**Review of Socio-Economic Perspectives** **Santos, S. C., pp. 93-116**
**Vol. 5 Issue: 3/ September 2020**

# ARE THE INDUSTRIAL DISTRICTS STILL ALL RIGHT? SOME BRAZILIAN CONTRIBUTIONS

**Samuel Cruz dos Santos**[1]

**Abstract**

Industrial districts were elected as one of the priorities by Brazilian governments in the 2000s. Four of them received financial and technical support from both national and international institutions. This paper aims to investigate what happened to those four districts officially supported by the Inter-american Development Bank to serve as models to a large number of other districts all around the country. Italian districts were again seen as a path for development to some regions with productive tradition and history behind chain of production. A great amount of money was directed to those four districts as well as great efforts were made by the *government* and the private sector to improve the productivity and performance of the districts. Ten years after an evaluation made by this author in a doctoral dissertation, the objective is to assess the performance of some indicators for the counties or regions: GDP growth; sector employment; income and other indexes that can be calculated by using Brazilian researches. Due to the support received and to the fact that those districts were a part of the industrial policy of the country, some of the districts chosen perform as well as expected, but some of them, considering different measures, did not. In part, the reason was the lack of continuity of the support, that, for some of them, would be necessary for a larger period of time. On the other hand, the maturity differences between the chosen districts and a non-homogeneous selection might have influenced the results that did not show a shift towards local development.

***Keywords***: Districts; economic development; regional economics.
***JEL Codes***: R1, R11, O47

**Citation** : Santos, S.C. (2020). Are the Industrial Districts Still All Right ? Some Brazilian Contributions. *Review of Socio-Economic Perspectives, Vol 5(3),* 93-116.

**Article Type:** Research Article
**Application Date:** 12.05.2020 **& Admission Date:** 26.08.2020
**DOI:** 10.19275/RSEP090

[1] PhD, Castelo Branco University, Praça Augusto Ruschi, 26/104 Recreio dos Bandeirantes 22790-045 Rio de Janeiro – RJ, Brazil
ORCHID ID: 0000-0001-6977-1776
E-mail: samuelcruz2009@gmail.com

## 1. Introduction: Regional Economy, Space and Local Development

Time, a fundamental variable for the economic analysis, has always overmastered space (Harvey, 2007) and space has always disturbed the economic analysis. Most often, space has been included in the *ceteris paribus* condition, meaning the variable has been either considered as constant or has it been in the analysis but scarcely problematized.

There are exceptions, of course, that simply confirms the rule: Von Thünen is, probably, the main one as, in the XIX century, with his urban model showing that competition between settlers would lead to a gradient of land rents that would decline from a maximum in the city to zero at the furthest limit from cultivation (Fujita et. al., 2002).

We could probably consider the Physiocrats also as an exception, but this would let us to a circular discussion as wealth creation itself was directly linked to the only space considered to be productive. On the other hand, the problem here is linked to something else: it was not the space itself the main concern of the physiocrats, but the agriculture as an activity. Again, the focus was the economic activity rather than the land itself.

While capital accumulation occurs at a given time in space, return rates are given "*per time*". While accumulation took precedence in its primitive or original phase, space emerges as a contingency. If space participates in the analysis, it does so as necessary for accumulation (in Marx) or as a relevant element for the generation of agglomeration economies (Marshall) that must be appropriated in the productive process and in profits realization. Perhaps, except in Lenin's thinking about imperialism, space did not play a relevant role in left thinking (Santos, 2009).

On the other hand, if we consider that the time of capital circulation has to be shortened for the absorption of surplus generated in the production sphere and, therefore, markets must be conquered (Lenin, 1985) as a condition of absorption, the territory emerges as a relevant variable. Nevertheless, this doesn't mean that the territory is endowed with any value to be added.

We can also think about David Ricardo and his comparative advantages model as a way of having space in focus. Anyway, it is, again, a great effort to think about Ricardo's model as a space problematizing one much more than a productivity focused model.

Some other authors can be quoted here. The model of Dixit-Stiglitz, considering monopolistic competition and its spatial implications and other authors dealing with center-periphery models surely treated *the space question* someway.

The regional analysis has three major milestones: the German School, the School of Regional Planning and Theories of Regional Development. Synthetically, the German School and its Classical Theories of Location is represented by the contributions of Von Thünen, Walter Christaller, Augusto Lösch, Alfred Weber and Walter Isard. For these authors, the region resembles the neoclassical firm as an analytical unit that combines production factors in the most efficient and rational possible way.

On the other hand, for the followers of Regional Planning, measurements of regional incomes and the active participation of the State in the conductiion of development policies must be prioritized. Here, keynesian and neokeynesian inputs (Harrod, Domar and Kaldor, mainly) are the basis for planning.

Finally, Regional Development Theories group together an uncomfortable eclecticism: theories that derive from the "theories of economic development" of Marx, Lenin, Keynes, Kalecki and Marshall deal with the influences of agglomeration economies and have subnational scales as their analytical unit. Of course, not all of these authors had a clearly established or peacefully accepted theory of capitalist development. However, the highlight made here is related to the use of concepts from different economic thinking as anchors for the inclusion of space in the economic analysis via the region. Here, Perroux's contributions with his ideal of growing poles as well as the theories of circular and cumulative causation of Myrdal (1968) and the effects upstream and downstream of Hirschman (1959) can also be mentioned.

It was in the 1970s that the theories of regional development established space as a social production, highlighting it as a "place" of class struggle and conflicts. Lipietz, Harvey, Castells, Milton Santos and other authors stood out at that period, each with specific contributions to the debate. However, it was in the 1980s, when the movement of capital imposed itself harshly and brought with it the deregulation of markets, that the regional analysis saw its dynamics "broken" and became innocuous to explain the structural changes that were present then.

The reaction has come with several attempts to explain the local phenomenon and the regional analysis, as a rule, has started to merge with the local analysis. At that moment, the theories have been concerned, *a posteriori*, to explain the factors that have generated this or that behavior of a local/region and, *a priori*, have them provided analytical benchmarks so that other regions could have benefits from a general prescription for development. Anyway, polysemy has been present according to ideological thoughts, and has highlighted, in the "reification of the local", the prospects of flexible specialization, the industrial district, Paul Krugman's new economic geography, endogenous development, neo-schumpeterians, the innovative environment, neo-institutionalists, associations, the "milliieux-innovateurs" and the regional planning (Santos, 2009, p. 52).

Present in an economic analysis, the local territory plays its role. The 1980s were emblematic years for the local-global issue. In a contexts of stagnation and crisis, in regions of production and employment decline some *iles of prosperity* were found. Areas with no growth perspectives have taken the lead in their development. Italian districts that have started their development in the 1950s (Becattini, 2002) are the best example of this protagonism: the Third Italy.

Although still showing dynamism, the north of the Italy experienced a crisis in the 1970s, contrasting with a region populated by small and medium-sized companies in about 60 to 100 socio-territorial districts, mainly in the center and in the northern region of the country. It was the production of these districts and their differentiated organization in relation to the fordist accumulation regime, in addition to the generation of exportable surpluses, which drew the world's attention to a possible canonical model of development and, extrapolating the analysis, to a model where the district it is the flexible accumulation unit that marks a new accumulation regime for some people (Piore, Sabel and Storper, mainly).

Arnaldo Bagnasco described the *terza Italia*, the Third Italy, as a region with the highest average number of family members in the country and where, based on small production, historical tradition and hierarchy, an unprecedented development in Italy in the middle of a severe crisis was developed. In that region, even the export development was higher than the one of large companies in Italy. This kind of social construction of the market started to be a research subject for regional economics.

## 2.Brazil and Local Development: Macroeconomic Issues and Industrial Policy

The 1990s were years of great shift in Brazilian development from both conceptual and practical perspectives. Import tariffs were suddenly lowered, and "non-orthodox methods" were applied to both tax and monetary policies. In 1994, the country started do experience its most successful stabilization plan which succeeded in lowering inflation with a cambial anchorage that, later, has been shifted to a fluctuation band and managed to succeed not only in price stabilization but also in creating a new environment for investments in Brazil.

The country has followed the normative approach derived from Washington Consensus which has led Brazil to consider what I call ¨theory of failures¨ in order to use some tools that moved Brazilian economy towards a path of monetary stability and growth (here we cannot use the adjective ¨sustained¨). The main questions treated were, then, the macroeconomic ones. A development policy was not a question if compared to a need for macroeconomic stabilization and a fiscal rearrangement. However, the years 2000 brought the issue of development back.

Brazil is a large and complex country in many ways. It is not different when social and economic development are the variables taken into account. The solutions for the equation have shown different patterns and a broad variety of instruments. One of those instruments, adopted by Brazilian industrial policy in 2003, was an explicit incentive for development of industrial districts all over the country.

The incentives for industrial districts development were a consequence of a major orientation towards a reduction of regional inequalities in the country. As a result, in addition to other paths for Brazilian industrial policy, there came the old Marshall Industrial Districts as a pattern for local development and, as it should be, the *Third Italy* has come to the scene as a major example to be followed.

The Italian pattern of development was not the only one observed by Brazilian authorities and institutions. The US Silicon Valley and the Route 128 as well as the German districts in Baden-Wurttemberg, among other experiences, were observed as signs of a different dynamics in local development that should be observed.

From the year 2003 on, as already mentioned, Brazil has adopted the Industrial, Technological and Foreign Policy, the PITCE, as a guide to the development of the country. The aim of the document was to create the necessary conditions to increase investment rate and its major guidelines were:

i. to improve the regulatory framework of the infrastructure sectors;

ii. to adopt measures of competitive equality to, among other things, exempt exports;

iii. to reduce the cost of credit and the cost of investment;

iv. to increase foreign trade by improving the country's productive structure in order to obtain productivity gains.

The PITCE established the articulation of regional policies in order to build a national integration:

> *Especially relevant are the links with the physical-economic integration of the territory, through the efforts of the public sector, in partnership with the private sector, in improving the transport, energy and telecommunications infrastructure. The improvement of infrastructure, together with a regional policy aimed at facilitating greater territorial integration, will strengthen regional skills, vocations and technological opportunities (Casa Civil, 2003, p.3).*

It is important to notice that Brazil is a republican federation of States which have autonomy in many aspects. Each State of the federation has its own government structure. Thus, although subordinated to the central power represented by the President of the Nation, the federated States have their own structures for the Executive, Legislative and Judicial Powers. One of the greatest problems of Brazilian political structure is that the federation is asymmetric not only in terms of development but also in terms of tax resources, which, eventually, implies that federated units end up receiving a tax counterpart not always equivalent to what is generated by them. However, this is a historical issue of the country's political and institutional formation and is beyond the scope of this article. On the other hand, differences in development between Brazilian States are fundamental for explaining regional questions and for the selection of specific development policies that seek to mitigate those differences.

Back to the PITCE and its guidelines, four lines of action were determined for the country's development:

i. innovation and technological development

The government intended to structure a national innovation system to articulate agents focused on the production with innovative processes. It was a neo-Schumpeterian approach, with clear institutionalist references. There was not only the recognition of the importance of innovation in the capitalist dynamic, but also the need for articulation of the actors involved in the innovative process. One can also perceive the importance given to the harmonization of the legal-institutional base with the definition of the “institutionality” of actors and management elements in addition to the search for strengthening public and private research institutions.

ii. external insertion

The actions provided for external insertion are related to the sustained expansion of exports, with a clear intention to expand the Brazilian presence in foreign production chains. The inspiration for this agenda is, in our view, a hybrid of neoschumpeterian and neoliberal characteristics, since the prescriptions vary from the need for trade liberalization, with the removal of tariff and non-tariff barriers, to the assumption that innovation creates new needs for use and consumption, with a clear idea of building a "Brazil brand" and capturing premium prices.

iii. industrial modernization and actions related to productive capacity and scale

The PITCE states that modernization problems are more serious in small and medium-sized enterprises due to the difficulty of accessing credit, technology and appropriate management techniques. This item of the document mentions that there is an important concentration of companies that need modernization in more traditional sectors of the economy. Here, therefore, there's a reference to local productive districts[1], although a formal definition of the term is not clearly made.

> *The second is the regional dimension, in which local productive arrangements should be privileged. In other words, modernization programs must act primarily in productive arrangements, taking advantage of the proximity of companies and the ease of cooperation between them and with technological and financial institutions for the diffusion of production techniques and management and expansion of business. Based on these conditions, the modernization programs may become more ambitious, moving towards technological innovation, the densification of the productive fabric and the manufacture of products with greater added value (Casa Civil, 2003, p. 15).*

The regional question is present as a consequence of local productive districts which is, *per se*, a mistake, since the region is not just the district, but a complexity of internal and external relations. Although the detailed examination of the region x local issue is also out of the scope of this article, it is important to point this difference. For those interested in this question we can suggest, among other texts, the analysis found in Santos (2009).

iv. productive capacity and scale

The agenda, in this item, seems to bring a keynesian inspiration with an option for the support of public policies to the sector of intermediate goods. This is a result of the diagnosis that the sector has a production capacity close to the limit. Considering the maturity period for investments in such sectors, the government indicates the performance of the public sector as fundamental to guarantee the expansion of the Brazilian economy

[1] In this article, the terms *industrial districts, clusters, productive agglomerations* and *local productive arrangements* are used as synonymous.

because, once the production limit of the intermediate goods sector has theoretically been reached, there would surely occur “bottlenecks” for production of goods.

The identification of clusters, agglomerations or productive arrangements as central elements of development strategies by Brazilian States was clearly marked as “the way to development” in the 2000s and has generated a kind of "cluster wave", a movement that involved official government agencies, several representative entities of the productive sector, all with a common axis: to defend the strategy of productive arrangements as an alternative for local/regional development.

The identification of productive agglomerations has turned out to be a kind of widespread panacea. One of the reasons for that has been the availability of credit lines destined for some cluster projects. Another reason has been the need of institutions representing entrepreneurs to show new paths for the development of their States. The consequence, however, has been the identification of an enormous number of productive arrangements across the country. In many cases, certainly, such arrangements were far from the definition of production carried out in a territory with socio-historical tradition. In fact, the concept has been applied to any set of companies of a certain activity (or from different activities) in a given location. This can be clearly seen in the definition of productive arrangement released by the Federation of Industries of the State of Minas Gerais, an entity representing the industrial sector of the state:

> *Local productive arrangement is the realization of a cooperative work that groups companies that are dedicated to producing goods and related products, the public and private powers, research institutions and technology centers. The articulation of actions promotes benefits for the entire production cycle, with reduced costs and access to new markets. And that does not mean creating new expenses. The cooperative work is going to build bridges to a new level, without each partner losing their identity (Sistema Fiemg, 2001, p.2).*

In the same document, the Federation points out that "*most of the entrepreneurs have already proven that the sustained growth of the industry necessarily passes through the strengthening of the local productive arrangement*"[2]. Thus, several initiatives have been established with the clear option for the unique alternative of the local productive arrangements (LPA) as a vital element of local development, which leads us to the reflection on the imprisonment of different paths and possibilities for the place to develop.

Considering the cluster wave, the Brazilian government, under the industrial policy of that time, has created the GTPAPL - Permanent Working Group for Local Productive

[2] Sistema Fiemg (2001). Arranjo Produtivo Local, um acordo em que todos ganham. FIEMG (ed.). Mimeographed. Belo Horizonte: FIEMG System.

Arrangements, composed of thirty-two institutions, in addition to the Brazilian Ministry of Development. The GTAPL defined a local productive arrangement as:

> *a large geographically defined productive complex, characterized by a large number of firms involved in the various production stages and, in various ways, in the manufacture of a product, where the coordination of the different phases and the control of the regularity of their operation are submitted to the game of market and a system of social sanctions applied by the community [...]. Spatial contiguity allows the territorial system of firms to make productive and technological externalities feasible without losing their flexibility and adaptability (Grupo, 2006, p.12).*

The GTPAPL definition deals with what the specialized literature calls "local productive system", since a "productive complex", "several productive stages" and other characteristics that point to production systems with a high degree of complexity in their production chains and in the inter-company relationship and between companies and support/development/ development institutions, governmental or not.

Based on the GTPAPL vision, the following productive arrangements have received support in the country:

**Table 1**: Local Productive Arrangements by Regions and States

| **Region** | **State** | **LPA** |
|---|---|---|
| North | Acre | Wood and Furniture; Brazilian Nuts; Manioc |
| | Amapá | Wood and Furniture; Pottery and Ceramic |
| | Amazonas | Phytotherapics and Drugs; Pisciculture; Nuts; Forestry and Wood; Technology and use of Forest Products |
| | Pará | Fibers; Fruits; Wood and Furniture |
| | Rondônia | Fruits; Coffee; Pisciculture |
| | Roraima | Fruits; Grains |
| | Tocantins | Agribusiness; Wood; Livestock |
| Midwest | Goiás | Pharmaceutical; Grains; Pigs and Poultry; Mining |
| | Mato Grosso | Cotton; Amazonian wood, extraction and furniture industry; Livestock; Beekeeping |

| **Region** | **State** | **LPA** |
|---|---|---|
| | Mato Grosso do Sul | Livestock; Hides and Derivatives; Natural Gas; Microbiology applied to animal pathology and aquaculture; Aquaculture; Pottery |
| | Distrito Federal | Information and Communication Technology |
| Northeast | Alagoas | Cotton, Corn and Manioc; Clothing; Fish Farming; Ovinoculture and Caprinoculture; Aquaculture; Dairy products; Beekeeping |
| | Bahia | Cocoa; Ornamental Rocks; Sisal; Telecommunications |
| | Ceará | Cashew Culture; Rocks; Flowers; Clothing; Pottery |
| | Maranhão | Soy; Wood and Furniture |
| | Paraíba | Ovinoculture and Caprinoculture; Sugar and Alcohol; Information and Communication Technology; Leather and Footwear |
| | Pernambuco | Medical Center; Information and Communication Technology; Creative Industries; Plaster; Construction |
| | Piauí | Beekeeping; Shrimp farming; Carnauba; Cashew; Gems and Jewels |
| | Rio Grande do Norte | Marine shrimp farming; Dairy Products; Clothing; Ovinoculture; Caprinoculture; Mining |
| | Sergipe | Fruits; Dairy Products; Pottery |
| South | Paraná | Metal mechanics; Auto parts; Wood and Furniture; Manioc; Support projects; Clothing; Plaster, Lime and Limestone; Ceramics; Medical, Dental and Hospital Equipment, Apparatus and Instruments; Agricultural Equipment and Implements |
| | Santa Catarina | Malacoculture; Wood and Furniture; Pig farming; Textile; Red Ceramics; Information and communication technology; Metal mechanics; Footwear; Aquiculutra and Fishing |
| | Rio Grande do Sul | Auto parts; Leather and Footwear; Wood and Furniture; Grape Culture; Viniculture; Gems and Jewels; Computer Systems; Metal mechanics; Food |

| Region | State | LPA |
|---|---|---|
| Southeast | Espírito Santo | Fruits; Ornamental Rocks |
| | Minas Gerais | Fruits; Information and communication technology; Wood and Furniture; Gems and Jewels; Support Projects; Biotechnology; Stone Artifacts; Footwear; Microelectronics; Electronics |
| | Rio de Janeiro | Underwear; Information and communication technology; Ornamental rocks; Support Projects; Aplicated math; Computing Methodologies and Techniques; Gems and Jewels |
| | São Paulo | Leather and Footwear; Wood and Furniture; Support Projects; Plastic; Ornamental rocks; Footwear; Health Materials and Equipment |

Source: Author's compilation. Primary data obtained from the Ministry of Development, Industry and Trade

It is important to notice that the support received by the districts mentioned above hasn't been an isonomic one. Some of the LPA have received money and institutional support; some others have received only government recognition that they were productive arrangements and could be a cell development in their regions. Among them, however, four were chosen to take part in a project of local systems development. The chosen LPA were:

**Table 2**: Local Productive Arrangements Supported by UNDP

| State | County | Local Productive Arrangement |
|---|---|---|
| Pará | Paragominas | Wood and Furniture |
| Paraíba | Campina Grande | Leather and Footwear |
| Rio de Janeiro | Nova Friburgo | Intimate Fashion (Underware) |
| Sergipe | Tobias Barreto | Clothing and Crafts |

Source: Author's elaboration

Paragominas is located south in the State of Pará, 307 km from Belém, the capital of the State. In 2010, the city had 97,819 inhabitants and, in 2018, 18,456 were employed.

Located 132 km west of the capital João Pessoa, in the State of Paraíba, Campina Grande had, in 2010, 385,213 inhabitants and 110,075 people were working in 2018.

Located west in the mountains of the State of Rio de Janeiro, 138 km from the city of Rio de Janeiro, capital of the State, Nova Friburgo had, in 2010, 182,082 inhabitants and, in 2018, 59,397 of the inhabitants were employed.

Tobias Barreto is located sowthwest in the State of Sergipe, 132 km from the capial of the State, Aracaju. In 2010, there were 48,040 inhabitants in the city and, in 2018, 5,280 were employed.

The project, carried out under the United Nations Development Program (UNDP), has received financial contributions from the Inter-American Development Bank (IDB), from the Chamber of Commerce, Industry and Crafts from Milan and from Brazilian Government via the Brazilian Service to Support Micro and Small Companies (SEBRAE). The objective of the project was to develop the so-called "productive polos" by improving the productive agglomerations and turning them into production systems integrated to the global dynamics.

## 3. The UNDP Project and the Local Productive Districts – Methodology and Results

The project developed under the UNDP/SEBRAE was a product from a series of agreements between the institutions mentioned above, the first one was signed in 2002. The project started in 2003 and ended in 2006 and conceptualized a local productive arrangement as follows:

> *[...] constitutes a particular type of cluster, formed by small and medium-sized companies, grouped around a profession or a business, where the role played by the relationships - formal and informal - between companies and other institutions involved is emphasized. The firms share a common culture and interact as a group, with the local socio-cultural environment (Gianni, 2004, p.9).*

When considering any cluster formed around a profession or business as a LPA, the polysemy around what would be a productive arrangement is obviously widened. Once again, the topic is beyond our scope, but allows us to say that, due to the scope of the definition and as a result of the game of political-institutional forces that took place around an object capable of channeling resources of all kinds, the comprehensive definition have identified about 230 productive arrangements in Brazil at that time.

The methodology for the productive arrangements was conceived from three main fundamental axes:

### 3.1. District Dynamics

On this axis, interests were in the interactions between the institutions involved with the arrangement, adopting a theoretical perspective of Douglas North's institutionalism as the basis for action. Organizations that worked in the areas of labor training, civil society organization and the government should be involved in order to make the connection with the business sector feasible. As a consequence, good governance was sought and was created the District Forum as the management body of the arrangement. The Forum was a

group of representatives of the productive sector, class entities, public sector, and non-governmental organizations.

Also in the scope of District Dynamics, issues related to access to credit were dealt with, mainly in search for reduction of interest rates for the companies and in the "unblocking of bottlenecks" in the guarantee for the production of small companies via, for example, auction of receivables always taking into account the Italian experience as a base of action.

3.2. Business Development and Production Organization

Production, productivity, design, quality, logistics and all topics related to production were treated in the scope of business and production organization. Management qualification programs, improvement of human capital, entrepreneurship and other topics that lead to better business performance and increased product quality were the main concern.

3.3. Information and Market Access

Sales, full knowledge of the market, product quality assessments, after-sales of the arrangement companies, competition, access to new markets and internationalization of the arrangement were the main concerns of this axis.

It should be noted, within the scope of the methodology used in the project, which involved, within the aforementioned axes, the adoption of a logical matrix, monitoring indicators, performance probabilities, etc., that the territory was an important part of the methodological organization. The territoriality was seen as an active dimension of competitiveness, that is, there was an understanding that the territory attributes, *per se*, value to products, institutions and agents.

> *The local particularity is the same as the qualities and characteristics that make a place unique. The factors that make up the differentiation of a territory are of a cultural, environmental, landscape, and socioeconomic nature. [...] The history and culture of a place represent an essential component of the economy of a territory, of an area, but in any case it can be impoverished by inattentive observations. [...]. It is necessary, then, to analyze all the small and large unique characteristics of a territory. [...] The local particularity is a relatively new concept that must be explored and deepened in order to make the competitive territory in the midst of a global market and always more aggressive (Sebrae, 2004, p. 84).*

## 4. Are the local arrangements still all right?

In order to assess the health of the arrangements supported by the IDB Project, we will use some indicators from the period prior to the start of the project, results from the year 2006 or later (end of the project) and the last available data. It should be noted that, as results are almost always related to municipalities, we do not always have the information

we would like for the assessment. However, we believe that the data can, at least, point out whether the aforementioned arrangements have achieved the expected success.

4.1 Budget Data

Tables 3 to 6 present budget data for the municipalities where the chosen districts are located. A large part of Brazilian municipalities survive thanks to transfers of resources from the central government. A measure of success of a productive arrangement could be a significant positive change in the percentage of own revenues, since tax revenue growth would be expected due to an increase in economic activity.

**Table 3**: Budget Data – Nova Friburgo (%)

| | 2002 | 2006 | 2018 |
|---|---|---|---|
| Transfers/Total Revenue | 75.7 | 68.3 | 68.2 |
| Own Revenue/Total Revenue | 24.3 | 31.7 | 31.8 |

Source: derived from author's calculation. Primary data obtained from the SIAFI System, National Treasury Secretariat/ Ministry of Economy.

**Table 4**: Budget Data – Tobias Barreto (%)

| | 2002 | 2006 | 2018 |
|---|---|---|---|
| Transfers/Total Revenue | 96 | N.A. | 90 |
| Own Revenue/Total Revenue | 4 | N.A. | 10 |

Source: derived from author's calculation. Primary data obtained from the SIAFI System, National Treasury Secretariat/ Ministry of Economy.

**Table 5**: Budget Data – Campina Grande (%)

| | 2002 | 2006 | 2018 |
|---|---|---|---|
| Transfers/Total Revenue | 84 | 77 | 75 |
| Own Revenue/Total Revenue | 16 | 23 | 25 |

Source: derived from author's calculation. Primary data obtained from the SIAFI System, National Treasury Secretariat/ Ministry of Economy.

**Table 6**: Budget Data – Paragominas (%)

| | 2002 | 2006 | 2018 |
|---|---|---|---|
| Transfers/Total Revenue | 92 | 73 | 77.3 |
| Own Revenue/Total Revenue | 8 | 27 | 22.7 |

Source: derived from author's calculation. Primary data obtained from the SIAFI System, National Treasury Secretariat/ Ministry of Economy.

Nova Friburgo's own revenues registered an increase in 2006 if we consider the year 2002 for comparison: in 2002, the municipality financed its expenses with 24% of its own revenues and in 2006, this percentage reached 32%, the same result achieved in 2018. It is likely that the own revenues grew due to the greater density of the arrangement. However, the maintenance of the same level in a recent period may point to the stagnation of the dynamics of the arrangement. Obviously, other factors may be the cause of the result: reduction in the dynamics of other economic activities, concession of tax incentives, etc, but one cannot ignore the growth shown after the project. Almost the same results are found in the other districts. Although Paragominas experienced a relative decrease in the participation of own revenues, the number is still much higher than the one for 2002.

4.2 Human Development Index

Another index that can be considered is the human development index (with all the criticisms that can be made of it) as a measure of improvement in the municipality. The numbers are shown in tables 7 to 10.

In 2000, Nova Friburgo had one of the largest HDIs in the state of Rio de Janeiro (0.654) and in 2010, the index reached 0.745. Thus, the growth amounts to 13.9% and a decrease of 73.7% in human development gap was achieved. Again, one cannot say the result was due to the dynamics of the productive arrangement, but, together with other indicators, this improvement is a positive number especially because there was a great growth in the income index for the municipality in the period.

If the period 1991-2010 is considered, the growth rate was 38.7%. If this result is compared to the one of the State of Rio de Janeiro (from 0.573 to 0.761), we can say the growth was very good, especially if we consider the rate of reduction of the human development gap of 55.08% for the municipality and 53.85% for the State of Rio de Janeiro.

**Table 7**: Human Development Index – Nova Friburgo

| | 1991 | 2000 | 2010 |
|---|---|---|---|
| HDI | 0.537 | 0.654 | 0.745 |

Source: Human Development Atlas in Brazil

**Table 8**: Human Development Index – Paragominas

| | 1991 | 2000 | 2010 |
|---|---|---|---|
| HDI | 0.336 | 0.471 | 0.645 |

Source: Human Development Atlas in Brazil

Considering the period 2000-2010, the HDI for Paragominas grew from 0.471 to 0.645: a growth of 36.9% which reduced the human development gap in 67.1%. This result also shows a great shift for the municipality and, as the income and education indexes were responsible for the HDI growth, one can point out that the district has played a great role in that movement.

**Table 9**: Human Development Index – Tobias Barreto

| | 1991 | 2000 | 2010 |
|---|---|---|---|
| HDI | 0.290 | 0.407 | 0.557 |

Source: Human Development Atlas in Brazil

The HDI went from 0.407 to 0.557 in the period 2000-2010, which means a 36.9% growth rate and a 74.7% drop in the human development gap. Again, education and income were responsible for the result a and it is not an exaggeration to attribute to the performance of the productive pole a fundamental role in this result for Paragominas economy depends fundamentally on the wood activity.

**Table 10:** Human Development Index – Campina Grande

| | 1991 | 2000 | 2010 |
|---|---|---|---|
| HDI | 0.476 | 0.601 | 0.720 |

Source: Human Development Atlas in Brazil

The HDI went from 0.601 in 2000 to 0.720 in 2010 which represented a growth rate of 19.8% and a 70.2% reduction in the human development gap. In Campina Grande the same pattern was observed: education and income are clearly responsible for the drop in the human development gap and it wouldn't be wrong to link this reduction to the district activities.

### 4.3 Income and Labor

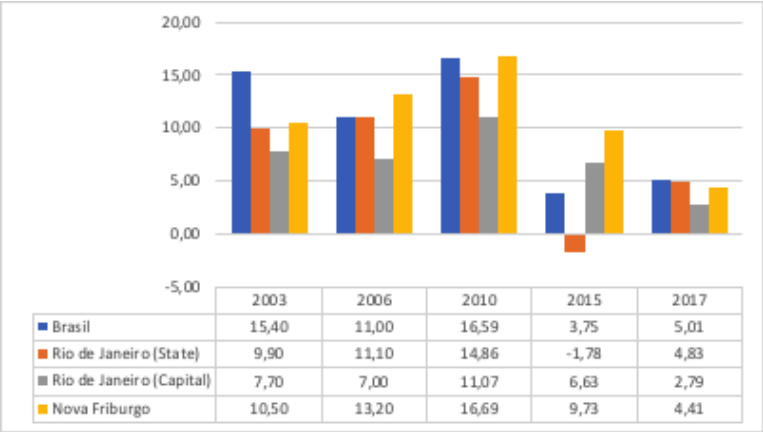
Considering, now, the impacts of the LPA on employment and income generation, two indicators were used: GDP at current prices and employment data. It is worth remembering that a positive or negative variation in GDP growth does not necessarily result from the productive arrangement since other activities may have contributed to GDP performance. However, due to the absence of economic indicators for the subnational scale and, in the Brazilian case, for the "substate" scale, we chose to use the municipalities' GDP as a reference.

One way to minimize this problem is to compare it with the dynamics of GDP growth or decline with other territorial references. Here, we used data from Brazil, from the State and from the capital of the State where the arrangement is located do make some comparisons (Graphs 1 to 4). Obviously, we know that we are using nominal growth. For this reason, we need to take into account that the intertemporal comparison carries an inflationary bias. However, based on the hypothesis that inflation is, on average, the same for all municipalities, we believe that we have, at least, a measure of comparison between the behaviors of the territories. The alternative option would be to consider GDP deflated by the implicit deflator or by another indicator that is deemed appropriate. For our purposes, however, the comparison of nominal growth is sufficient.

Nova Friburgo experienced a nominal GDP growth above Brazilian growth and, as a rule, above the State and the capital growths for the post-project period (2006 onwards). With some exceptions (fundamentally, the year 2015, when macroeconomic situation was already deteriorated in Brazil), the other municipalities host to the productive arrangements also registered nominal growth above the Brazilian growth and above the State and capital growths.

Can the observed behavior be attributed to the arrangements? As already said, certainly not. Other activities are carried out in the municipalities and other dynamics may have influenced the results. However, as the municipalities where the arrangements are located are small or medium-sized cities, one can think that the arrangements contributed to the results found since they are the main activities present in the municipalities studied. This does not mean that additional issues such as the elasticity of demand, the behavior of the price system and conjunctural factors should not be evaluated in order to allow a more accurate analysis.

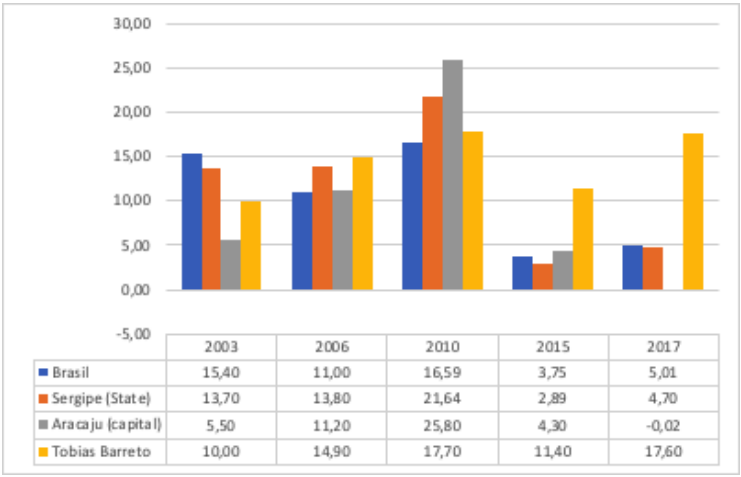
**Graph 1**: Nominal GDP Growth (%) – Brazil, State of Rio de Janeiro, City of Rio de Janeiro and Nova Friburgo




| | 2003 | 2006 | 2010 | 2015 | 2017 |
|---|---|---|---|---|---|
| Brasil | 15,40 | 11,00 | 16,59 | 3,75 | 5,01 |
| Rio de Janeiro (State) | 9,90 | 11,10 | 14,86 | -1,78 | 4,83 |
| Rio de Janeiro (Capital) | 7,70 | 7,00 | 11,07 | 6,63 | 2,79 |
| Nova Friburgo | 10,50 | 13,20 | 16,69 | 9,73 | 4,41 |

Source: Derived from Author's Own Calculation. Source of primary data: Brazilian Institute of Geography and Statistics, IBGE.

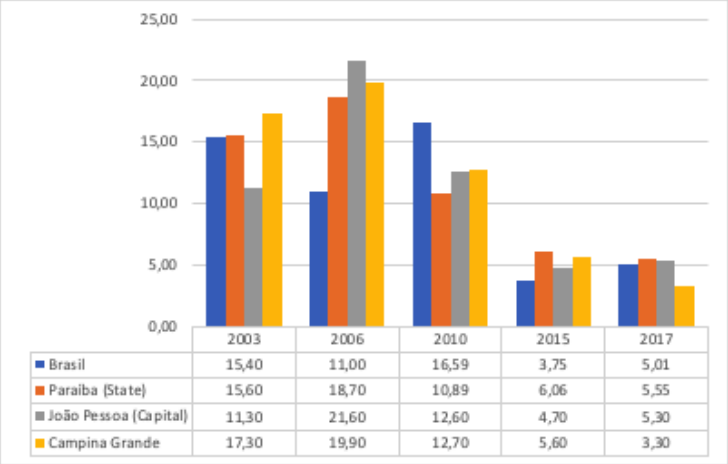
**Graph 2**: Nominal GDP Growth (%) – Brazil, State of Sergipe, City of Aracaju and Tobias Barreto




| | 2003 | 2006 | 2010 | 2015 | 2017 |
|---|---|---|---|---|---|
| Brasil | 15,40 | 11,00 | 16,59 | 3,75 | 5,01 |
| Sergipe (State) | 13,70 | 13,80 | 21,64 | 2,89 | 4,70 |
| Aracaju (capital) | 5,50 | 11,20 | 25,80 | 4,30 | -0,02 |
| Tobias Barreto | 10,00 | 14,90 | 17,70 | 11,40 | 17,60 |

Source: Derived from Author's Own Calculation. Source of primary data: Brazilian Institute of Geography and Statistics, IBGE.

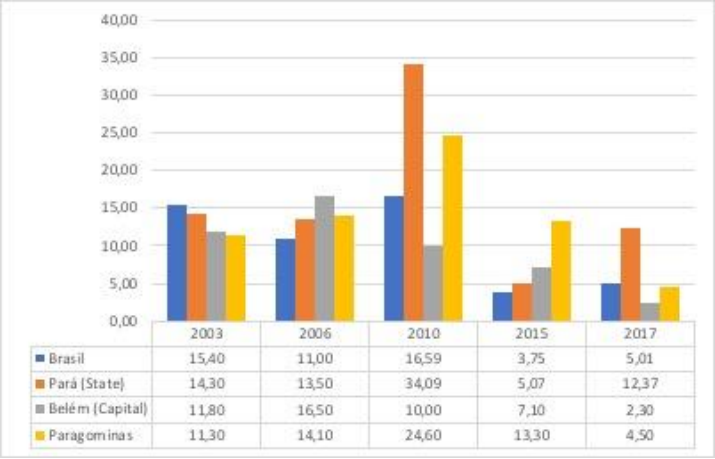
**Graph 3**: Nominal GDP Growth (%) – Brazil, State of Paraíba, City of João Pessoa and Campina Grande




| | 2003 | 2006 | 2010 | 2015 | 2017 |
|---|---|---|---|---|---|
| Brasil | 15,40 | 11,00 | 16,59 | 3,75 | 5,01 |
| Paraíba (State) | 15,60 | 18,70 | 10,89 | 6,06 | 5,55 |
| João Pessoa (Capital) | 11,30 | 21,60 | 12,60 | 4,70 | 5,30 |
| Campina Grande | 17,30 | 19,90 | 12,70 | 5,60 | 3,30 |

Source: Derived from Author's Own Calculation. Source of primary data: Brazilian Institute of Geography and Statistics, IBGE.

**Graph 4**: Nominal GDP Growth (%) – Brazil, State of Pará, City of Belém and Paragominas




| | 2003 | 2006 | 2010 | 2015 | 2017 |
|---|---|---|---|---|---|
| Brasil | 15,40 | 11,00 | 16,59 | 3,75 | 5,01 |
| Pará (State) | 14,30 | 13,50 | 34,09 | 5,07 | 12,37 |
| Belém (Capital) | 11,80 | 16,50 | 10,00 | 7,10 | 2,30 |
| Paragominas | 11,30 | 14,10 | 24,60 | 13,30 | 4,50 |

Source: Derived from Author's Own Calculation. Source of primary data: Brazilian Institute of Geography and Statistics, IBGE.

Better conclusions can be obtained if formal employment data is used. The employment data are compared from the pre-project phase to those in the post-project phase. Employment data used are from the specific activities of each arrangement.

Tables 11 below shows the results of employment in the clothing sector for the micro-region of influence of the district host city (contiguous area and immediate influence). The pre-project phase corresponds to the 2000-2003 period and the immediate post-project phase, to the 2004-2007 period. The figure for 2018, defined as post-project B, is also presented.

**Table 11:** Employment by Arrangements Activities

| **LPA** | **Pre-Project (2000-2003 average data) (A)** | **Post-Project (2004-2007 average data) (B)** | **Growth (B)/(A)** |
|---|---|---|---|
| Nova Friburgo | 5,809 | 7,021 | 20.9% |
| Tobias Barreto | 38 | 28 | - 26.5% |
| Campina Grande | 461 | 586 | 27.1% |
| Paragominas | 23 | 63 | 173.9% |

Source: Derived from Author's Own Calculation. Source of primary data: Labor Ministry of Brazil and Brazilian Institute of Geography and Statistics, IBGE.

As a first observation of the data in the previous table, it should be noted that in columns (A) and (B) data refer to the average job generation. That said, it is worth noting the fact that all arrangements, except the one in Tobias Barreto, registered growth in the number of jobs in their activities.

More recent data were not used due to methodological problems, since it would be necessary to use another source that, although showing growth in all arrangements, would generate high percentages of employment increase, which could lead us to overestimate the performance of the arrangements. Anyway, even Tobias Barreto has been showing growth in employment in the clothing and handicrafts sector in more recent years.

Here, again, there is evidence that support for productive agglomerations can result in virtuous cycles of job growth. Obviously, this virtuosity will always depend on macroeconomic issues since the actions of development of local productive arrangements such as those mentioned here are mostly aimed at correcting microeconomic and managerial aspects.

Tables 12 to 15 show the participation of formal employment in the productive arrangements in two moments: in the pre-project phase (2000-2003) and in the post-project phase (2004-2007). As a consequence of the implemented actions, it was expected an increase in the formalization of employment for one of the characteristics of the classic productive arrangements is the informality in labor relations, since they derive from spontaneous productions related to the historical-family tradition.

**Table 12**: Nova Friburgo – Formal Jobs in the Productive Arrangement (%)

| **Period** | **Share** |
|---|---|
| Pre-Project | 39.8 |
| Post-Project | 45.5 |

Source: Derived from Author's Own Calculation. Source of primary data: Labor Ministry of Brazil.

**Table 13:** Tobias Barreto - Formal Jobs in the Productive Arrangement (%)

| **Period** | **Share** |
|---|---|
| Pre-Project | 4.0 |
| Post-Project | 3.0 |

Source: Derived from Author's Own Calculation. Source of primary data: Labor Ministry of Brazil.

**Table 14**: Paragominas - Formal Jobs in the Productive Arrangement (%)

| **Period** | **Share** |
|---|---|
| Pre-Project | 5.8 |
| Post-Project | 8.2 |

Source: Derived from Author's Own Calculation. Source of primary data: Labor Ministry of Brazil.

**Table 15:** Campina Grande - Formal Jobs in the Productive Arrangement (%)

| **Period** | **Share** |
|---|---|
| Pre-Project | 16.0 |
| Post-Project | 19.5 |

Source: Derived from Author's Own Calculation. Source of primary data: Labor Ministry of Brazil.

The results show the greater formalization of work relations in all arrangements, with the exception of Tobias Barreto.

Tobias Barreto's arrangement had the peculiarity of being the "most disorganized" in terms of production and labor relations among the districts studied. Most of the production in this arrangement was carried out by families in their own houses, maintaining the tradition of producing typical lace from the northeast of Brazil, mainly from that region of the State of Sergipe. Therefore, the result is not surprising if we take into account the larger organization found in the other arrangements, mainly in Nova Friburgo and Campina Grande.

4.4**.** The Locational Quotient

The locational quotient os specialization index is calculated as follows:

$$LQ_{ij} = (\frac{Eij}{\sum Eij}) / (\frac{\sum Eij}{\sum\sum Eij})$$

Eij – Jobs in sector i from region j

$\sum Eij$ ou E*j = Jobs in all sectors of region j

$\sum Eij$ ou Ei* = Jobs in sector i in all regions

$\sum\sum Eij$ ou E** = Jobs in all sectors of all regions

The LQ allows assessing the greater or lesser specialization of the productive arrangement over time and also allows a better conclusion on the inducing effects of the project. The higher the LQ, the greater the specialization.

It should be noted, however, that LQs cannot be compared between regions because the presence of a single company in a poorly developed location leads to a high LQ. Table 16 shows the LQs calculated for the years 2002, 2004, 2006 and 2018 for the counties of the productive arrangements.

**Table 16**: Locational Quotient by Municipalities

| **County** | **2002** | **2004** | **2006** | **2018** |
|---|---|---|---|---|
| Nova Friburgo | 9.23 | 9.87 | 9.24 | 12.67 |
| Tobias Barreto | 1.33 | 3.34 | 3.82 | 15.55 |
| Paragominas | 0.38 | 0.28 | 0.49 | 2.95 |
| Campina Grande | 0.73 | 0.69 | 0.80 | 0.57 |

Source: Derived from Author's Own Calculation. Source of primary data: Labor Ministry of Brazil and Brazilian Institute of Geography and Statistics, IBGE.

In all cases, except in Campina Grande, the specialization index shows great growth, which corroborates the hypothesis that the project generated positive results in these regions.

On the other hand, Campina Grande shows, at least in recent years, that there was greater productive diversification (to be verified) than productive specialization. However, it is worth noting that the period immediately after the implementation of the IDB Project shows greater LQ, that is, greater specialization in the activity of the productive arrangement.

The most recent result for Campina Grande, therefore, can mean both greater productive diversification and the inability of the project to maintain its long-term results in the region, or even a change in the production structure itself, with greater density of the arrangement's own production chain, movement that was not analyzed here.

## 5. Conclusions

The productive arrangements are based on the cooperation-competition binomial and seek, in agglomeration economies, to reduce transaction costs. They are one of the possible ways for local/regional development, but not the only way. On the one hand, the socio-productive tradition that unites agents around a socio-technical production can generate density of production chains if, and only if, the governance structure derived from the actions of the members of the arrangement (and outside it) contributes to the cohesion. However, this tradition changes, undergoing mutations due to the movement of capital and the adaptation of agents to institutions and dynamic transactions.

Neither “Third Italy” nor any other experience can be a canonical model. The sustainability of the productive arrangements supported by the IDB/SEBRAE Project highlighted here depends on a business/institutional organization capable of coordinating antagonistic mechanisms of cooperation and competition that affect, among others, issues of credit and financing. Obviously, there will always be conjuncture and macroeconomic movements involved, but, from the point of view of the productive arrangement, the internal actions of its components seem to be of extreme importance.

The productive arrangements mentioned here are part of the group of traditional industries, the "rearguard of capitalism", with innovative processes that increasingly need the avant-garde search in terms of materials and design (except perhaps for Tobias Barreto's handicrafts and clothing). These economies depend on agglomeration economies to become extrapolable and not just agglomerative.

The IDB / SEBRAE Project had the merit of opening the space necessary for the reflection of local actors on innovation in design and technologies. In addition, it brought financial resources, fundamental for the insertion of producers in the Brazilian and international scenario.

Finally, the answer to the question in this article, whether the arrangements are in good health, is simple and not conclusive: yes, it seems so. However, some of them, like that of Tobias Barreto, show that they deserve greater attention. It is likely that this arrangement in particular deserves greater investment contributions (not only financial, but of organization, management, disclosure, etc). Nova Friburgo is inserted in the national and in the international scenes, since it accounts for about 25% of Brazilian underwear exports. Despite the reduction in the specialization index, Campina Grande has the advantage of being already consolidated in leather-footwear production and in complete harmony with the its State capital, João Pessoa, forming a "distribution corridor". Paragominas is a success story in terms of forest management and economic growth. This, of course, is due to the work carried out from the IDB Project.

In Brazil, there are, in fact, many productive arrangements if we consider the classic definition that includes the socio-historical tradition of production, that is, the territorial dimension that gives specific value to production in addition to the mere productive agglomeration. These arrangements, although not a complete solution for national development, are, in fact, a possible path for local development, for the generation of jobs and income and for the maintenance of workers in their cities, giving them a greater sense of belonging and generating added value in their own territory.

## References

Atlas do desenvolvimento humano no Brasil. http://atlasbrasil.org.br/2013/pt/. (Access: August 1st, 2020).

Becattini, G.(2002). Del distrito industrial marshalliano a la teoria del distrito contemporánea: una breve reconstrucción crítica. *Investigaciones Regionales, Asociación Española de Ciéncia Regional. Madrid, (1) otoño 2002.*

Benko, G.(2000*). La richesse des régions, la nouvelle géographie socio-économique*. Paris: PUF.

Benko, G. & Lipietz, A.(1994). *As regiões ganhadoras: distritos e redes. Os novos paradigmas da geografia económica.* Oeiras: Celta Editora.

Casa Civil (2003). *Diretrizes de Política Industrial, Tecnológica e de Comércio Exterior*. Brasília: Presidency of Federative Republic of Brazil (ed).

Castells, M. (1999). *A sociedade em rede*. Rio de Janeiro: Paz e Terra.

Gianni, S. (2004). "Instrumentalizar para o desenvolvimento". *Metodologia de desenvolvimento de arranjos produtivos locais. Projeto Promos/Sebrae/BID. (2),* 9-10.

Grupo de Trabalho Permanente para Arranjos Produtivos Locais (2006). *Brasília: Ministry of Foreign Affairs, Indusrty and Commerce*. 106p. Mimeographed.

Fujita, M.; Krugman, P. & Venables, A.(2002). *Economia Espacial.* São Paulo: Futura.

Harvey, D. (2007). *A produção capitalista do espaço*. São Paulo: Annablume.

Hirschman, A.O. (1959). *Strategy of economic development*. New Haven: Yale University Press.

IBGE. Brazilian Institute of Geography and Statistics. http://www.ibge.gov.br . (Acess: July 25th, 2020).

Kalecki, M. (1980). *Crescimento e ciclo das economias capitalistas*. São Paulo: Hucitec.

Keynes, J.M. (1988). *A teoria geral do emprego, do juro e da moeda*. São Paulo: Nova Cultural.

Krugman, P. (1999). The role of geography in development. *International Regional Science Review. 22(2),* 143-161.

Lenin, V.I. (1985). *O desenvolvimento do capitalismo na Rússia*. São Paulo: Nova Cultural.

Marshall, A.(1998). *Princípios de Economia*. Vol.1. São Paulo: Nova Cultural.

Mark, K.(1985). *O Capital.* São Paulo: Nova Cultural.

Myrdal, G.(1968). *Teoria econômica e regiões subdesenvolvidas*. Rio de Janeiro: Saga.

Perroux, F.(1967). O conceito de polo de crescimento. *Economia Regional.* pp 145-156.

Piore, M. & Sabel, C. (1984). *The second industrial divide: possibilities for prosperity*. New York: Basic Book.

Santos, M. (2007). *Por uma outra globalização: do pensamento único à consciência universal*. Rio de Janeiro: Record.

Santos, M. & Silveira, M.I.(1999). *O Brasil: território e sociedade no início do século XXI*. São Paulo: Record.

Santos, S.C. (2009). *Arranjos produtivos locais no Brasil pós-1990: práxis polissêmica e desenvolvimento.* Non-published PhD Dissertation. Rio de Janeiro: Institute of Urban and Regional Planning, Universidade Federal do Rio de Janeiro.

Sebrae. Serviço Brasileiro de Apoio às Micro e Pequenas Empresas. (2004). *Metodologia de desenvolvimento de arranjos produtivos locais*. Projeto Promos/BID/Sebrae. Sebrae; IDB & Promos (ed). Brasília: Sebrae.

Sistema Fiemg (2001). *Arranjo Produtivo Local, um acordo em que todos ganham*. FIEMG (ed.). Mimeographed. Belo Horizonte: FIEMG System.