MSc Programme in Urban Management and Development

Rotterdam, The Netherlands

September 2012

Title

Sao Paulo beyond borders: an investigation of the city's
competitiveness and complementarity in Latin America

Name: Carolina Vilela Figueiredo

Supervisor: Dr. Ronald Wall

Co-supervisor: Aloysius Bongwa

Specialization: Innovations in Urban Finance (IUF)

UMD 8

MASTER'S PROGRAMME IN URBAN MANAGEMENT AND DEVELOPMENT

(October 2011 – September 2012)

Sao Paulo beyond borders:
an investigation of the city's competitiveness and complementarity in Latin America

Carolina Vilela Figueiredo

Brazil

Supervisor: Dr. Ronald Wall

Co-supervisor: Aloysius Bongwa

UMD 8 Report number:

Rotterdam, September 2012

Summary

In a world where urban competitiveness is on the rise, cities are constantly competing with each other over attracting capital, business, talent and tourists. In this sense, how can cities reinvent themselves and enhance their competitive status locally, regionally and globally? How can cities learn from their competitors and build new strategies to become more attractive for investments? And the most important: how can cities shift the focus from individual urban competitiveness to networks of collaboration and complementarity, in which cities not only compete but also collaborate/complement with each other and boost economic development?

The city of Sao Paulo, the financial and economic center of Brazil, is at the heart of this research. The city is the hub for foreign direct investments (FDI) and a bright spot in Latin America, but in order to lengthen this prestige and performance the city must take full advantage of the economic potential of its networks of competition and complementarity. The metropolitan region of Sao Paulo, the largest in South America, has been facing a decline in economic growth over the last years and standards of service delivery are under fiscal constraints. There is clearly a mismatch between the great amount of investments received by the city, its economic performance and level of urban competitiveness compared to benchmarks in the region – Buenos Aires and Santiago. A strong network of competition and complementarity between Sao Paulo and its competitors could leverage the city and region's economic performance and competitive advantage.

In this context, the main objective of this research relies on finding out how Sao Paulo can enhance its competitive and complementary network in Latin America. Starting from a macro-regional scale analysis, this study analyzes the spatial distribution of inward foreign direct investments flows (FDI market.com – Financial Times & Orbis Database) between Latin American cities and, more specifically, into the city of Sao Paulo. In order to find the status, connectivity, position and competitors of Sao Paulo in the investment network, *Ucinet* city-to-city network diagrams and charts on Microsoft Office Excel were generated. In order to find in which economic sector Sao Paulo can establish complementary relations with its competitors a location quotient method was applied and revealed the specialization of each city in the network. A regression analysis in *SPSS* pointed out the location factors that are statistically more relevant for investments in Sao Paulo. In order to achieve validity and reliability, a number of interviews with the public and private sector contributed to the main findings and helped to a better understanding of the problem.

The main results of this research revealed that Information and Communication Technology (ICT) & Electronics is the top economic sector attracting FDI to Sao Paulo, followed by Physical Sciences and Environmental Technology – in accordance with the trend of investments in Latin America. Also, the city's true competitors in the region are Buenos Aires, Santiago and Rio de Janeiro in the fields of ICT, Physical

Science and International Events. The complementarity analysis revealed numerous sectors these cities can complement each other, reinforcing the complexity of the polycentrism and specializations in the network.

The location factors play a key role in determining the FDI inflows in Latin America. The most significant location factors for investment to Sao Paulo are related to GDP growth, business sophistication and climate, labour market efficiency, population size (market size and purchasing power of the population), institutional readiness, energy consumption, connectivity to suppliers, cities, research institutes and air/highways infrastructure.

One of the main significant lessons drawn from this research is related to the importance of *scale* in planning competitiveness, complementarity and how urban managers perceive this geographical category in different ways. It is necessary to overlook the city through the lens of multiple scales once its coopetitive network cuts across national borders, emerging a complex multi-sector-specialized *transnational cluster*. Sao Paulo is a complex paradigm of a local metropolis with regional proportions linked to a global network of world-cities. However, at the same time the city has spaces defined by the new ICT capital, it reveals a fragmented territory that expresses its local deficiencies.

Therefore, amongst other recommendations, in order to leverage its economic performance and coopetitive relations in Latin America, the city should focus on sector specialized policies and location factors that threaten the attractiveness of the city. Moreover, it is crucial to design supportive regional policies and complimentary-oriented strategies that facilitate and market the complementarity and competitiveness in the cluster and reinforces the multiple scale approach in the polycentric network. Focusing on the fields of E-tourism, Environment and Knowledge would also enable Sao Paulo and its rivals to benefit more from the rapid progress in high-technology, which is the basis of an emerging knowledge economy and society in Latin America.

Key Words

City networks, Urban Competitiveness, Coopetition, Complementarity, Location Factors, Economic Development

Acknowledgements

*'Learning is the only thing the mind never exhausts,
never fears, and never regrets'*

Leonardo da Vinci

Table of contents

List of Tables

List of Charts

List of Figures

CHAPTER 1: INTRODUCTION

1.0 Introduction

In a world where urban competitiveness is on the rise, cities are constantly competing with each other over attracting capital, business, talent and tourists. Some cities are considered more attractive and livable than others. In the same way, some locations score better in certain urban functions. However, cities are not left to fate; instead, they are constantly trying to reinvent themselves and leverage their competitive status. In this sense, what can cities do to enhance their competitive status locally, regionally and globally? How can cities learn from their competitors and build new strategies to become more attractive for investments? And the most important, how can cities shift the focus from individual urban competitiveness to regional networks of collaboration and complementarity, in which cities not only compete but also collaborate/complement with each other and boost economic development?

A city's level of competitiveness depends on several factors including its investment flows and the nature and scope of its connections with other cities (Friedmann 1986; Wall 2009). Other indicators of why some companies prefer to invest and settle in some cities rather than others are related to the urban qualities or location factors that are unique in each city. These indicators range from macroeconomic conditions, market size, strategic location, industrial structure, human resources, alluring living conditions, modern infrastructure, levels of education, favourable business environment to a number of other attributes that allow enterprises to maximize the benefits when choosing one city to start doing business. Cities that perform better in those criteria are listed as the top most competitive cities in the world.

A new paradigm of global urban competitiveness is about 'coopetition', which refers to those cities connected through a network of investment flows having simultaneous relations of competition and collaboration with global rivals and other cities. It is a shift in the urban competitiveness approach and the focus of this investigation.

1.1 Background

In 2010 Latin American and Caribbean region (Figure 1.1) showed great resilience to the international financial crisis and became the world region with the fastest-growing flows of foreign direct investments (FDI), with Brazil taking on the greatest share of US$ 48,462 million (ECLAC 2012). Starting from a macro-regional scale analysis of investment flows, this study analyzes the spatial distribution of inward foreign direct investments flows between Latin American cities and, more specifically, into the city of Sao Paulo.

Figure 1.1: Map showcasing Latin American countries and Sao Paulo
Source: Community of Latin American and Caribbean States (CELAC). Elaborated by the author.

Brazil is a unique situation in Latin America. It is a key emerging economy and considered the fifth largest country in the world, both in terms of territory (8.5 million km²) and population (estimated at 196,655,014 inhabitants - IGBE 2012). Brazil is considered the 6th world economy (GDP of more than US$ 2 trillion in 2010) and the 53rd most competitive country in the world according to the Global Urban Competitiveness Report (2011/2012). The country has been a global leader in many ways, taking on reforms and global responses to the current financial crisis, trying to join the most economically connected countries and formulating government policies for promoting local competitiveness.

At a regional scale, the main rivals of Brazil in South America in terms of absolute amount of FDI, economic performance and the level of urban competitiveness are Argentina and Chile (Global Competitiveness Report 11/12). These countries (Argentina, Brazil and Chile) form the so-called *A-B-C competitiveness* (Goldstein 2004) and have been attracting substantial amounts of FDI over the last years. The

Global Competitiveness Report ranks Chile as the 31st most competitive country, Brazil as the 53rd and Argentina as the 85th. At city level, Buenos Aires and Santiago del Chile are considered Sao Paulo's main rivals in terms of urban competitiveness and economic performance according to numerous reports and rankings (FDI Intelligence 2011; Global Outlook Report 2011; Ni 2012; Mckinsey 2011). In terms of urban competitiveness, Buenos Aires is ranked at 105th; Santiago, 142nd; while Sao Paulo ranks 147th (Ni 2012).

The city of Sao Paulo is at the heart of this study. Sao Paulo is the financial, economic and business center of Brazil with a total population of 11,253,503 inhabitants (IBGE 2012). Emerging as a national star, Sao Paulo is also the Brazilian business hub for foreign direct investments and is considered the 14th most globalized city in the world and an 'alpha' city by the Globalization and World Cities Study Group & Network (GaWC 2008) and the 10th Latin American city of the future (FDI Intelligence 2011). Furthermore, hosting important financial institutions and connected to intense flows of people, investments and employment, São Paulo is considered the main financial, corporative and economic center in Latin America. According to the Brazilian Institute of Geography and Statistics (IBGE 2012) almost 15% of Brazil's GNP comes from the city of Sao Paulo alone as well as 36% of the production of goods and services of the State of Sao Paulo. The economic concentration around its Metropolitan region represents 50% of the state GDP distributed across only 10 cities within 100-150km from the capital city (Asquino 2012).

In view of the city's growing shares in FDI flows in the past decade, research is urgently needed to narrow institutional gaps and to recommend regional economic development strategies focused on complementarity, competition and location factors in order to leverage Brazilian cities and regions' competitive advantage.

1.2 Problem Statement

The metropolitan region of Sao Paulo, the largest in South America, has been facing a decline in economic growth over the last years and standards of service delivery are under fiscal constraints. Although Sao Paulo is the hub for foreign direct investments in Latin America, the city does not perform as well as benchmarks in the region – Buenos Aires and Santiago – in terms of competitiveness and economic performance.

This context leads to the statement of the problem to which this thesis is addressed that if a city's level of competitiveness relies on location factors, investment flows and scope and nature of its connections with other cities, there is clearly a mismatch between the great amount of foreign investments received by the city of Sao Paulo, its economic performance and level of urban competitiveness compared to benchmarks in the region. An exploration of Sao Paulo's networks of competition and complementarity in Latin America could contribute to bridge this gap and leverage the city and region's economic performance and competitive status.
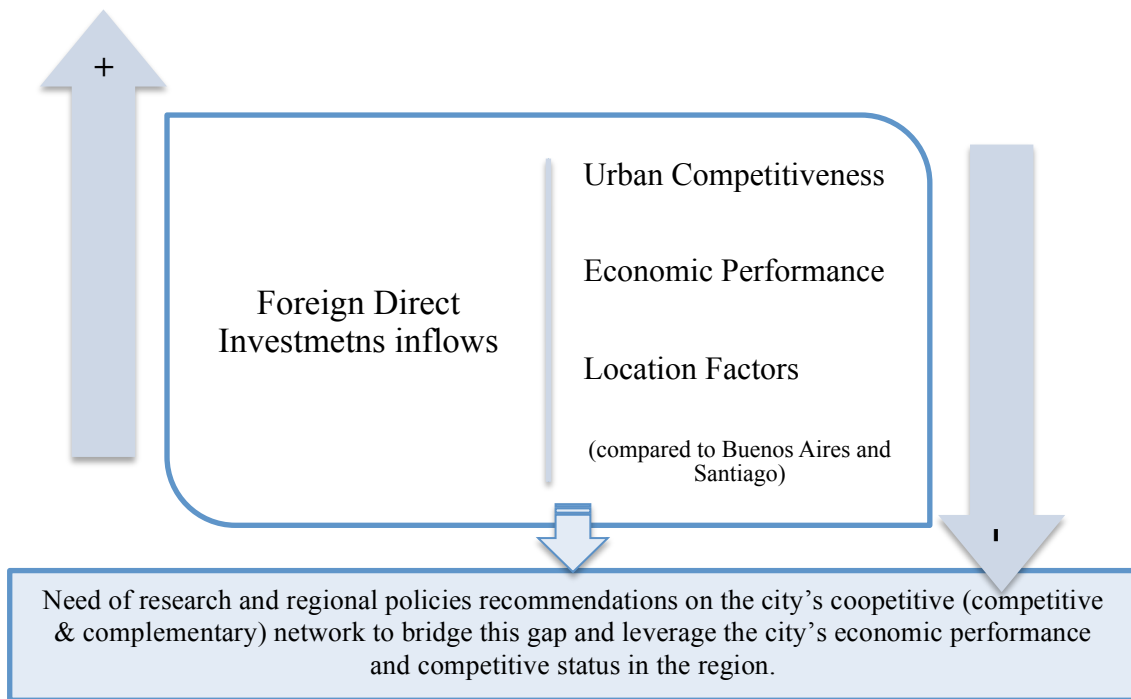
Figure 1.2: Problem statement summary

1.3 Research Objectives

The main objective of this research is to find out how Sao Paulo can enhance its competitive and complementary networks in Latin America.

1.3.1 Specific Objectives

- Identify Sao Paulo's leading economic sectors that most attract foreign direct investments.
- Identify Sao Paulo' competitors and true competitors in Latin America in attracting foreign direct investments.
- Identify in which economic sectors Sao Paulo can establish a complementary network with competitors.
- Identify which location factors are most significant for attracting investments to Sao Paulo and its competitors.

1.4 Research questions

1.4.1 Main research question

How can Sao Paulo enhance its competitive and complementary network in Latin America?

1.4.2 Specific research questions

- What are Sao Paulo's leading economic sectors that most attract foreign direct investments?
- Who are Sao Paulo's competitors and true competitors in Latin America in attracting foreign direct investments?
- In which economic sectors can Sao Paulo establish a complementary network with competitors?
- What location factors are most significant for investments to Sao Paulo and its competitors?

1.5 Significance of the study

The relevance of this study is justified in terms of its contribution to the academic debate and policy recommendations to the city of Sao Paulo. For academic purposes this research offers new insights to the topics regarding the spatial distribution of investments through multiple scales and how foreign direct investments are linked to economic development, location factors and coopetition. Furthermore, it contributes substantially to the debate about city networks and the emergence of a new focus for urban competitiveness, i.e., networks of complementarities.

For practical purposes this study is fundamental to offer policy remarks for the city of Sao Paulo and its region. It is a call for urban policies to focus on what type of investments Sao Paulo should attract foreseeing long-term benefits to the city/region, what kind of companies Sao Paulo should allow to settle in the city in a way that sustainability is assured, how São Paulo can absorb and maximize the spillover effects of foreign direct investments in the city/region and which location factors Sao Paulo should focus on in order to be more attractive or competitive for future investments.

The approach presented in this thesis could be replicated throughout Brazilian/Latin American regions in order to foster policies focused on reducing regional disparities and improving urban economic performance and competitiveness through complementarities between cities.

1.6 Scope and limitations

The main focus of this study is the city of Sao Paulo. However, in order to avoid distortion and achieve more reliable and generalized results, a large sample of cities was analysed – 2186 Latin American cities. After the quantitative analysis and qualitative contributions, it was clear with which cities Sao Paulo could establish networks of competition & complementarity and, therefore, it was possible to narrow the focus and scope of this research.

Some limitations encountered were of logistical character (impossibility to carry out field work observations and interviews in some cities outside Brazil) and time required for fieldwork for more detailed qualitative research. Also, the lack of extensive data available at city level for a large sample of cities limited the analysis of some results. More in-depth study at doctoral level about Sao Paulo's competitors and collaborators in Latin America would give a much richer understanding of the problem. Furthermore, expanding the research to surveys amongst the population would contribute substantially to this investigation.

The research design, methods and preparation of instruments to be used during fieldwork are covered in detail in Chapter 3 – Research Design & Methods.

1.7 Structure of the study

CHAPTER 1: Introduction

Background information, problem statement, research objectives, main question and sub-questions, significance of the study and scope and limitations

CHAPTER 2: Literature Review

(1) City Networks and Competitiveness; (2) Coopetition - Competition and Complementarity; (3) FDI: theoretical considerations; (4) Conceptual Framework

CHAPTER 3: Research Design & Methods

Research type, approach & techniques, research questions, operationalization of variables, sample size & selection, data collection methods & analysis, validity and reliability

CHAPTER 4: Presentation of data and analysis

FDI inflows spatial distribution, economic sectors, competition, complementarity and location factors

CHAPTER 5: Conclusions and recommendations

Figure 1.3: Structure of the study

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This chapter combines insights of literature on topics related to city networks, urban competitiveness, location factors, complementarity and theoretical considerations about foreign direct investments.

2.1 City Networks and Urban Competitiveness

2.1.1 City Networks: theoretical considerations

Recently, there has been a vast plethora of literature regarding economic competition between cities across the world. In the same way, the nature and dynamics of urban systems/networks have been a topical issue over the last decades. Friedmann's original pattern of the world city system from the mid-1980s was the spearhead of the discussion about this new global hierarchy of cities (Alderson & Beckfield 2004).

Friedmann (1986) argues that globalization has imposed a new geography of centrality in the world, as cities have become decoupled from the local political geography to be in a position in the international networks of investments and trade. The author recognized that a city's position in a global urban network indicates the strength of its connections, centrality, command and power over the others. In other words, *"cities are situated in a 'system', and some cities – as a result of the position that they occupy in this system – are better situated than others* (Alderson & Beckfield 2004, p. 812).

The author also points out that the level of development of a city depends on how integrated it is to the network and this integration depends on the city's economic functions. In this sense, the linkages between cities in a network create an arrangement of world cities connected to a complex spatial hierarchy.

This new geography of places has also been explored by recent literature, like Burger et al. (2011) who define urban networks as inter-linkages of flows of activities, investments, knowledge, skills and resources between cities. In this sense, there has been a shift in focus from cities being 'space of places' towards 'spaces of flows', term first coined by Castells (1996). In this context, the success of a city in the network is due to its privileged location at the intersection of these flows of capital, goods, people and ideas (Beaverstock et al. 2002).

Since cities compete with each other mostly in form of investments (Burger et al. 2011), when cities can attract investments and capture more of the command and

control functions of the world economy, their status in the urban hierarchy improves (Friedmann 1986; Alderson & Beckfield 2004).

2.1.2 City networks and the production of uneven development

If the fate of a city is tied to its position in the international flows of investments and trade (Alderson & Beckfield 2004) and if cities gain privileged status in the global network economy according to their connections and positions in the 'global space of flows' (Castells 1996), what happens to those cities that are not connected to the world city network?

Some cities are considered key nodes in the space economy. These cities are called global/world cities and serve as *" 'basing points' in the spatial organization and articulation of production and markets"* (Friedmann 1986, p. 71), and are considered *'highly concentrated command points'* (Sassen 2001, p. 3), because they manage and control the world economy. However, there is a vast territory being excluded from the global space of accumulation.

In this context, on one hand, there are those cities that are most central in the network, while below these stand cities that are isolated regions in the world economy outside the orbit of the world city system. This paradoxical phenomenon creates, according to Friedmann (1995), a densely connected archipelago. The author argues that the world is becoming into *"a core space articulated by a small number of regional control centers and a fragmented marginalized periphery"* (Friedmann 1995, p. 41). In other words, at the same time networks are connecting cities through flows, they have emerged regional inequalities and unevenness development in the world economy.

According to Scott and Storper (2003), the world's most important trading activities occur between a relatively limited number of cities/regions in the world network, accentuating the growth of 'city-regions' that are *'scattered across the continents in an integrated world-wide mosaic"* (Scott & Storper 2003, p. 585). This is the case of emerging economies like Brazil where, according to Araujo (2000), the uneven economic development and increasing disparities across regions has led the country to become an archipelago constituted of 'islands of prosperity' and 'aisles of poverty'.

While some metropolitan regions (city-regions) are the most important loci of national growth and prosperity in Brazil, there is an exacerbation of social and interregional inequalities across the lagging areas. In Friedmann's words:

"Sao Paulo and the affluent metropolitan classes of Brazil do not require the country's disempowered poor either as producers or consumers. In this sense, I would agree, more than 50 per cent of Brazil's population is economically irrelevant and, at worst, constitutes a drain on the economy (welfare, police, prisons)" (Friedmann 1995, p.41).

In this sense, a fundamental issue for developing countries is to create and sustain regional development policies that integrate lagging regions/cities into the world city network system and ensure that regional disparities remain within the politically and socially tolerable.

2.1.3 Defining competitiveness

The term 'competitiveness' is a very broad concept and has often been used in policy circles and academic literature without a consensus of its definition and several times detached from the context of city networks. There is considerable disagreement over a common meaning and, in fact, different definitions can be envisaged according to the interest.

Storper (1997) came up with a definition for 'place competitiveness' as *"the ability of an urban economy to attract and maintain firms with stable or rising market shares in an activity while maintaining or increasing standards of living for those who participate in it"* (Storper 1997, p. 20). For Kietson et al. (2004), competitiveness (urban or regional) is the success with which places – cities or regions – compete with one another over shares of export markets or over attracting capital or workers.

Scholars in more recent literature gave also an attempt to defining competitiveness. According to Onsel et al. (2008), a nation's competitiveness refers to its position in the international marketplace compared to other nations of similar economic development. The authors state that:

"The competitiveness of a nation is defined as the degree to which it can, under free and fair market conditions, produce goods and services that meet the standards of international markets while simultaneously expanding the real income of its citizens, thus improving their quality of life. This includes the set of institutions, policies, and factors that determine the level of productivity of a country" (Onsel et al. 2008, p. 222).

Although productivity and competitiveness are related terms, they have different meanings. The former refers to the internal capability of an organization (or city, region, nation), while competitiveness is related to the relative position of an organization vis-à-vis its competitors (Onsel et al. 2008).

The concept of urban competitiveness, however, entails a lot of controversy. Economists, like Paul Krugman (1994; 1996), for instance, have questioned the extent to which it is meaningful to carry the concept of competitiveness to the aggregate national economy, as Onsel et al. (2008) suggested. Krugman defends the idea that places (countries, regions or cities) do not compete with each other, but companies do. For him, the main reason for that is because places cannot go out of business.

Nevertheless, this research reinforces the idea that cities and regions do compete against each other in the sense that those cities that are able to provide a better

business environment and more alluring urban qualities attract more international capital and private companies to establish business in the city. Malecki (2004) also contributes to this debate by analyzing Camagni's (2002) arguments for competitiveness, stating that *"regions and localities do compete for investment, as the chosen location of workers and as the destination of tourists – all of which will be made (either completely or partially) in some and not in others"* (Malecki 2004, p. 1102).

From another perspective, some authors argue that urban competitiveness is primarily related to what flows through cities instead of what is fixed within them (Castells 1996; Derudder et al. 2003; Wall 2009). Therefore, 'urban competitiveness' should be considered as a 'networked phenomenon' (Beaverstock et al. 2002) in which 'no city develops in isolation' (Storper 1997), but rather, each is part of a system of cities (Wall 2009).

2.1.4 Location factors: determinants for urban competitiveness

Measuring city competitiveness is an attempt to estimate a city's relative economic strength and potential compared to others in the network. The indicators that explain why some companies and multinationals prefer to invest and settle in some cities rather than others are related to the urban qualities, also called location factors, that are unique in each city. In practice, location factors are associated with locations, cities, regions, nations and represent the basis of the location decision of firms. The following figure illustrates the main determinants of urban competitiveness, especially contextualized to Brazilian cities:
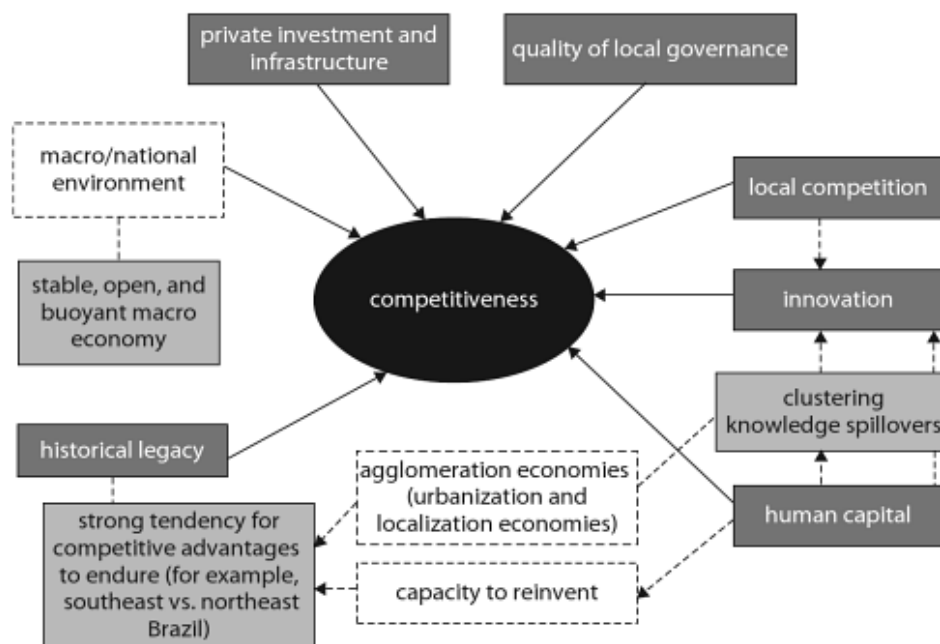
Figure 2.1: Determinants of urban competitiveness
Source: Competitiveness and Growth in Brazilian Cities (Word Bank 2010, p. 27).

As illustrated by the figure, these indicators range from macroeconomic conditions, market size, strategic location, industrial structure, human resources, alluring living conditions, modern infrastructure, levels of education, favorable business environment to a number of other factors that allow enterprises to maximize benefits when choosing one city to start doing business.

Cities are constantly trying to improve these location factors in order to achieve a better competitive position. For Sassen (2002), it is the city's task to create an innovative environment capable of attracting individual, business and investments and, therefore, become more successful in the network. In other words, *"investment will flow to – and exports will flow from – those cities that provide better educated and higher skilled workers, globally linked infrastructures, and flexible and responsible public and private organizations"* (Rondinelli et al. 1998, p.73).

However, a city's level of competitiveness relies not only on the location factors that are fixed in the cities, but also on the scope and nature of its connections with other cities and its investment flows (Friedmann 1986; Wall 2009). In other words, the competition involves a complex relationship between the built environment, economic functions and location factors, i.e., *'Form follows function follows flow'* (Wall 2010, p.57).

In summary, the literature in this section has highlighted that it is crucial to understand the intrinsic relation between urban competitiveness and city networks, once the more competitive the city is, the more connected and the higher the power and command it has over the other cities in the world economy. In the same way, as the literature points out, the better the position of the city in the global investment network, the higher its levels of development and competitiveness.

2.2 Coopetition: Competition and Complementarity between cities

Most of the literature about competition between cities neglects the fact that cities also have relations of cooperation and not only competition. The term 'coopetion', as a relatively new paradigm for competition between cities, was originally coined in the 1980's by Raimond Noorda (Brandenburg & Nalebuff 1996) and, at its simplest, means simultaneous relations of competition and cooperation between two or more rivals competing in the global market (Brandenburg & Nalebuff 1996). Recent literature (Luo 2007) also points out that coopetition is the relationship between global rivals with an inclusive interdependence with cooperation and competition as two separate yet interrelated continua.

2.2.1 Competition

In order to explain the relations of competition between cities within a network, Burger et al (2011) and Wall (2009) came up with a model (Figure 2.2) to measure competitiveness of cities that relates their degree of competition and similarity between the economic activities. For the authors, 'true' or perfect competition between cities in a network entails that they follow some conditions, such as: (1) sectoral similarities of investments, (2) functional similarity and (3) geographical proximity. For instance, cities B and C; E and F are considered true competitors once they satisfy these conditions and, therefore, have the same companies/cities investing in them. In the same way, Scott and Storper (2003) argued that competition between agglomerations occurs when producers in different places operate on the same markets.
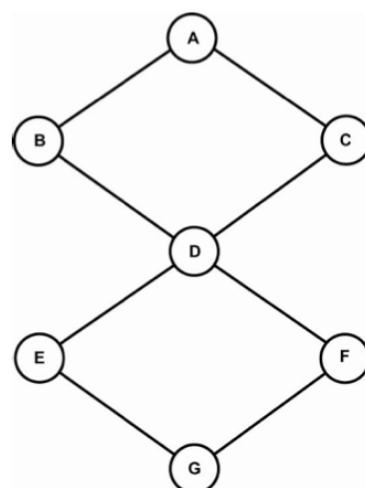
Figure 2.2: Diagram illustrating the competition between cities within a network
Source: Wall 2009, p.131

2.2.2 Complementarity

Previous studies pay little attention in identifying which cities are competing with each other over which types of investments (Burger et al. 2011). Under the coopetition scheme, rivals compete in some areas whereas cooperate/complement in others in the network. In this sense, an alternative approach to look at urban competitiveness in a network is by understanding complementarity between cities.

In order to have this complementarity, cities must have dissimilar sectors of investments, functional dissimilarity and geographical proximity (Burger et at. 2011) because a city cannot compete in all sectors of the economy with all the cities in the network. Meijers (2006) also established two preconditions that cities need to satisfy in order to be complementary in a network: 1) differentiation in urban functions (2) the geographical markets of demand for these urban functions must at least partially overlap. For instance, one city specialized in financial services can complement another city which is specialized in transportation and logistic services.

In this context, Burger et al (2011) and Wall (2009) came up with a theoretical framework that relates competition and complementarity of location factors and economic activities between cities. For the authors, true competition between cities entails that they have similarities in the economic activities (refer to Figure 2.2). In the same way, the more dissimilar the economic activities between cities, the higher the density of collaboration/complementarity within the network. A nexus of complementary relations between cities could revive fallen cities without threatening the status of the others in the network. The relations with region or cities with similar location assets and investment portfolios encourage competition, while those relations between places with dissimilar characteristics are cooperative.

Therefore, in order to improve cities' competitive status through different scales, they cannot only compete or copy one another, because *"alongside competitiveness there is cooperation, with world cities working together to maintain flows through the network"* (Beavestock et al. 2002, p. 115). Other scholars like Dunning and Narula (2004) have also argued that cities are becoming aware that they have more advantage when attracting investments that complement their existing economic functions to profit most from spillovers.

2.2.3 Regional Complementary Network: the key to economic development

Owing much to Michael Storper (1995b; 1997) who first coined the term 'region' as a new geographical category and scale of organization of economic and social life, recent authors have argued that cities can also have complementary relations within a region in order to achieve economic development and growth and create competitive advantage. There is evidence and a lot of discourses suggesting that regions, considered as spatial configurations, are constituted through spatiality of flow,

porosity, and connectivity (Harrison 2010). Furthermore, regions are considered a crucial element for development, as Scott and Storper (2003) argue:

"The role of selected regions [are seen] as springboards of the development process in general, and as sites of the most advanced forms of economic development and innovation in particular, where by the term 'region' we mean any area of subnational extent that is functionally organized around some internal central pole. Development does not depend on macroeconomic phenomena alone but is also strongly shaped by processes that occur on the ground, in specific regions of the type we have just defined. (…) Cities and regions, in other words, are critical foundations of the development process as a whole" (Scott & Storper 2003, p. 580).

The regional complementary network idea is related to the 'polycentric network of cities' developed my Meijers (2006) in which *"each city performs a distinct, specialized role and provides specialized services, also to the inhabitants and businesses in the other cities in the network"* (Meijers 2006, p.1). In a regional complementary model, when cities develop specialized and complementary assets, they avoid destructive competition and war between places and also promote regional economic development.

In this sense, cities need to create complementary connections to others in order to attract more investments, because as urban economies become more specialized, they require horizontal links rather than only vertical links with larger cities (Beaverstock et al. 2002). Cities do not have power in isolation and, therefore, need a well-structured local and regional network in order to be more competitive in the global market.

The idea of regional complementarity is also very much related to the concepts of clusters and competitive advantage introduced by Porter (1998) through the 'Porter's Diamond' theory in which: *"regional competitive advantage derives from the presence and dynamics of geographically localized or clustered activities among which there is intense local rivalry and competition, favorable factor input conditions, demanding local customers, and the presence of capable locally based suppliers and supporting industries"* (Kietson et al. 2004, p. 994).

Storper (1995a) also contributed by arguing that flows of tacit knowledge between firms, technical spillovers, networks of trust and cooperation and systems of norms and conventions also contribute to the competitive performance of a cluster. The more intense the interaction between these elements, the more productive and competitive the cluster is. In the same way, clusters of cities in a regional scale can enhance regional competitive advantage due to geographically localized, specialized and complementary cities. But in order to accomplish this, cities need a supportive regional policy, which facilitates and markets the complementarity and competitiveness in the cluster.

Once it is in the city where companies are based, the relations of coopetition between specialized cities, similarly to what happens between firms improve their ability to

compete with each other, through regional competitive advantage over others (Burger et al. 2011). In Scott and Storper's (2003) words: *"dense regional agglomerations of economic activity are major sources of growth in economies at virtually every stage of development today, as suggested by the worldwide expansion and spread of industrial clusters"* (Scott & Storper, 2003, p. 580).

Thus, it is clear that cities compete and cooperate, therefore, they should be complementary to enable competitive advantage and attract more investments. A clear understanding of the relations of competition and complementarities within an urban system enables strategic planning and regional policies formulation earmarked to a new type of competitive advantage and long-term economic growth and development (Malecki 2004).

2.3 Foreign Direct Investment Flows: theoretical considerations

Given the expressive growth of foreign direct investment (FDI) flows in the world during the last decades, the analysis of FDI has been attracting more attention in the economic literature. Empirical researches on FDI have focused on several topics, such as: determinants of FDI allocation, spatial distribution of investments in a region or country (Blanco 2012; Ng & Tuan 2006), the spillover effects and absorptive capacity (Narula & Lall 2006; Portelli & Narula 2004;), the relation between FDI and economic development and/or growth (Alfaro et al. 2010; Durham 2004; Ng & Tuan 2006; Narula & Driffield, 2012), FDI flows and urban competitiveness (Wall 2009; Pajevik 2011; Burger et al. 2011) and others.

The literature points out the intrinsic relationship between investments allocation and location factors, once the qualities found in a city are key determinants for its degree of attractiveness for business, people and investments. Furthermore, empirical evidence compiled in recent years (Xu 2000; Narula & Lall 2006) stresses the importance of recipient economies' absorptive capacity for foreign direct investments and location factors as key determinants for decisions of investments allocation in cities.

Another common topic within policy circles is the belief that FDI enhances the productivity of host countries and boosts economic growth, once FDI may not only provide direct capital financing but also create positive externalities by internalizing foreign technology and know-how. Blanco (2012), analyzing the spatial distribution of FDI specifically in Latin America, contributes to the debate by stating that FDI inflows into a country or city promote growth through its effects on productivity and capital accumulation, especially in less developed economies.

On the other hand, some empirical studies (Alfaro et al. 2010) point out that the response of economic growth to FDI depends on the country's capacity to capture FDI externalities. The authors argue that economic growth through FDI might be limited by local conditions, such as the development of local financial markets or the educational level of the country. Alfaro et al. (2010) also highlight the importance of local conditions such as market structure and human capital, the so-called absorptive capacities, for generating the positive effect of FDI on growth.

On the same note, Burger et al. (2011, p. 22) argue that *"foreign investments are not, by definition a catalyst for economic growth"*. The authors stress that, for instance, sustainable development could be achieved by attracting investments that complement the economic structure of a region. In contribution to the debate, Narula and Lall (2006) point out that the presence of a great amount of investments and its externalities does not mean that the domestic economy can internalize them, or that investments are significant in quantity or quality.

In terms of FDI and development, in general, there is a strong correlation between a city's development levels and FDI inflows but this is explained primarily by developed world cities that capture most investments. Cities in developing countries do not necessarily have this strong correlation with FDI and development, for example the city of Sao Paulo.

The literature points out that in order to develop cities it is necessary to understand what goes beyond the cities' municipal boundaries and understand the relative importance and meaning of the city in a regional, national and global scale. A city that is more connected to a world system network of investments could be developed or not. The absolute amount of investments inflows into a city is not a rule of thumb to affirm that the city is developed. It is necessary to look at other indicators, such as the sustainability of the companies establishing business in the city, the absorptive capacity the city has to internalize the knowledge and externalities provided by the inward investments, levels of education and literacy in the city, income polarization, etc. The following diagram summarizes what the literature has highlighted:
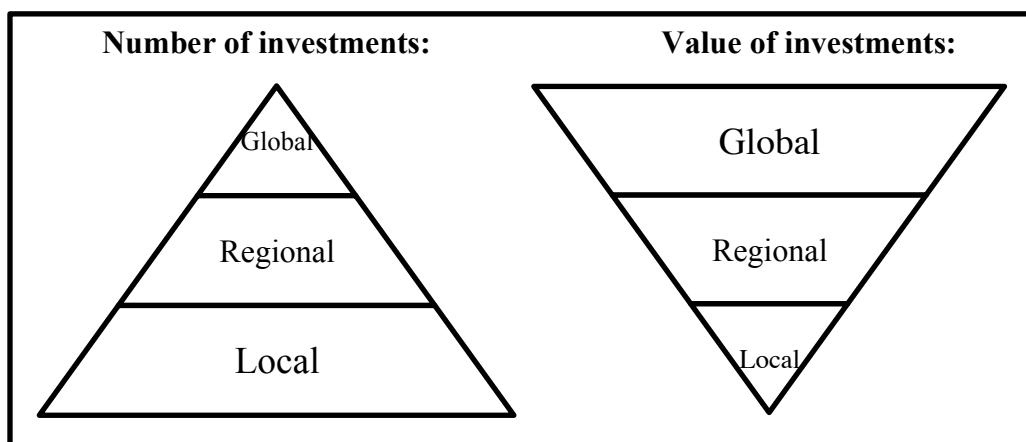
Figure 2.3: Diagram illustrating the number and value of investments through different scales. (Elaborated by the author)

The diagram shows that there are different ways of understanding the number and value of investments through global, regional and local scales. The figure on the left represents the number of investments received through different scales. It means that in order to stand at a good position in the global network of investments, cities must have a strong regional foundation. In the same way, in order to be powerful within a region, cities also need local power for investments attraction. Those cities that have a privileged location at the global investment network are the ones with very strong local and regional foundation, the so-called world cities.

However, the number of investments does not always account for its value, as the figure on the right illustrates. The presence of a great amount of investments and its externalities does not mean that the domestic economy can internalize them, or that investments are significant in quantity or quality (Narula & Lall 2006). In this sense, the total number of investments received by a city does not imply that those

investments have a high value. For instance, a city can receive a number of micro investments but the total value of those is not so significant. In the same way, one single company can invest a huge amount of investments in one city that has not received a significant number of investments.

The two figures exhibits the complexity of the investment flows between cities and regions networks, and not only the number of investments directed to a city is relevant, but also the value. It is also clear that a region is more powerful in attracting investments than a city in isolation and the value of the investments at global and regional level is higher than the value of the micro investments at local level. Therefore, when cities have a strong local and regional foundation they can attract more investments, improve their absorptive capacity and stimulate long-term growth.

As mentioned by Villaverde and Maza (2011) most empirical studies on FDI have focused on classical FDI determinants at national level, such as: macroeconomic indicators, exchange rates, taxes, political risks institutions, trade effects, etc. However, most of the literature curiously neglects the assessment of this issue from a regional perspective, for which not all the location factors as aforementioned are relevant.

Since the spatial distribution of FDI across regions at global and national scale are uneven, it is crucial that cities change the focus to build networks of not only competition but also complementarity to compete for FDI and domestic investments and, therefore, absorb the spillovers and promote regional economic growth. The literature shows that cities are becoming more aware of the advantages when they attract investments that complement their existing economic functions in order to profit most from spillovers (Dunning & Narula 2004).

When a city is embedded in a regional network of cooperation and complementarity, they can cope with the externalities and effects of external investments much easier than if they were outside the network, through flexibility and mutual proximity. In this sense, absorptive capacity, which is the ability of domestic actors (cities/firms) to internalize and capture knowledge and externalities that exists elsewhere (Narula & Lall 2006) may increase when a city is involved in a regional network of collaboration.

2.4 Conceptual Framework

The theories presented so far point out the need of a new model to understand urban competitiveness different than the traditional competitive advantage approach. This study comes up with a conceptual framework (Figure 2.4) in which cities are connected according to flows of investments to specific sectors of their economy. The agglomeration of these sector specialized cities compose a regional complementary network that has the potential to attract greater amount of investments, enhance urban competitiveness and promote economic development/growth.
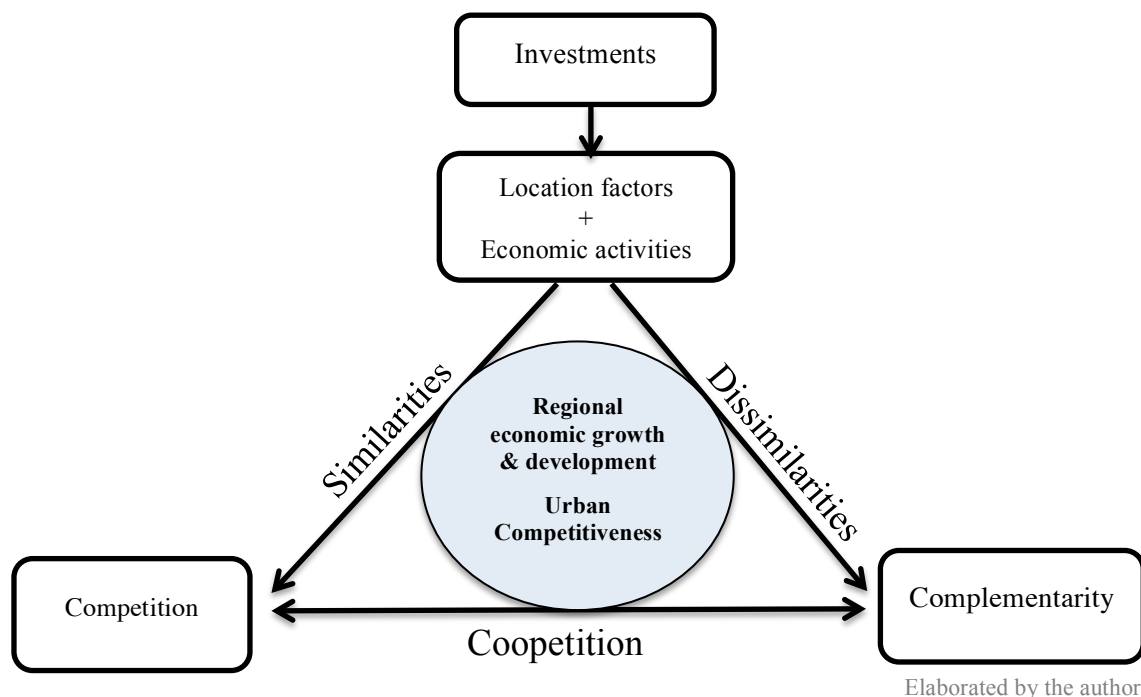
Figure 2.4: Conceptual Framework: Regional Complementary Network Model

The model illustrated in Figure 2.4 shows that in an urban network system investments flow into cities according to their location factors and economic activities. The similarities in this structure encourage competition between cities, revealing their true competitors. On the other hand, the more dissimilar the investment portfolios between cities, the more complementary they are.

By establishing relations of coopetition in which cities compete and collaborate with each other and rivals in the network, cities increase their absorptive capacity of investments and externalities generated by proximity, attract more investments that complement their existing economic functions and, consequently, leverage their economic performance and competitive status in a multi-scale level.

The importance of a spatial distribution of specialized cities in a network of complementarity relies of the fact that policy remarks can be drawn to the cities. For

instance, Sao Paulo can achieve sustainable economic development and become more competitive in Latin America and, ultimately, the global market if focused not only on competition, but also complementarity with its competitors. Furthermore, regional economic disparities can be reduced with the replication of this model at a national scale and even at a macro-regional level – Latin American cities.

CHAPTER 3: RESEARCH DESIGN & METHODS

3.1 Research type, approach and techniques

This is an explanatory/relational research in which the primary purpose is to explain how events occur in order to build, explain or extend a theory, by discovering relationships between multiple variables (Yin & Campbell 2002). In this context, supported by the theories presented on chapter 2 on urban competitiveness, city-networks and complementarities, this research seeks to discover the relationships between investments, location factors and economic sectors in order to understand competition and complementarity between cities.

This investigation is based on quantitative and qualitative approaches. The reason for quantitative approach is because a large representative sample in form of hard data (foreign direct investments) was analyzed through statistical analysis methods (regression analysis and location quotient) and softwares (SPSS and Ucinet Software). The quantitative data gave the framework and direction for the qualitative approach. Therefore, a number of interviews were carried out with key respondents in order to understand their perceptions of the phenomenon for a richer understanding of the problem.

The techniques applied in this research consisted of analysis of existing statistical database, case study and fieldwork. According to Yin and Campbell (2002, p.13) a case study is *"an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident"*. The case study and fieldwork were conducted in the city of Sao Paulo.

3.2 Revised Research Question

3.2.1 Main research question

How can Sao Paulo enhance its competitive and complementary network in Latin America?

3.2.2 Specific research questions

- What are Sao Paulo's leading economic sectors that most attract foreign direct investments?

- Who are Sao Paulo's competitors and true competitors in Latin America in attracting foreign direct investments?
- In which economic sectors can Sao Paulo establish a complimentary network with competitors?
- What location factors are most significant for investments to Sao Paulo and its competitors?

3.3 Operationalization: concepts, variables and indicators

In order to achieve a clearer understanding of the research design, the five specific research questions were materialized in concepts, variables, indicators and data collection methods and analysis:

Specific research questions	Concepts	Variables	Indicators	Data Collection Methods and sources	Data Analysis Methods
What are Sao Paulo's leading economic sectors that most attract foreign direct investments?	Economic functions	FDI inflows	-Value of FDI (USD million) -Number of projects	*Secondary data:* -FDI markets.com database (Financial Times) - Orbis database - Interviews (Public sector)	-Analysis of existing database - Use of Microsoft Excel for charts - Comparison with qualitative inputs
Who are Sao Paulo's competitors and true competitors in Latin America in attracting foreign direct investments?	Competition	FDI Inflows	-Total value of FDI (USD) -Number of projects	*Secondary data:* - FDI markets.com database (Financial Times) - Orbis database *Primary Data:* - Interviews (Public sector)	- City-network analysis -Elaboration of network diagrams at Ucinet Software - Comparison with qualitative inputs
	True competition	Sectoral FDI Inflows	-Sectoral similarity in FDI inflows -Functional similarity of investments - Geographical Proximity		
In which economic sectors can Sao Paulo establish a complimentary network with competitors?	Regional complementary network	Sectoral FDI inflows	- Sectoral dissimilarity in FDI inflows - Functional dissimilarities - Geographical proximity	*Secondary data:* - FDI markets.com database - Orbis database *Primary data:* - Interviews (Public sector and selected companies)	- Location Quotient Analysis Method -Elaboration of diagrams at Inkscape software - Comparison with qualitative inputs
What location factors are most significant for investments to Sao Paulo and its competitors?	Location factors	Location factors	Economic, Social and Environmental indicators/indexes for Latin American countries	*Secondary data:* World Bank indicators, United Nations Report and World Economic Forum (Global Competitiveness Report Indicators) *Primary Data:* - Interviews (Public sector and selected companies)	- Regression analysis in SPSS - Comparison with qualitative inputs

Table 3.1: Operationalization of concepts, variables, indicators, data collection methods and analysis

3.4 Sample size and selection

The general sample of this research at a macro-level refers to all the Latin American cities receiving foreign direct investments and source cities over the period of 2003-2011 representing a sample of 2186 cities. However, the main focus of this study is the city of Sao Paulo.

The sample size for interviews was of 9 key respondents based on a non-random and purposive selection. For the private sector, the companies were chosen according to the preliminary results of the quantitative data, which gave some direction of the sector of the industries interviewed. A semi-structured set of questions (Appendix I) guided the discussion. It is important to point out that the interviews were not the central focus of this thesis but rather a supporting element that contributed to the statistical findings. In this sense, key representatives[1] of the following institutions/agencies and companies were interviewed:

- Sao Paulo State Secretary of Planning and Regional Development.

- Secretary of Municipal Government of the City of Sao Paulo.

- 7 selected companies (headquarters) in the following sectors: IT (2), ICT & Electronics (2), Software (2) and Environmental Technology.

3.5 Data collection methods and analysis

Primary data collection consisted of semi-structured interviews and fieldwork observations. Secondary data collection consisted of the Financial Times & Orbis Database – FDImarkets.com – from January 2003 to December 2011 – for Latin American cities, detailing the nature of foreign direct investments going into the cities, the parent and investing company, the clusters or economic sectors invested in and jobs created.

Furthermore, desk research was also part of the secondary data method collection in this study. Based on this type of data, it was possible to identify in which sectors Sao Paulo has received more investments. For this, Microsoft Office Excel was used to generate charts comparing Sao Paulo, Brazil and Latin America.

In order to understand the spatial distribution of FDI inflows in Latin America, the position and connectivity of Sao Paulo in the investment network at multiple scales, city-network diagrams were produced using the *Ucinet Software.*

For the complementarity analysis, the location quotient method was applied in order to find in which economic sectors Sao Paulo could establish a network of

---

[1] The confidentiality of the key respondents was kept confidential and interview transcripts are available upon request (in Portuguese).

complementarity with competitors. A diagram generated in the software Inkscape presented a summary of Sao Paulo's coopetitive network in Latin America.

The data for location factors was collected from three different sources (World Bank indicators, World Economic Forum – Competitiveness Report and United Nations Reports). The relationship between the investments and the location factors were analysed through multiple regression in *SPSS*.

3.6 Validity and reliability

Case studies usually rely on multiple sources of evidence, with data needing to converge in a triangulation fashion (Yin & Campbell 2002). In this sense, triangulation was carried out to ensure validity, credibility and reliability of this research. In order to do that, different sources (interviews, analysis of database, field work observations, desk research) and methods (regression, location quotient, city-network analysis) were used to collect and analyze the data.

Reliability can be defined as *"the degree of consistency between two measures of the same thing"* (Black 1999, p. 73). Therefore, reliability was reached through gathering the written material studied together with the official sourced information provided by the qualitative research. Furthermore, transcripts of the interviews can be accessed upon request in case of further inquiries.

CHAPTER 4: PRESENTATION OF DATA AND ANALYSIS

4.0 Introduction

The following pages present the data collected and analysed in order to answer the specific research questions of this study. The quantitative and qualitative data are clustered and analysed at variable and concept levels, i.e.: (1) FDI inwards and leading economic sectors; (2) competition; (3) complementarity and (4) location factors. The analysis was carried out through a multiple scale perspective (from macro-regional scale to city level).

4.1 Foreign Direct Investment flows and economic sectors

The FDImarkets.com & Orbis database represents roughly 8,994 investments for the period of January 2003 to December 2011 between Latin American cities and cities in the rest of the world (2186 cities), amongst those 277 were Brazilian cities. This database also contains the investing and parent companies, the amount of capital investment (in USD million), the economic sector invested in and number of jobs created. From this database, it was also possible to generate charts in Microsoft Office Excel and Ucinet city-network diagrams to analyze the spatial distribution of FDI inflows to Latin American cities and, more specifically, to Brazil and Sao Paulo.

4.1.1 Latin America and Brazil

From the data collected and analysed it was possible to observe the fast-growing flows of inward foreign direct investment that Latin America and Caribbean region has presented over the last 9 years. The FDImarkets.com database reveals that with a total amount of USD 941,880.84 (million) invested into 17 main economic sectors, the region has shown great resilience to the international financial crisis taking on a great share of FDI in the world, especially in the sector of Physical Science (chart 4.1).

Brazil, Latin America's largest economy, has received a total of 2488 projects of capital investments, i.e., roughly USD 32,9287.11 (million), representing 34.9% of Latin America region total investment. The chart below showcases the economic sectors of inward FDI into Brazil in comparison to Latin America.
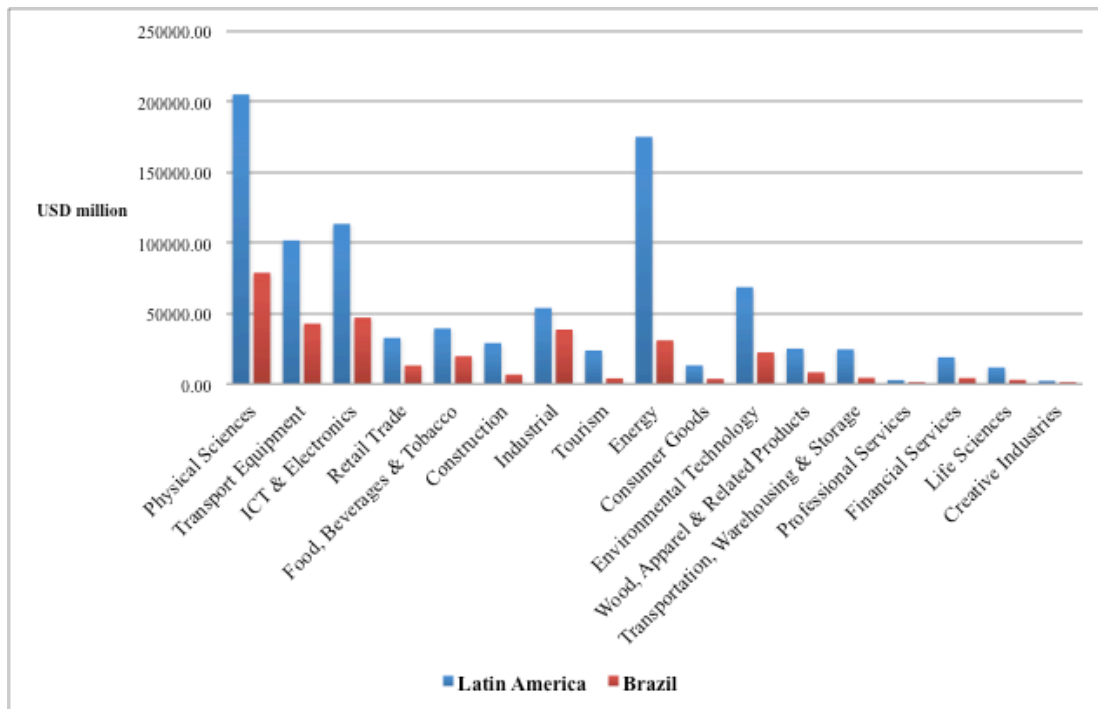
Chart 4.1: Economic sectors of inward FDI (USD million) in Latin America and Brazil, as extracted from FDI market.com

As the chart showcases, the sectors that most received inward FDI (in USD million) in Latin America were Physical Sciences with a share of 205,307.98 (22%), followed by Energy, 175,298.80 (19%); Information and Communication Technology (ICT) & Electronics, 113,555.52 (12%); and Transport Equipment, 101,796.39 (11%). In the same way, Brazil had more investments in Physical Sciences, 78,886.43 (24%), ICT & Electronics, 47,050.4 (14%) and Transport Equipment, 42,813.98 (13%).

However, the results shown on this chart are related to the value of the investments in US dollars, not necessarily the sectors with the greatest number of projects or jobs created. The following table showcases the investment details in Latin America and, more specifically, in Brazil.

Economic Sectors	Number of Projects		Capital Investment (US$)		Jobs Created		Top investing source countries	
	Latin America	Brazil	Latin America	Brazil	Latin America	Brazil	Latin America	Brazil
Physical Sciences	757	225	205307.98	78886.43	417350	152164	Canada. USA, UK	USA, Canada, Germany
Transport Equipment	909	304	101796.39	42813.98	411358	160656	USA, Japan, Germany	
ICT & Electronics	1542	462	113555.52	47050.4	281412	93576	USA, Spain, Japan	
Retail Trade	823	132	32738.12	13119.61	231044	45213	USA, Spain, France	USA, France, Portugal
Food, Beverages & Tobacco	552	193	39409.60	19693.76	157940	79344	USA, Switzerland, Spain	USA, Switzerland, Germany
Construction	246	69	29034.37	6701.77	153501	44379	USA, Spain, France	USA, Portugal, Spain
Industrial	462	162	53893.52	38531.39	141965	90573	USA, Germany, Japan	
Tourism	399	66	23739.80	4044.45	137719	23091	USA, Spain, France	USA, France, Portugal
Energy	524	132	175298.80	30900.26	129680	32046	USA, Spain, Canada	USA, UK, Norway
Consumer Goods	313	75	13186.77	3690.74	114575	26799	USA, Spain, Japan	
Environmental Technology	318	98	68662.89	22371.58	107693	41558	USA, Spain, France	
Wood, Apparel & Related Products	209	64	25034.93	8305.99	99721	23751	USA, Finland, Brazil	USA, Finland, Italy
Transportation, Warehousing & Storage	282	55	24549.51	4430.76	78759	10091	USA, Germany, Hong Kong	USA, UK, Netherlands
Professional Services	399	104	2758.25	986.62	78142	14166	USA, Spain, UK	
Financial Services	664	181	18938.62	4277.63	62271	16012	USA, Spain, UK	USA, Switzerland Spain
Life Sciences	343	84	11701.95	2947.94	59896	15725	USA, Germany, India	USA, Germany, Japan
Creative Industries	251	82	2273.82	533.80	18188	2995	USA, Spain, UK	
Total	8993	2488	941880.84	329287.11	2681214	872139		

Table 4.1: Table showcasing FDI details in Latin America and Brazil (2003-2011) as extracted from FDI market.com

As seen from the table above, the sectors with the highest number of investments in Latin America are ICT & Electronics (1542), Transport Equipment (909) and Retail Trade (823). Similarly, in Brazil, ICT & Electronics (462), Transport Equipment (304) and Physical Sciences (225) had the majority of FDI projects. The main investing source countries in these sectors are: USA, Spain, Japan, Germany and France.

Therefore, it is clear that Brazil and Latin America have both received higher number of investments in the sectors of ICT & Electronics and Transport Equipment, but in terms of value of investments, both have received higher amounts in the Physical Science sector.

4.1.2 Sao Paulo

From January 2003 to December 2011, the city of Sao Paulo received a number of 1002 projects of capital investments, i.e., a total value of USD 77,689.41 million. Comparing to Latin America and Brazil's total value of capital investments over the 9-year period, Sao Paulo took on 8.24% and 23.59% of the investments, respectively. The city was also responsible for 11.14% of the total number of investments (projects) in Latin America and 40.27% of Brazil's. The following charts exhibit Sao Paulo's FDI inflows (value in USD million) compared to Brazil and Latin America and Sao Paulo's leading economic sectors for inward FDI.
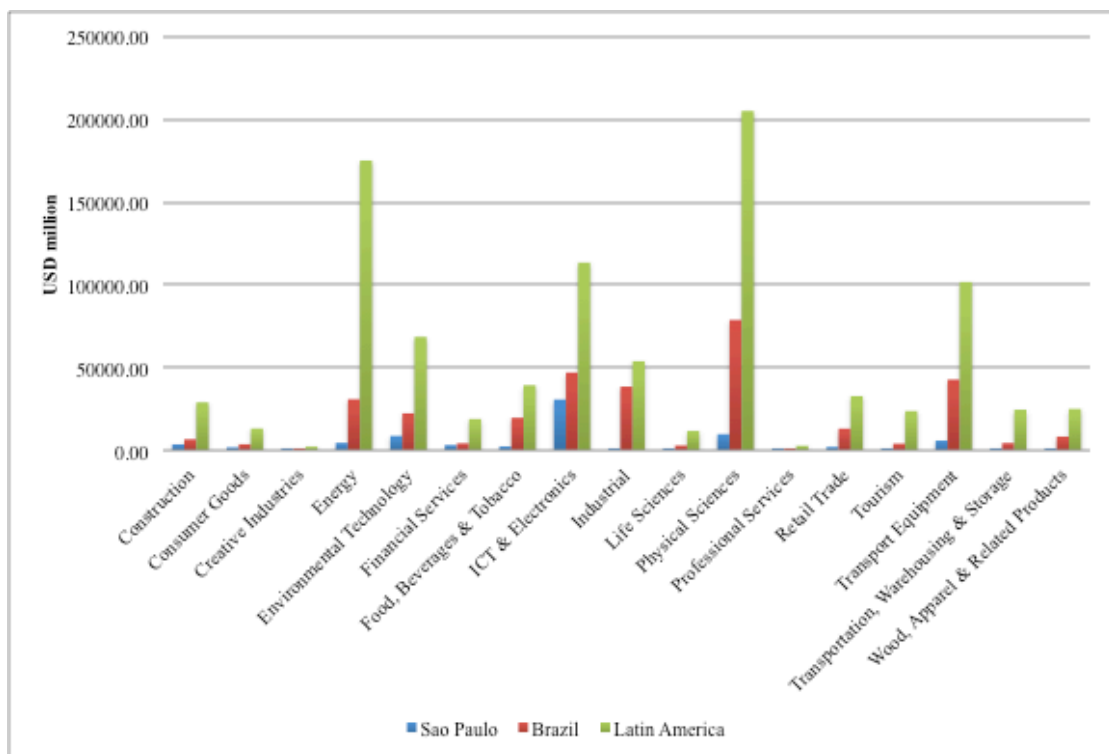
Chart 4.2: Sao Paulo's FDI share (value of investment in USD million) compared to Brazil and Latin America (2003-2011), as extracted from FDI market.com.
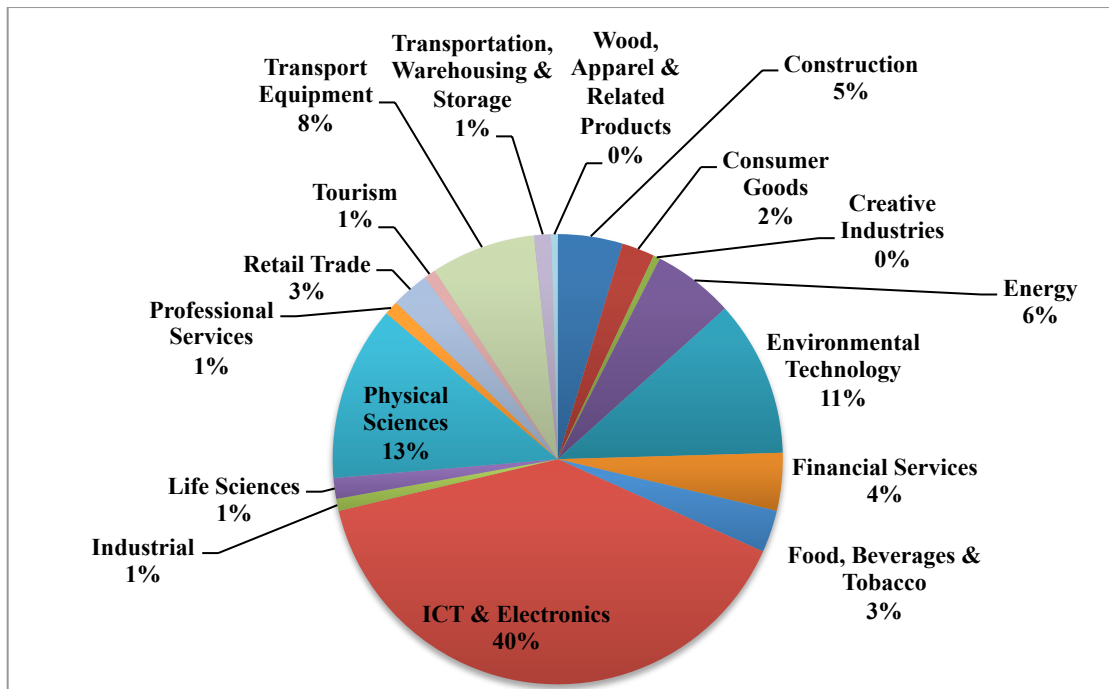
Chart 4.3: Leading economic sectors of Foreign Direct Investments (USD million) in Sao Paulo (2003-2011), as extracted from FDI market.com.

From chart 4.2 it is clear that, when compared to a national and macro-regional scale, Sao Paulo has not received as many investments in the Physical Science and Energy sectors, but shows an impressive share of investments in the ICT & Electronics sectors compared to Brazil.

Both charts illustrate that the ICT & Electronics is the leading economic sector of Sao Paulo that attracts more investments (USD 30744.65 million), which represents 40% of the investments followed by Physical Sciences (13%) and Environmental Technology (11%). Sectors like Consumer Goods, Creative Industries, Wood Apparel & Related Products, Transportation, Warehousing & Storage, among others, had the least share of investments in the city.

The database revealed that most of the investments in the ICT & Electronics sector were directed to Software & IT services and headquarters activities in the city. In the Physical Science sector, most of the investments went to Sales, Marketing & Support and to manufacturing in Environmental Technology.

The qualitative data contributed with other findings. As the coordinator of the Sao Paulo State Secretary of Planning and Regional Development stated:

"Sao Paulo has a very diversified investment profile. However, the city still seeks for value-added industries of high technology. Although the industries plants are not based inside the city anymore, Sao Paulo aims to attract high-technology industries with their headquarters based on the city. Therefore, I believe the foreign investment is still pouring into the added-value industry because there is opportunity for technologic development and scientific capacity in the city".

From the municipality's point of view, Sao Paulo has a globalized and diversified economy and is specialized in the commerce and service sector. However, the city's competitive strategies have been focused on attracting investments to the business tourism sector and international events.

In summary, it is very clear from this multiple scale analysis that the city of Sao Paulo, as well as Brazil and Latin America region have been following the trend to receive more investments (number and value) in the sectors of ICT & Electronics, Physical Sciences, Environmental Technology and Transport Equipment. And, from the qualitative data, Sao Paulo's focus is on International events.

4.2 Competition

This section presents the main findings related to the second specific research question of this study. In the following pages a multi-scale perspective of Sao Paulo's position in the investment network in Latin America and Brazil and Sao Paulo's competitors and true competitors is presented. In order to illustrate the spatial distribution of FDI flows into Latin American cities, Ucinet network maps were generated to showcase the main source and destination cities, as well as their connectivity, position and investment relationships with other cities in the network.

4.2.1 Sao Paulo's network of competition in Latin America

The following diagram (Figure 4.1) illustrates the cross-border investment flows between cities in Latin America & Caribbean region (blue nodes) and their investing source cities (red nodes) around the world. The linkages (in black) represent the total investments (in number of projects) taking place between the cities in different economic sectors. The bolder the line, the stronger the investment flows between the cities. For instance, Sao Paulo has investment relations with Houston, Lisbon, Amsterdam, Tokyo, Toronto, Barcelona, Madrid, however, the boldest lines run between Paris, London and New York. This means that, although these cities also invest in Mexico City, Bogota, Buenos Aires, Santiago, Lima and Rio de Janeiro, they maintain stronger investment relations with Sao Paulo. In the same say, according to the thickness of the lines, Madrid invests more in Mexico City than Sao Paulo.

The direction of the arrow also points out the direction of the investment. In this sense, it is clear from the diagram that Sao Paulo again has the majority of inward investments in Latin America urban network. Also, the larger the city's node, the higher the city's in degree centrality, i.e., the higher the number of connections with the other actors in the network, therefore, the more 'attractive' the city is for investments. Doing a degree centrality analysis (Appendix II) on Ucinet Software, it was found that Sao Paulo had the greatest share and in degree of investments in Latin America followed by: Mexico City, Buenos Aires, Santiago, Bogota, Rio de Janeiro, Panama City and Lima. This number takes into account the number of projects, not the total amount in USD of capital investment into these cities. A great amount of capital investment does not necessarily mean the city is attractive or very competitive compared to others. For instance, one single company could invest a great amount of money in a specific economic sector in a city and that does not mean the city has a great number of projects invested in.
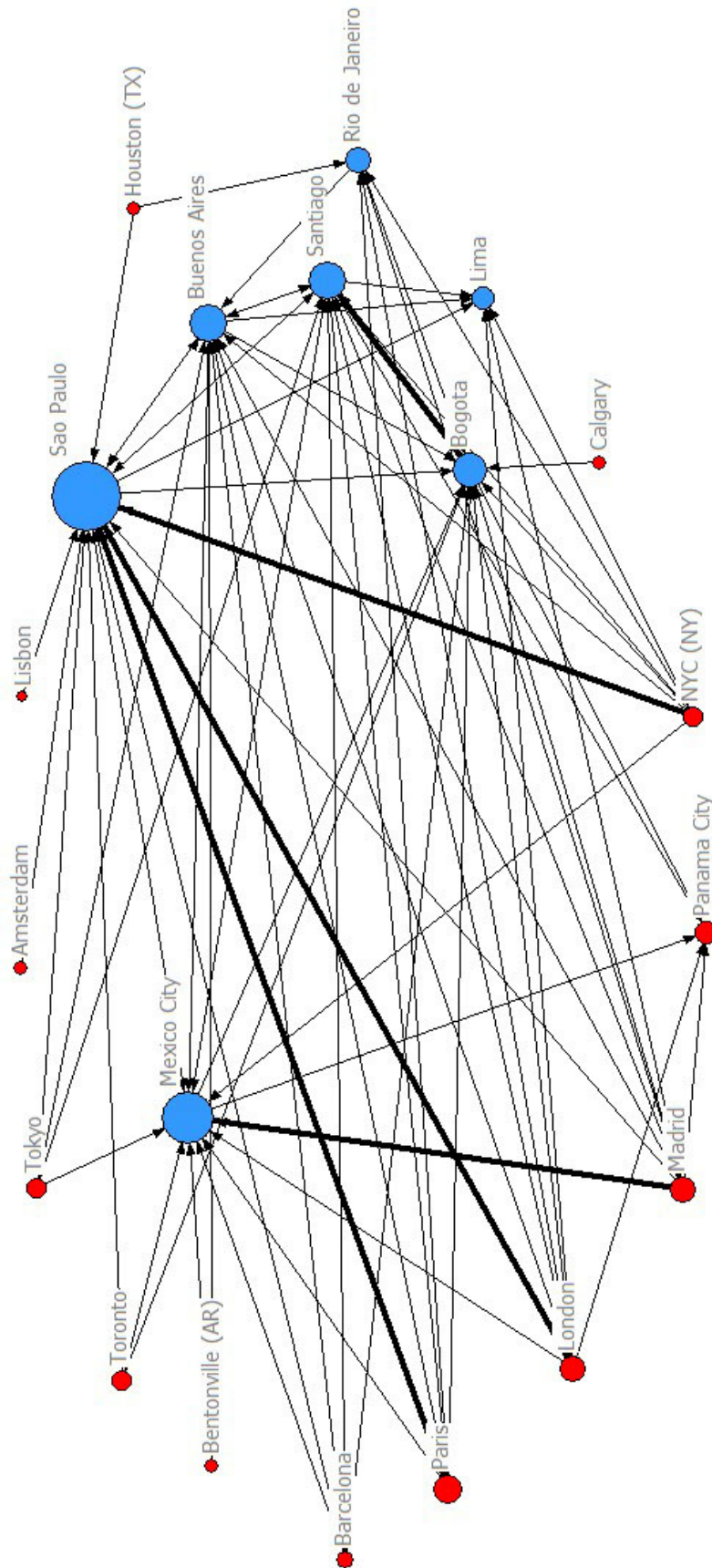
Figure 4.1: Ucinet Network Diagram showcasing the Foreign Direct Investment flows between Latin America and Caribbean cities and other cities in the world (2003-2011) as extracted from FDI market.com. (Elaborated by the author)

Based on this city-to-city network diagram it is possible to imply that Sao Paulo's main competitors in a macro-regional perspective and in number of projects (2003-2011) are Mexico City, Buenos Aires, Santiago, Bogota, Rio de Janeiro, Panama City and Lima, in this order. This result, however, does not entail that these cities are in perfect competition. The charts below showcase the details of the inward investments (number and value) and economic sectors of Sao Paulo and its top 3 main competitors.
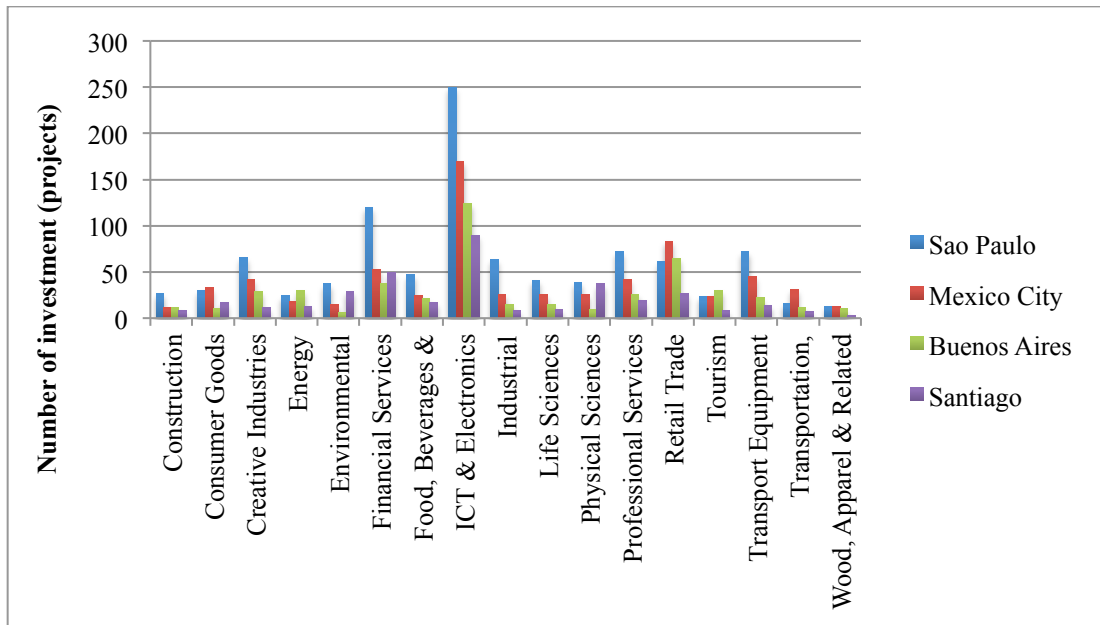
Chart 4.4: FDI inflows (number of projects) and main economic sectors of Sao Paulo vis-a-vis its main competitors in Latin America, as extracted from FDI market.com
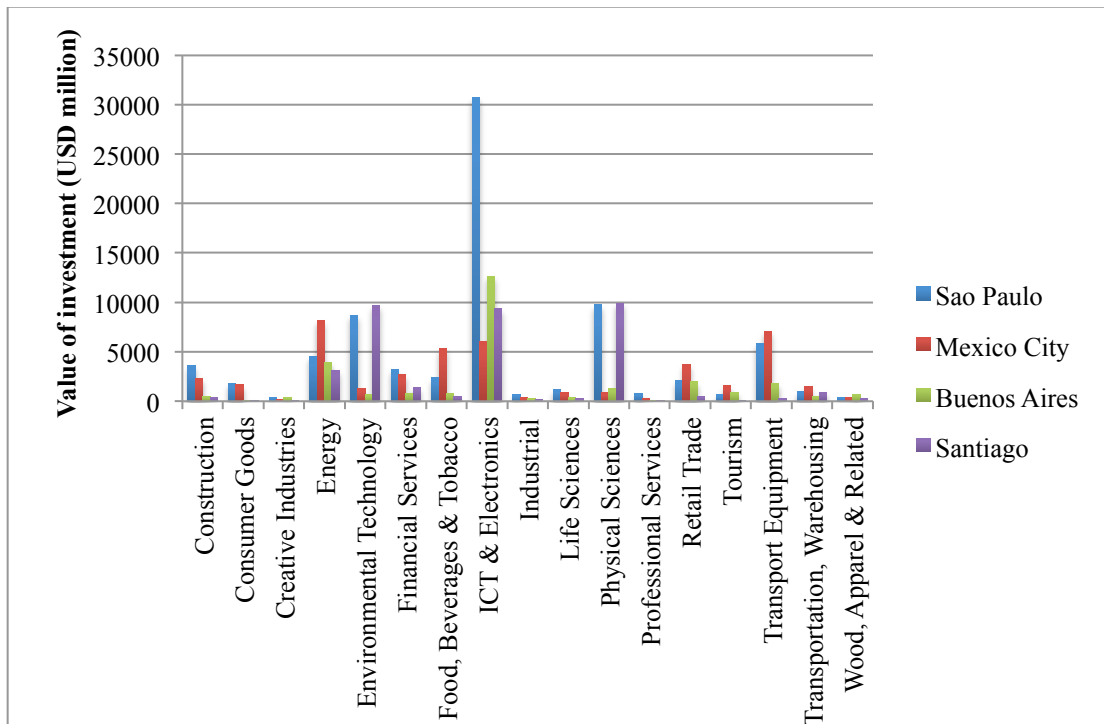
Chart 4.5: FDI inflows (USD million) and main economic sectors of Sao Paulo vis-a-vis its main competitors in Latin America, as extracted from FDI market.com

Sao Paulo beyond borders by Carolina Figueiredo

From the charts, one can see the slight difference between the value and number of inward investments between Sao Paulo and its competitors. In terms of number of investments, the four cities have the ICT & Electronics as the leading sector for investments. Sao Paulo had a total of 250 projects; Mexico City, 170; Buenos Aires, 124 and Santiago, 70. Sao Paulo is also the leader in many other sectors, such as: Financial Services, Professional Services and Transport Equipment amongst the competitors.

In terms of total value of investments, one can see from chart 4.5 that Buenos Aires and Santiago compete more with Sao Paulo over ICT & Electronics investments. Sao Paulo received a total of USD 30,744.65 (million); Buenos Aires, 12,653.97; and Santiago, 9,357.88. It is also illustrated on the chart that Santiago and Sao Paulo have received almost the same amount of investments in Physical Science and Environmental Technology. Even though Santiago had fewer projects than Sao Paulo, Santiago leads the investments in both sectors. Mexico City's main leading sectors for investments, on the other hand, are Energy and Transport Equipment.

These results lead to the implication that Mexico City, Buenos Aires and Santiago are Sao Paulo's true competitors in terms of number of investments in the ICT & Electronics sector. However, as covered by the literature (section 2.2.1), in order to be perfect/true competitors, cities must follow some conditions, i.e., (1) sectoral similarities of investments, (2) functional similarity and (3) geographical proximity.

In this context, it is possible to imply that Buenos Aires and Santiago entail more competition with Sao Paulo in view of their geographical proximity, reinforcing the so-called *A-B-C competitiveness* (Argentina, Brazil and Chile). Furthermore, the three cities share functional similarity, once most of the investments were directed to Software & IT services and headquarters. The following table exhibits further details of this perfect competition:

Cities	Leading economic sector	Number of projects in the leading sector	Activities invested in the sector	Value of total capital investment (US$)	Number of jobs created	Top investing source countries
Sao Paulo	ICT & Electronics	250	Software & IT and headquarters	30,744.65	40370	USA, Spain, Japan
Buenos Aires	ICT & Electronics	124	Software & IT and headquarters	12,653.97	16968	USA, Spain, Brazil
Santiago	ICT & Electronics	90	Software & IT and headquarters	9,357.88	11241	USA, Spain, Argentina

Table 4.2: Investments details in the ICT & Electronics Sector for the "ABC competitors" as extracted from FDI market.com.

As the table showcases, Sao Paulo is the leader in number of projects, value of investment as well as number of jobs created in the ICT & Electronics sector. Moreover, USA and Spain are the countries that have most invested in these cities. In order to detail this competition, the following Ucinet network diagram was generated to showcase the investment connections (number) between the companies investing in those cities.
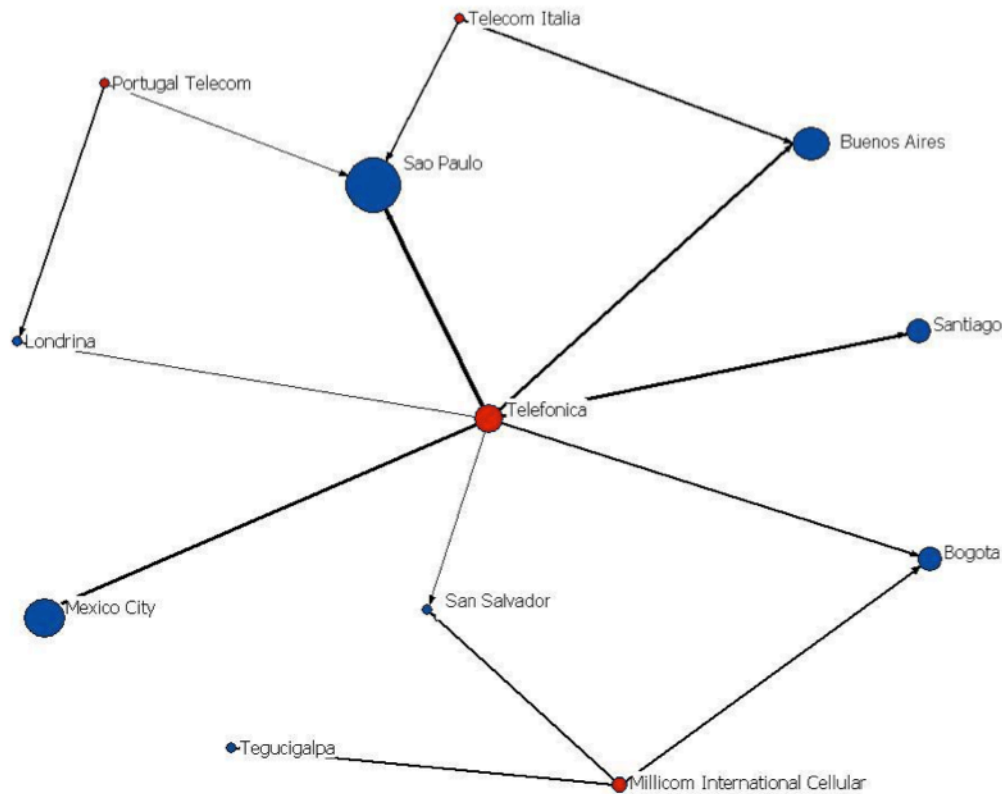
Figure 4.2: Ucinet Network Diagram showcasing Sao Paulo's true competitors over investments in the ICT & Electronics sector in Latin America and Caribbean and parent companies, as extracted from FDI market.com. (Elaborated by the author)

The diagram clearly illustrates that Telefonica (Spain) is the company that invested more in ICT & Electronics in Latin American cities. Yet, the strongest investment relation is with Sao Paulo. Telefonica invested USD 6,176.18 (million) in the city, which represents alone 20% of the total investments in this sector (30,744.65) in Sao Paulo. Also, Telecom Italia has invested both in Sao Paulo (USD 5,958.6) and Buenos Aires (USD 2,974.5). And Portugal Telecom invested USD 46.7 in Sao Paulo and USD 1713.3 in Londrina (State of Parana), the only Brazilian city in this network after Sao Paulo.

It is interesting to realize the language similarities between the countries where the parent companies are based (except Millicom International Cellular based in Luxemburg) and the destination countries where they are investing in. For instance, Portugal, Italy and Spain have language similarities with Argentina, Brazil and Chile and it is most likely that this fact also affects investments attraction in Latin America.

Also, the diagram does not show any company from the USA – the top investor in the ABC competitors. This could be explained by the dynamics in value and number of investments, once USA could be the top investor in aggregated value of investments, but not in number of investments like Spain, Portugal and Italy as shown in the diagram.

From the diagram, one can see that despite the thin linkages with the companies, only the Caribbean cities of San Salvador and Tegucigalpa showed significant investments flows in the ICT & Electronics sector in the region.

As pointed out previously in this research, although Sao Paulo has been receiving greater amount of foreign investments than any other city in Latin America, the city is not considered as attractive or as competitive as benchmarks in South America, especially, Santiago and Buenos Aires (FDI Intelligence 2011; Global Outlook Report 2011; Ni 2012). The qualitative research revealed some hypotheses that could explain this mismatch.

According to the key respondent of the Sao Paulo State Secretary of Planning and Regional Development, the main reason for that is because Buenos Aires and Santiago are national capital cities and that makes a difference in their urban quality. For him, there is a "symbolic value" given to all national capital cities that Sao Paulo has never had. In his own words:

"Sao Paulo has always been a functionalist city and adapted to the reproduction of the industrial and international capital. In this sense, the city lost opportunities to develop attributes of urban fluidity. Nowadays, it is difficult to revert this situation because that calls for massive urban investments, which is something the municipality does not have. Buenos Aires and Santiago, however, are capital cities that have received historical investments from their national government, which is responsible to preserve the public and symbolic spaces of these cities because they represent the nation. This fact gives them a better urban quality than Sao Paulo."

In this sense, it is crucial that Sao Paulo focuses not only on its leading economic sectors, but also in those urban qualities related to its attractiveness. If the city is focused on international events and business tourism, the attributes related to urban landscape, tourism infrastructure and public spaces are crucial to make Sao Paulo as competitive and attractive as its true competitors.

4.2.2. Sao Paulo's network of competition in Brazil

At a national scale, Sao Paulo also outstands as the core city in attracting investments. The following Ucinet network diagram exhibits the spatial distribution of FDI between Brazilian cities and the cities investing in Brazil.
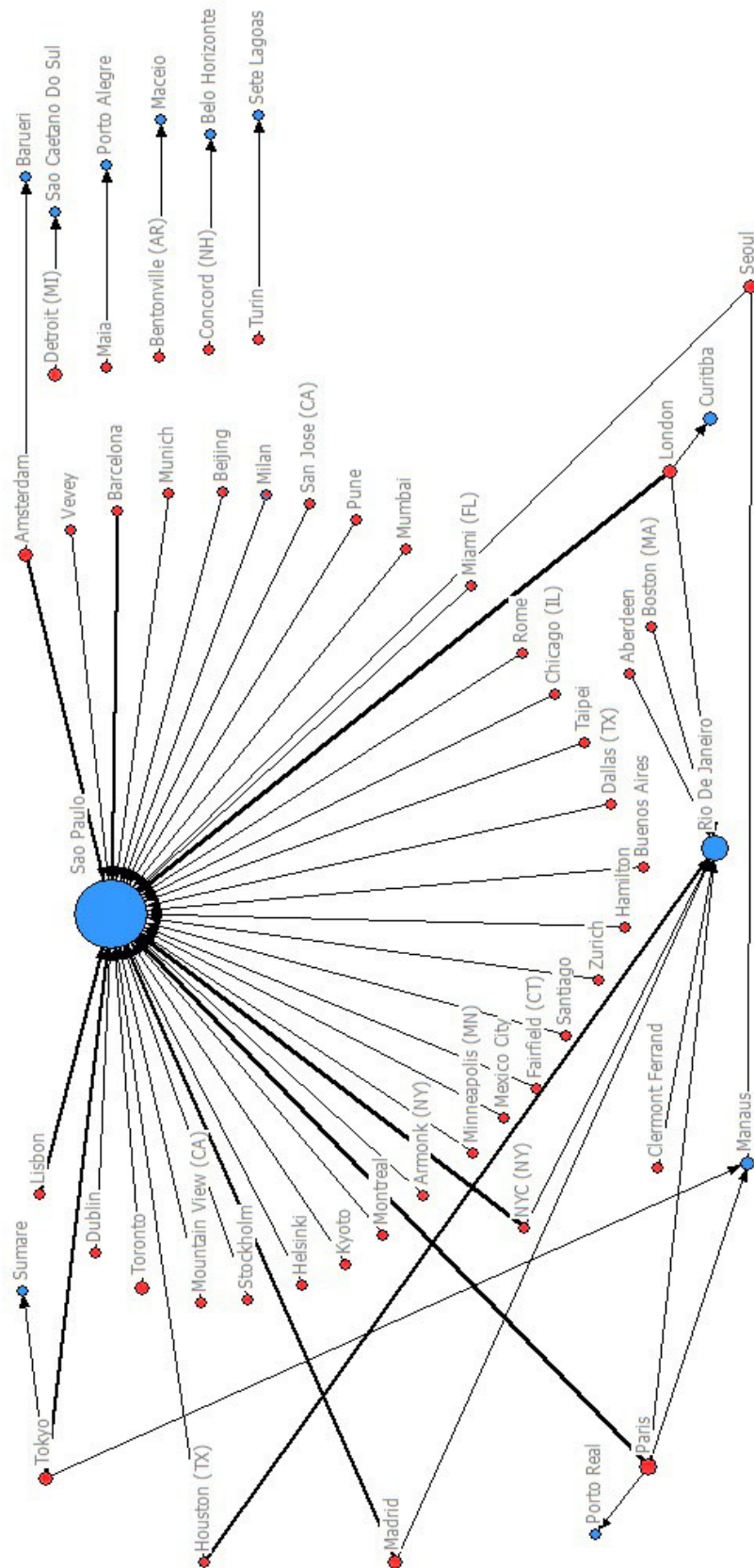
Figure 4.3: Ucinet Network Diagram showcasing the spatial distribution of Foreign Direct Investment flows in Brazil, as extracted from FDI market.com. (Elaborated by the author)

It is clear that Sao Paulo also outstands in the Brazilian investment network. From the city-to-city diagram, one can see that the main cities investing in Sao Paulo are Paris, New York and London represented by the boldest lines. In another level, Tokyo and Lisbon have also invested in the city. Spain has heavily invested in the ICT & Electronics sector in Sao Paulo, represented by the cities of Barcelona and Madrid.

Some other Brazilian cities, such as: Sao Caetano do Sul, Porto Alegre, Maceio, Belo Horizonte and Sete Lagoas are not integrated in the urban investment network in Brazil. Rio de Janeiro and Manaus, on the other hand, appear to have more ties in the network.

The State Government has also recognized the importance of Sao Paulo in the urban network: *"Sao Paulo is the main city in the Brazilian urban network. It is the city's specialization in the commercial and service sectors that contributes substantially to the city's attractiveness and competitiveness and also the great number of people coming from the cities around its network of influence, giving Sao Paulo relevance at regional and national scales"*.

From the diagram, it is also clear that after Sao Paulo, Rio de Janeiro is the city that has more investment relations in Brazil, with a total of USD 50,000.49 million (17,418.49 only in the Energy sector). However, as the linkages show, Rio de Janeiro is not competing for the same investors or the same economic sector. The thickest line shows that Houston is the city that has more investment flows relations with Rio de Janeiro in the Energy sector. Rio de Janeiro also leads the investments in Energy, Retail Trade, Industrial and Physical Sciences, as seen on the chart below:
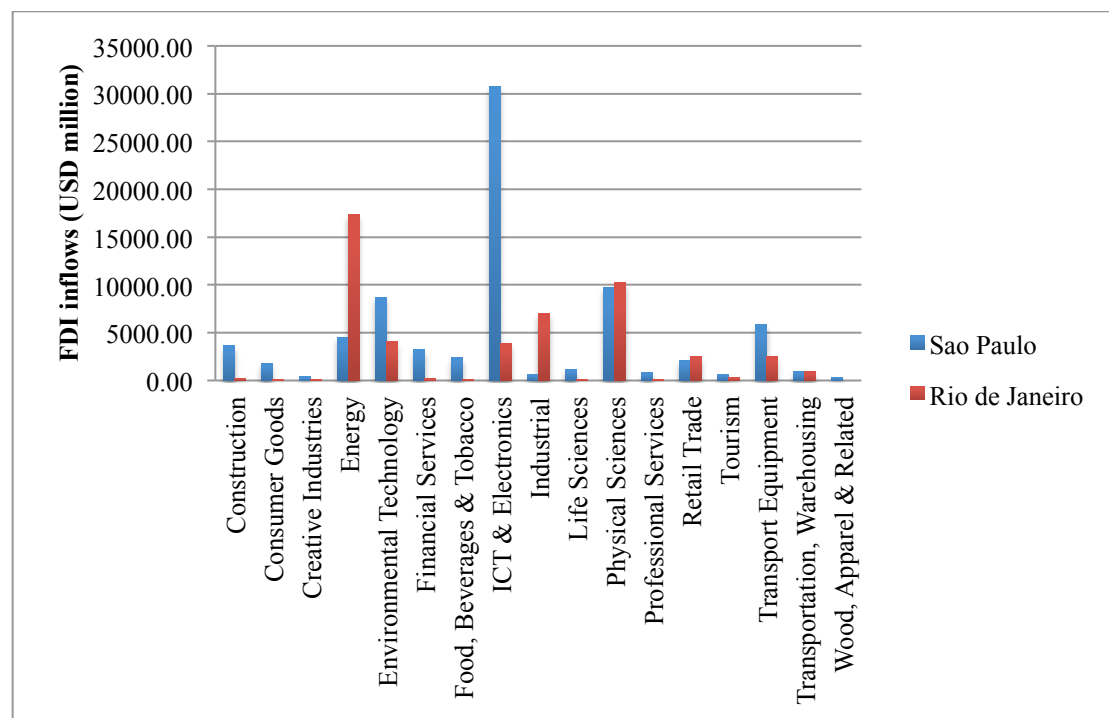
Chart 4.6: FDI inflows to Sao Paulo and Rio de Janeiro, as extracted from FDImarket.com

From the chart, it is clear that whereas Sao Paulo is the leader in the ICT & Electronics investments, Rio de Janeiro takes the front in the Energy sector. However, both cities are competing over investments in Physical Sciences. Rio de Janeiro received USD 10,274.6 million, whereas Sao Paulo's investments reached USD 9,751.50 million in this sector.

The qualitative research pointed out that Rio de Janeiro and Sao Paulo have traditionally always been on competition over general investments with each other since the beginning of industrialization in Brazil in the 30's. From the municipality's point of view, Sao Paulo and Rio de Janeiro are, at present, competing over investments on specific international events, for instance: The Soccer World Cup and the Olympic Games (in the case of Rio de Janeiro). According to him:

"Our aim is that Sao Paulo becomes an international city, that's why we want to attract investments in the business tourism sector which is already very strong here. Sao Paulo wants to host international events and so does Rio."

From a regional perspective, the state government respondent pointed out that because Rio de Janeiro takes the lead in the Energy sector, especially due to the Pre-Salt Project[2], the city has been attracting huge amount of investments in the extraction of petroleum and gas. In this sense, the main competition will happen, according to him, over future investments in other activities that are involved in the extraction of petroleum and gas. The State Government of Sao Paulo foresees that at least USD 87.12 billion of private and public investments will take place on the southeast coast of Brazil until 2025.

In his own words: *"In the next 20 years, we will see a specific competition between Rio de Janeiro and Sao Paulo to attract the infrastructure that will support this extraction (...) from shipyards to airports and refineries (...). The areas of influence where all the supportive services will settle covers the region from Rio to Sao Paulo".*

Gathering all the quantitative and qualitative data from this section, the following diagram generated in the Inkscape Software was developed to summarize the main competition relations between Sao Paulo and its competitors and the sectors they compete for.

---

[2] The Pre salt region is located 170 miles off the Southeast Brazilian coast from the state of Espirito Santo to Santa Catarina, measuring 800 kilometers long and 200 kilometers wide. The pre-salt layer is one of the biggest oil discoveries in Brazil where major volumes of light oil were found. (Available at http://www.petrobras.com.br/minisite/presal/en).
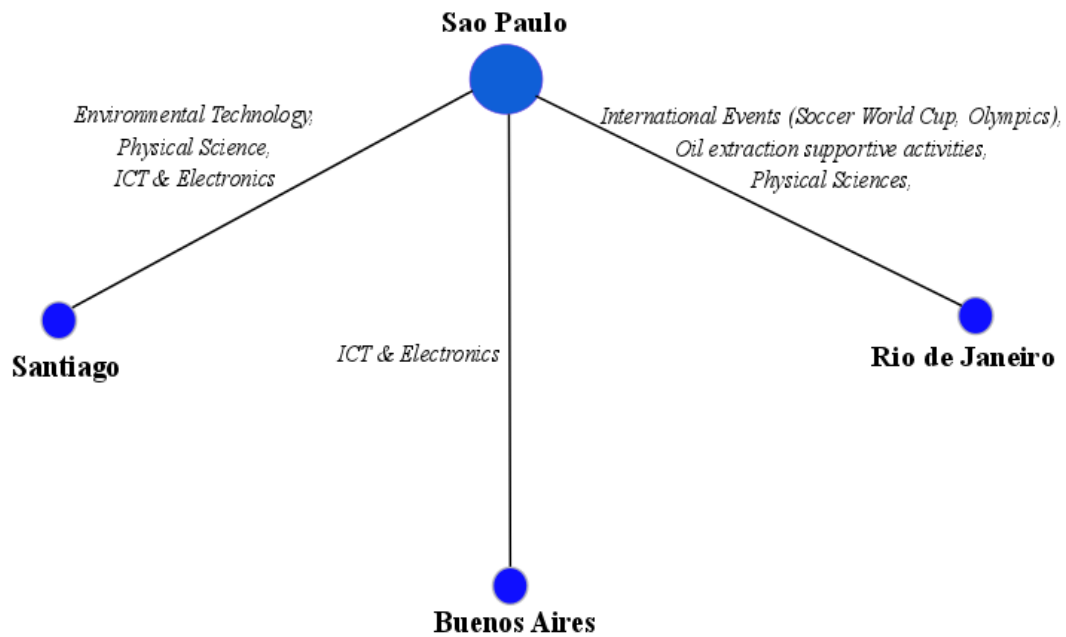
Figure 4.4: Inkscape Diagram showcasing Sao Paulo's competitive network in Latin America. (Elaborated by the author)

As the diagram showcases, cities cannot compete over all types of investments with all the cities in the network. In this sense, these are the sectors that entail more competition between Sao Paulo and its competitors. Sao Paulo competes mainly over investments in ICT & Electronics with Buenos Aires and in International Events, Oil Extraction supportive activities and Physical Sciences with Rio de Janeiro. It is interesting that the city competes in Environmental Technology, Physical Sciences and ICT & Electronics with Santiago, which are also Sao Paulo's top leading economic sectors in attracting FDI.

4.3 Complementarity

This section brings the results in order to answer the third specific research question of this investigation. In this sense, in order to find out in which economic activities Sao Paulo can establish a complementarity network with its competitors, a location quotient analysis[3] based on the share of total investment was carried out (Appendix III; chart 4.7). Also, dissimilarities in sector investments and geographical proximity (Burger et al., 2011) were taken into consideration.

As highlighted by the theories presented so far in this research, cities have more advantage when attracting investments that complement their existing economic functions to profit most from spillovers. Under the coopetition scheme rivals compete in some areas whereas cooperate/complement in others in the network. Following this context, Sao Paulo and its main competitors – Rio de Janeiro, Buenos Aires and Santiago were analysed in order to understand the complementary scheme between them. The following chart shows the specialization in different economic sectors of each city in the polycentric network:
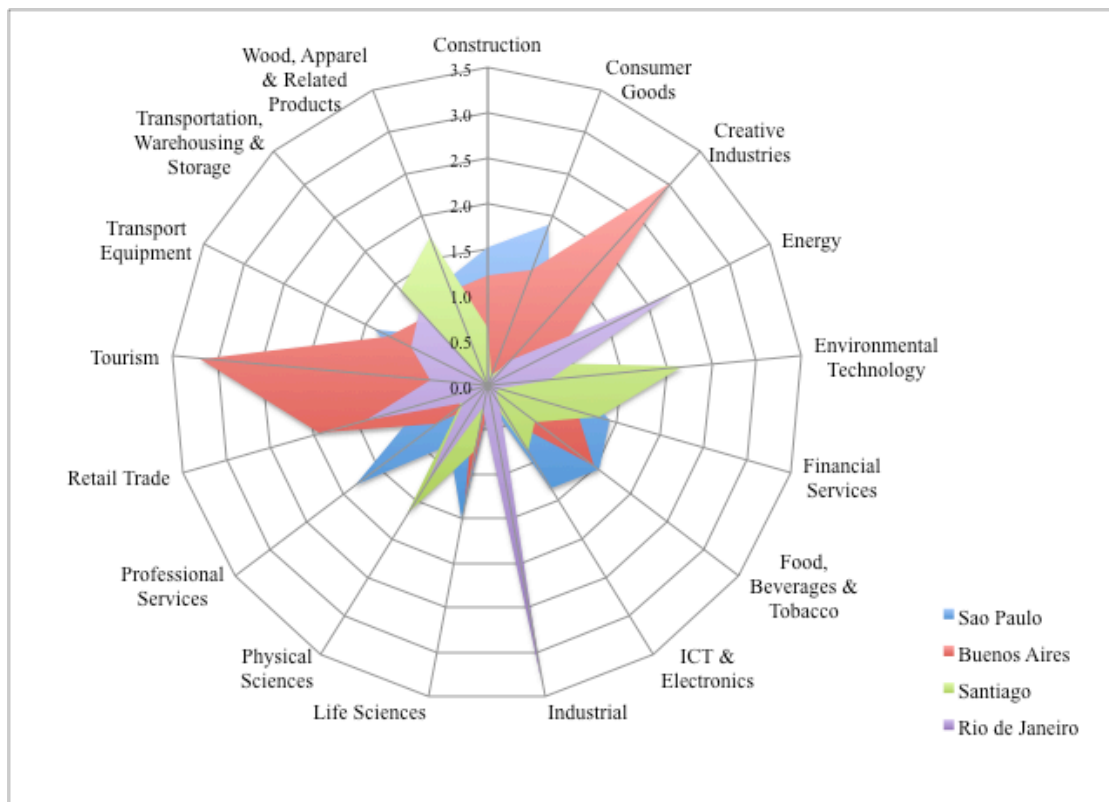
Chart 4.7: Location Quotient based on total share of investments for Sao Paulo and main competitors in Latin America and Brazil (FDI market.com Database).

---

[3] A location quotient analysis is a common economic based method used to analyze the economic diversity and health of a local economy. By comparing the investments in a specific sector to that same sector's share in the region, it is possible to identify which economic sectors one city is specialized in and which ones are not satisfying the region's demand. A location quotient equals to 1 means that local economy is satisfying the demand in that sector. Results greater or less than 1 indicate the degree to which the city is economically sufficient or specialized in that sector.

As the chart illustrates, not all the cities are specialized in the same sector as the one receiving more investments over the last 9 years (ICT & Electronics for Sao Paulo, Buenos Aires and Santiago; and Energy for Rio de Janeiro). In other words, the cities' absolute strength (amount of FDI) is not the same as the relative strength (specialization) in the polycentric/complementary network. This mismatch gives some directions towards the sectors each city should, in fact, be focused on.

Based on the analysis, Sao Paulo, as the ICT & Electronics hub in Brazil, is strong and specialized in the Consumer Goods Cluster (1.9) with the main activities in the Consumer Electronics products. This result is not a surprise once the Brazilian consumption of computers, printers, mobile phones, digital cameras and other electronic devices represents more than 20% of the Latin American market and has grown at impressive rates due to the attractive exchange rate in the country and the increase in the purchasing power of the population (USP 2011). This could also be related to the location factors the city provides for investments. Moreover, based on the chart, Sao Paulo can also be considered specialized in Professional Services (1.8) amongst all the competitors.

Buenos Aires, on the other hand, is specialized in Tourism (3.2) and Creative Industries (3.0). These are sectors that Sao Paulo has not shown an outstanding performance in attracting investments (refer to Chart 4.3). However, if Sao Paulo is also focused on international events and business tourism, Sao Paulo and Buenos Aires can also complement and learn from each other in these sectors.

Santiago's main specializations are in Environmental Technology (2.2) and Physical Science (1.7), revealing the city's focus on Environment. It is interesting to point out that these two sectors are Sao Paulo's second and third leading economic sector in attracting FDI. In this sense, Sao Paulo and Santiago can be complementary in these sectors in order to attract more environment-related or 'green' investments and increase their urban competitiveness.

Lastly, Rio de Janeiro showed to be specialized in the Industrial (3.3) and Energy (2.3) sectors. Again, these are sectors that Sao Paulo has not received a great number of investments over the last 9 years. And due to the great potential in competition in the next 20 years over the complementary activities in the oil extraction industry, Sao Paulo and Rio de Janeiro can attract investments in this field, complementing their economic structure.

Based on these results, the following diagram was designed to summarize Sao Paulo's complementary and competitive networks in Latin America with the true competitors and their specialized sectors based on location quotient (in green).

Sao Paulo
Consumer Goods

Environmental Technology;
Physical Science,
ICT & Electronics

International Events (Soccer World Cup, Olympics),
Oil extraction supportive activities,
Physical Sciences;

ICT & Electronics

Santiago
Environmental Technology;
Physical Science

Rio de Janeiro
Industrial,
Energy

Buenos Aires
Tourism,
Creative Industries
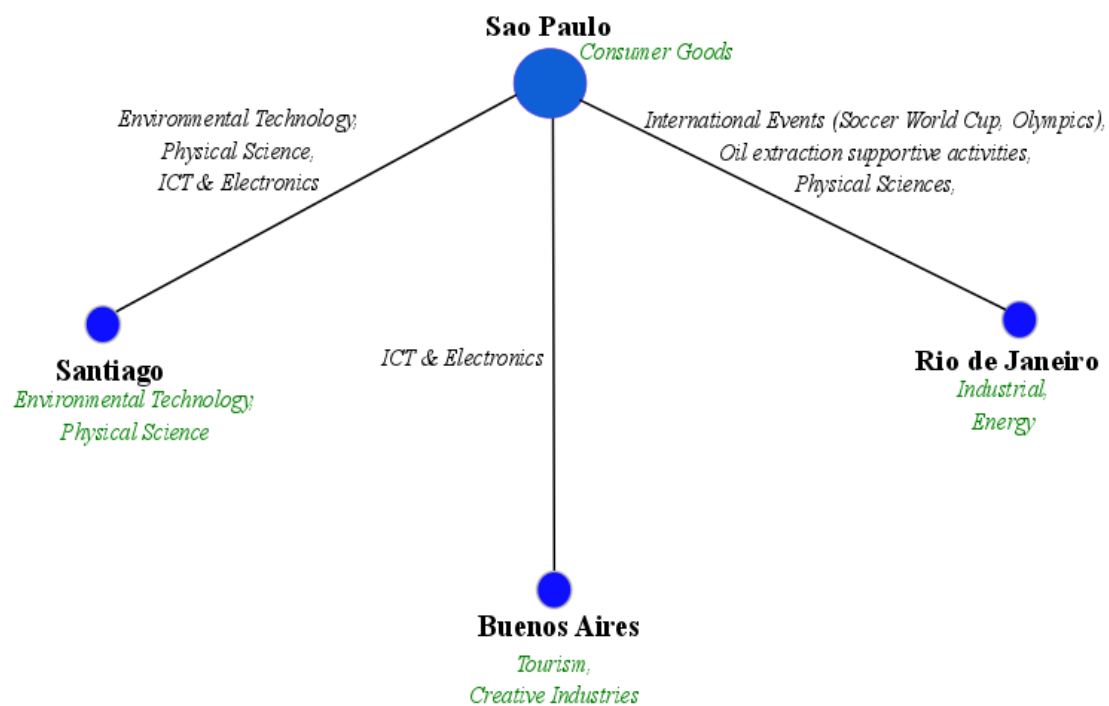
Figure 4.5: Inkscape Diagram showcasing Sao Paulo's complementary (in green) and competitive network in Latin America. (Elaborated by the author)

A deeper analysis on these results and consultations in international reports about investments in the ICT sector in Latin America (ECLAC 2012; USP 2011) converged to the findings that for Brazil, the international events – Soccer World Cup (2014) and the Olympic games (2016) are important opportunities for ICT investments as well as small and medium enterprises involvement in reaping the benefits of the touristic boom. In this sense, some recommendations (Chapter 5) can be addressed to prepare Rio de Janeiro and Sao Paulo for these events and the e-tourism industry with a distinctive role for ICT-related projects.

The contrast with the qualitative data shows how different actors perceive the geographical category of *scale* for complementarity in different ways. As the respondent from Sao Paulo State Secretary of Planning and Regional Development stressed:

"It is fundamental to say that Sao Paulo only is what it is today because the city has always had an important role over an area of influence that has always been much larger than the city itself... Sao Paulo has always been a regional city with a scale beyond the own municipality. This has made not only Sao Paulo grow, but also kept its importance as a center of decision making and investments over its urban network. (...) From an economic point of view, it is very difficult to think Sao Paulo as an isolated city. Sao Paulo is a group of cities, an archipelago. The capacity it has to maintain itself in urban networks beyond its own region and state has always given Sao Paulo the opportunity to grow and keep important".

From the private sector point of view, a key respondent from a company in the ICT & Electronics also highlighted the importance of Sao Paulo's collaborator cities, but at a smaller scale: *"The cooperation between Sao Paulo and other cities and the neighbouring cities is crucial to any company. The lack of space and resources in the Sao Paulo is forcing the companies to look for these resources in other cities that provide the resources".*

The results from the interviews (summary in Appendix IV) show that the state government recognizes the importance Sao Paulo has beyond its own metropolitan region and state's boundaries. The municipality, on the other hand, limits its perception to a local/regional scale, affirming that Sao Paulo's main collaborators are those cities inside its metropolitan region, located in a 100-150km distance from Sao Paulo. The private companies point out a range of collaborators mostly according to their proximity to business partners or market opportunities. Therefore, the qualitative approach contributed to the concept of Sao Paulo being embedded in a polycentric network, once the city is already complementary and a collaborator to many other middle-sized cities in many scales, i.e., its metropolitan region and cities beyond the state's borders.

In summary, the results in this section have shown that Sao Paulo's complementary network brings a new perspective to the competition between cities. It is crucial to think Sao Paulo in a regional context because the spillovers and returns of investments extrapolate the own metropolitan region and national boundaries, emerging a *transnational cluster*. Although tied in a regional network of collaboration in Brazil (refer to map in Appendix IV), Sao Paulo has potential for complementarity beyond borders. In this sense, Sao Paulo, Buenos Aires, Santiago and Rio de Janeiro exchanging complementary and competitive relations in numerous sectors with each other are the expression of a new scale in urban and regional economic development strategies that extrapolates the municipalities' boundaries and national borders.

Furthermore, the results have reinforced the idea of polycentricity. Each of these cities have major influence in their own metropolitan region but they can also perform a distinct and specialized service in the coopetitive network, avoiding destructive competition and war between places, promoting regional economic development through multiple-scales: not only at city-level, but also in their metropolitan regions and beyond national borders.

4.4 Location factors

This section brings the methodology and results from the quantitative and qualitative approaches in order to answer the fourth specific research question of this investigation, i.e., which location factors are statistically more significant for investments to Sao Paulo and its competitors. So far only the investments and leading economic sectors have been discussed to comprehend the competition and complementarity between cities. However, the urban qualities or location factors within a city are essential for a better understanding of the coopetition scheme in an urban network.

As covered by the literature, investments will flow to those cities that offer more attractive location factors and urban qualities for companies and the international capital. In other words, the competition involves a complex relationship between the built environment, economic functions and location factors, i.e., forms, functions and flows (Wall 2010).

4.4.1 Methodology

The location factors were collected from different sources – World Bank indicators, United Nations Report and the Global Competitiveness Report (GCR, 2011/2012)[4] – and pooled into three categories: Economic, Social and Environmental variables, as the table below shows:

Economic	Social	Environmental
- Macroeconomic environment (1-7) - Financial market development (1-7) - Business sophistication (1-7) - Land market efficiency (1-7) - Infrastructure (1-7) - GDP growth (%) - Technological readiness (1-7)	- Corruption (1-20) - Institutional readiness (1-7) - Population size (Total) - Health and primary education (1-7) - Human Development Index (0-1)	- Energy consumption (kt) - Carbon footprint (kt) - Access to electricity (%)

Table 4.3: Location factors selected for regression analysis (national level)

---

[4] The indicators provided by the World Bank referred to the period of 2009-2011. The Global Competitiveness Report (2011/2012) presented 12 pillars for measuring competitiveness and followed its own methodology and criteria for scoring each country's indicators. The score ranged from 0 to 7 (except for corruption: 0-20) and the higher the score, the better the country's position in the competitiveness rank. The only indicator collected from UN was the Human Development Index.

As location factors are not extensively available at city level for the whole Latin America & Caribbean region, the data was compiled at national level as a proxy for the analysis. The sample size for the regression was of 25 countries and a total of 15 location factors (Appendix V). Those countries with omitted data were not used for this analysis. Also, the data was logged in order to avoid skewness in the results.

A multicollinearity analysis in SPSS was carried out for each of the three groups in order to test each independent variable within its own group. By doing this, it was possible to find the variance inflation factor (VIF) of each variable, i.e., a quick measure of how much a variable is contributing to the standard error in the regression (Field 2006). When the VIF is above 10, the variables need to be excluded in order to avoid multicollinearity. However, after doing the diagnosis all variables had VIF values below 10 and could be applied in the regression analyses.

Three different multiple regression analyses for each of the groups were carried out in SPSS in order to find out those variables statistically more significant (below 0.05) for FDI inflows in Latin American countries/cities (Appendix VI). For this, the FDI inflows from FDI market.com database was aggregated at national level and used as the dependent variable.

4.4.2 Economic Location Factors

The regression analysis pointed out that only three out of the seven economic indicators were considered statistically significant for FDI inflows. These are: GDP growth (0.010), and business sophistication (0.018). Labour market efficiency (0.002) was considered significant in the stepwise approach and, therefore, will also be explained in this analysis (Appendix VI).

GDP growth

Not surprisingly, the Gross Domestic Product growth was pointed as the most significant factor for FDI inflows to Latin American cities. Despite a decrease in GDP of 1.8 percent in 2009, Latin America has managed to weather the global financial crisis relatively well and has been growing steadily ever since, outperforming advanced economies (Global Competitiveness Report 2011/2012). However, whereas the GCR report forecasted an economic growth of 4.1% for Brazil in 2011, the World Bank calculated an actual growth of 2.7%. Compared to Argentina (8.7%) and Chile (6%), Brazil's GDP growth has not presented such good performance.

At city level, the same happens with the ABC competitors and even Rio de Janeiro as the following figure illustrates:

The relative growth of São Paulo and Rio de Janeiro have declined in the recent past

GDP growth
Compound annual growth rate, %

	Period	
	1920–70	**1970–2008**
Rio de Janeiro	7.0	2.6
São Paulo	10.3	3.5
Brazil	6.8	4.4
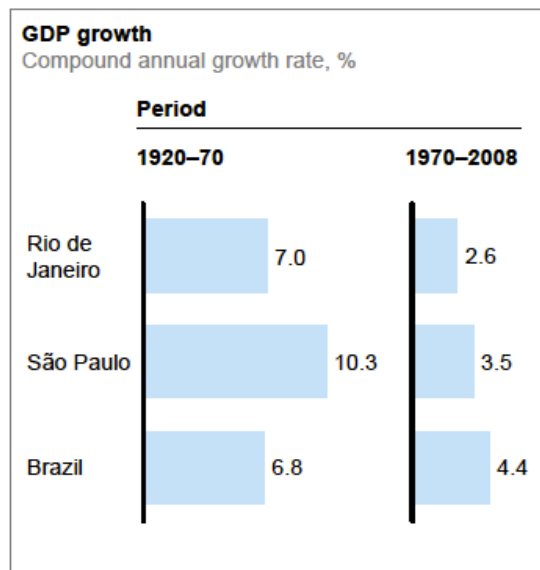
Most of the top ten cities have grown more slowly than their host economy

City GDP growth relative to national average
Index: 100% = country GDP growth, %

	Period	Indexed GDP growth
São Paulo	1999–2008	66
Mexico City	1999–2009	106
Buenos Aires	1993–2003	89
Rio de Janeiro	1999–2008	37
Lima[1]	2001–2009	113
Bogotá[1]	1998–2008	91
Santiago[1]	1996–2006	93
Monterrey	1999–2009	140
Brasília	1999–2008	57

100
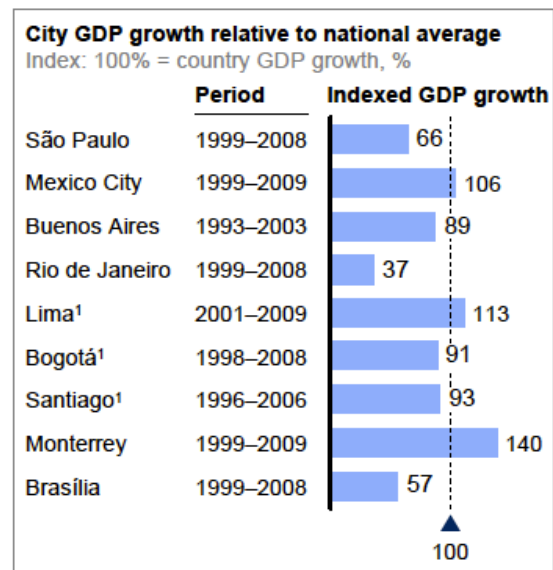
1 In cases where GDP data were not available at the city level but the city represented most of the region/province, we used data at this next level.

Figure 4.6: Latin American cities' economic growth
Source: McKinsey Global Institute 2011, p.3

Once this analysis proved that FDI inflows depend on the local economy' GDP level, this results reveals an interesting paradox for Sao Paulo. Even though the city's economic growth has not been as good as its competitors, the city still receives a higher amount of investments. Many could be the reasons for this mismatch, such as monetary policies, fiscal constraints, inflation rates, etc. Therefore, it is necessary to analyse other economic location factors in order to understand this mismatch.

Business Sophistication

Based on the Global Competitiveness Report (2011/2012), Business sophistication is one of the pillars for a country's urban competitiveness. Amongst the *ABC competitors*, Brazil has reached the highest score in Business Sophistication, justifying the quantity of inward FDI received by the country (Appendix V). The GCR (2011/12) points out that Business Sophistication concerns two elements: (1) the quality of a country's overall business networks and supporting industries; (2) the quality of individual firms' operations and strategies.

The first is important because is measured by the quantity and quality of local suppliers and their interaction. *"When companies and suppliers from a particular sector are interconnected in geographically proximate groups, called clusters, efficiency is heightened, greater opportunities for innovation in processes and products are created, and barriers to entry for new firms are reduced"* (GCR 2012, p.8). At city level, Sao Paulo is considered as a strategic point for business clusters

once it is surrounded by other cities that offer supporting services, such as suppliers and resources to the firms located in Sao Paulo, especially those in the ICT sector.

The quality of individual firms' operations and strategies is crucial in the sense that the companies' innovative strategies spill over to the local economy leading to sophisticated business process. In this sense, since Sao Paulo aims to attract high-technology headquarters offices in order to capture and internalize their spillovers, investors have taken into account the city's sophisticated business climate.

Labour market efficiency

This pillar is crucial for the competitiveness status of Sao Paulo. Since the ICT & Electronics is the city's leading sector in receiving investments, the city requires specialized and highly educated labour force.

In 2011, the State of São Paulo was responsible for 37% of the local ICT units and 44% of all jobs in the country in the segment of data processing and internet content (Investe SP 2012). There was also concentration of those jobs in the Metropolitan Regions of São Paulo (65%) and Campinas (27%) – city close to one of the Technological Parks in the State. Not surprisingly, it is in Sao Paulo and its metropolitan region and other cities under its area of influence where most of the Research & Development Institutes and Universities are located to meet the demand of highly qualified labour force.

In this context, one would expect Technological Readiness as a significant location factor, once the city leads the investments in Information and Communication Technologies in the region, showing, therefore, great abilities to adopt new technologies to enhance productivity and efficiency. However, it is worth to remember the data was collected at national level implying some limitations to the analysis.

4.4.3 Social Location Factors

The regression analysis (Appendix VII) revealed that the most significant social location factor that explains the FDI causes is Population Size (0.000). Nevertheless, Institutional Readiness (0.001) will also be analysed because the stepwise approach includes this indicator as significant.

The results point out that investments have been directed to the countries or cities where there is a large population contingent. According to the national census (IBGE 2012), the city of Sao Paulo has a population estimated at 11,253,503 inhabitants whereas its metropolitan region has approximately 19,889,559. This represents 5% and 10% of the total country's population size (196,655,014). Brazil is a country where half of its population now occupies the middle class with better access to

credits and with an increasing purchasing power. Thus, one could expect that Sao Paulo's large population have been an attractive consumer market for investments.

In terms of Institutional Readiness, Brazil scored 3.72 (the closer to 7, the better), whereas Chile scored 5.06 and Argentina 2.9. The quality of institutions has a strong bearing on urban competitiveness, economic growth and investments decisions, once investors choose places where there are strong institutions with low costs and high security (trust) in doing business. In this sense, taking Brazil as a proxy, Sao Paulo still has to provide a sound and fair legal and administrative environment for business in order to be more competitive in the region and leverage its economic performance.

Surprisingly the Human Development Index was not considered so significant as the other variables. One would expect that the higher the human development index, the better is the correlation for investments. When comparing Brazil with its competitors, it is clear the paradox between their HDI and FDI inflows. Chile and Argentina present higher HDI than Brazil - 0.805, 0.797 and 0.718, respectively; however, do not received as much investments as Brazil. One could infer that the continent dimensions of Brazil as well as the great income disparities between regions, income polarization of the population and overall poor quality of educational system could influence this result. As the latest report (August 2012) from UN-Habitat revealed, Brazil is the fourth most unequal country in Latin America, behind Guatemala, Honduras and Colombia (UN-Habitat 2012), reinforcing the dichotomy between the country's spectacular economic growth and underperformed development. Again, it is important to remember that the data was collected at national level, implying some limitations in the analysis of city level.

4.4.4 Environmental Location Factors

According to the regression analysis (Appendix VIII), the most significant environmental location factor was found to be Energy Consumption (0.004).

This result is most likely to show that investments have been directed to those areas where there is intense industrial production, manufacturing and, consequently, more energy consumption. This also explains the trend of investments to Latin America in Physical Science and Energy (refer to char 4.1), once most of the investments went to activities like Industrial, Machinery and Equipment.

Furthermore, this is also related to the population size, once the more populated a city is, more economic activities happening in the ground and more energy being consumed. One would also expect that carbon foot print would be significant for investments, once these are also related to areas where production and manufacturing is heavily happening.

In order to summarize and make a comparison between the ABC competitors location factors, the following chart was produced based on each country/city' performance in location factors:
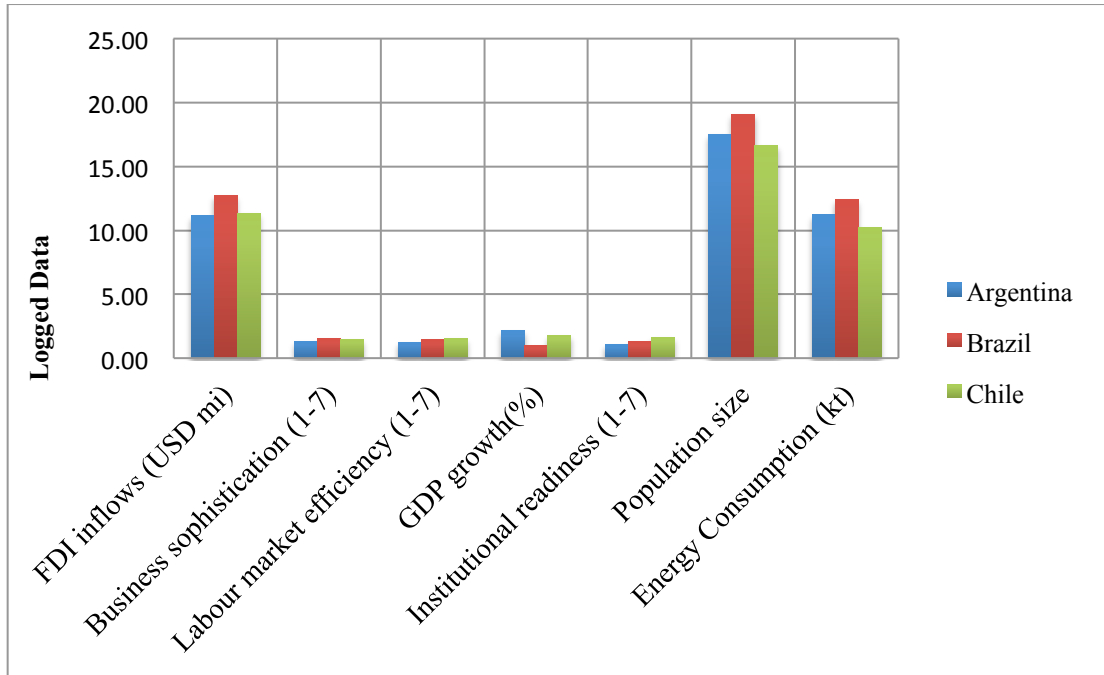
Chart 4.8: ABC competitors' performance on location factors

It is important to notice that more location factors were expected to be significant for investments flows in Latin America; however, the lack of extensive information available at city level in terms of location factors for a large sample of Latin American cities was the limitation of this analysis. In this sense, the contributions from the qualitative research were also relevant to understand this relationship between FDI inflows and location factors at city level.

4.4.5 Results from interviews

The following table summarizes the reasons why companies start doing business in Sao Paulo and how the public sector perceives the reasons why Sao Paulo attracts investments.

Location Factors	Companies (Headquarters)							Government	
	Environmental Technology	IT Services	IT Services	Software	Software	ICT & Electronics	ICT & Electronics	State	Municipality
Geographical location (connectivity to other cities, Port of Santos, etc.)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Proximity to suppliers and clients	✓	✓	✓	✓	✓	✓	✓		
Attractive business climate	✓	✓	✓	✓	✓	✓	✓	✓	✓
Proximity to university/research institutes	✓	✓	✓	✓	✓	✓	✓	✓	✓
Infrastructure/Logistics (airport connectivity, highways, etc.)			✓	✓	✓	✓		✓	✓
Low living costs	✓								
Low local tax	✓		✓		✓	✓			
Market Size		✓			✓	✓	✓		✓
Purchasing power of the population			✓	✓	✓	✓	✓		✓
Business Environment	✓	✓	✓	✓		✓	✓		
Open market for telecommunications		✓	✓	✓		✓	✓		✓
Specialized economy								✓	
Importance at national and regional scales (economy or competitiveness)					✓			✓	
International Events									✓

Table 4.3: Summary of interview results for location factors

From the table, it is possible to conclude that the location factors most cited as important for Sao Paulo are related to the city's privileged geographical position that provides good connectivity to other cities, ports, suppliers, research/technology institutes that provide highly skilled labour force and also the business climate the city offers. Location factors such as specialized economy, importance of the city at regional and national scales as well as opportunities for international events were not cited as the main attributes for investment attraction or the establishment of the companies in Sao Paulo.

In summary, this quantitative and qualitative analysis has shown that some location factors are key for investments flows to Sao Paulo and Latin America: GDP growth, business sophistication and climate, labour market efficiency, population size (market size and purchasing power of the population), institutional readiness, energy

consumption, connectivity to suppliers, cities, research institutes and air/highways infrastructure. It is also interesting to perceive how Sao Paulo's main location factors relate to what Rondinelli et al. (1998) had previously stated: *"investment will flow to (…) those cities that provide better educated and higher skilled workers, globally linked infrastructures, and flexible and responsible public and private organizations"* (Rondinelli et al. 1998, p.73).

Moreover, the results show that if Sao Paulo and the majority of large and middle-sized Latin American & Caribbean cities want to be more competitive in the global investment network, there is urgent need of more comparative studies and extensive data available at city level in the region.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

The purpose of the current study was to find out how Sao Paulo can strengthen its competitive and complementary network with Latin American cities in order to overcome the mismatch between the great amount of investments received by the city, its level of urban competitiveness and economic performance compared to benchmarks in the region – Buenos Aires and Santiago. This research also stressed the importance of shifting the focus from individual competition to regional networks of collaboration/complementarity, in which cities compete and still complement each other at multiple scales in the network avoiding destructive competition.

This investigation added to a growing body of the literature on how a city's position in an urban network indicates the strength of its connections, centrality, command and power over the others. Thus it is very clear from the results presented that Sao Paulo has a privileged position not only at local/regional scale, but also at a national level and in Latin America as a macro region. The city is indeed the FDI hub for investments and a bright spot in Latin America, but in order to lengthen this prestige and performance, the city must take full advantage of the economic potential of its networks of competition and complementarity.

The results presented lead to various interpretations and pose new challenges at the same time. Firstly, Sao Paulo's main economic sectors that have received more foreign direct investments over the last 9 years are Information and Communication Technology (ICT) & Electronics and Physical Science, following the trend of investments in Brazil and Latin America – an evidence of the rapid technological progress in the city, country and region. However, the city's specialized sector is Consumer Electronic Goods. This is not a surprise once the Brazilian consumption of computers, printers, mobile phones, digital cameras and other electronic devices represents more than 20% of the Latin American market and has grown at impressive rates due to the attractive exchange rate in the country and the increase in the purchasing power of the population.

In terms of competition, the findings have shown that Sao Paulo's main rivals over investment inflows in Latin America are Mexico City, Santiago, Buenos Aires and Rio de Janeiro. However, as geographical proximity is concerned in the perfect competition scheme, Santiago and Buenos Aires are, in fact, considered Sao Paulo's true competitors in the ICT & Electronics sector, reinforcing the so-called *ABC Competitiveness*. These cities are invested by the same companies/cities and it is interesting to observe the language similarities between the source country of the companies investing in the cities and the destination country. An interesting topic for further research would be how language similarities affect business allocation and investments decision in Latin America.

The findings have shown how the ICT industry has literally cut across the geographical boundaries of the nations in Latin America. Firstly, because knowledge

and information have been produced, transmitted and shared in Latin America and throughout the world with no physical constraints. In another sense, the competition network for ICT investments goes beyond borders in Brazil, imposing the importance of multiple scales in the city-to-city competitiveness.

At a national level, the city of Rio de Janeiro is considered Sao Paulo's competitor over general investments, international large events (Soccer World Cup and Olympics) and Physical Sciences. Moreover, due to the predicted amount of investments in the oil extraction and natural gas along the coast nearby Rio de Janeiro in the following 20 years, the two cities are also the expression of great opportunities for not only competition but also complementarity in their economic structures. This approach avoids destructive competition, fiscal wars between states and promotes competitive advantage and economic development for the region.

In terms of complementarity, the evidences from this research shows that Sao Paulo, although tied in many relations of collaboration with cities inside its own metropolitan region and state, must also look for complementarity beyond the geographical borders of the country. By comparing the results to Porter's Diamond Theory, one can see some differences in the sense that Sao Paulo's competitive and complementary network has gone beyond the traditional concept of geographically localized clusters. Instead, Sao Paulo has emerged a complex multi-sector *transnational cluster*. In this sense, this coopetitive approach is the expression of a new scale in urban and regional economic development strategy that extrapolates the municipality's boundaries and brings a new perspective to the competition between cities, i.e., an outlook beyond national borders.

In fact, a major significant lesson from this research is related to the importance of *scale* in planning competitiveness & complementarity and how urban managers perceive this geographical category in different ways. This investigation has found that the municipal government of Sao Paulo, for instance, perceives the city through the lens of a local scale and is focused on the brand/image of an "international city". The municipality aims to increase the city's competitive status by attracting cultural, sport and international business events to the city. On the other hand, the state government overlooks Sao Paulo in a regional context, recognizing the importance and the role Sao Paulo plays at state, national and macro-regional level. In this sense, the state is not so much focused on the city's competitive status because by emphasizing the city's competitive status, regional disparities in the state could increase even more. In this sense, it is crucial to think Sao Paulo not only as a national star but also as a city-region with the capacity to distribute its positive spillovers and returns on investments across the cities beyond its own metropolitan region, reinforcing its polycentrality.

It is clear from this study that cities need to create complementary connections with others in order to attract more investments, because as urban economies become more specialized, they require horizontal rather than only vertical links. Cities do not have power in isolation and, therefore, need a well-structured local and regional network in

order to be more competitive in the global market. In order to accomplish this, cities need a supportive regional policy, which facilitates and markets the complementarity and competitiveness in the cluster. This study is a call for urban managers and policy markers to formulate regional policies according to what Meijers calls as polycentric network. Sao Paulo, Buenos Aires, Santiago and Rio de Janeiro have major influence in their own metropolitan region but they can also perform a distinct and specialized service in the *transnational cluster*, developing complementary assets, avoiding destructive competition and war between places and promoting regional economic development through multiple-scales: not only at city-level, but also in their metropolitan regions and beyond national borders.

The findings revealed that Sao Paulo is specialized in Consumer Goods; Buenos Aires in Tourism and Creative Industries; Santiago in Environmental Technology and Physical Sciences; and Rio de Janeiro in Industrial and Energy, revealing a mismatch between what the cities in the network are statistically specialized in (relative strength) and the sectors the cities are in fact receiving more investments (absolute strength). However a challenge for urban managers and policy makers is: to what extent should cities focus on what the statistics shave shown based on their location quotient or on other sectors that could build stronger and more sustainable ties of complementarity in the long-term? As supported by the theories presented, one city cannot compete or be complementary in all sectors of the economy with all the cities in the network. Therefore, from Sao Paulo's complementarity network analysis it is clear that strategies on the fields of E-tourism, Environment and Knowledge would enable those cities to benefit more from the rapid progress in high-technology, which is the basis of an emerging knowledge economy and society in Latin America.

This study has also proved that some location factors are key for investment flows to Sao Paulo and Latin American cities. These are: GDP growth, business sophistication and climate, labour market efficiency, population size (market size and purchasing power of the population), institutional readiness, energy consumption, connectivity to suppliers, cities, research institutes and air/highways infrastructure. Although Sao Paulo does not perform so well as its competitors in some of these location factors, the city still receives more investments. It is clear that as long as investors foresee opportunities to maximize their profit and the city can capture and internalize the spillovers of FDI, investments will continue to flow to Sao Paulo even though the city's competitive status or GDP growth perform poorly against benchmarks in the region. Also, the results show that if Sao Paulo and the majority of large and middle-sized Latin American & Caribbean cities want to be more alluring in the global investment network, there is need of more comparative studies and extensive data available at local level in the region.

The body of knowledge presented in this thesis also stressed that a city's level of competitiveness relies not only on the location factors that are fixed in the cities, but also on the scope and nature of its connections with other cities and investment flows, revealing a complex of forms, functions and flows. In this sense, it is possible to

conclude that not only is Sao Paulo what Friedmann would call of *basing point* and Saskia Sassen of *highly concentrated command point* in Latin America's competitive network, but also the city with more investment connections than its own competitors before ranked as more competitive.

This study has gone some way towards enhancing the complex paradigm of a local metropolis with regional proportions linked to a global network of *world-cities*. At the same time Sao Paulo has spaces defined by the new ICT capital, it reveals a fragmented territory that expresses its local deficiencies. In this sense, this thesis can pose new problems and challenges that would contribute to a richer understanding of the problem. Sao Paulo is also known by its numerous brownfields, deposits and abandoned industrial buildings in contrast to innovative environments oriented to services and high-technology. How can the city improve its urban landscape in order to bridge this gap? Furthermore, the IT economy has created numerous jobs but mostly in favour of highly specialized and skilled human capital. How can the rest of the labour force be digitally and socially included in the new economy? How is Sao Paulo's absorptive capacity for the investments in the ICT & Electronics industry? It is clear that Sao Paulo has potential for numerous complementary and competitive relations that have not yet been deeply explored and call for research.

Referring back to the main research question and conceptual framework to which this thesis is addressed to, it is clear that in order to achieve regional economic growth & development and enhance networks of competition and complementarity, Sao Paulo should focus on sector specialized policies to meet the growing needs of its economy and population and improve the location factors that represent a threat to its attractiveness. Sao Paulo and its competitors/collaborators need a supportive regional policy, which facilitates and markets the complementarity and competitiveness in the cluster and reinforces the multiple scale approach in the polycentric network.

RECOMMENDATIONS

I – For the coopetitive network

1) Regional Policy focused on multi-scales and multi-sector specializations.

A supportive regional policy focused on each city's specialization can diversify their economy and affect investments decisions. In this way, a clear strategic planning on functional complementarities can contribute to a distinctive regional polycentric structure and transform these four cities into the pillars of a more powerful region for investments in South America.

Institutional arrangements and actions suggested:

1. Different cities, different roles! Each city in this transnational network should formulate a unique set of strategies suitable to its own situation and specialization. In fact, the most important challenge is to propose a 'smart' strategy that differentiates one city from each other. The cities should assess their own potential and take into account not only their absolute strength for investments, but also their specialization in the network.

2. Ensure a multi-stakeholder engagement, particularly in the private sector in the process of developing and implementing a common strategy for the region and in long-term investments.

3. Inter-organizational networking across horizontal and vertical boundaries, i.e., a cross-national effort for regional economic collaboration between the municipalities and central governments, public and private sectors and other organizations. This could discourage fiscal wars, destructive competition, and regional disparities and is a more relevant solution than formal changes in government boundaries. Also, this would help the local authorities to shift the focus from individual city competitiveness to complementary networks with competitors.

4. Design a coordinated city/region-marketing and branding strategies related to their multi-sector transnational cluster of activities (E-tourism, Environment, Knowledge). The elaboration of a brand for the Coopetitive Network aims to associate the region to an image or approach, sending a signal of the region's vision and specialization to investors.

5. Creation of a regional economic development agency for the region. The agency can provide technical and financial assistance, training programs, elaboration of plans for territorial competitiveness and marketing campaigns.
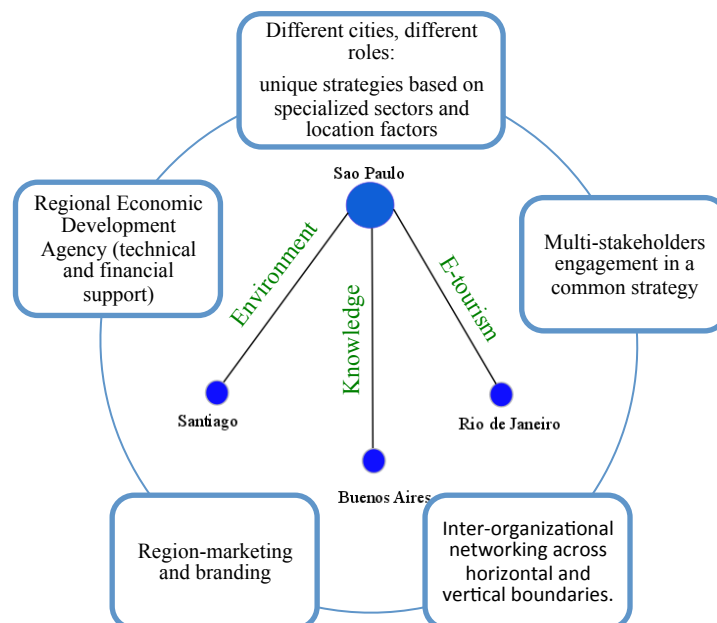
Figure 5.1: Summary of the actions of a Regional Policy for Sao Paulo's multi-sector transnational cluster

Multi-sector specializations:

Sao Paulo's economic/investment structure can be complemented by the city's true competitors in the multi-sector transnational network. In this sense, Buenos Aires, Santiago and Rio de Janeiro can complement Sao Paulo by focusing on what they are specialized in.

- *Sao Paulo and Buenos Aires:* Since Sao Paulo is focused on business tourism and Buenos Aires is specialized in this sector, both cities can learn from each other and improve their attractiveness. In this sense, Sao Paulo should make an assessment of which tourism-related location factors should be improved compared to Buenos Aires. Sao Paulo can also learn from the city's Creative Industries specialization and knowledge economy and apply this to its strategies in Consumer Goods.

- *Sao Paulo and Rio de Janeiro* can work together towards the e-tourism industry with a distinctive role for ICT-related projects. The international events - Soccer World Cup (2014) and the Olympic games (2016) are important opportunities for ICT investments as well as small and medium enterprises involvement in reaping the benefits of the touristic boom. Therefore, these cities should be more aggressive in absorbing the implications of ICT in the tourism industry and benefit from these technologies, moving towards achieving a knowledge economy.

- *Sao Paulo, Santiago and Rio de Janeiro* can work together with Energy, Environmental Technology and Physical Sciences. The cities working together can attract 'green' investments, giving a focus to the Environment segment. Sao Paulo should learn from the natural endowments Santiago and Rio de Janeiro have in order to capture the complementary services of these industries. Once Sao Paulo is moving towards becoming a non-manufacturing city, Sao Paulo can attract the headquarters of these companies, as well as specialized services in this field.

II - For Sao Paulo

1) **A "strategic and multi-scale plan" for Sao Paulo's competitiveness, complementarity and economic development.** This aims to overcome the lack of dialogue and coordinated policies between state and municipal government, as well as a different scale of analysis for urban planning and development in the city of Sao Paulo. There should be more integration between the state and municipal governments apart from political divergences in order to rethink the city's competitive strategies to regional scales and even cross-national boundaries. It is necessary to look at Sao Paulo through the lens of multiple scales in order to improve its economic importance, competitive status and enhance its complementary relations. Once Sao Paulo

is already a bright spot in the Brazilian network of investments, the challenge is to think Sao Paulo as a city-region which spillovers extrapolate the city's own boundaries.

2) **Improvement of certain location factors that play a crucial role in defining the city's competitiveness:**
   1. *Institutional Readiness.* Sao Paulo still must provide a sound and fair legal and administrative environment for business. Less bureaucracy and lower costs to start a new business, stronger institutions and high security (trust) in doing business are some improvements the city should focus on.
   2. *Urban renewal of brownfields scattered across the city.* The numerous brownfields, deposits and abandoned buildings in contrast to the innovative environments are a symbol of decay and crime and a threat to the city's attractiveness once it affects the urban landscape. The restoration and renewal of old spaces into spaces with new functions will revitalize the city and transform Sao Paulo from a functionalist city to a city where people can not only work and consume, but also live.
   3. *Upgrade tourism transport infrastructure:* Sao Paulo has a variety of art galleries, exhibitions, convention centers, and museums that have been improved once the municipal government is focused on international events and business tourism. However, the city lacks of efficient special transportation facilities associated with tourism. Following the successful example of Curitiba (state of Parana) and Buenos Aires where there is a broad specialized tourism transport infrastructure, Sao Paulo could also strengthen its tourism sector and achieve higher visibility in South America.

3) **Employment for the "new economy'.** The IT economy has created numerous jobs but mostly in favour of highly specialized and skilled human capital in detriment of the rest of the labour force. Sao Paulo should focus on opportunities of employment for its growing population. A better implementation of the existing national policies for social, cultural and digital inclusion in low-income communities and public schools would have profound implications in socioeconomic development and employment opportunities in the city.

4) **Set up a metropolitan-wide development fund that can capture the value of future return on foreign direct investments.** A development fund acting at local deficiencies and ensuring that other cities in Sao Paulo's polycentric area of influence benefit from the positive spillovers from the investments could boost local/regional economic development.

REFERENCES

Alderson, A. S. & Beckfield, J. 2004, 'Power and Position in the World City System', *AJS*, vol. 109, no. 4, pp. 811-851.

Alfaro, L., Chanda, A., Kalemli-Ozcan, S. & Sayek., S. 2010, 'Does foreign direct investment promote growth? Exploring the role of financial markets on linkages', *Journal of Development Economics*, vol. 91, pp. 242-256.

Araujo, T. B. 2000, 'Dinâmica regional brasileira nos noventa: rumo à desintegração competitiva?', In: de Castro, I. E., Miranda, M., & Egler, C. G., Orgs. *Redescobrindo o Brasil.* 500 anos depois, 2. ed, Rio de Janeiro, Bertrand Brasil, FAPERJ.

Asquino, M. S. 2012, *Infrasestrutura e Planejamento em Sao Paulo:* a metrópole entre as escalas regionais e o impacto local, Sao Paulo, Annablume.

Beaverstock, J. V., Doel, M. A., Hubbard, P.J. & Taylor P. J. 2002, 'Attending to the world: competition, cooperation and connectivity in the world city network', *Global Networks* 2, pp. 111–132.

Black, T. R. 1999, Evaluating social science research, an introduction, London: *Sage publications.*

Blanco, L. R. 2012, The Spatial Interdependence of FDI in Latin America, *World Development,* In press: http://dx.doi.org/10.1016/j.worlddev.2012.02.003

Brandenburger, A. M. & Nalebuff, B. J. 1996, *Co-opetition,* New York: Doubleday Currency.

Burger, M. J., van der Knaap, G.A. & Wall, R.S. 2011, 'Revealed Competition for Greenfield Investments between European Regions', *Journal of Economic Geography*, Oxford University Press.

Camagni, R. 2002, On the concept of territorial competitiveness: sound or misleading?, *Urban Studies* 39, pp. 2395–2411.

Castells, M. 1996. *The rise of the network society*, Blackwell, Oxford.

Derudder, B., Taylor P.J., Witlox F. & Catalano G., 2003, Hierarchical Tendencies and Regional Patterns in the World City Network: A global Urban Analysis of 234 Cities, *Regional Studies,* no 37*,* pp. 875 – 886.

Dunning, J. H. & Narula, R. 2004, *Multinational and Industrial Competitiveness*: A New Agenda, Cheltenham, Edward Elgar.

Durham, J. B. 2004. 'Absorptive capacity and the effects of foreign direct investment and equity foreign portfolio investment on economic growth', *European Economic Review,* vol 48, pp. 285-305.

ECLAC. 2012, Report on Foreign Direct Investments in Latin America and the Caribbean. [Homepage of The United Nations Economic Commission for Latin America and the Caribbean (ECLAC)] [Online] Available: http://www.eclac.cl/cgiin/getProd.asp?xml=/publicaciones/xml/0/43290/P43290.xml &xsl=/ddpe/tpl-i/p9f.xsl&base=/tpl-i/top-bottom.xsl [2012, 13 February].

Economist Intelligence Unit. 2010, Evaluation of the environment for public-private partnerships in Latin America and the Caribbean*,* The 2010 Infrascope. *A guide to the Index and methodology*. The Economist.

Field, A. 2006, *Discovering Statistics Using SPSS*, Second Edition, London, Thousand Oaks, New Delhi, Sage Publications.

FDI intelligence 2011. American Cities of the Future 2011/2012 Report. [Homepage of FDI intelligence] [Online] Available: http://www.fdiintelligence.com/Locations/Americas/American-Cities-of-the-Future-2011-12 [2012, 15 March].

Friedmann, J. 1986, *World City Hypothesis.* Development and Change, vol. 17, pp. 69-83, London, Beverly Hills and New Delhi, SAGE.

Friedmann, J. 1995, 'Where We Stand: A Decade of World City Research.' Pp. 21–47 in *World Cities in a World-System*, edited by Paul L. Knox and Peter J. Taylor. New York, Cambridge University Press.

GaWC 2008, 'The World according to GaWC 2008'. [Homepage of Globalization and World Cities Study Group & Network (GaWC)] [Online] Available: http://www.lboro.ac.uk/gawc/world2008t.html [2012, 13 February].

Goldstein, A. 2004, The dynamics of foreign direct investment and A-B-C competitiveness, In: *Trade and competitiveness in Argentina, Brazil and Chile: not as easy as A-B-C,* OECD.

Harrison, J. 2010, 'Networks of connectivity, territorial fragmentation, uneven development: The new politics of city-regionalism', *Political Geography*, vol. 29, issue 1, pp. 17–27.

IBGE. 2012, Demographic Census [Homepage of Instituto Brasileiro de Geografia e Estatística (IBGE)], [Online]. Available: <http://www.ibge.gov.br > [2012, 11 January].

Investe SP. 2012, Reasons to invest in SP [Homepage of Investe SP] [Online]. Available: <http://www.investe.sp.gov.br/porque/porque_principal?lang=en> [2012, 22 August].

Kitson, M. et al. 2004, 'Regional Competitiveness: An Elusive yet Key Concept?,' *Regional Studies*, Taylor and Francis Journals, vol. 38(9), pp. 991-999.

Krugman, P. 1994, 'Competitiveness: a dangerous obsession', *Foreign Affairs,* no. 73, pp. 28–44; repr. Krugman, P. 1996, *Pop Internationalism*, pp. 3–24. MIT Press, Cambridge, MA.

Luo, Y. 2007, 'A coopetition perspective of global competition', *Journal of World Business,* no 42, pp. 129-144.

Malecki, E. J. 2004, 'Jockeying for Position: What It Means and Why It Matters to Regional Development Policy When Places Compete', *Regional Studies*, vol. 38.9, pp. 1101–1120.

McKinsey Global Institute. 2011, Building globally competitive cities: the key to Latin American growth. [Homepage of McKinsey & Company] [Online]. Available: http://www.mckinsey.com/insights/mgi/research/urbanization/building_competitive_cities_key_to_latin_american_growth [2012, 17 August].

Meijers, E. 2006. *The notion of complementarity in urban networks:* definition, value, measurement and development, Paper presented at the 10th ENECE Conference on Urban and Regional Research, Bratislava.

Narula, R. & Driffield, N. 2012, 'Does FDI Cause Development? The Ambiguity of the Evidence and Why it Matters', *European Journal of Development Research*, vol.24, pp. 1–7.

Narula R. & Lall, S. 2006, *Understanding FDI Assisted Economic Development*, London, Routledge.

Ng, L. F. Y. & Tuan, C. 2006, 'Spatial agglomeration, FDI, and regional growth in China: Locality of local and foreign manufacturing investments', *Journal of Asian Economies*, no 17, pp. 691-713.

Ni, P. 2012, *The Global Urban Competitiveness Report 2011*, UK: Edward Elgar Publishing Ltd.

Onsel, S. et al. 2008, 'A new perspective of the competitiveness of nations', *Socio-Economic Planning Sciences,* no 42, pp. 221-246.

Pajevic, F. 2011, *A competitive Rotterdam:* An investigation into Rotterdam's competitive status vis-à-vis its main challengers - Hamburg and Frankfurt within the global market. Master Thesis, Institute for Housing and Urban Development Studies, Erasmus University of Rotterdam, Rotterdam.

Portelli, B. & Narula, R. 2004, 'Foreign direct investment through acquisitions and implications for technological upgrading: Case evidence from Tanzania,' *Research Memoranda 008*, Maastricht: MERIT, Maastricht Economic Research Institute on Innovation and Technology.

Porter, M. E. 1998, 'Location, clusters and the new economics of competition', *Business Economics,* no. 33, pp. 7–17.

Rondinelli, D. et al. 1998. 'The Changing Forces of Urban Economic Development: Globalization and City Competitiveness in the 21st Century', *Cityscape: A Journal of Policy Development and Research,* vol. 3, no 3, pp. 71-105.

Sassen, S. 2001, *The global City:* New York, London, Tokyo, 2d ed, Princeton, N.J.: Princeton University Press.

Sassen, S. 2002, 'Locating Cities on Global Circuits'. Globalization and Cities, *Environment and Urbanization,* vol. 14, no 1, pp. 13-30.

Scott, A. J. & Storper, M. 2003, 'Regions, Globalization, Development', *Regional Studies*. Vol. 37.6/7, pp. 579-593.

Storper, M. 1995a, 'Competitiveness policy options; the technology–regions connection', *Growth and Change Spring,* pp. 285–308.

Storper, M. 1995b, 'The Resurgence of Regional Economies, Ten Years On: The Region as a Nexus of Untraded Interdependencies', *European Urban and Regional Studies* 2, pp.191-221.

Storper, M. 1997, *The Regional World: Territorial Development in a Global Economy,* Guildford Press, New York.

The FDI Global Outlook Report. 2011, Manufacturing makes a come back. [Homepage of FDI intelligence] [Online] Available: http://www.ofii.org/docs/Global_Outlook_Report.pdf [2012, 23 February]

The Global Competitiveness Report (GCR) 2011-2012 [Homepage of the World Economic Forum] [Online] Available: http://www3.weforum.org/docs/WEF_GCR_Report_2011-12.pdf [2012, 14 February].

UN Habitat 2012, Estados de las Ciudades de América Latina y el Caribe 2012. Rumbo a una nueva transición urbana. [Homepage of UN Habitat] [Online] Available: http://www.onuhabitat.org/index.php?option=com_docman&task=cat_view&gid=362 &Itemid=18 [2012, 22 August]

USP 2011, Status of ICT Policy Development – Country Report Brazil. [Homepage of Pro-ideal] [Online] Available: http://www.pro-ideal.eu/sites/default/files/D5.2_Status_of_ICT_policy_development_Country_report _Brazil.pdf) [2012, 15 August]

Villaverde, J. & Maza, A. 2011, 'Foreign direct investment in Spain: Regional distribution and determinants', *International Business Review.* IBR 880, p. 12.

Wall, R. S. 2009, *Netscape:* cities and global corporate networks. ERIM and Haveka Publishers.

Wall, R. S. 2010, 'We Need Archinomics', special issue MVRDV Architects (ed),

Journal l'Architecture d'aujourd'hui, Paris.

World Bank, 2010, '*Competitiveness and Growth in Brazilian Cities, Local Policies and Action for Innovation'*. Ming Zhang, Editor.

Xu, B. 2000, 'Multinational enterprises, technology diffusion, and host country productivity growth', *Journal of Development Economics*, vol 62, no 2.

Yin, R. & Campbell, D. T. 2002, *Case Study Research: Design and Methods Applications of Case Study,* Thousand Oaks, CA, Sage.

APPENDIX I: Research Instruments

I - Interview Guide (Semi-structured) for key respondent of:

- Sao Paulo State Secretary of Planning and Regional Development

- Secretary of Municipal Government of the City of Sao Paulo

General questions: to contrast with secondary data collected

1. What would you consider the main attributes that make Sao Paulo attractive for foreign direct investments/business?

2. Which economic sectors have been attracting more investments in Sao Paulo?

3. Where are the areas of the city where most companies are agglomerated and why?

4. How would you describe Sao Paulo's economic position in terms of investments and connectivity to the world city network of investments?

5. Who are the cities that Sao Paulo competes with in Latin America? And what is the nature of this competitiveness (for example: investments, tourists, business, human resources, etc)?

6. Who are the cities that Sao Paulo collaborates with in Latin America? And what is the nature of this collaboration?

Specific questions: exploring the problem

7. How does Sao Paulo maintain its attractiveness for investments/business? Which actions is the city taking to enhance its competitive status?

8. Buenos Aires and Santiago del Chile rank better than Sao Paulo in terms of economic performance and urban competitiveness. Why do you think are the main reasons for this? Is the city taking action to improve these two aspects?

9. Sao Paulo is the hub of investments not only in Brazil, but also in Latin America, however, these investments are not leading to economic growth or development. Why do you think this is happening? Is the city taking any action to improve this?

10. Sao Paulo is the financial and economic center in Latin America, hosting financial institutions and connected to intense flows of people, employment and investments; however, the word of mouth is that Sao Paulo is not an attractive city to live. How and is this addressed by the city?

Specific questions: exploring solutions

11. Is there any complementary/collaborative urban network between Sao Paulo and other cities?

12. With which cities do you think Sao Paulo can build complementary relations?

13. What kind of companies/industries does Sao Paulo want to attract for the long-term?

14. In your opinion, how important is a regional integration between Sao Paulo and other cities to the attraction of investments and regional development?

II – Interview Guide (Semi-structured) for three selected companies:

1. What are the main location factors for the establishment of your business in Sao Paulo?

2. The geographical position of your firm inside the city of Sao Paulo was intentionally chosen? Why?

3. For your firm, which of the following factors offered by the city are the most important:

( ) the regional integration Sao Paulo has with the neighbouring cities;

( ) the city's locational advantages.

4. What else does your company consider important when choosing a location/city to establish a new business?

5. For your company, how important is the position of Sao Paulo in the urban competitiveness ranks? Why?

6. For your company, how important would be a complementarity network between Sao Paulo and other neighbouring cities? Why?

7. Does your company have complementary/collaborative relations with other cities close to Sao Paulo?

( ) No

( ) Yes. Which cities? Why these cities?

APPENDIX II: Freeman's Degree Centrality Measures Analysis *(UCINET Software)* based on FDI market.com database (2003-2011)

Cities	Degree	Share
Sao Paulo	200	0.071
Mexico City	144	0.051
Buenos Aires	97	0.034
Santiago	91	0.032
Bogota	83	0.029
Paris	61	0.022
Madrid	56	0.02
Rio de Janeiro	56	0.02
London	50	0.018
Vancouver	43	0.015
Panama City	43	0.015
Lima	39	0.014
Toronto	35	0.012
Tokyo	33	0.012
Monterrey	33	0.012
NYC (NY)	33	0.012
San Jose	30	0.011
Caracas	27	0.01
Seoul	23	0.008
Barcelona	23	0.008

APPENDIX III: Location Quotient for Sao Paulo and true competitors in Latin America

In order to calculate the location quotient, the following formula was applied:

(Investment in a sector/Total city investment) * Weighted Total

Sectors	Inward FDI (USD million)					Weighted Total	Location Quotient			
	Sao Paulo	Buenos Aires	Santiago	Rio de Janeiro	Total Sector Investment		Sao Paulo	Buenos Aires	Santiago	Rio de Janeiro
Construction	1829.40	519.98	359	258.99	2967.37	0.01	1.5	1.2	0.6	0.3
Consumer Goods	3620.30	928.59	115.6	69.9	4734.39	0.02	**1.9**	1.4	0.1	0.1
Creative Industries	371.40	394.3	51.13	86.9	903.73	0.01	1.0	**3.0**	0.3	0.4
Energy	4535.28	3920.8	3127.1	17418.49	29001.67	0.15	0.4	0.9	0.6	**2.3**
Environmental Technology	8710.30	685	9660.43	4100.38	23156.11	0.12	0.9	0.2	**2.2**	0.7
Financial Services	3219.05	830.6	1376.6	177.9	5604.15	0.02	1.4	1.0	1.3	0.1
Food, Beverages & Tobacco	2360.34	806.56	475.74	122.4	3765.04	0.01	1.6	1.5	0.7	0.1
ICT & Electronics	30744.65	12653.972	9357.88	3885.64	56642.14	0.29	1.3	0.5	0.9	0.3
Industrial	673.90	232.7	158	7007.3	8071.90	0.04	0.2	0.2	0.1	**3.3**
Life Sciences	1158.00	354.4	270.25	122.6	1905.25	0.01	1.5	1.3	0.7	0.2
Physical Sciences	9751.50	1239.1	9890.2	10274.6	31155.40	0.16	0.8	0.3	**1.7**	1.3
Professional Services	799.08	112.36	76.9	89.7	1078.04	0.01	**1.8**	0.7	0.4	0.3
Retail Trade	2106.04	1979.15	450.9	2556.09	7092.18	0.03	0.7	1.9	0.3	1.4
Tourism	646.70	928.59	109.1	335.5	2019.89	0.01	0.8	**3.2**	0.3	0.6
Transport Equipment	5840.92	1827.48	234	2561.9	10464.30	0.05	1.4	1.2	0.1	0.9
Transportation, Warehousing & Storage	946.40	472.00546	875.5	932.2	3226.11	0.01	0.7	1.0	1.4	1.1
Wood, Apparel & Related Products	365.15	117.3	242.3	0	724.75	0.01	1.2	1.1	1.7	0.0
Total City Investment	77678.41	27782.69	36830.63	50000.49	192292.24					

APPENDIX IV: Summary of results from the interviews about Sao Paulo's collaborator cities

<table>
<tr><th colspan="2">Respondent</th><th>Main collaborator cities</th><th>Reasons</th></tr>
<tr><td rowspan="4">Companies</td><td>Environmental Technology</td><td>Sorocaba and Campinas</td><td>Proximity to costumers and business partners</td></tr>
<tr><td>IT services (2)</td><td>Sorocaba, Campinas, Bauru, Sao Jose do Rio Preto and Sao Jose dos Campos</td><td>Proximity to business partners and locational advantages</td></tr>
<tr><td>ICT & Electronics (2)</td><td>Metropolitan region of Sao Paulo*, Hortolandia, Campinas, Ribeirao Preto, Indaiatuba, Rio de Janeiro (RJ), Curitiba (PR)</td><td>Where the branch offices and business partners are located</td></tr>
<tr><td>Software (2)</td><td>Metropolitan region, Diadema São Bernardo do Campo, Pouso Alegre (MG), Cuiaba (MS), Rio de Janeiro (RJ)</td><td>Easy access and low cost of resources</td></tr>
<tr><td rowspan="2">Government</td><td>Municipal Government</td><td>Macrometropolitan region of Sao Paulo (main cities: Campinas, Sao Jose dos Campos, Jundiai, Sorocaba, Braganca Paulista, Santos, Piracicaba)</td><td>- Geographical proximity (100-150km to Sao Paulo)
- Exchange of services, people, students, consumer market, etc.</td></tr>
<tr><td>State Government</td><td>Metropolitan Region, Guarulhos, Osasco, Barueri, Sao Bernardo, Santo Andre, Sao Caetano do Sul, Jundiai, Piracicaba, Campinas, Sorocaba and Sao Jose dos Campos

*Cities in the area of influence: States of Mato Grosso do Sul, Parana, Minas Gerais ,Rio de Janeiro and Espirito Santo.</td><td>- Presence of industrial parks in those cities
- Manufacturing, automobile and high-tech industries plants are based on these cities and the decision making centers and headquarters are established in Sao Paulo.</td></tr>
</table>

*Note: The Metropolitan Region of Sao Paulo is composed by 39 cities: Aruja, Barueri, Biritiba Mirim, Caieiras, Cajamar, Carapicuiba, Cotia, Diadema, Embu das Artes, Embu-Guacu, Ferraz de Vasconcelos, Francisco Morato, Franco da Rocha, Guararema, Guarulhos, Itapevi, Itapecerica da Serra, Itquaquecetuba, Jandira, Juquitiba, Mairipora, Maua, Mogi das Cruzes, Osasco, Pirapora do Bom Jesus, Poa, Ribeirao Pires, Rio Grande da Serra, Salesopolis, Santa Isabel, Santana do Parnaiba, Santo Andre, Sao Bernardo do Campo, Sao Caetano do Sul, Sao Lourenco da Serra, Sao Paulo, Suzano, Taboao da Serra, Vargem Grande Paulista.

The following map illustrates Sao Paulo metropolitan region and extended areas of influence in the state:
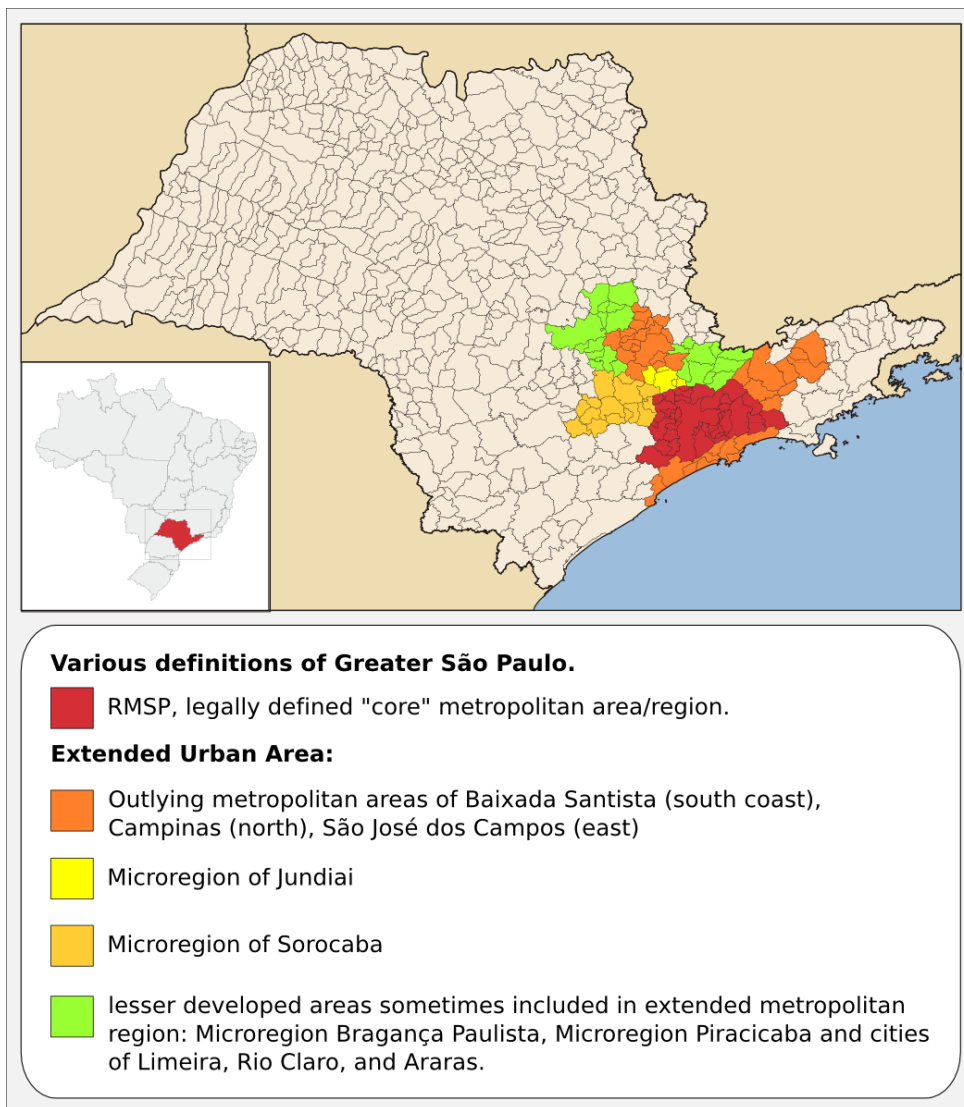
Map showcasing Sao Paulo's areas of influence in Sao Paulo State
Source: Junior 2011. Organized by the author.
Available at: http://en.wikipedia.org/wiki/File:Grande_SaoPaulo.svg

APPENDIX V: Location factors for investments in Latin American & Caribbean countries

Countries	FDI inflows (USD million)	Location Factors														
		Economic							Social					Environment		
		Macro-economic Environment (1-7)	Financial Market Development (1-7)	Business Sophistication (1-7)	Labour market efficiency (1-7)	Infrastructure (1-7)	GDP growth (%)	Technological readiness (1-7)	Corruption (1-20)	Institutional Readiness (1-7)	Population size (Total)	Health and primary education (1-7)	Human Development Index (HDI)	Energy Consumption (Kt)	Carbon footprint (kt)	Access to electricity (%)
Argentina	68106.98246	4.9	3.26	3.78	3.52	3.7	8.7	3.71	12.1	2.9	40764561	5.8	0.797	74249	192378	97
Barbados	453.7	3.88	4.7	4.29	4.69	5.49		4.93		5.29	273925	5.01	0.793		1358	
Belize	8.1	4.5	3.49	3.3	4.19	3.21	2	2.86	11	3.21	356600	5.81	0.699		425	
Bolivia	14965.79	5.39	3.29	3.45	3.29	3.1	5.1	2.7	2.8	3.14	10088108	5.2	0.663	6232	12835	78
Brazil	329287.112	4.16	4.47	4.54	4.19	3.99	2.7	3.98	6.4	3.72	196655014	5.45	0.718	240162	393220	98
Chile	82274.09	6.07	4.56	4.32	4.64	4.67	6	4.26	0.9	5.06	17269525	5.68	0.805	28184	73109	99
Colombia	51690.3325	5.17	4.07	4.04	4.12	3.66	5.9	3.6	18	3.47	46927125	5.58	0.71	31932	67700	94
Costa Rica	12455.80019		3.83	4.04	4.51	3.7	4.2	3.94	5.3	3.47	4726575	6.08	0.744	4899	8016	99
Dominican Republic	13962.385	4.45	3.61	3.65	3.98	3.03	4.5	3.65	16.7	3.11	10056181	5	0.689	8093	21617	96
Ecuador	8780.2	5.21	3.47	3.57	3.37	3.39	4.8	3.1	16.5	3.11	14666055	5.68	0.72	11352	26824	92
El Salvador	4077.3	4.61	4.01	3.81	3.69	3.98	1.5	3.37	8.5	3.21	6227491	5.42	0.674	5102	6113	86
Guatemala	5845.12	4.7	4.44	4.12	4.03	3.91	3.9	3.5	18.3	3.08	14757316	5.28	0.574	9842	11914	81
Guyana	2211.93	4	3.77	3.77	4.1	3.12		3.26	15.3	3.55	756040	5.62	0.633		1525	
Haiti	743.8	4.72	2.52	2.78	4.11	1.62	5.6	2.56	11.3	2.46	10123787	3.32	0.454	2595	2435	39
Honduras	4332.98	4.61	4.23	3.77	3.48	3.53	3.4	3.37	16.4	3.44	7754687	5.43	0.625	4407	8672	70
Jamaica	2458.350789	2.55	4.33	3.81	4.22	3.74	1.3	3.63	11.8	3.63	2709300	5.11	0.727	3257	12204	92
Mexico	158373.1387	5.25	3.92	4.11	3.92	3.98	3.9	3.75	15.2	3.44	114793341	5.69	0.77	174640	475834	
Nicaragua	3763.5	4.3	3.45	3.21	4.05	2.75	4.7	2.82	14.5	3.06	5869859	5.3	0.589	3085	4331	72
Panama	14303.61	5.18	4.79	4.21	3.91	4.74	10.6	4.44	19	3.76	3571185	5.55	0.768	3100	6912	88

Countries	FDI inflows (USD million)	Location Factors														
		Economic							Social					Environmental		
		Macro-economic Environment (1-7)	Financial Market Development (1-7)	Business Sophistication (1-7)	Labour market efficiency (1-7)	Infrastructure (1-7)	GDP growth (%)	Technological readiness (1-7)	Corruption (1-20)	Institutional Readiness (1-7)	Population size (Total)	Health and primary education (1-7)	Human Development Index (HDI)	Energy Consumption (Kt)	Carbon footprint (kt)	Access to electricity (%)
Paraguay	5301.2	4.42	3.86	3.39	3.63	2.53	4	2.99	17.3	2.96	6568290	5.1	0.665	4752	4118	97
Peru	66707.85	5.02	4.54	3.93	4.62	3.62	6.9	3.65	16.8	3.54	29399817	5.36	0.725	15831	40535	86
Puerto Rico	8046.288235	5.88	4.51	4.85	4.58	4.26		4.67	4.4	4.44	3706690	5.76				
Suriname	813.2	4.71	3.66	3.24	4.01	3.74		3.29	9.1	3.59	529419	5.44	0.68		2439	
Uruguay	16815.31	4.9	3.97	3.76	3.84	4.46	5.7	4.18	0.4	4.8	3368595	5.98	0.783	4093	8328	98
Venezuela	41382.913	3.85	3.11	3.15	2.88	2.72	4.2	3.36	10.4	2.42	29278000	5.48	0.735	66898	169533	99

Sources: World Bank Indicators(2009-2011), Global Urban Competitiveness Report 2011/2012, Human Development Report (UN)

APPENDIX VI: Regression Analysis for Economic Location Factors

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-1.477	5.060		-.292	.774	-12.152	9.198					
	Macroeconomic_Environment	.049	.964	.008	.051	.960	-1.984	2.082	.104	.012	.007	.912	1.097
	Financial_market_development	-1.436	4.682	-.100	-.307	.763	-11.313	8.442	.223	-.074	-.045	.199	5.032
	Business_Sophistication	15.584	5.933	.899	2.627	.018	3.066	28.101	.435	.537	.383	.181	5.525
	Labour_market_efficiency	-6.719	3.488	-.361	-1.926	.071	-14.077	.639	-.141	-.423	-.281	.606	1.650
	Infrastructure	-3.855	3.029	-.428	-1.272	.220	-10.246	2.537	.221	-.295	-.185	.188	5.320
	GDP_growth	1.388	.480	.452	2.891	.010	.375	2.401	.502	.574	.421	.869	1.150
	Technological_readiness	3.243	4.191	.247	.774	.450	-5.598	12.084	.349	.184	.113	.208	4.803

a. Dependent Variable: fdi_inflows

Stepwise Method:

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	7.126	.776		9.181	.000	5.521	8.732					
	GDP_growth	1.542	.554	.502	2.782	.011	.395	2.689	.502	.502	.502	1.000	1.000
2	(Constant)	-4.929	3.546		-1.390	.178	-12.282	2.424					
	GDP_growth	1.753	.460	.570	3.808	.001	.798	2.708	.502	.630	.565	.982	1.018
	Labour_market_efficiency	8.945	2.588	.518	3.457	.002	3.578	14.311	.442	.593	.513	.982	1.018

a. Dependent Variable: fdi_inflows

APPENDIX VII: Regression Analysis for Social Location Factors

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-18.587	3.917		-4.745	.000	-26.786	-10.389					
	Corruption	-.125	.307	-.054	-.406	.689	-.767	.517	-.024	-.093	-.037	.476	2.100
	Institutional_Readiness	3.021	1.683	.264	1.796	.088	-.501	6.543	.047	.381	.164	.385	2.598
	Population_size	1.261	.132	.945	9.560	.000	.985	1.537	.844	.910	.872	.852	1.174
	Health_and_primary_education	2.296	2.122	.118	1.082	.293	-2.145	6.737	.259	.241	.099	.695	1.438
	HDI	-1.069	1.554	-.068	-.688	.500	-4.321	2.183	-.001	-.156	-.063	.840	1.191

a. Dependent Variable: FDI_inflows

Stepwise Method:

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-8.812	2.375		-3.710	.001	-13.725	-3.899					
	Population_size	1.125	.149	.844	7.536	.000	.817	1.434	.844	.844	.844	1.000	1.000
2	(Constant)	-16.072	2.754		-5.835	.000	-21.784	-10.360					
	Population_size	1.272	.127	.954	10.033	.000	1.009	1.535	.844	.906	.905	.900	1.111
	Institutional_Readiness	3.987	1.088	.348	3.665	.001	1.731	6.243	.047	.616	.331	.900	1.111

a. Dependent Variable: FDI_inflows

APPENDIX VIII: Regression Analysis for Environmental Location Factors

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	6.530	1.294		5.046	.000	3.839	9.221					
	Energy_Consumption	.604	.187	1.104	3.226	.004	.215	.994	.756	.576	.440	.159	6.302
	Carbon_footprint	-.086	.206	-.102	-.418	.680	-.514	.342	.615	-.091	-.057	.311	3.217
	Access_to_electricility	-.379	.267	-.335	-1.419	.171	-.935	.177	.485	-.296	-.193	.333	3.007

a. Dependent Variable: FDI_inflows

Stepwise Method:

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	5.887	.633		9.301	.000	4.577	7.196					
	Energy_Consumption	.414	.075	.756	5.546	.000	.260	.569	.756	.756	.756	1.000	1.000

a. Dependent Variable: FDI_inflows