



City and economy: changes in Sao Paulo metropolitan context

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1) Introduction

Development of information technologies and increasing economic integration among nations inspired and gave some plausibility to theses that space and location would lose relevance as “variables” in value chains. The idea of a horizontal, “plain world” where productive agents relate through networks and information flows is usually associated to loss of importance by Nation States and convergence among regions.

Although plausible, the “plain world” thesis⁵ clashes with counterevidence forming a vast investigation ground about cities’ economic dynamics, specially “big cities”, metropolitan areas, region-cities – the nomenclature can be broad. The typical context of much of that debate is that of mature countries, the USA and Europe in the first place, followed by Japan; or New York, London and Tokyo, Saskia Sassen’s global cities. The top place is occupied by global cities, and there are lower variations of hierarchic models and classifications for lesser cities in wealthy countries and also in major cities in the so-called developing countries.

In the present article, we discuss the course of development of São Paulo, Brazil – the core city of one of the world’s largest metropolitan areas (now with over 19 million inhabitants or about 20% of the country’s population) and the top city for Brazilian economic development. The aim is to add elements that help to better specify the dynamic of large urban centers in countries such as Brazil – of large size as well as more recent and uneven development – stressing aspects that are usually not highly valued in this debate, namely: a) connections between “regional” and “national”; b) the importance of taking into account region’s histories;

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⁵ Friedman, Thomas L. (2005) *O mundo é plano. Uma breve história do Século XXI*. Rio de Janeiro, Objetiva. For a critique of that theory, see: Rodríguez-Pose, Andrés and Crescenzi, Riccardo (2008) “Mountains in a flat world: why proximity still matters for the location of economic activity”. *Cambridge Journal of Regions, Economy and Society*. 1(3):371-388.

and c) the distinct meaning that some changes associated to globalization have for developing countries.

In the following section, we shall summarize some historical aspects of São Paulo's development, in an attempt to show how the high concentration of Brazil's development in that region is a result of a combination of "local" elements, generated mainly after the late 19th century (through the spread of the coffee industry) with encouragement and planning by the nation state after the same period. The importance of some national dynamics for the city's development is underlined here.

In the third section, to examine recent changes that the city's economy is undergoing, we take some recurrent topics for the debate on the economy of major cities, namely: a) the sector-oriented nature of the region's (industrial or post-industrial economy/services economy; b) the extension of its agglomerating field (regional, national, or international); c) and its functions as a space for innovation and circulation of knowledge. Differently from the previous section, the broad centrality of the region for the functioning and dynamism of Brazil's economy is underlined here.

Finally, in Conclusions, we explore some of the ambivalences of urban hyperconcentration of development in countries such as Brazil, pointing out the fact that it solves (or mitigates) the problem of those countries' lack of nobler assets (such as highly skilled workforce, networks of companies providing specialized services, density of financial institutions, universities etc.) but it also extends their strong regional inequalities and deepens the social-spatial segregation dynamics in those large metropolitan areas.

2) Brazil and Sao Paulo City

Differently from most European and Asian cities, which appeared long before the nation states they belong to, in Brazil as well as in nearly all of America, cities are the product of colonization and multiple migration processes. Massive use of African slave labor has left a deep mark (which remains today) on regional distribution of economic development and particularly on the makeup of urban labor markets, without which the process of capitalist change cannot take place.

Even though it was founded early during Portuguese colonization, in 1554, São Paulo remained as a small trading post of minor importance until almost the end of the 18th century. The activities that used to drive the interests of the Portuguese crown so far, especially sugar and precious metals, were located in different parts of the colony. Only with the expansion of coffee over lands that now make up the countryside of the state of São Paulo the city grew in

importance as a hub for trade and banking activities driven by the new and highly profitable crop. The region's development took place already within Brazil's transition to being a free nation, which happens in 1822.

As it is widely known, in the 19th century, England embraced the abolition cause and started putting high pressure on American countries that maintained the institution of slavery even after they became independent. Brazil was one of the last countries to abolish slavery, but since mid-19th century slave trade to the country was banned. Therefore, coffee-based economy in the new exploration regions, located in the province of São Paulo, was less percolated by slavery and became an early center for massive foreign immigration (at least since the 1920s). From the 19th century on and during nearly all the 20th century, Brazil (with São Paulo as the core destination) received successive waves of highly varied origin: Italians, Spaniards, Germans, Poles, Russians, Syrians and Lebanese, Jews, Japanese, Korean, to mention only the most numerous groups⁶. Not many people know it, but São Paulo has the highest amount of Japanese descendents in the world, after Japan, of course.

Therefore, as important as accumulation of capitals from coffee exports – which was one of the elements to define the role of the city in the later industrialization process – the early (for Brazil) formation of a free urban labor market was a decisive factor for the region and the city to become a center for the development of capitalist activities. Migration flows (especially from Italy and Spain) that settled in the city gave it a labor force including numerous workers already skilled in manual trades and having factory experience. Among them, those who were better off when they arrived formed the initial core of the industrial bourgeoisie and some built real business empires at their times. Those immigrants also brought to Brazil the culture of labor union associationism, anarchism, socialism, and fascism. Later on, already under the military regime, the region would also see the emergence of the substantial union protest movement that would influence the country's recent history. The major immigration waves are also to be credited with the “cosmopolitan” or multicultural air that the city sustains nowadays: no other city in Brazil displays such cultural diversity in its origins as São Paulo.

Wealth created by coffee (which accounted for two thirds of Brazil's export revenues in the early 20th century) and lower dependence on slave labor placed São Paulo at the core of political power at the beginning of the republican period. Monarchy and slavery were two faces of the same coin. The end of slavery in 1888 takes place only a little over a year before the fall of the monarchy. Regional oligarchies whose power was based on slavery were sidelined and, under the hegemony of São Paulo's coffee oligarchies, the Brazilian State acted strongly to guarantee accumulation in that industry. At the peak of the world recession started in 1929,

⁶ Nowadays, the city is still a hub for immigration, now mainly of South-Americans, Africans, and Chinese.

Brazil's government bought and burned huge amounts of coffee to sustain the profitability of businesses.

The 1930 Revolution, which to a large degree created contemporary Brazil, marks the beginning of the cycle of industrialization through import substitution. In order to enter the Second World War at the allied side the government bargained with the US resources and technology to establish heavy industry. Many of the new investments were made in the São Paulo area (including infrastructure, such as transports, telecommunication, and energy), where industries such as steel, oil refining, and petrochemicals were implanted. From the 1950s on, when a long cycle of fast growth starts in Brazil's economy (in the 1970s the industry grew at rates above 10% a year), São Paulo's metropolitan area is chosen to receive the automobile complex that was one of the motive powers of that growth cycle. Other important industrial complexes, such as metal-mechanic, electro-electronics, white line appliances, plastics and capital assets, for instance, also tended to concentrate strongly in the region, since a broad segment of specialized providers was being established there, as well as skilled industrial labor, financial institutions, and the most important port in the country located nearby, in Santos, about one hour from the state capital. Therefore, between the 50s and 70s, São Paulo's metropolitan area accounted alone for over half of the country's industrial product. Since Brazil's industrialization model was highly sustained on attracting multinational capital, the business environment in the city was also transformed by the presence of major industrial conglomerates, chiefly American, German, Italian, French, and Japanese. That certainly contributed to give the city a business environment that was much more cosmopolitan than the rest of the country.

As can be imagined, the city and its surroundings became a center drawing migrants from all over Brazil, resulting in an exponential growth for the city. From 1950 to 2000, Brazil underwent its demographic curve (fertility rate fell from 5.9 to 1.3 children per woman) and it became a urban country (urban population went from 36% to 81%). That giant change was even stronger in São Paulo. Along that half century, the country's population trebled, that of the state of São Paulo increased fourfold and São Paulo city grew five times, from little over 2 million inhabitants in 1950 to more than 10 million in 2000. The process, however, has already been reversed and now the city is on its way to stabilizing its population. Several factors contributed to that: reduction in migration flows and their redirecting to other regions of more recent development; high cost of living and soaring land prices; lower demand for unskilled labor. The city now grows slowly and tends to expel lower-income populations to its outskirts, thus creating a new sort of spatial segregation of poverty.

This historical digression aims at showing that if São Paulo is now a reasonably cosmopolitan and internationalized urban hub, concentrating more capital and knowledge-

intensive industries, it is due to the efforts dispended by the whole country to the region. In a pattern that is more or less typical of developing countries, urban hyperconcentration serves the imperative of regionally concentrating nationally scarce resources such as capital for productive investments, social services, and more advanced education and research institutions. It can be said that the hyperconcentration strategy has “worked” since the country got to take the leap, becoming one of the world’s 10 largest economies – but at the cost of regional and social inequality that is proverbial in the world.

3) The city and the country

“These city-regions are locomotives of the national economies within which they are situated, in that they are the sites of dense masses of interrelated economic activities that also typically have high levels of productivity by reason of their jointly-generated agglomeration economies and their innovative potentials. In many advanced countries, evidence shows that major metropolitan areas are growing faster than other areas of the national territory, even in those countries where, for a time in the 1970s, there appeared to be a turn toward a dominant pattern of non-metropolitan growth. In less-developed countries, too, such as Brazil, China, India and South Korea, the effects of agglomeration on productivity are strongly apparent, and economic growth typically proceeds at an especially rapid rate in the large metropolitan regions of those countries. The same metropolitan regions are at once the most important foci of national growth and the places where export-oriented industrialization is most apt to occur.” (SCOTT & STORPER 2003, p. 581).

The passage above includes important aspects that should be underscored when examining the case of São Paulo. Firstly, the idea that city-regions, large metropolitan areas, in our study are locomotives of national economies and – we add – the former’s dynamism is conditioned by the latter’s features: their size, their industry diversity, their place in the international scenario, the environment they provide to skilled workers.

Secondly, important authors such as Manuel Castells embrace the idea that the rise of information technologies and economic globalization would imply the decline of nation-states and lead to a world similar to a constellation of node, in a cities network. That controversy is much broader than the debate on cities and it cannot be developed here, but the major crisis of 2008 must have served to remind all of how much national states are still the backbones of global economy. Financial businesses and capital, both of them currently pointed out as the fastest-flowing and most de-territorialized form of capital, were saved by their respective

national states. And the fact that people in England and the Netherlands were hit by the bankruptcy of a major financial institution from Iceland led the government of those countries to rescue their citizens and demand compensation for lost funds from the government of the small Nordic country. Today, it seems clear that the funeral of nation states, so boasted in the 1990s, was premature.

Three aspects warrant an analysis for being more closely associated to the character of large cities in developing countries, particularly São Paulo. They are: a) the importance of manufacturing industry; b) the extension of the gravity radius of those cities; and c) their importance to knowledge-based economic activities. We will return to the problem of relations between regional and national in Conclusions.

a. A post-industrial city?

Post-industrialist theses are old and have several different versions, but they basically converge at the idea that today's highly informational, technology-intensive development designs cities for economies based increasingly on the creation and circulation of immaterial goods, with manufacturing process losing importance. That trend finds its zenith in large cities. Of course, authors such as Castells and Sassen know perfectly well that the decline of manufactures – especially those that are more characteristic of the Industrial Revolution – in highly wealthy countries, mainly in Europe, have a counterpart in the huge industrialization process experienced by developing countries in recent decades. Seen from the “South”, what is going on seems to be more a major industrial revolution than the emergence of an essentially tertiary post-industrial economy. The so-called “new economy” growth in those countries, but it does not replace the crucial role that manufacturing industry plays and will continue playing in nations of more recent development. However, that did not prevent the academic field, common sense view, and – which is potentially more serious – policymakers from associating “modern” metropolises and tertiary industries or simply raising the thesis of the tertiary metropolis. That happened in Brazil, for instance. Let us see, then, how the recent history of the city of São Paulo illuminates that controversy.

As has been exposed in Section 2, São Paulo was the epicenter of Brazil's industrialization process from the start, in the first decades of the 20th century. In the mid-1950s, its metropolitan area concentrated over 50% of the country's industrial production, with less than 10% of its population. From the 1970s on, induced by the federal government, a process of relative deconcentration starts in the manufacturing industry, parallel to the

expansion of new development frontiers towards the Midwestern and Northern regions of the country.

Even so, the state of São Paulo (of which the city is capital) still concentrates the same 50% of Brazil's manufacturing production that used to be gathered only in its metropolitan area, since areas adjacent to the metropolitan region were those where manufacturing advanced the most. A 150-km radius from the centre of the city includes about 40% of the nation's manufacturing production, revealing that new investments, which started avoiding the city as well as its metropolitan surroundings after the 70s, are still attracted by the area where several large companies, especially multinationals, have their corporate headquarters. That is why several Brazilian experts have been talking about the making of São Paulo's macrometropolis, a conurbation of nearly 30 million people including metropolitan areas adjacent to São Paulo's (SP and other two: Campinas and Baixada Santista), where several sorts of manufacture activities are concentrated, from the most traditional to highly innovative ones⁷.

Moreover, the manufacturing industry is not the only basis of the region's economy. It must be said that the state of São Paulo also plays a major role in some of the most important production chains of primary goods for the domestic and foreign markets. Three of them stand out for the importance they confer on Brazil: the sugarcane complex, (automobile fuel, electricity, sugar, animal feed, biodegradable plastics); orange juice, and meat – those are the industries where Brazil is a world leader and has major multinational companies. There is no doubt that the wealth created by those industries (which are among the fastest-growing in recent years) converge in many ways to the city of São Paulo.

Some experts, observing the city externally, think its productive dynamics and its manufacturing industry in particular as something that spreads its political-administrative limits, and influences a large territory. However, it has to be said that internally its manufacturing industry remains strong, although distinct from 40 years ago. New features include: using smaller spaces, resorting more and more to outsourced services (whether they are of high or low complexity) and maintaining headquarters and R&D centers while manufacturing facilities move to other regions, especially within the São Paulo area. Besides, São Paulo's manufacturing industry represent 22% of the city's added value⁸ and, in spite of low labor use, as can be seen in Table 1, its share remains about 16% of the city's total employment – a highly relevant figure.

⁷ See, for instance, AZZONI, Carlos Roberto. *Indústria e reversão da polarização no Brasil*. São Paulo: IPE-USP, 1986; MATTEO, Miguel e TAPIA, Jorge R. B. *Características da Indústria Paulista nos anos 1990: em direção a uma city region?* In *Revista de Sociologia e Política*, nº 18: 73-93, jun. 2002; and ABDAL, Alexandre. *São Paulo, Desenvolvimento e Espaço: a formação da Macropetrópole Paulista*. São Paulo: Papagaio, 2009.

⁸ Fundação Seade. PIB Municipal 2007.

Table 1: Firms, employment* and wage mass** according to industries. SP City, 1997 and 2005

| Industries | 1997 | | | | | | 2005 | | | | | |
|---------------|---------|-------|------------|-------|-------|---------|-------|------------|-------|-------|--|--|
| | Firms | | Employment | | Wage | Firms | | Employment | | Wage | | |
| | Abs | % | Abs | % | % | Abs | % | Abs | % | % | | |
| Manufacturing | 74,286 | 14.0 | 549,050 | 22.4 | 23.7 | 80,314 | 11.8 | 459,761 | 16.3 | 18.4 | | |
| Services | 219,241 | 41.2 | 1,250,324 | 51.0 | 57.8 | 277,766 | 40.7 | 1,578,478 | 55.9 | 61.1 | | |
| Trade | 216,020 | 40.6 | 470,691 | 19.2 | 13.4 | 302,147 | 44.3 | 641,834 | 22.7 | 16.7 | | |
| Construction | 22,463 | 4.2 | 179,471 | 7.3 | 5.2 | 21,689 | 3.2 | 143,174 | 5.1 | 3.8 | | |
| Total | 532,010 | 100.0 | 2,449,536 | 100.0 | 100.0 | 681,916 | 100.0 | 2,823,247 | 100.0 | 100.0 | | |

Source: Rais/MTE. Cebrap. Computed by the authors.

* Formal employment, only.

** In R\$ on 12/2006. Inflation: INPC/IBGE.

Obs.: Public administration is not computed.

We can also point out that the same traditional industries, such as textiles-clothing, have re-qualified themselves, valuing segments with higher added value in their production chains, as design and fashion. It is interesting to realize how such a traditional industry, even though it faces competition from China and the displacement of plants to Northeastern Brazil, is still strong in the city. Indeed, much remains to be sorted out in terms of labor relations – for instance, the slave labor status of many Bolivians. However, such a traditional industry is a symbol of São Paulo’s changes. Distinct generations of immigrants control production, imprint their ingenuity, and transform the industry: Jews (from several places), then Koreans, and now Bolivians who have made and still make the industry change. Producers located within the Brás-Bom Retiro area – neighborhoods located in the city center, with a tradition in manufacturing textiles and clothes – are able to sell tons of jeans pants to people from São Paulo, other Brazilian regions, and abroad. At the same time, those areas are home to entrepreneurs that take part in national and international fashion fairs (Paris and Milan) seeking knowledge to feed their creativity and therefore generating new processes and products for São Paulo’s industry.

As for services, some activities have been renewed as others emerged. On the one hand, there was indeed an impulse in segments such as security, food, cleaning, and parts of computing and accounting. And exposure to the market’s competition dynamics forced diversification of services offered and clients. On the other hand, and most important, new activities have been created, generating a complex web of outsourcing, as in niches like telecommunications, computing, finance, and expert consultancies (management, legal, and advertisement services).

Therefore, a distinction must be drawn between outsourcing in order to reduce costs and subcontracting. An old idea is at its core: needs are created. In the 1980s, for instance, companies did not use to hire others to provide complex management systems, such as ERPs (Enterprise Resource Planning). The reason was not because they developed those systems themselves, but rather because such software did not exist. That is, production and

management services emerged from new knowledge, virtually forcing companies to subcontract those services from those that, in turn, have specific knowledge and know how to do.

It is in that game of knowledge specialization, process complexifying, and creation of needs that the service industry – particularly more knowledge-intensive activities – acquired its own dynamic in the last 20 years. Manufacturing industry, for instance, was not left out of their client list, but became one client among other important ones, such as the financial sector and the service industry itself. In this context, segments are strengthened in the city: finance (banks, brokerage firms, and related services)⁹, varied consultancy services (legal and management), information technology as well as media or the so-called creative economy, like movies, TV, journalism, advertisement, games, and culture.

In the wake of that double-sided process of, on the one hand, changing traditional characteristics of manufacturing industries, and, on the other hand, diversifying and renewing certain activities and services, segments that blur the limits between services and manufacture stand out in the city. The biotechnology industry, for instance, is a challenge to those studying São Paulo's economic development. Based on teaching and research at excellence-level institutions (USP, UNIFESP, the Butantan Institute, etc.) and in top public and private hospitals (Clínicas, São Paulo, Oswaldo Cruz, Sírio Libanês, Albert Einstein, etc.), which combine with small businesses in incubators and multinational giants, São Paulo's biotechnology has potential for growth with competitiveness (in the city or in the state, since it is entangled all over the state of São Paulo).

One way to try to escape from those changes in São Paulo's production structure is to use a sector-based classification, alternative to the classic "agriculture, manufacture, trade, and services". Instead of opposing manufacture and services, the basic opposition is displaced towards more *versus* less technology and more knowledge-intensive activities.

With a reference on debates on productive restructuring, knowledge economy, informational society, knowledge-intensive business services (KIBS), and knowledge-intensive service activities (KISA), that alternative classification presupposes the centrality acquired by processes of knowledge creation and spreading, technological change, and innovation for competitiveness of businesses, cities, regions, and countries, as well as for long-term growth.

More technology and knowledge-intensive activities, regardless of being manufactures or services, include: microelectronics, industrial automation, optical equipments, computers,

⁹ The finance sector is highly concentrated in São Paulo. The headquarters of the main Brazilian banks, which started arriving in the 1960s, and foreign banks, which arrived in the 1990s, are in the city, as well as Latin America's main stock exchange after the BM&FBovespa merger, and a myriad of ancillary services. Besides its importance for the number of employees (many with higher education), high salaries, and incentive to technological development of other segments for complex and specialized demands, finance intermediation is essential in itself for its ability to irrigate the city's economic development.

medical/hospital and dentist equipments and drugs, information service activities, software, telecommunications, engineering, advertisement, and financial, media, educational and health services.¹⁰

Having defined sector aggregation, some results show the importance of those activities for São Paulo's development. As can be seen in Table 2, in 2005, despite their low share in the number of establishments (10%), they accounted for 26% of formal labor and 41% of the city's wage mass. Besides, they represented 43% of added value¹¹ and 53% of employees with higher education in the city.

Table 2: Firms, employment* and wage** mass according to knowledge/technology intensity activities classification. SP City, 1997 and 2005.

| Manufacturing and Services Industries | 1997 | | | | | 2005 | | | | |
|---------------------------------------|---------|-------|------------|-------|-------|---------|-------|------------|-------|-------|
| | Firms | | Employment | | Wage | Firms | | Employment | | Wage |
| | Abs | % | Abs | % | % | Abs | % | Abs | % | % |
| High-tech manufacturing | 8,242 | 1.5 | 93,050 | 3.8 | 5.0 | 10,034 | 1.5 | 78,591 | 2.8 | 3.6 |
| Medium-high-tech manufacturing | 7,352 | 1.4 | 94,587 | 3.9 | 5.5 | 8,101 | 1.2 | 83,036 | 2.9 | 5.1 |
| Medium-low-tech manufacturing | 23,971 | 4.5 | 152,468 | 6.2 | 5.4 | 26,822 | 3.9 | 117,292 | 4.2 | 3.8 |
| Low-tech manufacturing | 34,721 | 6.5 | 208,945 | 8.5 | 7.9 | 35,357 | 5.2 | 180,842 | 6.4 | 5.9 |
| Technological KIS | 7,474 | 1.4 | 77,558 | 3.2 | 5.2 | 10,521 | 1.5 | 91,077 | 3.2 | 5.7 |
| Professional KIS | 19,465 | 3.7 | 77,484 | 3.2 | 2.9 | 19,734 | 2.9 | 147,805 | 5.2 | 4.9 |
| Financial KIS | 10,835 | 2.0 | 142,392 | 5.8 | 12.2 | 12,471 | 1.8 | 146,125 | 5.2 | 11.8 |
| Social KIS | 12,332 | 2.3 | 136,431 | 5.6 | 6.6 | 10,361 | 1.5 | 184,864 | 6.5 | 8.6 |
| Media KIS | 2,002 | 0.4 | 13,071 | 0.5 | 0.9 | 1,670 | 0.2 | 14,141 | 0.5 | 0.9 |
| Other Services | 167,133 | 31.4 | 803,388 | 32.8 | 29.9 | 223,009 | 32.7 | 994,466 | 35.2 | 29.3 |
| Trade | 216,020 | 40.6 | 470,691 | 19.2 | 13.4 | 302,147 | 44.3 | 641,834 | 22.7 | 16.7 |
| Construction | 22,463 | 4.2 | 179,471 | 7.3 | 5.2 | 21,689 | 3.2 | 143,174 | 5.1 | 3.8 |
| Total | 532,010 | 100.0 | 2,449,536 | 100.0 | 100.0 | 681,916 | 100.0 | 2,823,247 | 100.0 | 100.0 |

Source: Rais/MTE, Cebrap. Computed by the authors.

* Formal employment, only.

** In R\$ on 12/2006. Inflator: INPC/IBGE.

Obs.: Public administration is not computed.

In terms of workers' wealth, those activities include the highest incomes for labor with both high and low training. That is, they are not elitist activities only for higher labor strata, but also for lower ones. And that is completed with the finding that those working for more technology and knowledge-intensive industries have a higher probability of earning a better wage¹².

¹⁰ Classification according to technology and knowledge intensity is based on taxonomies by the Organization for Economic Co-operation and Development (OECD) on the manufacturing industry – referring to research and Development (R&D) spending – and the European Union statistics office (Eurostat) for services – which ranks segments according to their knowledge intensity. We propose an improvement in the OECD and Eurostat classification, and an adjustment to the Brazilian case, creating groups and a rearrangement of activities. Those changes are justified because of analytical and methodological reasons. Therefore, there are four groups for manufactures: High-tech manufacturing industries, Medium-high-tech manufacturing industries, Medium-low-tech manufacturing industries and Low-tech manufacturing industries. For services, changes were more significant and resulted in the following groups: Technological knowledge-intensive services (KIS), Professional KIS, Financial KIS, Social KIS and Media KIS. For more details about the classification, see TORRES-FREIRE, Carlos, ABDAL, Alexandre, BESSA, Vagner. (2010). "Conhecimento e tecnologia: atividades industriais e de serviços para uma São Paulo competitiva" (*Knowledge and Technology: Manufacturing and Service Industries for SP City competitiveness*), in: Comin, Torres-Freire & Wissenbach (orgs.), *Metamorfoses Paulistas: Atlas Geoeconômico da Cidade*. São Paulo: Co-edition Sempla/Cebrap, 2010 (no prelo).

¹¹ According to São Paulo State Economic Activity Research (*Pesquisa da Atividade Econômica Paulista*, Paep) de 2001, by Fundação Sistema Estadual de Análise de Dados (Seade) in the state of São Paulo.

¹² For more details about the results of the logistic regression model, see TORRES-FREIRE, Carlos, ABDAL, Alexandre, BESSA, Vagner. (2010). "Conhecimento e tecnologia: atividades industriais e de serviços para uma São Paulo competitiva", In: Comin, Torres-Freire & Wissenbach (eds.), *Metamorfoses Paulistas: Atlas Geoeconômico da Cidade*. São Paulo: Co-edition Sempla/Cebrap, 2010 (in press).

Examining Sao Paulo's productive structure based on a knowledge and technology intensity ranking, what emerges for manufacturing industry is less a process of exhaustion than an intense movement of reorganization. What is seen in the city is an increase in the number of highly technology-intensive industry businesses and a decrease in the less technology-intensive ones. A similar movement takes place in the service industry: the more sophisticated or more intensive ones in terms of knowledge (telecommunications, computer programming, information service activities, financial activities, advertisement, media) are the ones displaying the highest growth in the city, adding to the dynamism of remaining manufacturing industries instead of merely replacing them.

Therefore, Sao Paulo's current development is not marked (and that possibly applies to cities such as Bombay, Shanghai or Seoul¹³) by the passage from an industrial to a post-industrial or tertiary structure, but rather the accumulation of functions. It plays that role because it concentrates the national assets that are very relevant both to manufacturing and service industries. This point is quite important regarding the problem of internal inequalities in those countries.

b. A command city

Maurício Borges Lemos and Marco Crocco (2000) see large cities in general and metropolitan spaces in particular as having two core features, namely: producing and polarizing. *Producing* is expressed by the fact that such spaces concentrate a significant share of regional or even national wealth production, while *polarizing* refers to their high capability to exert economic, political, and cultural attraction over other spaces.

Regarding the former category, an initial indicator that might be used to measure São Paulo's production capability – as the core of Brazil's largest metropolitan area – is its share in the country's GDP: the city accounts for about 12.5% of Brazil's GDP, with only 5% of the population. In São Paulo's metropolitan area, in turn, it represents about 19% of Brazil's GDP with only 10.5% of its population, according to data provided by Brazilian Institute of Geography

¹³ Yusuf and Nabeshima (2006) report that, in East Asia, services with fastest-growing job rates are increasingly concentrated in major cities (as educational, informational, health, leisure and business services). For instance, over half of Japan's jobs in research and advertisement are in Tokyo – a proportion that is even higher in cities like Seoul and Taipei. On the other hand, most capital-intensive industrial activities also remains in those centers, and there is even space for some not very competitive activities, although, on average, the whole of those activities tends to be displaced to other areas. That is to say, what is seen is more a qualitative change in the productive structure of those large centers.

and Statistics (*Instituto Brasileiro de Geografia e Estatística*, IBGE)¹⁴. However, its relative decline as a result of growth in other regions might induce a false image of loss of importance.

A second and perhaps more interesting way to measure such capability to concentrate production, which helps to mitigate the feeling of loss of relative importance resulting from GDP concentration is to observe the concentration of more technology and knowledge-intensive industries in São Paulo vis-à-vis other Brazilian state capitals. Tables 3 and 4 show employment and wage mass in high and medium-to-high technological intensity and the five KIS segments in seven capitals – first, their respective shares in the country’s production structure, and then in their respective cities’ production structures.

Table 3: Employment* and wage** mass participation according to high and medium high-tech manufacturing industries and to knowledge Intensive Services (KIS) in seven Brazilian cities; 2005

| Cidades | Alta | | Média-alta | | SIC-T | | SIC-P | | SIC-F | | SIC-S | | SIC-M | | Total | |
|----------------|-------|-------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | Emp. | Massa | Emp. | Massa | Emp. | Massa | Emp. | Massa | Emp. | Massa | Emp. | Massa | Emp. | Massa | Emp. | Massa |
| São Paulo | 10.7 | 12.1 | 12.2 | 17.7 | 18.0 | 25.6 | 20.1 | 32.8 | 23.5 | 27.9 | 13.9 | 19.9 | 14.7 | 23.3 | 11.7 | 18.0 |
| Rio de Janeiro | 2.1 | 2.1 | 3.0 | 3.6 | 12.0 | 16.4 | 8.4 | 10.5 | 9.7 | 10.0 | 7.9 | 8.6 | 13.4 | 26.1 | 6.2 | 7.8 |
| Belo Horizonte | 0.8 | 0.6 | 1.0 | 0.6 | 6.3 | 5.2 | 3.9 | 2.9 | 3.4 | 3.2 | 4.1 | 4.2 | 2.3 | 2.4 | 3.1 | 3.0 |
| Porto Alegre | 1.0 | 1.0 | 1.1 | 1.0 | 2.5 | 2.7 | 2.2 | 2.0 | 2.8 | 3.1 | 3.1 | 4.6 | 3.0 | 3.2 | 1.7 | 2.1 |
| Recife | 0.3 | 0.2 | 0.6 | 0.4 | 1.6 | 1.4 | 2.1 | 1.4 | 1.5 | 1.3 | 1.9 | 1.4 | 1.4 | 1.6 | 1.4 | 1.2 |
| Salvador | 0.1 | 0.1 | 0.2 | 0.2 | 1.9 | 1.6 | 2.5 | 2.1 | 1.7 | 1.7 | 3.3 | 3.5 | 1.6 | 1.7 | 1.8 | 1.6 |
| Curitiba | 3.0 | 3.5 | 1.9 | 1.9 | 3.9 | 3.5 | 2.5 | 2.5 | 3.1 | 3.1 | 2.3 | 2.1 | 2.0 | 1.9 | 2.0 | 2.3 |
| Brasil | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Source: Rais/MTE. Cebrap. Computed by the authors.

* Formal employment, only.

** In R\$ on 12/2006. Inflater: INPC/IBGE.

Obs.: Public administration is not computed.

The first finding to highlight (in Table 3) is the non-proportional scale of the city of São Paulo. Employment and wage mass concentration is, in any sector, much higher in São Paulo than in other capitals. Secondly, comparing the activities within the city reveals an above average concentration of more technology and knowledge intensive activities. While São Paulo concentrates about 12% of Brazil’s formal employment and 18% of its wage mass, more technology and knowledge intensive activities, together, concentrate 16% of employment and 22% of the mass, indicating that the level of concentration of those sectors is relatively higher than economic activity as a whole.

Table 4: Employment* and wage** mass share according to high and medium high-tech manufacturing industries and to knowledge Intensive Services (KIS) in seven Brazilian cities; 2005

| Cities | High | | Medium-high | | SIC-T | | SIC-P | | SIC-F | | SIC-S | | SIC-M | | Total | |
|----------------|------|------|-------------|------|-------|------|-------|------|-------|-------|-------|------|-------|------|-------|-------|
| | Emp. | Wage | Emp. | Wage | Emp. | Wage | Emp. | Wage | Emp. | Wages | Emp. | Wage | Emp. | Wage | Emp. | Wage |
| São Paulo | 2.8 | 3.6 | 2.9 | 5.1 | 3.2 | 5.7 | 5.2 | 4.9 | 5.2 | 11.8 | 6.5 | 8.6 | 0.5 | 0.9 | 100.0 | 100.0 |
| Rio de Janeiro | 1.0 | 1.4 | 1.4 | 2.4 | 4.1 | 8.4 | 4.2 | 3.6 | 4.1 | 9.7 | 7.1 | 8.6 | 0.9 | 2.3 | 100.0 | 100.0 |
| Belo Horizonte | 0.8 | 1.1 | 1.0 | 1.0 | 4.3 | 7.0 | 3.9 | 2.6 | 2.9 | 8.1 | 7.4 | 11.0 | 0.3 | 0.6 | 100.0 | 100.0 |
| Porto Alegre | 1.9 | 2.6 | 1.8 | 2.5 | 3.2 | 5.1 | 4.0 | 2.6 | 4.4 | 11.4 | 10.5 | 17.4 | 0.7 | 1.1 | 100.0 | 100.0 |
| Recife | 0.7 | 1.0 | 1.2 | 1.9 | 2.5 | 4.9 | 4.8 | 3.3 | 2.8 | 8.7 | 7.9 | 9.2 | 0.4 | 1.0 | 100.0 | 100.0 |
| Salvador | 0.2 | 0.4 | 0.4 | 0.5 | 2.3 | 4.0 | 4.4 | 3.5 | 2.6 | 8.0 | 10.6 | 17.1 | 0.4 | 0.7 | 100.0 | 100.0 |
| Curitiba | 4.4 | 7.9 | 2.6 | 4.3 | 3.9 | 5.9 | 3.8 | 2.9 | 3.9 | 10.0 | 6.4 | 7.1 | 0.4 | 0.6 | 100.0 | 100.0 |
| Brasil | 3.0 | 5.3 | 2.8 | 5.2 | 2.1 | 4.0 | 3.1 | 2.7 | 2.6 | 7.6 | 5.5 | 7.8 | 0.4 | 0.7 | 100.0 | 100.0 |

Source: Rais/MTE. Cebrap. Computed by the authors.

* Formal employment, only.

** In R\$ on 12/2006. Inflater: INPC/IBGE.

Obs.: Public administration is not computed.

¹⁴ Rio de Janeiro Metropolitan Region is the second more populated in Brazil and accounts to 6% of Brazil’s population and for 7.8% of its GDP.

São Paulo's out-of-proportion weight, however, can be balanced by comparing each group's share in its own city (Table 4). It is worth mentioning – and consistent with the overrepresentation of technology and knowledge-intensive sectors in São Paulo – that employment and wage mass of all seven technology and knowledge industries in the city have shares equal to or higher than their respective shares in Brazil's production structure. That happens in no other city, even though some of them, in specific industries, might present concentration higher than São Paulo's¹⁵.

Saskia Sassen (2001) defines global cities as centers for command and articulation of production systems worldwide. The fact that directly productive activities have spread over the developing world in search of different costs and new consumer markets is one of the justifications for the trend to concentrate the functions of articulation and command in large cities with advanced infrastructure in finance, telecommunications, trade, and business services in general. Reduced to national or regional scale, several major cities play a similar role. According to Duranton and Puga (2005), those cities transit from a pattern of "sector specialization", based on command and support activities, which "serve" the several production chains that are no longer located in their own territory.

When the "functional" importance of the city as a command and articulation center of Brazil's regional economies, what is seen is a high enlargement of its gravitation area, not only in strictly productive terms, but also as a center for shopping and leisure, specialized medical services, and as a core gateway for foreign relations.

The changes in the city's productive structure pointed out in the previous item seem to be consistent with the broadening influence of the city, especially towards the new frontiers for expansion of Brazil's economy, in the Midwestern and northern regions, thousand of kilometers away. According to the study "The influence regions of cities – 2007", conducted by the Brazilian Institute for Geography and Statistics, IBGE, the network of cities whose core economic connection is São Paulo includes 1,028 towns that, together, concentrate 285 of Brazil's population (51 million inhabitants spread over 2.3 million sq kilometers – over a third of the country's territory) and 40.5% of its GDP, reflecting the more than proportional concentration of that regional aggregate. Also within its influence area the city of São Paulo stands out with a per capita gross product that is 66% higher: 21.6 thousand *reais* compared to

¹⁵ For further analysis about production structures in different metropolitan regions, see TORRES-FREIRE, Carlos. "Por que analisar a estrutura produtiva brasileira sob a ótica da tecnologia e do conhecimento?" (*Why should we analyze Brazilian productive structure under the lens of knowledge and technology*). In: Estudos da Produção, Tecnologia e Inovação. OIC/IPEA/FINEP. 2010 (forthcoming). See also: ABDAL, Alexandre. A dinâmica produtiva recente das regiões metropolitanas brasileira: diversificação e especialização; competição e complementaridade. Estudos da Produção, Tecnologia e Inovação. OIC/IPEA/FINEP. 2010 (forthcoming).

14.2 thousand for the other towns in the group. For a comparison, the second most important economic center – Rio de Janeiro – influences 264 towns with little over 20 million inhabitants (11.3% of Brazil's population), which, together, accounted for 14.4% of the national GDP, in 2005. And, in that case, the difference between the income in the center (Rio de Janeiro, with 15 thousand *reais*) and the other towns (14.8 thousand) is only residual.

Besides, of the 1,124 largest companies operating in Brazil, 365 are located in the city of São Paulo (420 in the whole estate), reinforcing the idea that changes in the city's production structure include thickening of command functions for business activities. Among the 50 largest financial institutions (in total assets), according to Brazil's Central Bank, 32 are located in the city, showing its major role as a financial center (especially in the private sector).

c. The city as an environment for creativity and knowledge

Big cities are different not only for being big, but also because they are particularly prone to developing production activities based in knowledge and creativity. Literature points out some reasons for the association between urban environments and knowledge circulation, and a large part of them is related to the main input of chains based on those assets: labor. Even though it is argued that such industries might generate jobs for different profiles of workers, it is generally agreed that it is in those industries that skilled workers are mostly needed. Activities involving innovation of any nature depend on proximity – not only spatial but also cognitive, organizational, and cultural¹⁶ – and fluidity of interactions within those professional networks. Some processes depend on face-to-face contacts and specific social networks in order to be realized as an economic activity¹⁷.

Major urban concentrations are, by and large, reservoirs of those workers, not only because they tend to prefer denser and more diversified spaces in terms of job offers (where they can earn more and remain part of specialized social networks), but also due to other advantages provided by large cities (more sophisticated consumption, culture and leisure equipments, health services, good quality schools for their children etc.). It is true that, for historical reasons (specially high income concentration and urban planning), São Paulo is far from entering the list of Brazil's places with best quality of life; the city suffers from chronic

¹⁶ For an exciting discussion on the several dimensions of "proximity" involved in the analysis of innovation processes, see Boschma (2005).

¹⁷ A clarifying piece of information for the reader: Brazil is fourth place among emerging countries in terms of global R&D investments, behind China and South Korea, which spend three times more money in those activities in absolute terms, and Taiwan (small Chinese province with little over 20 million inhabitants), which invests 50% more. But it is ahead of countries like India, Russia, and Mexico. When considered only R&D investments by businesses, Brazil falls to fifth place (behind Russia), but much behind the leaders South Korea and China (UNCTAD, 2005), showing that country's technological capacities and its productive system are out of sync.

traffic jams, pollution, floods, high crime rates. But it is certainly the job market with the broadest and best paid career opportunities for skilled workers.

In effect, São Paulo concentrates a substantial part of the country's infrastructure. Of all college graduates in Brazil in 2004, 30% were in the state of São Paulo and 12% in its capital. Between 1996 and 2003, 15,711 people received doctoral degrees, over 60% of the country's total, about half of which were in the city of São Paulo (Viotti and Baessa, 2008). The city hosts the largest university in the country, which is also the leading Brazilian institution in international scientific production indicators. In this item, measured by articles published on internationally indexed journals, Brazil's history in recent decades is highly positive: the country jumped from 0.2% of the world's production in 1980 to 1.5% in the current decade. Nothing less than half that production comes from the state – 25% only at the University of São Paulo (USP), whose largest campus is located in the capital.

The city of São Paulo has numerous highly complex health equipments, which draw patients not only from all over Brazil but also from neighboring countries. It also has the most varied offer of cultural and leisure services in the country – 319 movie theaters, 110 museums, and 160 theaters¹⁸. It is a major consumption center that gathers from world brands to shopping centers such as that at 25 de Março Street, where over 800 thousand people circulate every day, drawing retailers from the whole country and an increasing number of neighbors from South America and even African countries. Few people would describe São Paulo as “beautiful” or “pleasant”, but in spite of that, it is by far the largest tourism destination in Brazil, especially because of business tourism.

4) Conclusions

São Paulo is close to the profile prescribed in literature for cities that command and feed large economies with innovation mainly because it concentrates, in a very disproportional way, several modern assets. But it is important not to underestimate the negative effects of hyperconcentration or overestimate the positive effects that the density of those factors might create. The limits for the city's development are still dictated strictly by the pace of Brazil's economy, by federal government's policies, and by the dynamism of new frontiers for the country's growth. In other words, São Paulo's gravitational reach is still essentially national, and it tends to expand also through South America as regional integration gains ground. But that limitation is not due to its productive or urban characteristics, but rather to the still restricted degree of internationalization of Brazilian economy.

¹⁸ SP Turis, 2008. *Indicadores e Pesquisas do Turismo da Cidade de São Paulo*.

Urban chaos in metropolises such as São Paulo points out the limits of the hyperconcentrated development model, which characterizes the past and present history of most developing countries. In countries such as Brazil, in a foreseeable future, unfortunately, the best places to study, work, and do business are not the best places to live, if by living we understand having space, pure air and green areas. More than that, those cities summarize very well the developing processes generating extreme inequalities that are quite difficult to revert – well exemplified by Brazilian experience, even with recent progresses.

From the point of view of the internal dynamic of São Paulo's metropolitan area, it is possible to assume an increase in the spatial segregation pattern of poverty, creating new problems. Changes in the labor market that reduce the chances for successful placement to individuals with low schooling, increases in prices of land and the cost of living in general, and policies that favor the interests of major real estate capital, which have characterized municipal administrations in recent decades (except for two terms by leftwing mayors) are forces repulsing lower income strata. Cities that typically receive those populations are also the poorest and less economically developed, serving as dormitories, with poorer infrastructure in public services. Some of those cities have productive uses severely restricted in large part of their area because they include legally protected water sources, which gather new shantytowns and informal neighborhoods that cannot be properly urbanized – even because of the nature of those territories. Therefore, those cities cannot attract any sort of investment that could strengthen their budgets and create jobs, while they are in charge of environmental protection areas and basic services highly demanded by the poor. The inexistence of metropolitan government spheres and the tendency of the region's cities to compete rather than collaborate is not a promising sign for the solution of those problems.

Concerning regional inequalities, the current cycle of Brazilian economy has a clear deconcentrating bent, since the poorer or less developed regions are precisely those to grow more. But given the accumulation of inequalities already established among the country's regions, decades would be needed for convergence in development levels. The poorest regions include the Northeast, which, for historical reasons sustains closer relations with Rio de Janeiro. More recent developing areas, in the Midwest and the Amazon more to the north, whose growth is driven by export industries (such as soybean, cattle, and minerals), have stronger links to São Paulo.

Something is symptomatic in a country where individuals must travel thousands of kilometers (by highly precarious or highly expensive means) to have access to a specialized health treatment, a good university or simply to purchase electronic products or watch a theater play. The other side of cosmopolitanism and vibrant life seen in São Paulo (and in some other

Brazilian cities such as Rio de Janeiro, Belo Horizonte, and Porto Alegre) is still the poverty and lack of opportunities that mark urban environment in a large number of Brazil's cities.

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