficulties and needs for development of the North and Northeast of Brazil. It is highlighted the Commission of the São Francisco Valley (CVSF), Cia Hydroelectric São Francisco (Chesf), the Superintendence of Northeast Development (SUDENE), the Superintendence of the Amazon Development (SUDAM) and the Superintendence for the Development of Manaus Free zone (SUFRAMA). Later, in the 1950s, the Working Group for Northeast Development (GTDN) was created, led by Celso Furtado, who demonstrated in reporting format the needs of the Northeast of Brazil, and how great were the differences between this and the South and Southeast (Diniz, 2001).

As national development plans, aimed at integrating the whole country, were created: the Health Promotion Plan, Power, Transportation, and Energy - JUMP in 1949 by President Gaspar Dutra, who aimed to step up investments in sectors that have the name of the plan; the Target Plan in 1957 by President Juscelino Kubitschek, who was a redesign of JUMP plan, aiming to raise investments in energy, transportation, basic industries, food and education; Economic Development Triennial Plan and Social in 1963, led by Celso Furtado, with a view to raising the efficiency of public accounts, with a fiscal adjustment that matches the increase of government revenues (Vianna & Villela, 2005). Alongside these plans, rural credit policies were created, which aimed to modernize agricultural production and investments were made, arising from the Second National Development Plan (II-PND), which permeated the way of completion of the production structure started with the Program Imports Replacement (PSI). Note that with these policies, two regions stood out fruitfully, the Manaus Free Trade Zone and parts of São Francisco Valley region: the first, with the production of electronic; and the second, with the production of irrigated fruit (Cano, 1997).

In the preparation of the 1988 Constitution it rekindled the debate about the Brazilian regional inequality, and from that were duped some successes, including the “regionalized distribution of resources allocated in the Multiannual Investment Plan”. However, the economic difficulties of the period, felt worldwide, led a race in favor of the strengthening of neoliberal policies. In Brazil, it was reflected in the reduction of the civil service structure, where much felt the organs directed to provide studies to productive deconcentration policies and reducing inequality between regions. Thus, the successes achieved in the 1988 Constitution did not materialize and many of them did not leave the paper (Cano, 1997, p. 102).

Throughout the 1990s, the new dominant economic format in the world, turned the attention to the reduction of interference of state agents in the economy, it was touted as the way to increase efficiency and competitiveness, including the peripheral countries and more level of inequality. Brazil was not different. The problem is that many Brazilian regions had no further structure to compete, and this order was eventually reduce or wipe out “the possibilities of achieving a certain social and regional equity” (Cano, 1997, p. 103). Faced with the reduction of direct public investment of federal and state governments in productive activities, where many cases occurred to the privatization of state enterprises, there was, from then on, a new form of government position, where a dispute occurs between regions by private companies and industries, which offer benefits such as tax exemptions. Regions unexplored outside the production centers, which counted with plenty of cheap labor, big draw for intensive enterprises in human capital, such as automakers, have become attractive. It is coupled to this movement, it occurred in the 1990s the disarticulation of the regional nature of superintendents (SUDENE and SUDAM) and the reduction of transfers “to regional development funds (Constitutional Fund of the Midwest Finance - FCO Constitutional Fund for Financing North - FNO and Constitutional Fund for Financing the Northeast - FNE)” that made the dependent regions of the state direct investments more vulnerable to speculation and exchange variations (Monteiro Neto, 2014, p 289).

During the 2000s, it is observed a rise of economic dynamics in Brazil, which was reflected in social improvements. There is the restoration of the interventionist state, as the main responsible for propelling the national dynamics, which had been abandoned in the 1990s. The income transfer policies, which were the starting point to boost the economy of historically less dynamic regions, caused a multiplier effect on consumption and production, is cited, for example, social programs as Bolsa Família and Minha Casa, Minha Vida. During this period the lending intensified, mainly by the National Bank for Economic and Social Development (BNDES), and federal investments, mainly from 2007, with the Growth Acceleration Program (PAC), directed to infrastructure (Monteiro Neto, 2014).

### 3. Methodological Procedures

In order to meet the proposed it will work with qualitative and quantitative data. It will be to apply the method developed in Brazil by Lodder (1974) and Haddad (1989) for regional studies, commonly used by several authors, including Pumain and Saint-Julien (1997), Delgado & Godinho (2002) and Simoes (2004; 2005).

This method is to use the GDP data of the three major sectors of the Brazilian economy (Industry, Services and Agriculture) and the five major regions (North, Northeast, Southeast, South and Midwest). For this purpose, use will be Ipeadata data (2014) and the data matrices below:

$GDP_{ij}$  = GDP of economic activity ( $i$  = industry/services/agriculture) of the region ( $j$  = one of the five Brazilian regions).

$$\sum_i GDP_{ij} = GDP \text{ of the sum of all economic activities in the region } j.$$

$$\sum_j GDP_{ij} = GDP \text{ of economic activity } i \text{ in all regions.}$$

$$\sum_i \sum_j GDP_{ij} = GDP \text{ of all economic activities and all regions of Brazil.}$$

From this information, regional character measures will be applied, using methods of location and regional methods or expertise.

### 3.1. Location methods

With the data array constructed, it can develop the calculation of the indicators of the location methods. Thus, it will be calculated at first the Location Quotient ( $QL_{ij}$ ), which is a method of location used for observation of the dynamics of GDP by sector and Brazilian regions (Lodder, 1974; Haddad, 1989). To perform the calculation employs the formula below:

$$QL_{ij} = \left[ \frac{\left( \frac{GDP_{ij}}{\sum_j GDP_{ij}} \right)}{\left( \frac{\sum_i GDP_{ij}}{\sum_i \sum_j GDP_{ij}} \right)} \right] \quad (1)$$

To interpret the result of the index, followed by the following rule: when  $QL_{ij} \leq 0,49$ , it is defined below; when  $0,50 \leq QL_{ij} \leq 0,99$ , it is defined medium; and when  $QL_{ij} \geq 1$ , it is defined significant. If it is considered significant, it has analyzed that the region has importance for Brazil, the sector considered for the calculation (Lodder, 1974; Haddad, 1989).

Subsequently, it calculates the coefficient location ( $CL_{ij}$ ). It shows the sector's significance level analyzed in relation to the chosen region when, if it is taken into account GDP, considered all economic activity of all regions (Brazil) (Lodder, 1974; Haddad, 1989).

$$CL_{ij} = \sum_j \left[ \frac{\left[ \left( \frac{GDP_{ij}}{\sum_j GDP_{ij}} \right) - \left( \frac{\sum_i GDP_{ij}}{\sum_i \sum_j GDP_{ij}} \right) \right]}{2} \right] \quad (2)$$

It has been here the following: when  $CL_{ij} \cong 0$ , economic activity  $i$  will be distributed in the region also to the rest of the economic activities. However, when  $CL_{ij} \cong 1$  it means that the concentration of economic activity analyzed differs from other economic sectors in the region in the patter of regional concentration (Lodder, 1974; Haddad, 1989; Pumain & Saint-Julien, 1997, Delgado & Godinho, 2002; Simões, 2004, 2005).

### 3.2. Regional methods or expertise

Finally, it uses to the methods of specialization or regional measures, namely: specialization coefficient ( $CS_j$ ) and Restructuring coefficient ( $CR_j$ ). The goal of these methods is to analyze the economic structure of each region, with the intention of identifying the regional economic structural basis for the proposed years (Lodder, 1974; Haddad, 1989).

The first method, the coefficient of specialization, has the level of expertise in the region, without distinguishing it by sectors from the economic analysis of the set of all regions (Brazil) (Lodder, 1974; Haddad, 1989). For this, employing the formula below:

$$CS_j = \sum_i \left[ \frac{\left[ \left( \frac{GDP_{ij}}{\sum_i GDP_{ij}} \right) - \left( \frac{\sum_j GDP_{ij}}{\sum_i \sum_j GDP_{ij}} \right) \right]}{2} \right] \quad (3)$$

For analysis, there is the following: when  $CS_j \cong 0$ , the region's economy is similar in composition to the total of all regions (Brazil); However, when  $CS_j \cong 1$ , the area in question has high degree of economic specialization, if it's considered in relation to the rest of the regions of Brazil (Lodder, 1974; Haddad, 1989).

The second, Restructuring coefficient  $CR_j$ , is to inform the behavior of the economic activity of the regions for two different time instants, as follows: the base year 0 and year 1. Restructuring coefficient is



able to identify and quantify the change in specialization economic, from the regional analysis of GDP (Lodder, 1974; Haddad, 1989).

$$CR_j = \sum_i \left\{ \left[ \left( \frac{T1}{\sum_i GDP_{ij}} \right) - \left( \frac{T^0}{\sum_i GDP_{ij}} \right) \right] / 2 \right\} \quad (4)$$

When  $CR_j \cong 0$ , there weren't significant changes in the economic structure of the set of regions (Brazil); However, when  $CS_j \cong 1$ , there is the opposite, ie; significant changes in the economic restructuring of whole regions during the period under review (Lodder, 1974; Haddad, 1989).

With the theoretical background acquired over the first two chapters and the indicators listed above, try in the third chapter explains the economic dynamics of the three major sectors of the economy and its path between the regions of Brazil within the proposed time period.

#### **4. Locational dynamics of regional brazilian product**

Throughout this chapter will assess the locational changes occurred in the Brazilian production process. The regional development process and the main conditions for such occurrences will be analyzed. Most attention will be given to conditions that left government policies to decentralize the productive activities and the specialization and restructuring of the regions after such changes. These interferences are intensified in the 1970s and changed its format in later years, most dynamic international market. From the development of the proposed methodology analyzes the results. The results are shown in tables and are divided by the three major sectors of the economy: industry, services and agriculture. The analysis is performed within the time frame from 1950 to 2009 and covers the five Brazilian regions: North, Northeast, Southeast, South and Midwest.

##### **4.1. The location of the GDP from the Location Quotient**

The next three tables show the Location Quotient (QL) of the GDP of the three major sectors of the economy divided by region and by year, from 1950 to 2009. The first, the table 01, contains the Location Quotient (QL) of GDP Brazil's industry every major region of the year 1950-2009.

Table 1: Location Quotient of industry in Brazil per region, 1950-2009.

YEAR	NORTH	NORTHEAST	SOUTHEAST	SOUTH	MIDWEST
1950	0,55	0,60	1,16	0,84	0,31
1955	0,70	0,61	1,19	0,72	0,20
1960	0,85	0,54	1,23	0,67	0,30
1965	0,76	0,50	1,28	0,63	0,24
1970	0,49	0,60	1,21	0,72	0,23
1975	0,64	0,67	1,16	0,83	0,27
1980	0,96	0,78	1,11	0,96	0,41
1985	0,89	0,84	1,12	0,89	0,43
1990	0,83	0,81	1,09	1,05	0,43
1995	1,10	0,91	1,05	1,18	0,36
2000	1,02	0,93	1,06	1,14	0,40
2005	1,09	0,90	1,06	1,08	0,55
2009	1,06	0,91	1,05	1,12	0,59

Source: Prepared by the author from 2014 IPEADATA.

It is clearly observed the significant disparity between regions. It is peculiar characteristic to developing centers, common in developing countries (Perroux, 1955). The Southeast sports, throughout the period, high significance for the industry; however, this level is reduced from 1975, while other regions rises. Tavares & Belluzzo (1984, p.129) point out that “from 1970-71 can be considered as exhausted spare capacity in the industry, inherited from the previous step and used in the recovery period.” As spare capacity is extinguished, the increase in production in this region demand new investments in fixed and installed capacity, which increases the expansion of production, implying short-term expansion limit (Kalecki, 1983). From 1970 to 1975 registers high rise in significance of other regions, a consequence of the industrial integration policies, which led to the migration of companies to other regions aiming to increase competitiveness through cost reduction: tax incentives hand of abundant and cheap labor, less expensive land, proximity to consumer markets, among others (Cleps, 2003). They are policies that aim to turn the propeller effect on peripheral regions (Myrdal, 1960).

The only region with QL low GDP for the industrial sector is the Midwest, a level that remains until the 2000s, from when it increases the significance and starts to get an average QL, as a result of the

development of agribusiness (Juttel, 2007). This region and the North are the ones with the highest levels of growth, reaching variations close to 100% between the first and last year of the series. The Northeast has a predominantly middle QL, but growing, registering about 50% growth between the first and last analyzed year, a consequence of industrialization at a slower rate compared to the NO and CO. This growth started from the installation in Bahia in the Camaçari Petrochemical Complex and “the system of tax incentives 34/18-FINOR” (Pacheco, 1996, p. 116). The North and South have moved from mid-level to high throughout the period, closing the series in the second group, due to the installation “of the Manaus Free Trade Zone and the Great Carajás Program” in the first, and metal companies mechanical, Triunfo Petrochemical Complex and footwear, textiles, pulp and paper, agribusiness and in the second (Pacheco, 1996, p. 116).

Table 2 contains the QL of GDP of services. This sector is the one with greater homogeneity over the analysis period. No one region exerts dominance as a leader in significance from start to finish the series.

Table 2: Location Quotient of services in Brazil per region, 1950-2009.

<b>YEAR</b>	<b>NORTH</b>	<b>NORTHEAST</b>	<b>SOUTHEAST</b>	<b>SOUTH</b>	<b>MIDWEST</b>
1950	1,20	0,92	1,06	0,83	0,75
1955	1,16	0,98	1,07	0,79	0,68
1960	1,11	0,92	1,07	0,82	0,81
1965	1,14	0,92	1,07	0,85	0,85
1970	1,08	1,04	0,99	0,93	1,21
1975	1,06	1,04	1,01	0,89	1,26
1980	0,88	1,05	1,00	0,88	1,30
1985	0,85	0,93	0,99	0,87	1,96
1990	0,82	1,03	0,93	0,78	2,68
1995	0,92	1,08	1,00	0,97	1,00
2000	0,97	1,10	0,99	0,91	1,11
2005	0,88	1,04	0,99	0,95	1,15
2009	0,89	1,05	1,00	0,93	1,12

Source: Prepared by the author from 2014 IPEADATA.

The region holds greater significance level in the first year of the series, the North is the same as owning the significance level last observed year. This high initial significance is due in large part to the mineral extraction that attracted many people at the time for the region, but it lost strength over the years (Juttel, 2007). Low quality of the structure and public services reduces the attractiveness of the region (Myrdal, 1960). Just like that, the Southeast also decreased the level of significance due to the reduction of people migration process to the region in search of better opportunities, very common in the early years of the series; however, this reduction is less amplitude and remains highly significant (Pacheco, 1996).

The other regions increased QL, with highlights for the Midwest, passing the average level of significance for the high significance level, as well as the Northeast, however, to a lesser extent. These regions were at the beginning of the series the origin of the people who migrated to the East and North, especially for the first (Juttel, 2007). From the policies that increased the opportunities and the quality of public services, the movement was reduced and was registered also the return of some. The South elevates your QL, but not enough to download it from the average level of significance for the high significance.

Table 3 ends the QL analysis of the GDP of sectors. It contains the significance level for the agricultural sector.

Table 3: Location Quotient of Brazilian agriculture per region, 1950-2009.

YEAR	NORTH	NORTHEAST	SOUTHEAST	SOUTH	MIDWEST
1950	0,98	1,38	0,80	1,37	1,85
1955	0,96	1,32	0,75	1,54	2,11
1960	0,91	1,50	0,68	1,59	1,90
1965	0,91	1,52	0,67	1,56	1,86
1970	1,88	1,78	0,52	2,00	1,91
1975	1,80	1,79	0,49	2,02	2,01
1980	1,69	1,63	0,56	1,74	1,98
1985	1,52	1,44	0,62	1,70	1,56
1990	2,33	1,47	0,60	1,46	1,46
1995	2,03	1,59	0,61	1,64	1,14
2000	1,76	1,32	0,56	1,85	1,55
2005	1,91	1,45	0,53	1,40	2,12
2009	1,86	1,34	0,49	1,56	2,03

Source: Prepared by the author from 2014 IPEADATA.

In agriculture the predominance of regions changes in relation to industry. In the agricultural sector, the region with the greatest significance during the reporting period is the Midwest, due to the dynamics in the production of grains, warming the demand for products in this sector (Juttel, 2007). The Northeast and South also have tradition in the sector, with high significance quotients, with the first reduced its participation in four hundredths, and the second rose in nineteen cents. This was because the North did not follow the development of agribusiness, industry responsible for the promotion of agriculture and its profitability, which occurred in the Midwest and South (Pacheco, 1996).

The two regions that modified the QL were North and Southeast. The North has grown throughout the series, and specifically in 1970, now has a high significance quotient result of the expansion of agricultural borders towards the forest, which increased its production area in the sector (Juttel, 2007). The region with the lowest QL sector is the Southeast, with a tendency to decrease. The region starts the analyzed period with an average level QL, but close to the high level of significance, but it is reduced over the years, the series ending with a QL 0.49, which is below the significance level. This region, from the coffee crisis oversized by overproduction crisis of 1929, the capital migrates come of this for other

sectors and regions, as well as the labor that supplied, with no maintenance position and, as a result; It reduces its QL (Cleps, 2003).

#### 4.2. Location of GDP coefficient

The next three tables expose GDP Location coefficient. It quantifies the degree of concentration of sectors for each region. Table 4 contains the CL Industry. The values are very close to zero, which exclude the possibility of high concentration of the industrial sector.

Table 4: Location coefficient of Industry in Brazil per Region, 1950-2009.

YEAR	NORTH	NORTHEAST	SOUTHEAST	SOUTH	MIDWEST
1950	0,00	0,03	0,05	0,01	0,01
1955	0,00	0,02	0,06	0,02	0,01
1960	0,00	0,03	0,07	0,03	0,01
1965	0,00	0,04	0,09	0,03	0,01
1970	0,01	0,02	0,07	0,02	0,01
1975	0,00	0,02	0,05	0,02	0,01
1980	0,00	0,01	0,03	0,00	0,02
1985	0,00	0,01	0,04	0,01	0,01
1990	0,00	0,01	0,03	0,00	0,01
1995	0,00	0,01	0,02	0,01	0,03
2000	0,00	0,00	0,02	0,01	0,03
2005	0,00	0,01	0,02	0,01	0,02
2009	0,00	0,01	0,01	0,01	0,02

Source: Prepared by the author from 2014 IPEADATA.

Despite the low CL, it is possible to identify which regions are at increased industrial concentration. The Southeast has higher values, confirming the results obtained by calculating the QL of the industry GDP. The level of concentration, but rises only until the year 1965. From the 1970s, start-up policies by the authoritarian state in order to promote industrial decentralization and increase the competitiveness of Brazilian industry. These measurements were taken from the installation of industries in regions outside the South East policies, such as steel and petrochemicals, through institutional mechanisms such as the

National Council of Urban Planning (CNPU), the Industrial Development Council (CDI) and the Council for Economic Development (CDE) (Cleps, 2003).

The CL Midwest shown growing process throughout the series, by the year 2000, which shows a process of concentration; however, since 2005, suffers slight decrease and stagnates. Southern operates in the same dynamics. It presents increased concentration at the beginning of the series, but decreases from 1970, following the industry devolution movement that occurred towards smaller centers (Diniz & Crocco, 1996). The Northeast also follows this downward line, with significant increase in concentration only in 1965, as it happened in the Southeast.

Among the regions analyzed, the North stands out as the one with the lowest degree of industry concentration, being homogeneous throughout the series, even expressing a change in 1970, but was not confirmed in the following years. Even with the installation of an industrial park, the volume relative to the total produced in the country remained small. Structural investment is necessary and deployment industries able to fully develop the region in order to make the self-sustaining and continuous development (Tavares & Belluzzo, 1984).

Table 5 shows the CL of GDP in the service sector. Among the three sectors under review, the service is what possess a lower level of concentration.

Until 1965, the Southeast has some level of concentration, nothing significant. Since then none region has predominant concentration. This is due to the sector characteristic: it is present in many branches. The values are very low and sporadic. This characteristic is due to the easy migration of this sector between regions. It concentrated in certain regions according to the demand for labor, especially of a commercial nature (Juttel, 2007).

Table 5: Location coefficient of Services in Brazil per Region, 1950-2009.

<b>YEAR</b>	<b>NORTH</b>	<b>NORTHEAST</b>	<b>SOUTHEAST</b>	<b>SOUTH</b>	<b>MIDWEST</b>
1950	0,00	0,01	0,02	0,01	0,00
1955	0,00	0,00	0,02	0,02	0,00
1960	0,00	0,01	0,02	0,02	0,00
1965	0,00	0,01	0,02	0,01	0,00
1970	0,00	0,00	0,00	0,01	0,00
1975	0,00	0,00	0,00	0,01	0,01
1980	0,00	0,00	0,00	0,01	0,01
1985	0,00	0,00	0,00	0,01	0,02
1990	0,00	0,00	0,02	0,02	0,04
1995	0,00	0,00	0,00	0,00	0,00
2000	0,00	0,01	0,00	0,01	0,00
2005	0,00	0,00	0,00	0,00	0,01
2009	0,00	0,00	0,00	0,01	0,01

Source: Prepared by the author from 2014 IPEADATA.

It has been on the table 6 CL GDP of agriculture. The most striking observation is the highest expression of values, which is a higher degree of concentration in comparison to the CL industry and services, owns characteristic of underdeveloped countries (Myrdal, 1960). However, as these, CL values of agricultural GDP are not high, which means that the concentration level is not significant. The Southeast has the largest CL among regions, as well as with the CL industry. However, in agriculture CL Southeast rises over the years, contrary to what happens in the industry.



Table 6: Location coefficient of Agriculture in Brazil per Region, 1950-2009.

YEAR	NORTH	NORTHEAST	SOUTHEAST	SOUTH	MIDWEST
1950	0,00	0,03	0,07	0,03	0,01
1955	0,00	0,02	0,08	0,05	0,01
1960	0,00	0,04	0,10	0,05	0,01
1965	0,00	0,04	0,10	0,05	0,02
1970	0,01	0,05	0,16	0,08	0,02
1975	0,01	0,04	0,16	0,09	0,02
1980	0,01	0,04	0,14	0,06	0,03
1985	0,01	0,03	0,12	0,06	0,01
1990	0,03	0,03	0,12	0,04	0,01
1995	0,02	0,04	0,12	0,05	0,01
2000	0,02	0,02	0,13	0,07	0,02
2005	0,02	0,03	0,13	0,03	0,05
2009	0,02	0,02	0,14	0,05	0,05

Source: Prepared by the author from 2014 IPEADATA.

The CL of the Midwest and North grew throughout the series, indicating increased concentration. The Midwest has developed in recent years increased production capacity thanks to higher demand of its agribusiness (Juttel, 2007). The Northeast is the only region with decrease in comparison with the initial and final values of the series. Until 1970, she sported elevated concentration; thereafter it moved up laterally outlining reduction as main non-technological production monitoring question (Diniz & Crocco, 1996). The South showed a strong increase of the CL by the year 1975, as well as the Southeast; but from 1980 it began a lateral movement, not expressing trend growth or reduction.

### 4.3. GDP Specialization coefficient

The specialization of companies in Brazil is in accordance with the size and technological level of the market in which they operate. Large companies, which have competitors as leading companies from other countries, usually high-tech, are characterized by investment in research and technology development in order to raise competitiveness (Carneiro, 2008). They are already small and medium-sized businesses, which are the majority, specialized not by increased investment in research and technology, but in carrying out mergers and acquisitions of competing firms, which can distort the final result, since many of the mergers and purchases will not increase production efficiency, but the withdrawal of competitors (Carneiro, 2008).

Schumpeter (1982) explains that this is the prevailing feature in the economy: prioritize is not the most efficient, but it shows the best cost-benefit of the activity to be carried out, justifying why in crisis, more efficient companies, however, newer and not yet stabilized tend not to survive against less efficient companies, but have stabilized in the market.

Table 7 sets the coefficient of specialization (EC) of GDP by region from 1950 to 2009. The amounts recorded are close to 0 for all regions, which means the low level of specialization. Added to this is the fact that the values follow a downward trend in all regions, registering falls of up to 75%, such as the Northeast, when comparing the initial year and the last year of the series. The region with the highest level of expertise is the Midwest, with higher values throughout the reporting period, however, with a significant drop compared the initial and final year of the series in question, approximately 57%. The industry of the region is specialized in agribusiness, which operates in the mechanization and industrialization of agricultural production, especially grain (Pacheco, 1996).

Table 7: Coefficient of Specialization of GDP in Brazil per Region, 1950-2009.

YEAR	NORTH	NORTHEAST	SOUTHEAST	SOUTH	MIDWEST
1950	0,10	0,12	0,06	0,12	0,26
1955	0,08	0,10	0,08	0,16	0,33
1960	0,06	0,14	0,09	0,17	0,25
1965	0,07	0,14	0,10	0,16	0,24
1970	0,16	0,12	0,06	0,12	0,24
1975	0,13	0,12	0,06	0,12	0,26
1980	0,08	0,09	0,04	0,08	0,24
1985	0,09	0,07	0,05	0,10	0,38
1990	0,13	0,07	0,06	0,09	0,58
1995	0,08	0,05	0,02	0,06	0,11
2000	0,03	0,04	0,02	0,07	0,14
2005	0,06	0,03	0,02	0,03	0,13
2009	0,06	0,03	0,02	0,04	0,11

Source: Prepared by the author from 2014 IPEADATA.

The other regions produce low specialization, especially since 1980, period in which the difficulties forced the diversification of production in order to make it possible to survive in the midst of difficulties. The North records high peaks in 1970, 1975 and 1990, but these figures have not been sustained. During this period it is recorded migration of various industries to the region, with large expanses of agricultural borders; however, it suffers then reduced, so that the movement of variation was not sustained (Juttel, 2007). As for the South and Northeast, dominated by low levels throughout the period, but with a tendency to reduced specialization. These regions are characterized by a diverse industry, covering various branches, mostly intermediate goods of low technological intensity (Diniz & Crocco, 1996).

The Southeast, which has the most productive country park is also the region with less productive specialization, which means that there is diversification across sectors.

#### 4.4. Restructuring of GDP ratio

Finally, it calculated the coefficient of restructuring of Brazil's GDP by Region, presented in Table 8, which compares the situation of two separated years. It shows that in none region the level of restructuring was high. It is also observed that there is no trend to continue for any region.

Table 8: Coefficient of Restructuring of Brazil by Region, 1950-2009.

YEAR	NORTH	NORTHEAST	SOUTHEAST	SOUTH	MIDWEST
1950/1955	0,04	0,03	0,02	0,04	0,05
1955/1960	0,03	0,02	0,03	0,03	0,10
1960/1965	0,03	0,01	0,01	0,02	0,03
1965/1970	0,02	0,20	0,12	0,18	0,27
1970/1975	0,07	0,05	0,04	0,07	0,03
1975/1980	0,17	0,08	0,05	0,10	0,07
1980/1985	0,02	0,07	0,05	0,02	0,16
1985/1990	0,06	0,10	0,06	0,06	0,29
1990/1995	0,03	0,03	0,06	0,05	0,51
1995/2000	0,02	0,03	0,03	0,03	0,04
2000/2005	0,08	0,10	0,11	0,15	0,07
2005/2009	0,03	0,03	0,03	0,01	0,01

Source: Prepared by the author from 2014 IPEADATA.

The restructuring occurs at specific times. The North recorded significant value only in the 1975/1980 crop, 0.17, driven strongly by the attractiveness of the Free Zone installed in Manaus, which, in addition to attracting big capital, urged the development of chain of raw material suppliers and regional services sector. As for agriculture, the region expanded its production frontier toward the forest, increasing the quantity produced (Diniz & Crocco, 1996). The Midwest has the largest restructuring indexes. This region has developed its very agriculture during the period under review, integrating it with the agricultural industry. It related to this fact is the degree of importance that was given to the region after the construction of the Federal Capital, Brasilia, which attracted many investments and labor, basking in the service sector. It also highlights the labor quality in the region, driven by the installation of numerous universities (Pacheco, 1996). In 1990/1995 the region recorded its highest level

of restructuring, 0.51, this value follows the increase in its share in the national GDP by 60%, while all other regions recorded decline in participation.

At the other side is the Southeast, which had the lowest CR GDP in predominant part of the series. This region remains a leader in production in most sectors, but is losing attractiveness for companies because of the high cost of the region (Kalecki, 1983). Moreover, the unfolding of the global economy, which is now more globalized and interconnected, does not need in a good range of branches, the next physical presence to his rise, which reduces the attractiveness of expensive regions (Cleps, 2003).

The Northeast and South had very close CR, with a peak in 1965/1970, of 0.20 and 0.18, respectively. These regions have as features in common the fact that they already have historical experience in some sectors, such as agriculture. It is linked to this the abundance of labor, which, during a long period, was supplied to other regions, observing her return, currently (Juttel, 2007). But the hand of cheap and abundant labor, but disqualified, not attract big industry, requiring the construction of training centers (Myrdal, 1960).

## **5. Final considerations**

The aim of this paper was to study the dynamics of production in Brazilian regions and the regional production concentration, in the context of actions to productive decentralization and the promotion of Brazilian economic development. The displayed time frame covers the years 1950 to 2009, the latest information available for this purpose.

From the results, it is observed that the results of Quotient industry Locational confirm that is occurring deconcentration movement in this sector over the years. While the QL Southeast decreases, the other regions grows significantly. As for the QL of agriculture, the Southeast also lose participation. It is noteworthy that index the significance of the Midwest and the growing significance of the North, mainly due to the expansion of their productive borders. Among the Locational quotients analyzed the more homogeneous is the service sector. That's because this sector is that which requires less investment in physical infrastructure to thrive.

The coefficient of industry location, despite sporting low values, shows that the region to have a higher level of concentration is the Southeast, and this is more expressive until 1965. After this period, is reduced, which corroborates the results of QL. But the agricultural Location coefficient shows that this sector tends to grow the regions, particularly the Midwest and the Southeast. The coefficient service sector location confirms the homogeneous character, with low level of concentration for all regions, as well as the QL industry.

The coefficient of specialization makes it clear that in any of the areas there are high levels of specialization, which implies a diversified productive structure. The region with the highest levels of expertise is the Midwest, whose main branch agribusiness. The region with the lowest results is the Southeast, indicating a diverse and homogeneous production. The other regions have only sporadic peaks, when they receive a large investment, not representative of any trend continuing.

The Restructuring coefficient, calculated last indicator, shows that despite the alterations, they were not significant enough. This coefficient also confirms that large deconcentration policies, as was the case of the construction of Brasilia in the Midwest and the Free Zone in the North are able to result in changes and deconcentration. These policies, as well as other smaller, but no less significant, put the Midwest as the region had higher CR records. In addition, the restructuring is not continuous. The Southeast was the one that had lower CR, a sign that is actually experiencing a deconcentration through capital migration, historically concentrated in this region to other regions. However, physical infrastructure deployment policies, such as energy, transport and communications, among others, and intellectual and technical capacity, such as universities and research centers in other regions also are insufficient and unattractive to the intensification of productive deconcentration throughout the country.

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