Politics of Urban and Regional Competitiveness, Custo Brazil and the International Airport Tancredo Neves

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ABSTRACT

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Politics of Urban Competitiveness, Custo Brazil and the International Airport Tancredo Neves

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This thesis critically examines recent efforts by local authorities to stimulate competitiveness and development as well as to increase global connectivity of the city of Belo Horizonte, Brazil. Such efforts have been conducted through a series upgrading projects of the city’s international airport. Local authorities have developed and have been implementing a project based on the industrial airport concept at the International Airport Tancredo Neves. The project includes the addition of a special customs zone and an industrial district zone to the airport’s perimeter. A long term investment plan has been developed and put in place to expand and modernize the airport’s facility, culminating in increased operational capacity.

The notions of economic development, competitiveness and international connectivity are being used to justify these massive infrastructure investment projects. Local authorities have made called the airport an “emerging gateway in the heart of Brazil”. This thesis has identified discrepancies between how the airport has been promoted and what actually happens on the ground.

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CHAPTER 1: INTRODUCTION

Historically airports have been associated to places where passengers depart and arrive. In recent years this traditional understanding has slowly started to be reshaped. Airports have been emerging as a decisive factor to regional competitiveness and development. They have a vital role in regional employment, growth and dynamism (Banister & Berechman, 2003). Peneda, Reis, and Macário (2010) state that airports have become regional development poles.

This change in the role of the airport in the urban and regional economy is due mainly to the incorporation of a wide range of non-aviation activities into the airport site. It is recurrent to observe the transition of an airport into a complex business and industrial center (Kuhn, 2003). Kasarda (2009) claims that “airports and their immediate environs are becoming twenty first century anchors in local and regional development.” (p. 56)

This growing association of the airport with regional competitiveness and economic development has often led local politicians to argue for massive public investment in airports. Such investments are part of an envisioning process in which their city is imagined and planned as a globally connected urban center (Lindsay, 2006). This “going global” strategy and the assumed benefits from it have been used as political justifications for large scale infrastructure projects. Many of the so-called second-tier cities at the national and regional levels have undergone mega urban airport-related projects in pursuit of joining the first-tier and gaining world-class city status, including Atlanta (Katz, 2010), Incheon in South Korea (Lee, 2003) and Schipol-Amsterdam in Netherlands (Vasconcelos, 2007).
This research critically examines the implementation of the industrial airport concept in the International Airport Tancredo Neves (IATN), located in the Metropolitan Area of Belo Horizonte, Brazil. Belo Horizonte in many ways falls into a second-tier city category at the national spectrum, when compared to more developed cities such as Rio de Janeiro and Sao Paulo. Despite having a Metropolitan Area with a population of over five million (third largest in Brazil) and being an important national economic center, Belo Horizonte is often considered to be weakly globally connected and is rarely mentioned in global studies and world city analysis (GaWC, 2011). Robinson (2008) claims that there is a growing importance of projects of globalization in recent urban development. The IATN project is being conceptualized by the state of Minas Gerais as a way of promoting its state capital, Belo Horizonte, to be a first-tier city by increasing the city’s connectivity to the world and stimulating development and competitiveness. The IATN project is part of a long term structure plan created to guide the the regional economic development for the next two decades. The project consists of the incorporation of an industrial zone to the airport complex and a special customs regime designed to attract new industries and business and create a pro-business environment. Moreover, it encompasses the upgrade of the IATN’s physical facility as it becomes a regional/national airhub. According to an interview conducted with state authorities the IATN is under development to become the second most important gateway of Brazil in the next 10 years for passenger and cargo.

The political justification for massive transportation infrastructure investment relies on the notion of a modern international airport being essential to a more competitive and global-oriented city. The state authorities have claimed that Belo
Horizonte has become “a strategic location to leverage competitiveness,” and that the IATN is “an emerging gateway for worldwide business in the heart of Brazil.” This thesis examines the efforts made by state and city governments, through the IATN project, to promote Belo Horizonte’s international status from a second-tier to first-tier category.

1.1 Methods

This research draws mainly on qualitative methods including a series of personal interviews. In addition, an extensive analysis of government documents and publications, and statistics related to the IATN project and its current performance is involved. Field research was conducted at the IATN site from June 6th to August 26th, 2011, and again during December 2011. Personal interviews were conducted with state authorities in charge of the development of the IATN’s project as well as authorities working at the Federal Customs Bureau.

The city of Belo Horizonte is the capital of the state of Minas Gerais. The state government through the Secretariat for Economic Development manages airports related investments at the state level. The Secretariat does not manage the operational activities of the airport, but has played a critical role in infrastructure investment in recent years. It in charge of managing long term investments, structure plans and follow ups, hiring specialists and consultants to assist in the decision making process, integrating with other concomitant projects there are also being developed at the metropolitan region and state level, attracting new businesses and industries as well as marketing and advertisement.
Interviews were conducted during December 2011 with the Federal Customs Bureau officials at IATN. The Customs Bureau monitors cargo flows in all Brazilian airports including the IATN, and it is in charge of establishing the special customs regime. Personal interviews with Bureau’s employees helped to assess what the IATN has accomplished and how that would affect Belo Horizonte’s competitiveness and development at the national and international level.

In addition, two exploratory visits were made to the airport complex site; one in August and the other one in December of 2011. Those field trips were conducted in order to evaluate the potential proliferation of new industries and business across the airport complex. It was also useful to understand the extension of the airport influence zone and to evaluate possible physical upgrades under construction.

Lastly, the research analyzed public documents and publications in order to supplement the data collected through personal interviews. It also relied on statistical data regarding operational levels of nationally-based airports, including the IATN. It was possible to compare this information to the ones obtained through personal interviews, resulting in a more complete assessment of the IATN’s assumed role in helping Belo Horizonte become a world class city.

The personal interviews, field trips as well as statistics and documental analysis allowed this research to obtain a diverse set of data regarding the IATN developing project. Information gathered from different sources allows a great degree of comparison and contrast of different perspectives on the airport project and in general going global strategies and accordingly more complete and empirical understanding of the subject matter.
1.2 Research Questions

This research seeks to answer the following three questions:

1 - What is the industrial airport concept that has been implemented at the International Airport Tancredo Neves (IATN)?

   By answering this question the research seeks to understand in depth the features of the industrial airport being created and added to the IATN. Focus is given to which branches of the government are involved with the project and what is the level of integration and articulation among those different branches. Also this question seeks to examine closely the project in terms of physical expansion, traffic levels and integration with other projects. Answering this question allows for a better understanding of where this project is heading to in terms of a long term investment and benefit.

2 - How has the investment in the International Airport Tancredo Neves (IATN) stimulated Belo Horizonte’s economic development?

   One of the particularities of the industrial airport being implemented at IATN is the industrial district within the airport complex. This complex is expected to increase exports from the region as well as to attract new businesses and industries to the region. This question seeks to evaluate how successful this project has been in terms of promoting regional competitiveness and development by assessing that new industries have moved into the area.
3 - How has the International Airport Tancredo Neves (IATN) been promoted by state and city government with relation to global competitiveness?

This question investigates how IATN is approached by the state government of Minas Gerais. It further examines how the airport is being promoted and what are the claims and justifications for massive infrastructure investment in the airport. In addition, it examines the role of IATN in changing Belo Horizonte’s city status nationally and internationally by comparing what has been expected, what has been claimed to and what has been indeed achieved so far.
CHAPTER 2: REGIONAL AND URBAN COMPETITIVENESS IN THE ERA OF GLOBALIZATION

This chapter reviews the literature on regional and urban competitiveness, with particular focus on the Brazilian economy and its changing position in a globalizing world. It examines how public investment plays or it is believed to play a role in determining the course of the economy. Furthermore, it approaches the notion of “Custo Brazil” and how it relates to the political and media account of competitiveness and public investment in Brazil.

2.1 Regional and Urban Competitiveness

Competition among cities is an urban phenomenon that has been long affecting city development and urban planning. It is something that occurs in virtually every city, regardless of its size. At its simplest, one can define urban and regional competitiveness as the success with which cities and regions compete with one another (Kitson, 2004). Such competition can involve attracting and retaining capital and labor. It can also involve attracting investment as well as competing for national and international status, such as World city, Olympic city and regional center. According to Gordon (1999), the most common reasons that lead to competition among different cities are:

1. Attraction of Desirable Residents
2. Contest for Funding
3. Political Status
4. Hosting Events

5. Rivalry within Product Markets

6. Inward Investment (at the national and international scale)

Storper, (1997, p. 20) definition of “place competiveness” is very insightful as he states, “the ability of an urban economy to attract and maintain firms with stable and rising market shares in an activity while maintaining or increasing standards of living for those who participate in it”.

City competition can take place in two distinct levels although they are not mutually exclusive to each other: Internally, as cities within a country compete at the local, regional or national levels or externally, as they compete at the continental and/or global levels. With the intensification of globalization the latter competition process has been largely deepened and gained more attention from policy makers as well as academic researchers. More open global markets, increase in trade, faster transportation, advanced logistics and improved telecommunication are a few good reasons that have been allowing companies to search for a place, anywhere in the globe, where they can achieve minimum costs of production and be more competitive (Porter, 1990). When a product can be sourced from anywhere in the globe, in theory, it implies that there is a diminishing trend in the role of geographical location in competition, and that cities and regions would never stop competition from one another in attracting and retaining what is considered beneficial for them (Porter, 1998). Competition and competitiveness are terms often associated with development and prosperity, and are often considered to be a “goal” for many countries, regions, cities and even companies across the globe. However what is in fact competitiveness? How can it be defined?
Competitiveness is often referred to as a key factor for economic development, especially at the city and regional level. This term has increased in popularity in recent years as many parts of the world have been incorporated into the process of economic globalization. Scholars, Economists, Geographers, Politicians and other groups are often stressing the importance of competitiveness not only to urban and regional development, but also at the macro level (national) and micro level (firm based) development. However, among those distinct groups there does not seem to be a consensus on the definition of competitiveness. Gardiner, Martin, & Tyler (2004) raises important issues in a paper titled “Competitiveness, productivity and economic growth across European region”, by asking what precisely is meant by competitiveness and how it can be measured and accounted for. Kitson (2004) goes further as it refers to competitiveness as a “contentious and elusive concept”.

Why is competitiveness such a controversial concept? The main reason relies upon the fact that there are many instruments, theories and methods available and utilized to determine, define and measure competitiveness. It becomes more contentious as one narrows it down to urban and regional competitiveness, due to the fact that the topic has been studied more at the national scale.

For a long period of time economists used the concept of competitive advantage based on factors of production to determine competitiveness. This is one of the most influential theories related to competitiveness and played an important role in determining new policies. This theory started in the 18th Century with the British Economist David Ricardo, and it suggests a strong correlation between trade and competitiveness. According to this theory countries through specialization can mutually benefit as trade
will allow them to be better off. This specialization would occur according to a country’s factors of production. The factors of production include: land, labor, natural resources and capital. In other words, countries would be more competitive if they decide what to produce exclusively according to their factors of production. As countries behave the same way, they would all benefit as they trade. In conclusion, competitiveness would be achieved through specialization and consequently trade.

It is unquestionable that this theory can be quite appealing. However it has limitations and it is far from being unanimous among scholars. If one would apply this theory to various cities in the contemporary world, taking in consideration the advances brought by globalization, one would conclude that individual cities’ competitive advantage would be determined by the following (Dewan & Min, 1997):

1. Resources Availability
2. Labor Costs
3. Macroeconomic Context

If these factors were indeed the only factors to determine competitiveness, one would not be able to explain why some cities with similar endowments are more competitive than others; also the current distribution of companies and industries in the world would not be shaped the way they currently are. Uneven distribution of resources and labor costs could only account for a fraction of the economic unevenness in the modern world (Boddy, 1999). Krugman (1996) points to the main similarities between Los Angeles and Sao Paulo as on empirical evidence of similarly endowed cities having widely different economic fortunes. This theory could not be useful to explain why the developing world does not play a more important role in the international economy either.
Porter (1998) concludes that the level of success of a corporation, and the decision making on where in the globe to locate, goes beyond this notion of deciding where to invest based exclusively in factors of production.

This theory also assumes that there are equivalent levels of technology across different countries as well as diminishing returns to scale\(^1\). Those limitations become even more severe as one attempts to shift the rationale of this theory to a smaller scale such as interaction among different cities and regions.

Michael Porter introduces a new way to approach competitiveness by highlighting the necessity of continuous upgrading in competitiveness. In order to be productive, or competitive, according to Porter (1992), upgrading is critical. He was one of the first to acknowledge the importance of technology, innovation, externalities and spillover effects in determining levels of competitiveness (Porter, 1992). Krugman (1990) has similar understanding on competitiveness and certainly observes a strong correlation between productivity and competitiveness as well. This can be illustrated by his statement: “Productivity isn’t everything but in the long run it is about everything. A country’s ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker” (Krugman, 1990, p. 9).

However one of the most significant contributions from Porter’s research relates to the scale of study. He was a pioneer in observing the importance of regional competitiveness. Different from the theory of competitive advantage, which focuses exclusively on the role of competitiveness at the macro level, Porter’s and Krugman’s

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\(^1\) Diminishing returns to scale is the decrease in marginal output, due to an increase in one factor of production as the other are remained constant.
research acknowledge the importance of regional and local competitiveness. Porter (1998) contends that productivity is “created and sustained through a highly localized process” (Porter, 1998).

Krugman (1996) introduces in a paper titled “Making sense of the competitiveness debate”, a concept that would later be identified as a major factor to determine competitiveness. He identified a pattern of what he would refer to as “urban agglomeration”. Urban agglomeration relates to the benefits that companies from a similar industry gain by locating nearby each other. To describe his theory he used as example the pharmaceutical industry. Hundreds of pharmaceutical industries are concentrated in the state of New Jersey. They mutually benefit from the fact that they are located close to one another. According to Krugman (1996), there are increasing returns to the companies located in urban agglomerations. This is extremely relevant to the issue of competition among cities as well as regional and local competitiveness. When one would consider a company’s decision to determine where they would open a subsidiary for instance, geography does not play an important role considering exclusively the factors of production described above. By introducing the term of urban agglomeration, Krugman changed the role geography would play in competitiveness. If firms can benefit by locating nearby each other, consequently geography matters to competition.

Porter (2000) expands this rationale and introduced a jargon very well known to current academia, Clusters, on a paper titled “Location, clusters and the new economics of competition”, published in 2000. He defines Clusters as “[…] geographic concentrations of interconnected companies and institutions in a particular field. Clusters encompass an array of linked industries and other entities important to competition.”
More than just the industries themselves are embedded in this concept of clusters. Using the pharmaceutical example described above, a cluster encompasses more than the pharmaceutical industries. A portion of the production chain would also benefit by locating closely to each other as well. By concentrating in the same region, the pharmaceutical industry as well as their suppliers would be susceptible to positive externalities. This is what Krugman (1996) previously referred to as increasing returns to scale. A cluster is also composed of:

*Suppliers* – they include suppliers of specialized inputs and providers of specialized infrastructure. In many cases this can create an environment that facilitate logistics and reduces the necessity of stocking. This would also approximate companies to their suppliers allowing them to work together. Suppliers will be able to provide customized services to the companies. In the Pharmaceutical example, the suppliers would provide everything from special machinery to special packing and acclimatized storage units, just to mention a few.

*Governmental and Private Institutions* – universities, technological centers, trade associations. These would provide an environment including specialized training, information technology, research and development and specialized technical support, facilitating creation and retention of specialized workforce and providing the industry with customized services.

It is evident that urban and regional economic development can be highly affected by clusters. It impacts directly issues such as job creation, improvement of local infrastructure, and attraction of educational institutions, to name a few. They also play a
role in competitiveness. Clusters can impact competition in three broad ways (Bergman & Feser, 2000).

1. Increasing the productivity of companies based in the region.
2. Driving the directions and pace of innovation.
3. Stimulating the formation of new businesses.

If clusters can be potentially beneficial to a regional and city’s economic development and influence positively business competitiveness levels, another logical question would be, how do clusters incept? In other words, how are clusters created? Markussen (1999) contends that clusters are a result of an organic and spontaneous process, not to be created purposely. In this sense, policy makers would not be able to stimulate competitiveness, as clusters would incept rather naturally.

However, the mainstream scholars believe that clusters can be influenced by urban policies and investment. According to Krugman (1996) urban centers can provide competitive factors creating an environment that would impact directly in the level of competitiveness of internationally successful companies. This so called environment will be determinant for the creation and preservation of clusters. Porter (1998) reaches similar conclusion for the role investment plays in cluster formation as argued:

“The sophistication with which companies compete in a particular location, however, is strongly influenced by the quality of the local business environment. Companies cannot employ advanced logistical techniques, for example, without a high quality transportation infrastructure.” (p.80)
In conclusion, both Porter (1998) and Krugman (1996) are acknowledging that a pro-business environment is a key element to a successful cluster. In this sense cities and regions can indeed compete, in order to offer better and more desirable conditions to attract investment, retain preexistent clusters and allow for business competitive advantage.

Many others attempted to “offer” their own insights and definitions on urban competitiveness. Florida (2002), for example introduced the term “creativity index”. According to him the level of competitiveness of a city lies upon its capacity to create, retain and attract skilled labor or, as he refers to, “the creative class”. There are numerous other theories such as; Spatial agglomeration models (Fujita et al, 1999), standard export-based theories and evolutionary theories (Boschma, 2004) are just to name a few. Understanding and acknowledging the divergence in competitiveness theories is important in order to understand the empirical implications in different regions across the globe. Kitson (2004) states in the paper over regional competitiveness titled “Regional Competitiveness, an Elusive yet Key Concept”, “at best, different theories seem to be implicit in different competitiveness drivers.” (p. 996).

Despite the many terms and focuses argued for by these theories, there seems to be a certain level of agreement among them on a set of common features shared by competitive cities and regions. The European Commission has a department that deals exclusively with competitiveness related issues. In their sixth periodic report on regional competitiveness (1999), they acknowledge the existence of common features between the most competitive regions and cities across the globe.
“The idea of regional and urban competitiveness should capture the notion that, despite the fact there are strongly competitive and uncompetitive firms in every region, there are common features within a region that affect the competitiveness of all firms located there.” (European Comission, 1999, pg 5)

One of the features that seems to be unanimous among researchers is what Morgan (2004) refers to as soft externalities. Soft externalities can be related to knowledge, creativity and learning. There appears to be a strong correlation between urban competitiveness and R&D, innovation and creativity. Porter had made similar statements as he associated competitiveness with productivity. Malecki (2004) identifies that in a globalized economy, urban competitiveness relies considerably in localized knowledge and technology creation by peoples and firms. The way they interact and exchange information at this local scale is a key to competitiveness.

As shown in Figure 1, Martin and Sunley (1998) list the six most relevant features to regional competitiveness, and they include:
Similarly, Treasury (2004) conducted research in the United Kingdom regional competiveness policies in the early 2000’s that were designed to improve urban competitiveness and stimulate regional economic development. The regional government’s study developed their own set of “common features,” to increase competitiveness at the urban level. Those so called drivers of productive performance identified by Treasury (2004) are: skills, innovation, investment, competition and enterprise. Figure 2 demonstrates how these drivers would interact and reinforce one another:

*Figure 1. Bases of regional competitive advantage:*
Both figures 1 and 2 sought to identify the most important variables to regional and local competitiveness. Martin and Sunley (1998) and Treasury (2004) attempt to capture the common features shared by competitive regions; in other words, an attempt to identify the drivers to competitiveness was made in both studies. In their research, the final conclusion results in the creation of a set of general policies constructed based on compilation of those identified drivers of competitiveness. Both researchers reach similar conclusions as far as identifying those drivers. In order to become more competitive, they argue, policies should focus on the creation of a pro-business environment. A competitive region according to these studies should focus on stimulating and retaining skilled human capital, providing quality business related infrastructure, providing efficient institutions that would support business activities and lastly providing economic and fiscal incentives.

Figure 2. Drivers of regional productivity used in UK regional competitiveness policy
Although their conclusion sounds very logical, those general policies may also hamper competitiveness. This research is certainly not trying to argue that high skilled human capital and efficient institutions for instance are not important to creating a competitive region or city. However, one notorious problem with this general policy approach to achieve competitiveness is that it tends to give little attention to the demand-side and concentrate in the supply-side (Fothergill, 2005).

The demand should be approached as one of the drivers to competitiveness, a very important one. As Kitson (2004) stated,

“A low level of local demand tends to dampen local innovativeness and entrepreneurialism, encourages the exodus of skilled and educated workers in search of better employment prospects elsewhere, hinders the development of high quality cultural and infrastructural capital, and generally weakens the dynamics of the area.” (p. 996)

Believing that competitiveness can be achieved exclusively through the supply side is rather naïve. The drivers listed by Martin (1998) and Sunley and Treasury (2004) are extremely important, but might not be sufficient to create a competitive region. In this sense the macroeconomic context plays an important role.

Yet, another problem with the general policy approach to competitiveness lies on the universalism of policies. It is assumed that similar policies applied elsewhere would result in similar outcomes. The set of general policies are in theory applicable to any region and city in the world, but one does not see identical/similar results (Kenny & David, 2001). For instance, investment in qualification of human capital could impact the level of competitiveness of two different regions in very distinct ways. In sum those
policies are not proven to hold empirically, as they result in distinct outcomes when applied to different regions.

Another important aspect that has to be taken into consideration is the “leak out dilemma” that can result from general policies seeking to increase competitiveness within a country. It is recurrent to see highly comparable, if not identical, efforts made by different regions and cities to attract high-technology oriented industries to their respective domains. According to Treasury (2004) by implementing the right conditions, virtually any city or region could in the long run experience high levels of competitiveness. However this is certainly not the case. Many sectors are better off being concentrated in a few specific geographical regions (Lovering, 1999). This is particularly true for sectors such as biotechnology, nanotechnology, information and communication technology and many others. As several locations within a nation attempt to simultaneously nurture those sectors, they might be inadvertently harming the overall outcomes for those sectors at a macro level.

The theoretical and empirical debate on urban and regional competitiveness is still going on, as many factors that were once believed to determine and contribute to competitiveness turn out to be inconclusive. However, it has not stopped policy makers from picking up many of the inconclusive, uncertain, exaggerating theories and applying to their cities, claiming and expecting desirable competitiveness.
2.2 Regional/Urban Competitiveness in Brazil

“A region cannot be analyzed, comprehended nor transformed separately from the national context. There is an inter-relation between the regional and national levels, in which an event occurred in one level may consequently implicate in changes in the other” (Ferreira, 1989, p.58).

Growth, development and competitiveness do not occur in a homogenous pattern throughout different regions and cities within a country. In order to be more competitive and achieve steady growth a country depends on the emergence of stronger regional centers (Hirschman, 1977). This is a natural process. According to Santos (1996), this process occurs mainly because of regional specialization. Regional specialization occurs in accordance to natural allocation of resources/endowment (i.e. oil reserves or strategic geographical location), technology concentration or due to social, political or institutional advantage (Santos, 1996). It is common to observe very distinct levels of development and competitiveness within different regions in a country. Especially in the Developing World, one can identify the existence of very developed and industrialized regions as well as nearby struggling and underdeveloped ones.

In developing countries, the central government tends to play an exceedingly important role in the provision and geographical distribution of infrastructure and public services. Moreover, the governments of these developing nations will often be in charge of managing strategic sectors of their economies. It is common to see public agencies running national ports and airports as well as creating and managing public enterprises. Consequently, more than in developed nations, the government can interfere in the local
and regional competitiveness and development through allocation of resources throughout different areas of the country. In this sense regional planning becomes very strategic to the national development plan (Ricardo, Rodrigues, & Haag, 2008).

This is particularly true for Brazil. Historically the federal government has always been a very active player in the national economy. This public involvement in the economy started in the early 1930’s. The Wall Street Crisis in 1929 had a profound impact on the Brazilian economy, deteriorating the country’s terms of trade. Back then, the Brazilian economy largely depended on coffee exports, and it became one of the most relevant national economic activities. In order to bring stability and security to coffee producers the national government implemented a price support system. This system basically sought to reduce the impacts on the economy caused by cyclical fluctuations in international coffee prices. This culminated in a huge overproduction as the demand for coffee vanished from the nations highly impacted by the Great Depression. This was the first major intervention by the government in the Brazilian economy (Brandao, 2003).

The federal government remained playing a major role in the country’s economy after the events of the early 1930’s. With the previously mentioned deterioration of the terms of trade, most Latin American countries experienced the rise of the so called Import Substitution Industrialization regime. In order to substitute imported goods, the Brazilian government decided to industrialize and diversify its national industry and increase production. The government played a key role in this process. More than provision of infrastructure the government had to be in charge of investing in areas where the private sector was unable to do so. The Brazilian government invested in sectors considered strategic for the expansion of the national economy, and in building a strong
industrial foundation; in order for that to happen, public enterprises were created to manage those sectors. The main areas considered to be strategic and that received massive investment were: Steel, petroleum, phosphate, potassium, paper, petrochemical, coal and mining (Pacheco, 1996). Furthermore the government created multiple incentives such as tax breaks and subsidized credit lines in order to promote private sectors that would contribute to national economic development. In the 1960’s and 70’s the federal government accounted for over 60% of all the investment in the Brazilian economy (Diniz, 1993). Until the early 1980’s the state decision on where to allocate public resources mostly dictated the regional competitiveness and development in Brazil. In many cases the government would opt for a more decentralized approach, investing in a wide range of regions across the country, allowing for a more evenly distributed growth and standardizing to some extent, the level of competitiveness among different geographical regions.

From 1950’s all the way to the 1970’s was a period characterized by elevated government expenditure, as the state greatly increased its investment and incentives to a record high level. The Brazilian government relied on expensive international loans, in order to afford those set of investments. Eventually the government could no longer have access to new credit lines nor pay interest rates from old loans. This resulted in the 1980’s debt crisis, experienced by most countries in Latin America. Also known is the “lost decade”, the 1980’s and 1990’s were a period of severe structural adjustment in Latin America, and Brazil was no exception (Pacheco, 1996). With the supervision of the International Monetary Fund, the government faced the implementation of austerity measures that sought basically to eliminate budget deficits. Those measures included,
raising taxes, raising interest rates, privatizing public enterprises and most importantly reducing significantly investment. In this sense the government was no longer able to be a very active player in the national economy. Progressively it lost its ability to coordinate regional development, resulting in dissociation between public and private investment. During this period the government could no longer robustly interfere in balanced regional development as it had in the past (Galvao, 2003). The lack of public coordination and articulation resulted in the concentration of industrial activity in a few selected regions of Brazil, especially in the Southeast region of the country, resulting in a grossly uneven national economic geography of Brazil.

According to Santos (1996), globalization has shifted the role the Brazilian government plays in the national economy. The government can no longer be the ultimate source of investment like it had been in the past. The market driven economy and the emergence of multinational corporations, as well as the increasing power of supranational and multilateral organizations has further undermined the significance of public policies in regional competitiveness. In other words, regional competitiveness and development also depend on external variables such as foreign direct investment.

As Santos (1996) analyzes the current Brazilian regional economic development pattern, he concludes that soft externalities are imposing a change in the orthodox understanding of regional and urban competitiveness and consequently a change in the way policy makers should approach this issue. The emergence of industrial clusters, are resulting in concentration of skilled labor, technology (know-how) and knowledge in a few regions within the country. He points out that in Brazil, industrial clusters are tremendously concentrated in only a handful of regions, with a few exceptions, in the
southern part of the country. Those are key to determine the level of competitiveness and economic development as well. It is vital to understand that those regions do not follow municipal nor state boundaries. They are also dynamic, therefore their geographical extension can change over time (Diniz, 1995). They establish their own, unique influence zone. This is very important in policy making. Santos (1996) proposes that an efficient development planning should be designed taking these factors into account.

Benitez (2003) identifies that different levels of competitiveness among different regions in Brazil are highly affected by the geographical concentration of research and development activities. The main industrial activity in Brazil is located along those “knowledge belts” as the author points out. This is one of the factors that led to competitiveness and development discrepancies throughout the country. By not acknowledging the importance of business/industrial agglomeration and its relevance to competitiveness one would be missing an important component of this matter. As for the government, it would be failing in providing important tools to increase competitiveness to various regions of Brazil (Benitez, 2003).

Pacheco (1996) emphasizes that, despite the recent changes brought by globalization, government investments are still important to promote regional competitiveness and reduce disparities between regions. It does not accumulate as many functions as it has in the past, but provision of infrastructure has become a powerful instrument of promoting regional competitiveness in a globalized context. In this sense, public investment is essential, as infrastructure investments are rarely funded by the private sector (Brandao, 2007).
2.3 Public Investment in Brazil

Regional allocation of public resources is a direct way that the government can impact regional and local competitiveness. In Brazil, the Federal government has assigned a specific ministry to manage policies regarding this issue: regional integration ministry (Ministério da Integração Regional). The ministry designed and implemented the regional development national plan - Política Nacional de Desenvolvimento Regional (PNDR) as a way of incorporating regional development into the national development plan. These policies seek to increase competitiveness and boost economic development of different regions across Brazil. PNDR is part of the national development strategy, which allows the increase in regional performance to be reflected and integrated to national development strategies (PNDR, 2007).

As mentioned previously in this chapter, the importance of public investment for regional competitiveness in the developing World is critical. According to Brandao (2007) public policies and investment planning are designed to leverage specific regional potential, but at the same time promote integration and cohesion of the different parts of the country.

Hirschman (1977) affirms that the allocation of public resources in Brazil is basically conducted in three distinct ways: dispersion, concentration in fast growing regions and support of least developing regions as a way of reducing inter-regional inequalities.

Dispersion is characterized by the distribution of public investments in a broad way across the country through a large number of small projects. This type of investment
is often done with the support of local governments and private sector (Ricardo, Rodrigues, & Haag, 2008).

Concentration in fast growing regions is characterized by what Howells (2005) refers to as a “bottom-up” approach. This type of public investment focuses on providing fast growing region with the necessary tools so they can be more competitive and achieve more robust and efficient growth. Investment decision is often based on an identified bottleneck or constraint within the region. It requires long term planning and articulation between Federal, State and Local governments. Furthermore it encompasses the private sector. This can be done through public-private partnerships or concessions. Different from dispersion, this type of investment commonly focuses on a small amount of very specific and large state projects (Hirschman, 1977).

Lastly, there is a support for least developing regions across the country. This type of investment focuses on reducing inter-regional disparities and inequalities across the country. Historically, in Brazil, this type of investment has been least provided and even residual (Ricardo, Rodrigues, & Haag, 2008). When all other priorities have been taken care of, the government would invest in less developed regions as an attempt to make them more dynamic. However, this scenario has changed in recent years as government has been allocating more resources and prioritizing the lessening of regional inequalities across the country. Diniz (2004) emphasizes that in order for public investments to be efficient, planning and articulation among different branches of the Brazilian government is critical.
Below, Table 1 points out the share of each macro-region to the national GDP.

Table 2 illustrates the allocation of Federal resources throughout those regions in infrastructure from 2007-2010.

### Table 1

**Share of regions in the total Brazilian GDP**

<table>
<thead>
<tr>
<th>Regions</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>4.7%</td>
<td>4.8%</td>
<td>4.9%</td>
<td>5.0%</td>
<td>5.1%</td>
<td>5.0%</td>
<td>5.1%</td>
</tr>
<tr>
<td>Northeast</td>
<td>13.0%</td>
<td>12.8%</td>
<td>12.7%</td>
<td>13.1%</td>
<td>13.1%</td>
<td>13.1%</td>
<td>13.1%</td>
</tr>
<tr>
<td>Southeast</td>
<td>56.7%</td>
<td>55.8%</td>
<td>55.8%</td>
<td>56.5%</td>
<td>56.8%</td>
<td>56.4%</td>
<td>56.0%</td>
</tr>
<tr>
<td>South</td>
<td>16.9%</td>
<td>17.7%</td>
<td>17.4%</td>
<td>16.6%</td>
<td>16.3%</td>
<td>16.6%</td>
<td>16.6%</td>
</tr>
<tr>
<td>Midwest</td>
<td>8.8%</td>
<td>9.0%</td>
<td>9.1%</td>
<td>8.9%</td>
<td>8.7%</td>
<td>8.9%</td>
<td>9.2%</td>
</tr>
<tr>
<td>BRAZIL</td>
<td>100,0%</td>
<td>100,0%</td>
<td>100,0%</td>
<td>100,0%</td>
<td>100,0%</td>
<td>100,0%</td>
<td>100,0%</td>
</tr>
</tbody>
</table>

Source: IBGE

### Table 2

**Regional Investment in Infrastructure 2007-2010 in R$ billion**

<table>
<thead>
<tr>
<th>Regions</th>
<th>Logistics</th>
<th>Energy</th>
<th>Social and Urban</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>6.3</td>
<td>32.7</td>
<td>11.9</td>
<td>50.9</td>
</tr>
<tr>
<td>Northeast</td>
<td>7.4</td>
<td>29.3</td>
<td>43.7</td>
<td>80.4</td>
</tr>
<tr>
<td>Southeast</td>
<td>7.9</td>
<td>80.8</td>
<td>41.8</td>
<td>130.5</td>
</tr>
<tr>
<td>South</td>
<td>4.5</td>
<td>18.7</td>
<td>14.3</td>
<td>37.5</td>
</tr>
<tr>
<td>Midwest</td>
<td>3.8</td>
<td>11.6</td>
<td>8.7</td>
<td>24.1</td>
</tr>
<tr>
<td>Interregional</td>
<td>28.4</td>
<td>101.7</td>
<td>50.4</td>
<td>180.5</td>
</tr>
<tr>
<td>BRAZIL</td>
<td>58.3</td>
<td>274.8</td>
<td>170.8</td>
<td>503.9</td>
</tr>
</tbody>
</table>

Source: PAC

Table 1 indicates that the Southeast region clearly plays a very important role in the national economy, as it accounted for 56% of the GDP in 2008. However, table 2 shows that the Southeast region received R$ 130.5 billion in investments, which accounts for just over 40% of the total amount invested by the Federal government. The Northern
region, accounted for 5.1% of the national GDP, however it received R$ 5.9 billion from Federal investments, which represents almost 16% of the total amount invested across the country. This demonstrates how the Federal government has been investing more in least developed regions. Most importantly this indicates that after decades of austerity measures and expenditure cuts, the Brazilian government pursues being the main driver of competitiveness and economic growth (Ricardo, Rodrigues, & Haag, 2008).

The Southeast region of Brazil, as shown on table 1, accounts for over 56% of the total Brazilian national income. The region is particularly relevant to this research due to the fact that there is where Belo Horizonte and IANT are located. This region is also where the cities of Sao Paulo and Rio de Janeiro are. They are first-tier cities at the national level and the most developed urban centers in the nation. This more evenly redistribution of public investment represents an effort from the federal government and from other regions to catch up with the predominant regions in Brazil. This is precisely the case of Belo Horizonte, as it will be examined in next chapters.

2.4 “Custo Brazil”

Custo Brazil is a term used to describe the increased operational costs associated with doing business in Brazil. This term has been long used in academia and media circles and incorporates several aspects of the Brazilian economy that could hamper the level of competitiveness of its nationally-based companies, goods and services (BNDES, 2009). According to Castor (1999) the extra cost are caused by the following factors that Brazil-based companies have to shoulder:
1. High Interest Rates
2. Instable Inflation Rates
3. Expensive Labor Cost
4. Economic Instability
5. Corruption
6. Excessive Layers of Bureaucracy

The factors listed above play indeed a significant role in obstructing the level of competitiveness of Brazilian companies. Discussions on the need of improved and more efficient institutions, reduced interest rates as well as a fiscal reform have been well documented in the studies of the Brazilian economy (Castor, 1999). Although such discussions are relevant, they go beyond the scope of this study, but should definitely be considered in a more in depth research on Custo Brazil. This research mainly focuses on the impacts caused by under-provision of transportation infrastructure on competitiveness. Frischtak (2008) emphasizes that poor transportation infrastructure is the main component of Custo Brazil and impacts negatively the competitiveness of “Made in Brazil” goods and services internationally.

The lack of proper infrastructure can certainly constrain the possibilities of growth and create poor incentives for attracting investment. The final price of a product or service manufactured in Brazil is highly affected by logistics costs, more than in other high or upper-middle income countries. There is an extra cost imposed on businesses by poor infrastructure, constraining economic activities and obstructing competitiveness. A study conducted by the Brazilian National Development Bank (BNDES) in 2009 points out that transportation costs consumed over 12.5% of Brazilian GDP in 2008. As a matter
of comparison, transportation costs consumed almost 5% less of the United States GDP. This illustrates the burden imposed on Brazilian companies.

Haddad and Hewings (1998) affirm that land transportation is the most significant component of the “Custo Brazil”. According to him there is an excessive reliance on trucking in Brazil. In comparison to Australia or the United States, total cargo is carried twice as much by trucks in Brazil. He states that railroad and barge transportation are considerably cheaper over long distances than trucking, principally for bulk commodities. Inefficiencies and low productivity in the railroad sector significantly increase transportation costs. Freight could be reduced as much as 20% with an improved railway system to connect the country’s main economic corridors (Haddad & Hewings, 1998).

He also claims the following on the current conditions of land transportation in Brazil: “Decay in the transportation system curtails economic growth as well as international competitiveness”. Poor land transportation infrastructure also negatively impacts competitiveness as insurance prices are significantly higher; This result in higher freights and final transportation costs. A study conducted by BNDES (2009) recommends not only improvements in existent highways and railways systems, but also the expansion in its capacity as a way to enhance competitiveness both in the internal and external markets. Furthermore, not only the study classifies the demand for infrastructure investment in Brazil as critical, but it also concludes that the deterioration of transportation networks in recent years resulted in higher operational costs, hampering competitive integration of the country.

Land transportation is not the only transportation segment in urgent need of public investments in Brazil. Air transportation has also been identified as a critical element of
“Custo Brazil”. Airports are currently inefficient, and delays and cancelation of flights are quite common. A study conducted by the Applied Economic Research Institute (IPEA) indicates that the number of passengers increased 117% from 2003 to 2010, going from 71 million to 154 million passengers. The increase in cargo transportation during this period is estimated to be even higher than that. However airports did not receive equivalent investments nor increased their operational capacity to comport this significant increase in demand. This same study analyzed the top 20 Brazilian airports in terms of air traffic, and concludes that 17 out of 20 are currently operating above their capacity. This scenario has worsened significantly from 2008 to 2010 (IPEA, 2011). Another issue regarding the airport decay in infrastructure in Brazil is the concentration of flights in a small number of airports. A study conducted by BNDES on current Brazilian airport infrastructure indicates that 15 airports in Brazil concentrate more than 80% of the total commercial flights in the country. The same study predicts that by 2030, airport operational capacity in Brazil will have to increase by over 120%, and investments are estimated in US$ 20 billion (R$ 34 billion) in order to keep up with the increase in the demand (BNDES, 2011).

“Custo Brazil” is basically the term utilized to acknowledge the need for investment in infrastructure in Brazil. Scholars have emphasized and identified this poor infrastructure as a major constraint to competitiveness and growth in Brazil. Upgraded infrastructure is considered critical for boosts in economic development, attracting foreign investment and increasing competitiveness.

The investments at the IATN are a result of this critical need for airports and air transport upgrade and modernization in Brazil. As the studies conducted by IPEA (2011)
and BNDES (2011) emphasizes, the demand for air transportation has been growing at a much faster rate than the increase in airports operational capacity levels in the Brazilian airports. Moreover, the studies indicate strong concentration of air traffic in few airports across the country, as the top 20 airports are already operating above full capacity. An efficient airport could represent not only an improvement in the regional competitiveness environment but also constitute leverage in comparison to other Brazilian cities. Local authorities are using and promoting the IATN project as part of the process that envisions the city of Belo Horizonte as a first-tier city.
CHAPTER 3: SECOND-TIER CITIES

3.1 Global Cities and “Going Global” strategies

The intensification of globalization has altered the extent to which a city can aspire to stand out. Going global or becoming a world city seems to have captured popular imagination and become a conventional strategy for urban economic development among local politicians (Paul, 2004). There is extensive literature on the subject of global cities. Global or world cities originated in urban studies, but have gained much importance in other fields including geography, economy, global studies and urban politics. Despite the fact that global cities have become a relevant subject for academic studies, the debate on how to precisely define the term is still going on (Markussen, 1999). Thus, what does in fact constitute a global city?

Various scholars tend to focus on a single factor to determine whether a city is considered global or not. Some focus on the city’s economic connectivity to the wider world (Taylor 2004, Alderson and Beckfield 2007). Others focus on the historical “layers” of the city. In this sense, cities such Venice in Italy or Alexandria in Egypt would be considered global cities due to their historical importance (Abu-Lughod 1999). It is also common to see cultural based definitions of world cities. As Clark and Hoffman-Marinot (1998) state, a city will be global depending on the global microcosm within the city. They classify a city as global according to its cosmopolitanism. In accordance with this definition a small college town can be considered a global city due to a strong
presence of international students and faculty. All those definitions use exclusively one determinant/factor to classify a city as global.

Boschken (2008), on the other hand, utilizes multiple elements to define a global city. In his words a global city is a “reflection of historical stages that evolved through interdependence between globalization pressures and intra-urban development initiative” (p. 5). According to Boschken (2008) there are only a few global cities in the world. In order for a city to be considered global it has to be multidimensional; it is critical that they meet requirements in three different levels:

**Economic level** – A global city has to be connected economically to the world. It should be a relevant international financial center and be operating in the stock exchange as well. Another important aspect is accessibility. A global city has to have developed infrastructure and allow fast paced exchange of goods and services. In this sense the city has to be an international gateway and engaged in trade.

**Cultural level** - A global city must have cultural diversity. Cosmopolitanism is a key element. Presentation of “global events” should happen on a regular basis as well as international celebrations and festivals. International neighborhoods are also very common in those cities. Multiple international entertainments such as ethnic restaurants, stores and movies should be available.

**Political level** – A global city should be influential at the international political spectrum. Embassies and chambers of commerce should often be located in a global city. Hosting international political events are also desirable.
Those are the relevant dimensions identified by Boschken (2008) to determine a global city. Given those dimensions he goes even further and provides a list of characteristics shared by global cities. Those are:

1. Large Monocentric Urban Area
2. Command Centre for the Global Economy
3. Global Entertainment Machine
4. World Centre for Research
5. Global Centre of Multicultural Exchange
6. International Transport Gateway
7. Rail Mass Transit Infrastructure

In accordance to this structure developed by Boschken (2008), only a few cities would be categorized as global, due to the many conditions identified by the author. Saskia Sassen has published several articles and books on this topic and is one of the most influential authors on global city studies. She agrees with Boschken on the small number of global cities. However she introduces a more simplified definition. According to Sassen (2001), the most determinant factor that characterizes a global city is the combination of major international financial and business centers. In other words, large stock markets would differentiate global cities from not-so-global ones. This way, only cities such as New York, Tokyo and London would be considered global. Nevertheless she alerts to the fact that with the emergence of developing countries, new cities would be “promoted” to global cities. Beijing, Sao Paulo and Mexico City for example are progressively becoming more relevant economic centers and should be at least included in the global cities discussion.
It should be clear that the jargon “global city” has been very well analyzed, yet, scholars have not seemed to reach a consensus on its definition. This diversity of definitions makes it hard to precisely define a global city. Ann Markussen (1999) classifies the concept of global city as “at least a thrice fuzzy concept” (p. 875).

Nonetheless, “global city status” has captured popular imagination, with local businesses, media and especially local politicians and state officials embracing the concept. As Paul (2004) claims:

“attracting global fixed capital investment (corporate headquarters, production facilities, downtown skyscrapers) and circulating (transportation, tourism, cultural events) through an international identity has become a nearly universal economic development strategy.” (p. 572)

The debate on global cities and specially “going global” strategies at the urban level has demonstrated to be inconclusive, due to the extensive variety of classifications. A global city is to some extent subjective, and different definitions have much to do with it. Similarly to the issue of urban and regional competitiveness this lack of theoretical and empirical agreement has not stopped local politicians from “picking and choosing” definitions that would more conveniently suit their city, and use those as justifications for public investment.

This “going global” strategy is used by many urban politicians of the world to reshape their respective city’s identity, to become a new, more globally connected and celebrated one. This process includes a “city building process” (Pagano and Bownman, 1995) that relates both to the literal and metaphorical senses of the expression. Thus, going global strategies will impact urban planning, as the city will be physically changed.
in accordance to this new desired “image”. Those changes rely on capital investment and image creation, through “symbolic and concrete imagination in the cityscape” (Short and Kim, 1999). Those are the core elements behind the physical changes in the cityscape related to the going global strategy that are incorporated to the city in the form of buildings, large infrastructure projects, parks, cultural festivals, sporting events and so on. Archer (1997) and Rutheiser (1996) define this process as “Imagineering”. Imagineer is the result of the words imagination and engineering, and to some extent, it has influenced policymaking for urban economic development. Regarding this urban Imagineering process, Paul (2004) states the following:

“[…] urban elites promote a particular set of values and goals through an “international” or “globally” themed built environment and spectacle. In offering a broad vision for the city’s physical, economic and even moral development, world city projects are in their essence the pursuit of an ideal, a vision of the city’s identity as much as its level of capital investment, employment or income” (p. 574)

It is important to stress that the going global strategy, through the “Imagineering” process, often results in massive changes in the urban space. Those changes require in most cases a large sum of public investment in order to finance such changes and projects that are often funded by local governments. It is also vital to emphasize the fact that there are no empirical correlations between such investments and actual economic benefits to the city or its population.
3.2 Imagineering of Second-tier on First-tier cities

Recently a new urban phenomenon has emerged in which many countries are experiencing a rapid growth of their medium-sized cities, at a faster pace than the more traditional dominant ones. New urban settlements are outgrowing hegemonic cities that have always received much for investment and accounted for a large share of the nation’s economic growth. Those second-tier cities are finding ways through trade-oriented industries and booming economic activities to achieve employment, population growth and significant development. This is a trend that can be observed throughout the world. Silicon Valley in the United States, Sao Jose dos Campos in Brazil, Vera Cruz in Mexico, and also places in Europe. (DiGiovanna, 1999).

In the recent years, going global has become a primary development strategy for many second-tier cities, as they attempted to attract investment from overseas. Going global is an alternative to orthodox approaches at the national level, by aiming to the international scale through a variety of creative envisioning and imagineering projects. Paul (2004) claims that such strategies have been progressively becoming more common among such cities. He states that going global strategies are becoming, to some extent, part of a “conventional wisdom” in urban development efforts.

Globalization indeed allows not-so-global cities, which have been more or less neglected from central government’s public investment, to go global and to benefit from international investment and markets. Increase in international trade, advanced transportation and logistics as well as improved telecommunication are listed by Porter (1990) as main factors that would allow such phenomenon to occur. The rise of second-
tier cities through a going global strategy often occurs as part of an articulation between national and local government with the support of local businesses and media (Markusen, 2001). Short and Kim (1999) refer to those as “wannabe world cities”. Nevertheless such a strategy can be associated with what Swyngedouw (1997) calls politics of scale. In this sense going global would be an alternative to high dependence on national government and its investment decisions. Haddad and Hewings (1998) calls this process a bottom-up approach, in which a city would utilize supra-national institutions (e.g. World Bank, Inter-American Development Bank) to finance the required investments at the local level.

Regardless, there are certainly success cases such as Singapore and Shanghai that have benefited and grown from going global. However what does raise a city status from a mid-sized, to a so called global city? Could a new airport, or sport stadium turn a second-tier city into a world class city? Does hosting the Summer Olympic Games or allowing for the creation of a new industrial district make a city more competitive internationally? This may or may not be the case. History undoubtedly shows several examples of cities that attempted to go global, and failed in doing so. This includes hosting international events, infrastructure investment or even gentrification as a way of promoting and re-shaping the city’s position in the global urban hierarchy. Not only they did not achieve their desired goals, but they were left with the burden of paying for all the investments done. There are several examples such as:

*Durban and Johannesburg in South Africa.* – both cities attempted to increase their international relevance and exposure by formulating a global citywide vision based on trans-urban networks and complemented by the 2012 FIFA World Cup (Robinson, 2008)
Atlanta in the United States – once labeled “the next great international city”, Atlanta city officials attempted to put the city on the map. By hosting the 1996 Olympic Games, investing in a high-tech airport and becoming an international air hub and labeling itself as a cultural center, the Atlanta city officials created a big effort to become a global city (Whitelegg, 2000)

Montreal in Canada - The city has made several attempts to become a global city, including hosting the 1976 Summer Olympic games, giving specific property tax breaks, constructing skyscrapers and trade centers and building an international airport (international gateway) (Paul, 2004)

3.3 Second-tier cities in Latin America and in Brazil

As previously mentioned in this chapter the study of global cities has been well captured in academia. There is extensive literature available on this subject. The same can be said about strategies used by second-tier cities to go global and become first-tier global cities. However urban studies seem to have focused more on cities located in the global north. Not many studies have been conducted on the rise of second-tier cities in the Global South. In Latin America urban studies are concentrated in a limited range of cities. Studies on Sao Paulo, Rio de Janeiro, Mexico City, Santiago and Buenos Aires are quite extensive. It is also possible to come across studies on Caracas, Bogota and Lima as well. Not coincidently those are the largest cities in Latin America (Atlas, 2011). Therefore, in the national context those are all first-tier cities. There is a very limited literature on Latin American second-tier cities, specially focusing on their efforts to gain first-tier and global
status. Cities in Brazil including Brasilia, Porto Alegre, Salvador and across Latin America including Cali and Medelin in Colombia, Guadalajara and Monterey in Mexico or even Maracaibo in Venezuela, Guayaquil in Ecuador and Guatemala City in Guatemala are very relevant urban settlements but remain understudied.

According to the Atlas (2011) all those cities listed above have an estimated metropolitan area of 3 million or above, nonetheless very limited academic attention has been paid to them, particularly in terms of their efforts to go global, and move up to a first-tier city category.

This research focuses on another city that fit this category. Belo Horizonte is one Brazil’s largest cities. Its metropolitan area has a population of over 5 million people and is the third largest in the nation (IBGE, 2010). The city’s economy draws the strength of the mining and steel industry, along with agribusiness and is home to Latin American’s largest car manufacturing plant (Exportaminas, 2010). Despite its importance in the national context Belo Horizonte is a second-tier city behind Sao Paulo and Rio de Janeiro at the first-tier level. Like other second-tier cities in Latin America, Belo Horizonte commonly falls off the map of globalization and world cities studies.

Other Brazilian cities, such as the more “glamorous” Rio de Janeiro and São Paulo are certainly perceived as more global centers. This perception plays an important role in terms of investment as well as competitiveness. There is no doubt that those two cities are a step ahead of Belo Horizonte in various segments such as total population; global exposure and output just to name a few. Those two cities have dominated the urban studies analysis in Brazil. However, various efforts have been made in recent years by city and state government to promote Belo Horizonte as an attractive city center and to
“put the city on the map”. Local officials have hired an international consultancy group – Jurong International – to help reimage the city as a well-positioned city both nationally and internationally. Furthermore this consultancy group, in conjunction with the state government, is designing a long term structure plan that includes identifying the city’s main strengths, weaknesses, opportunities and threats (SWOT matrix). Basically this long term structure plan will determine which sectors need to be invested in and leveraged by the local government. The following is how Jurong International (2009) defines the current status of Belo Horizonte as a second-tier city at the regional and national level:

“Belo Horizonte, like many newly-developing cities in the world, faces various external and internal challenges. External challenges refer to the keen competition with other global cities for Foreign Direct Investment and high end labour, coping with global economic fluctuations and the need for constant adaptation and re-invention due to technological changes. Internal challenges refer to issues such as the provision of employment and education opportunities, enhancement of the quality and quantity of human capital, provision of adequate and affordable housing, infrastructure development etc.” (p. 469)

Like many other second-tier cities of the world, local officials in Belo Horizonte have jumped on the global city development strategy bandwagon. The eminence of two international events in Brazil, and the international exposure such events would bring to the hosting city, constitute a major opportunity. As Brazil prepares to host the FIFA Soccer World Cup in 2014 and the Summer Olympics in 2016, Belo Horizonte officials have been working hard on promoting the city as a very site of these global sports events. Such international events bring more capital availability, in terms of facilitated credit
lines, or through Federal funds. This has been resulting in several ongoing investments throughout the city. Those investments include the construction of a cutting edge sports complex, investment in the modernization of a new convention center, construction of a new state public administration office building as well as a diversity of investments in urban mobility and expansion and modernization of the road and highway system at the city level. This envisioning of a more international, modern and competitive urban center has been used to promote and justify even more public investments.

This research is analyzing the implications of the expansion and renovation of the IATN as a potential booster of urban competitiveness and more specifically in this case, an assessment of its role in promoting Belo Horizonte to a world-class city.

A major International Airport, or as many scholars would refer to as an international gateway, is often mentioned by different authors as one of the pillars and key characteristics of a global city (Boschken, 2008; Taylor et al., 2002; Markussen, 2001). There were in the past examples of cities that not only have based a significant part of their economic development on an international airport, but also have reshaped their identity through one. That is the case of Atlanta, GA (Whitelegg, 2000) and Incheon, South Korea (IIAC, 2007).

In Belo Horizonte, local officials have been promoting the importance of investing in the airport as a way of their city becoming a more competitive urban center as it will increase the city’s linkage and connectivity with the wider world. One of the brochures, utilized in the airport’s advertisement campaign, refers to IATN as an “emerging gateway for worldwide business” as shown on figure 3.
Figure 3. Brochure used by the state of Minas Gerais’ government to promote Belo Horizonte and IATN (1)
According to interview conducted with the coordinator of foreign trade affairs of the Minas Gerais State Government, by investing in the modernization of the IATN the city of Belo Horizonte would be “reducing the current dependency on the existent traditional industries”. The airport is also expected to play a central role in the regional economy, and this is the major justification which has been a rationale behind the local government’s push for a large sum of investment in the transportation infrastructure.

3.4 Minas Gerais and Belo Horizonte

Minas Gerais is one of the Brazilian 26 states. It is the fourth largest in the country in terms of land area and it is located in the southeast region of Brazil as shown on figure 4.
With a population of almost 20 million, Minas Gerais is the second most populated state in the country, after Sao Paulo. The state has 853 municipalities. Its largest city is Belo Horizonte, which is also the state capital (IBGE, 2011). In 2009 the state GDP was approximately R$ 288 billion (US$ 155.7 billion\textsuperscript{2}), which accounts for over 9% of the total national GDP. The state is ranked third in the nation in terms of income, outranked by the states of Rio de Janeiro and Sao Paulo. Its economy has maintained a growth rate above 5% in the last decade (Fundacao Joao Pinheiro, 2011). The distribution of Minas Gerais economy by sector in 2009 is divided into agriculture 8.4%, industry 31.9% and services 59.7%.

\textsuperscript{2} Currency conversion date – April 18\textsuperscript{th} 2012.
In the agriculture sector coffee, sugar-cane, corn and bean productions are among the most important to the state economy. Cattle ranch and dairy farming are also key components of this sector. In the industry sector, auto and auto parts manufacturing industry, mining, iron and steel industry, petrochemicals, textile and biotechnology were the main industrial activities performed in Minas Gerais state (Fernandes & Rocha, 2006).

In 2010 Minas Gerais exports were US$ 31.22 billion accounting for 15.5% of the national exports. The state was ranked second in the nation. In this same year, imports were US$ 9.96 billion. Minas Gerais, in 2010, had a trade balance surplus of US$ 21.26 accounting for more than the total trade surplus obtained by Brazil in 2010 (Exportaminas Center, 2011). The main exported products by the state during this year were iron ore, steel and iron products, coffee, ethanol and precious stone. The main imported products were mechanical machinery, petrochemical products and electric and electronic materials/components. Minas Gerais trade are heavily dependent on exports of commodities and extracted good while it relies on imports of industrialized and high added value goods.

Despite the economic relevance of the state of Minas Gerais to the national economy, until the beginning of the 2000’s, the state did not have an airport with regular scheduled international flights. This constituted a major constraint to competitiveness of state-based industries in international markets. They had to fully rely on neighboring states to trade, due to the fact that without shore access or an operating international flight the state was isolated and low connected globally. This lack of connectivity represented a major bottleneck to regional competitiveness and development (Diniz & Diniz, 2006).
It was only in the early 2000’s that the state of Minas Gerais started to see an increase in global connectivity through an in state international airport. The International Airport Tancredo Neves was the first and still is the only airport to operate regular scheduled international flights in the state. This was a result of the increased demand for trade from regional industries and government efforts through investment and concentration of regional flights (Mamede & Alves, 2006). The IATN is located in the central part of the state of Minas Gerais, more precisely, in the city of Confins as shown on figure 5.

Figure 5. Minas Gerais state

Confins is one of the 34 cities of the Belo Horizonte Metropolitan Area, and it is located 38 kilometers northwest from downtown Belo Horizonte. The city of Belo
Horizonte, in 2009, had a population of just less than 2.4 million, being ranked 6\textsuperscript{th} in the nation, and a total income of R$ 44.6 billion (US$ 24.1 billion) (IBGE, 2011). The Metropolitan Area had a population of 4.9 million and total income of R$ 100.1 billion (US$ 54.1 billion) during the same year (Fundação João Pinheiro, 2011). In terms of population BHMA is the 3\textsuperscript{rd} largest in Brazil and 7\textsuperscript{th} largest in Latin America. Of the 34 cities which make up the BHMA, most resources are concentrated on Belo Horizonte and two adjacent industrial cities of Betim and Contagem. Together they form an economic corridor that accounts for 65\% of the population and 87\% of the income of the metropolitan region (Jurong International, 2012).

Betim and Contagem account for greater part of the region’s industrial activity. Among the main industries existent in the metropolitan area are auto and auto parts industry, steel, petrochemical and food industries. There is also significant mining of iron ore. This commodity accounts for important share of the region’s industrial activity and even more to exports. The services sector is highly concentrated in the city of Belo Horizonte. Kasarda (2006) have identified a trend of specific high added value activities to the region including IT, software and biotechnology industries.

The IATN plays or is expected to play a major role in the future course of BHMA’s economic development and competitiveness. It is also being promoted as an international gateway and indispensable piece in promoting Belo Horizonte to a world-class city status. Next chapter will examine the relevance of airports and airhubs to regional economies.
CHAPTER 4: AIRPORT AS A DRIVER FOR REGIONAL COMPETITIVENESS

The air industry has been experiencing an unprecedented growth in recent years. Worldwide civil aviation traffic has grown at a yearly rate of almost 9% while cargo traffic grew almost 10% in the past 15 years (ICAO, 2007). This increase in traffic levels is significantly higher than any other transportation industry. The air industry has managed to sustain high levels of growth despite of the recent economic global recession (Bowen, 2011).

Airport infrastructure plays a crucial role in the economic, political and social spectrum of any country in the world. Airports, particularly international airports, are important to the development of many different areas of national economies. International airports account for a significant share of total international traffic of passengers and cargo arriving and departing from the country. They are central to tax and tariff collection through custom duties. Their regional and global connectivity, measured by the number of direct flights to major cities of the world, has become a decisive factor in their city’s competitiveness and development (Vasconcelos, 2007)

Airports are also critical to international trade. As economies become more open and interconnected, advanced logistics have come to be extremely important in multinational firms’ everyday operations. Air transportation has allowed for a more efficient trade, allowing distant regions in the world to be connected within hours. This reflects the most important characteristic of air transportation (Button, 2006). He claims that air transportation is one of the most expensive means of transportation; therefore ratio between time, price and weight is key. According to the author in 2006 air
transportation accounted for over 40% of all the international trade in terms of value and corresponded to only 2% in terms of total weight. Air transport is mostly utilized for transporting high-added value and perishable goods.

A very important characteristic of an efficient airport infrastructure is the level of connectivity to other transportation modes. Airport links passengers to other destinations through other means of transportation. This is also true for cargo, as transshipment and transloading takes place within the airport’s facility (Silva, 1991).

Recently developments have incorporated a whole new range of possibilities to airports, going beyond the core-aviation related traditional notion. Kasarda (2006) and Guller and Guller (2001) have elaborated a new definition of what an airport would be in post-modern times, as perception of time and space has changed due to digitalization, more efficient logistics as well as improved communications (Harvey, 2001).

An efficient, comfortable and attractive physical facility is considered critical to this “new airport”. While in the past airports were designed in a way of allowing users to remain the least amount of time possible within its facilities, it would now offer users a wide range of services, stimulating them to remain a longer period within the airport facility before and after flights. Furthermore, this new airport even offers services in a way of attracting non-passengers (Vasconcelos, 2007).

An airport can deeply impact the economy of the region where it is located. It has become a regional “employer” due to this incorporation of new range of commercial and industrial activities. More than only passengers and airport employees, the airport will have an inflow of local people that will attend its facilities to do business, consume goods
and services and utilize its linkage to other means of transportation such as bus, railway and subway systems.

Managing this “new airport” can be both complex and challenging. An efficient management should address responsibilities to both public and private sectors (Teixeira & Amorim, 2005). The relevance to national security, the large initial investment costs and its characteristic of a public good require a public interpolation in the overall management (Benitez, 2003). On the other hand its constant needs of investment and upgrading, the wide range of services provided and the high level of competitiveness in the sector require a private approach oriented management system.

This profit/market oriented approach to airport management has resulted in major changes not only in the airport facility, but in its surrounding area as well. A variety of non-core businesses and industries have been implemented in the airport perimeter. Businesses such as hotels, office buildings, storage facilities, and even industrial plants and entire districts are just a few examples of indirect business taking advantage of this new role performed by airports.

Innovation is according to Vasconcelos (2007) is the key word to better understand why airport and urban planners are breaking the paradigm as the airport being exclusively a place for people and cargo transportation. Especially in the United States, Europe and some places in Asia, a strong relationship between airport and regional development and competitiveness have been established. This is according to the author due to this new role performed by airports that impact regions as it attracts investment, skilled labor and increase levels of innovation and dynamism of the region it is located at.
This chapter seeks to examine three new concepts regarding the recent developments in airport infrastructure and airport management. They are: Airport Firm, Industrial Airport and Airport City – Aerotropolis.

The three concepts share the notion that airports are businesses centers where, services, entertainment, and industrial activity are also part of the core business. In this sense the airport becomes a very important piece in urban and regional competitiveness and development (Vasconcelos, 2007).

There are also main differences between the three, consisting basically of specific functions performed by each one of them. For the airport firm, as the name says, the airport is managed as if it were any other firm. A market oriented type of management is implemented. Therefore the particularity of this concept is its unique management system (Kuhn, 2003). The industrial airport consists in the creation of an industrial district within the airport boundaries. This industrial district is a result of public encouragement to increase exports. Differently than the airport firm, this category has a strong public intervention in the airport’s management. In order to increase exports and attract industries the government will provide important subsidies such as waived tariffs, tax breaks and special customs to industries (Vasconcelos, 2007). Lastly, there is the airport city, which is the most complex of the three. Kasarda (2011) calls the airport city the new airport profile of the 21st century. Under this category an airport would be the core of regional development outlying corridors and clusters of aviation-linked businesses (Kasarda, 2010).
4.1 Airport Firm

The concept of airport firm represents primarily a shift in the traditional airport management to a commercial management. It is a transition of the orthodox understanding of the airport from a place to transport passengers and cargo to a complete business environment. It incorporates a market oriented approach to the airport management.

The increasing demand in the aviation sector has been compelling airport managers and owners to invest progressively more in the modernization and expansion of airports. Airport management has become a very complex task as different activities are being incorporated to the airport complex. For a provision of efficient services, up-to-date facilities are critical. Modern infrastructure in terms of accessible ground transportation and linkage to other transportation modes, accommodation of business centers, constantly increasing operational levels and the inevitable upgrading in security has been imposing extra costs to airport management.

In order to keep up with this increased demand for upgrading and investment, airport managers can no longer rely exclusively on aviation related activities as a source of revenue. The scarce profits obtained by airports, by charging fees and surcharges from airline companies, are no longer enough to finance the necessary investment costs associated with maintaining and expanding the airport infrastructure (Vasconcelos, 2007).

Compelled to diversify the sources of revenue, airport managers have been increasingly relying more on non-aviation revenue to complement the total income. Table
3 below identifies according to Kuhn (2003) the main differences between a traditional and a commercial airport management.

**Table 3:**
Main differences between traditional and commercial airport management

<table>
<thead>
<tr>
<th>Traditional Management</th>
<th>Commercial Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitate access to check-in areas</td>
<td>Facilitate passengers, accompanying and visitors access to all parts of the airport</td>
</tr>
<tr>
<td>Prioritize passenger/tourist related businesses</td>
<td>Maximize revenue, inside and outside of the terminal. Offers a variety of businesses, including non-passerger related</td>
</tr>
<tr>
<td>Utilize parking lots as a source of revenue</td>
<td>Utilize parking lot as a complimentary service, as a way of stimulating inflow of people</td>
</tr>
<tr>
<td>Offers easy access</td>
<td>Offers easy access, and is interconnected with other means of transportation</td>
</tr>
<tr>
<td>Focus construction exclusively to aviation related activities</td>
<td>Induce expansion of commercial areas</td>
</tr>
</tbody>
</table>

The non-aviation business activities include the diversification of services offered by the airport, renting and concessioning a wide range of stores and businesses within it. Those are not directly related to aviation. However in airport-firms, they account for a significant share of total revenue; in some cases even more so then aviation revenue (Guller & Guller, 2001).
According to Pitfield (2008), such changes in management can impose consequences and impact regional development. He divided those impacts in three main categories:

*Primary Impacts* – Direct impacts of construction and operation of the airport. Create jobs in construction as well as in the aviation and non-aviation business activities provided by the airport.

*Secondary Impacts* – Indirect impacts of construction and operation of the airport, mostly in form of taxes and tariffs.

*Relative Impacts* - Represented by induced investments from primary impacts. They consist mainly in the impacts the airport related business brings to bank, insurance companies and suppliers.

### 4.2 Industrial Airport

The industrial airport is more than a break in paradigm in the traditional airport management style. Greis (1997) calls it a revolutionary concept, as it changes the role performed by the airport, and it also impacts the industrial productivity.

According to Greis (1997), an industrial airport is an international airport with bonded areas and tariff-free zones specifically designed for industrial plants to manufacture and add value to goods there are going to be predominantly exported. It represents a new utilization of an airport complex, seeking an increase in revenue by rental and occupancy fees and infrastructure use.
According to Vasconcelos (2007), the industrial airport allows an improvement in import and export processes efficiency. It culminates in production chain cost reduction as well as tariff reduction, as the industrial plants are located within special customs zone in the airport perimeter.

The industrial airport also plays a role in reducing inventory costs, due to the fact that industrial plants will be physically located within the airport complex. Therefore, imports and exports will be processed in the same place (Loures, 2006).

According to Kasarda (2006) and Loures (2006), companies with the following characteristics are often the ones that can benefit the most from industrial airports:

1. Customized and flexible production
2. High ratio between product value in comparison to weight
3. Manufacturing of perishable products – both physical and economical perishability
4. Companies that utilize Just-in-time inventory management system or companies with short production cycles
5. Companies that rely on fast delivery of spare parts to its clients

One important characteristic shared by most industrial airports in the world is a relatively high level of government intervention. Generally, governments compromises in providing fiscal benefits and tax breaks as an incentive for new industries to relocate to the industrial airport site. Moreover, industrial airports often will provide the necessary logistic environment so those industries can operate efficiently. In other words government along with the airport management will attempt to establish a pro-business environment in the airport surroundings, offering fiscal subsidies and improved
infrastructure and accessibility to attract new businesses and industries (Vasconcelos, 2007).

Loures (2006) lists the most common incentives provided by the public sector to attract new industries:

- Duty exemptions on inputs utilized on exported goods
- Waiver of the duties and taxes on capital goods utilized in manufacturing goods to be exported
- Implementation of Exporting Process Zone (EPZ) in the airport surrounding areas, benefiting exporting oriented companies and industries

In conclusion, there are an extensive number of successful industrial airports operating in the globe today such as Dallas/Fortworth International Airport (Kasarda, 2010), Incheon in South Korea (Lee, 2003), Schipol-Amsterdam in Netherlands (Vasconcelos, 2007). They have a profound impact in regional competitiveness and development; however it does require a strong public effort in terms of subsidies and investment to attract new industries. Furthermore, most industrial airports have established some sort of connection with worldwide air carriers and logistic companies that will boost the airports operational levels.
4.3 Airport-City: Aerotropolis

As it has been explained previously in this chapter, airports are evolving from transportation oriented centers into a mixed-use commercial and industrial center. The engine of this change is the fast traffic growth experienced by air industry in recent years (Bowen, 2011). Passenger traffic has grown at a rate of 8.9% yearly from 1998 to 2007 while cargo has grown 9.7% (ICAO, 2007). This significant increase in traffic levels has demanded more efficient airports to ensure smooth connections between them. Additionally, this has implicated in a large concentration and flow of people at the airport facility.

According to Kasarda (2010), the emergence of airport cities occurs in response to four basic factors:

- Airports need to create new non-aeronautical revenue sources, both to compete and to better serve their traditional aviation functions
- The commercial sector’s pursuit of affordable, accessible land
- Increased passenger and cargo traffic generated by gateway airports
- Airports serving as a catalyst and magnet for a landside business development

At Atlanta’s Hartsfield-Jackson International Airport for example, more than 90 million passengers passed through the passenger terminals in 2008 (Kasarda, 2009). The number of people attending the Atlanta airport on a daily basis can be similar to a medium-sized city. The airport-city is the ultimate outcome of this transformation in the
airport scenario and has been designed and managed in a way to handle a large concentration of people.

All the factors above have culminated in physical changes in major international airports throughout the globe. One of the most explicit changes is the diversification of commercial segments that currently are located at or in the surroundings of an airport. Kasarda (2010) lists the main airport-city commercial facilities.

- Restaurants, catering and other food services, some locally themed
- International brand, specialty retail shops and factory outlet stores oriented to both air travellers and locals
- Banks and currency exchanges
- Duty-free shops
- Airline lounges and private meeting rooms
- Hotel and accommodation
- Office buildings and convention and exhibition centers
- Leisure and recreation venues as well as cultural and entertainment attraction including museums, art galleries and movie theaters
- Medical and wellness facilities and personal and family services such as fitness centers, spas and daycare
- Auctions, exchange and trade complexes
- Aviation-related industries such as aircraft maintenance, repair and overhaul
- Logistics and distribution, including perishables and cool-chain facilities as well as value adding logistics (labeling, testing, kitting etc.)
- Free-Trade Zones, Special Economic Zones and bonded warehouses

Guller and Guller (2001) classify the economic activities present in the airport-city into three categories: first, core aeronautical activities that are directly related to technical operations of air traffic; second, airport related activities that are related to the intensity of air traffic in an airport, such as hotels and restaurants. Lastly, airport oriented activities that may not be particularly linked to the airport’s traffic. Rather, they often choose the airport area because of an association to the airport image, or because of the improved infrastructure airport areas often have. Accessibility, connectivity and real estate prices, rather than air traffic, are the main factors that would determine such activities to take place in the airport area. As previously identified by Kasarda (2010), affordable and accessible land are one the main factors that have led airport expansion and the development of airport-cities. In comparison to other parts of the city with similar flow of people and business opportunities, most airports still have a reasonably cheap and advantageous cost-benefit of real state price according to the author. Such prices would oscillate in accordance to the proximity to the airport center. Real state inside or nearby a passenger terminal for instance will have a much higher cost than land 10 miles outside the airport center. This cost-benefit relationship will determine the physical distance and spatial structure of economic activities at the airport complex. Table 4 identifies each business and industry within the economic activities leveraged by airport cities according to Guller and Guller (2001) classification:
A large concentration of people is not the only motive that leads a diverse range of business and industries to locate in airport areas. Real estate price is also a determinant in this process. The closer a business or industry is located to the airport center, the higher the square foot will cost. In this sense an industrial plant would be located further away from the airport than a duty-free shop for instance. Table 4 also indicates the distance from the airport center that each activity will be more likely to choose in accordance to the square foot cost and their segment.
Good accessibility is fundamental to modern airport complexes and one of the most important characteristics for the development of an airport-city; as such for any city, particularly for wannabe world cities and regional centers. When there is good accessibility, indirect and non-aviation business and industries can be located as far as 20 km from the actual airport, such as industrial districts, wholesale, distribution centers and bonded warehouses for instance (Vasconcelos, 2007).

The airport city is a very complex new urban form. It is centered on an international airport but impacts regional infrastructure and a diverse set of different businesses and industries, not necessarily aviation oriented. Kasarda (2006) believes that the spatial expansion of the airport economic influence zone has allowed a new analogy similarly to the airport-city. He uses the term aerotropolis, to refer to the largest airport-cities in the world. Changi Airport International (2010), an international consultancy firm from Singapore specialized in airport development and management defines aerotropolis as:

“[…] spines and clusters of airport-linked businesses along airport transportation corridors up to 25 kms from the airport with a significant impact up to 90 km. Aerotropolises are akin to traditional metropolis comprising of a central city (hub) and its commuter-linked suburbs (spokes). Aerotropolis consists of an airport core (hub) and extensive outlying areas of aviation-oriented businesses and their associated residential developments (spokes). (p. 18)

Guller and Guller (2001) affirm that the definition of airport-city is strongly related to regional competitiveness and development, due to the fact the airport’s influence zone has been progressively extending. Thus, the airport can be used as
important part of strategic urban development plan, as it would leverage airport related businesses and boost regional competitiveness and economic development.

Due to the complexity, and to its impacts in regional development, some level of public involvement is critical for the development of any airport-city. Even if the management is conducted or delegated to the private sector, the development of an airport-city relies on the government to invest in infrastructure and provide incentives for business and industries. Without those, airport-cities would face constraints and bottlenecks that could hamper or derail the development of such airport (Vasconcelos, 2007). Therefore both public and private sectors have to be involved for the development of an airport-city.

Junior (2001) claim that public investments, in order to be efficient, have to be allocated in sectors that will consequently result in positive externalities. They should be complementary to private investments and not compete against them. It is important to emphasize that the airport-city is the result of a long term planning process rather than a simple sprawl process along of airport (Kasarda, 2006).

The air transportation sector has been greatly impacted by privatization and liberalization in recent years. However, this liberalization has been impacting the operational side of the industry more than the airport ownership and management. Privatization of carriers and airlines, for instance, are much more common than the privatization of airports. This is a trend that can be observed worldwide. Airport management and ownership is traditionally a role played by the public sector, as only 2% of the world’s commercial airports are owned or managed by the private sector (Button, 2006).
In the developed world, the public sector would often manage airports based on a mirror type of approach; undertaking what a private management would also adopt (DeNuefville & Odon, 2003). Interesting outcomes have resulted from such an approach, and although this is typically concentrated in the developed world, it is spreading throughout the developing nations rapidly. However, traditional public management is still a trend in airport management in the developing world.

As for the IATN, the public sector was still in charge of both ownership and management during the time of this research; even though rumors of privatization and concession to private corporations have been increasingly reverberate in the media. The original project implemented at the IATN was designed based on the industrial airport concept. This way, an industrial district has been incorporated to the airport perimeter. Such district seeks to attract to new industries to the region, and in order to do so it relies on fiscal incentives including a special customs zone and tax breaks to industries.

However, as previously approached in this sector, a common strategy used by the public sector in airport management is to adopt a mirror type approach based on successful private management practices. The IATN has incorporated such type of management, as the state of Minas Gerais’ government hired international private consultancy firms to support the development and future structural and investment plans of the airport. In conjunction with the international consultancy firms, the concept of aerotropolis have been recently incorporated to the projected future role of IATN, as the airport achieve important role in Minas Gerais economic development.

Next chapter will look at the air sector in Brazil and how the IATN is positioned in the national context. It will examine in details the upgrading project and look at the
efforts of the public sector to boost regional competitiveness and economic development by leveraging the IATN.
CHAPTER 5: INTERNATIONAL AIRPORT TANCREDO NEVES IN BELO HORIZONTE

In Brazil, airport management is a responsibility of the Federal government. A public company named Brazilian Enterprise of Airport Infrastructure (INFRAERO) was established in the 1970’s to manage and supervise national airports. Currently it manages 66 airports across the country including the International Airport Tancredo Neves. Those airports account for more than 97% of air traffic movement in Brazil. The public enterprise has 36,800 employees and is in charge of management, investment and expansion almost all of air transportation in Brazil. (INFRAERO, 2011).

The International Airport Tancredo Neves (IATN) is an airport located in Belo Horizonte metropolitan area, more specifically in the city of Confins. The airport is equipped with a passenger terminal with a capacity to handle five million passengers annually. It has a runway 3000m long and 45m wide and can accommodate up to 15 aircrafts (INFRAERO, 2010). This airport site is considered to be a very strategic location due to the fact it is only 38 kilometers away from Downtown Belo Horizonte and is also close to main cities in Brazil such as Rio de Janeiro (478 kilometers), Sao Paulo (619 kilometers), Vitoria (545 kilometers) and Brasilia (708 kilometers).
As of January 2012, the following carriers operate scheduled flights to and from the IATN, according to the IATN’s official website:

**Brazilian Carriers:**

- TAM
- GOL/VARIG
- Webjet
- Ocean Air
- Azul
- Avianca
- Trip Airlines
International Carriers:

- American Airlines
- TAP
- Copa Airlines
- Pluna Airlines

In 2011, the IATN had a flow of over 9.5 million passengers, including 422,000 that were international. This total passenger flow increased over 31% from the previous year. This international passenger flow grew more than 40% during the same period. The cargo volumes handled by the airport in 2011 were 16,263 tons, which put the airport in the top 6 in the nation.

The IATN was also an important gateway for the country’s international trade. It accounted for FOB US$ 175,971,016 in exports in 2011. The main products exported through IATN included automotive parts, pharmaceutical products, precious and semi-precious stones and electronic parts. The total imported was FOB US$ 1,025,101,138. The main products imported through the airport were electronic, automotive and railroad parts and components (INFRAERO CARGO, 2011).

Below are the pictures of the current facilities at the International Airport Tancredo Neves:
The International Airport Tancredo Neves was designed in the late 1970’s and was built in the early 1980’s by INFRAERO. The main purpose of building this airport was to lessen traffic congestion at Pampulha Airport, which is located closer to downtown.
Belo Horizonte. Pampulha Airport is another airport located at Belo Horizonte and at the time was the main operating airport of the state of Minas Gerais. Pampulha Airport was already back then operating at a level above its maximum capacity. To make the matter worse, the airport’s adjacent areas were fully occupied by residential complexes and local businesses, leaving no room for a potential expansion. It did not meet international standards, thus it could only host domestic flights. The routes to the airport were complicated due to the fact that it had poor accessibility and the only avenue that led to the airport was already struggling with congestions and excessive vehicle flow. Under the circumstances, the Federal government decided that a region needed a bigger airport that accommodates the growing demands for air transportation in the region (Mamede & Alves, 2006).

Furthermore, based on the development predictions and forecasts identified for the region, the government believed that the state needed an international airport which could handle a more intense flow of aircrafts, passengers and cargo (Infraero, 2010).

Although IATN was inaugurated in March 1984, it had been underutilized until 2004. Until 2004, all passengers and cargo still had to use other major airports (such as the ones located in Rio de Janeiro and in Sao Paulo) to reach the state of Minas Gerais. That was a bottleneck to the development and it hampered competitiveness of in state businesses. It certainly did not create any incentives for foreign investment, losing to other regions and cities of the country with international air connections (Diniz & Diniz, 2006).

The IATN airport infrastructure, in terms of physical facilities, (e.g. proper runways, terminal buildings, tower controls, maintenance center) was designed in a way
to allow as many as five million passengers on a yearly basis, but after two decades of operation, the airport still accounted for a very small percentage of the state of Minas Gerais’ total flights. This was in part due to poor ground transportation connection between the airport and downtown Belo Horizonte (Jurong International, 2010). The access roads were single-laned and sinuous, making it difficult for passengers and especially trucks to reach the airport. Furthermore, the access roads were highly congested. The fact that IATN is not that far from either airports in Rio de Janeiro or Sao Paulo, further discouraged international carriers to fly to and from it (Vasconcelos, 2007).

In order to promote the use of the IATN, as the congestion at Pampulha Airport reached intolerable levels, the Brazilian government decided, in March 2005, to transfer most of the scheduled flights from the Pampulha Airport to operate at the IATN. ANAC (National Agency of Civil Aviation), in charge of regulating commercial flights in Brazil, limited the number of daily flights operating out of Pampulha Airport, resulting in a major shift of passenger and aircraft flow to IATN.

In 2004, Pampulha Airport had an annual passenger flow of approximately three million passengers, but its number has decreased to 800,000 since. On the other hand, IATN had an annual passenger flow of less than 390,000 in 2004, but it now handles almost 10 million passengers a year. Figure 9 illustrates the shift in flights from 2003 to 2011 between Pampulha Airport and IATN.
Figure 9. Shift in the number of annual passengers in Belo Horizonte Metropolitan Area’s two main airports

Over the years, the airport has undergone several rounds of upgrading and expansion to meet the ever growing air traffic in the region. The main recent projects that have been carried out include improvements in ground transportation infrastructure connecting IATN to Belo Horizonte downtown.

5.1 Linha Verde

As previously mentioned, one of the IATN’s main constraints was its poor accessibility and lack of efficient ground transportation to/from major cities it needed to serve. The poor infrastructure was identified as a major bottleneck and one of the main reasons why the IATN was underutilized for many years. In order to facilitate connectivity from downtown Belo Horizonte to the airport and reduce congestion and
traveling time, the Minas Gerais State Government, in partnership with the Belo Horizonte municipal authorities, designed an upgrading project that sought to improve ground traffic accessibility to downtown Belo Horizonte and its Northern Areas, including the IATN. The expansion of the highway MG-10, also known as Linha Verde, was initiated in 2002 and was fully finished in 2007. It resulted from an investment of an estimated US$ 140 million. This highway has significantly reduced the traveling time between downtown Belo Horizonte and the IATN. The congestion was decreased as well, because the highway was widened to three lanes (Mamede & Alves, 2006). Figure 10 and 11 illustrates the Linha Verde route.

Figure 10. Upgraded highway MG-10 – Linha Verde
As discussed in previous chapters, it is becoming appreciated that air transportation has been increasingly playing a more important role in urban and regional competitiveness and used as an important tool for long-term economic development (Button, 2006). Likewise, airports are evolving into a mixed-use commercial and industrial center (Kasarda, 2010). More and more non-aviation businesses and industries are being incorporated into the development of the new airport complex. This is why a new, or upgraded, airport is an integral part in the economic development plan for many cities, particularly second-city tier ones.
In Brazil, public administration has been historically in charge of investment and management of transportation infrastructure of all sorts. This is particularly true for the air transportation sector, thus airport management is a controlled by the Federal Government through its assigned public enterprise. In response to this new reality in which airports are more complex business centers and can have a deeper impact in regional competitiveness and economic development, in 2002, the Federal Government started designing a project that sought to modernize airports in Brazil. This project was designed based on incorporating the concept of industrial airport in Brazilian airports. Different departments and agencies linked to the Federal Government have been in charge of designing and implementing the project. These departments and agencies include: the Ministry of Finance (Ministério da Fazenda) through the Customs Bureau, Ministry of Development, Industry and International Trade (MDIC) through the Chamber of International Trade and INFRAERO (INFRAERO, 2009).

The industrial airport to be implemented in Brazilian airports is strongly connected to the concept of bonded warehouses. Companies will be allowed to store, clean, sort, repack and otherwise change the condition of the merchandise within the designated area within the airport. Industries will also be allowed to manufacture. All of this will be conducted under the supervision of Customs authorities. The industrial airport will enable companies to add value to goods within the airport facility. All imported inputs and goods are duty exempt as long as they are re-exported. Internal revenue and other forms of taxes are also waived if the product is destined to external markets. If they are to be sold domestically they will be subjected to regular duty and taxes on imported goods.
The primary goal of the industrial airport set by the Federal government is to facilitate international trade and boost national export levels. The industrial airport would be a way of increasing international competitiveness of national-based industries. As benefits to industries, the Industrial Airport is expected to cost of imported inputs, insurance and storage. Additionally, it will facilitate and agilize logistics as well as reduce import and export processing time. All of these benefits are attributable to a special customs regime provided by the Custom Bureau through the implementation of the Industrial Airport.

The different public authorities involved with the project have agreed to implement the project initially in one airport, as an experimental project. The basic requirements in order to be selected by INFRAERO to be part of this pilot project was (INFRAERO, 2009):

- Be an airport located within the Brazilian territory and managed by INFRAERO
- Be an International Airport, with regular scheduled international flights and regular flow of exports and imports.
- Have large territory in order for construction of industrial districts and selected industrial plants, within the airport perimeter.
- Have a public bonded warehouse with facilities to store all types of cargo. This warehouse should be apart from other warehouses.
• Have software approved by Customs, to manage and monitor cargo, having complete control of all stages of the import, export and production process conducted within the airport and its facilities.

Five airports were considered eligible for hosting the project. They are in Sao Jose dos Campos (SP), Campinas (SP), Petrolina (PE), Galeao (RJ) and Confins (MG). The initial plan was to implement an industrial airport exclusively in one airport, and based upon the findings and results here, the government might expand this concept to other airports, implementing the industrial concept in multiple locations.

The International Airport Tancredo Neves on the city of Confins, was selected as the very first Brazilian airport to be conceptualized under the industrial airport model.

5.3 The Pilot Project

As of spring 2012, the International Airport Tancredo Neves remains as the only recipient of investments towards transitioning into an industrial airport in Brazil, although source of similar projects are to be put in place in the near future. The uniqueness of this project in Brazil and even Latin America is the main justification to this research. Numerous field research trips to the airport complex were made during the months of June, July and August of 2011, and interview with a Customs Bureau as well as the State Secretariat of Economic Development authorities were conducted.

The airport complex has 15 million square meters and includes one runway, one Passenger Terminal and one Cargo Terminal (TECA). The Passenger Terminal was designed to handle an annual passenger traffic of an estimated 5 million passengers, and
according to 2011 INFRAERO data, the airport operated well above its capacity, having a passenger flow above 9.5 million (IPEA, 2011). The Cargo Terminal, also referred to as TECA, was designed to handle 18,000 tons of cargo annually. The Cargo Terminal can simultaneously accommodate 3 large aircrafts and, in 2011, also operated above its capacity (Jurong International, 2010).

The industrial airport project at IATN was originally designed to be implemented in two phases. The first one was initiated in 2006 and should continue until 2012. During this period, the 8 lots of 4,000 square meters each, are being designated to accommodate new industrial plants. Furthermore, this phase includes TECA (Cargo Terminal) expansion, providing each one of those industries with a bonded area up to 500 square meters within the terminal to operate.

The second phase, also known as “Industrial Condominium phase” is planned to occur throughout the years of 2012 to 2017. During this phase, an area of one million square meters is being designated to tenant new industrial facilities and plants. The federal government expects to accommodate approximately 30 new industries in this area. Figure 12 illustrates where the industrial park will be located within the International Airport Tancredo Neves.
The Industrial Airport can be understood as a special customs regime, applicable to selected industries and businesses located in the designated areas of the IATN. This special regime grants the following benefits to participant industries:

- Duty exemption on imported goods, parts, inputs or capital goods utilized in the processing or manufacturing of export-destined goods (Imposto de Importação - II)
- Exemption of the following Federal internal taxes on exported goods: IPI (Imposto sobre Produtos Industrializados), PIS and COFINS.
• Waiver of the following legal documents required in the export and import processes: *Termo de Responsabilidade sobre a carga* and *Prestação de Garantia*. Such documents are required on standard import and export processes operated within Brazil and relate to registration of goods and collateral payment. The waiver of such documents reduces customs clearance processing time.

All of these tax exemptions and other incentives were implemented by the Federal government, while the state government of Minas Gerais homologated in 2002, a law named Pro-Confins, to offer state tax exemptions to industries operating under the Special Regime at IATN.

Not all industries are allowed to operate under the Special Customs Regime. The list of activities not applicable to operate in the International Airport Tancredo Neves industrial park includes:

• Activities that could potentially endanger the environment.

• Activities that could potentially interfere with the airport or aviation security issues.

• Tobacco processing or manufacturing industries

• Weapons and ammunition manufacturing industries

Despite the fact that the Industrial Airport project was designed and has been implemented by different units linked to the Federal Government, the state of Minas Gerais’ government has been playing an important role in the development of the project as well. The State government has been involved with non-aviation related projects. Kasarda (2009) has identified the articulation of different branches of public
administration in the development of airport development strategy as being fundamental. Those peripheral projects include the expansion and upgrading of MG-10 – Linha Verde, allowing a more efficient ground access to the airport complex, as demonstrated in the previous chapter. Furthermore, there are other concomitant planned and ongoing projects that are associated with the development of the Industrial Airport as a driver for regional competitiveness and economic development. They include an inland port, a technological park and the construction of a metropolitan ring road.

5.3.1 The Technology Park of Belo Horizonte

The technology park of Belo Horizonte (BH-Tec), is currently under construction in the city of Belo Horizonte, and is located approximately 30 kilometers away from the International Airport Tancredo Neves. This park is a result of partnership of the state of Minas Gerais, the city of Belo Horizonte, Federal University of Minas Gerais (UFMG), Federation of the Industries of Minas Gerais (FIEMG) and Brazilian Service for the Support to Micro and Small Companies of Minas Gerais (SEBRAE) (Minas Gerais State Government, 2010).

The BH-Tec has been designed to attract academic research and stimulate scientific know-how to the region. Furthermore, it seeks to decrease the need to import technological solutions from abroad, as it encourages the investment in research and development, and regional technology transfer (Jurong International, 2010). The technological park would provide space and support to small and mid-sized companies in the fields of biotechnology, information technology, pharmaceutical and engineering
solutions, allowing them to develop and grow as well as invest in new technologies. This is a way of encouraging R&D and also a way of maintaining high-skilled labor force in the region (Minas Gerais State Government, 2010).

5.3.2 Inland Port

An inland port, or commonly referred to as a dry port, is an inland intermodal terminal, to/from which seaport cargo is shipped directly. Companies are allowed to consolidate, store, forward and maintain (for rail or road cargo carriers to clear customs) different goods as if in the original port of entry as shown in figure 13. These facilities are directly connected to seaports, through railways or an efficient roadway system (Roso, 2008).

Inland ports are a way of expanding hinterland to regions sometimes distant from the shore. It increases the operational capacity of seaports and lessens congestion as cargo clearance can be transferred to alternative in-land facilities. Vandervoot and Morgan (1999) state the following in regard to inland ports:

“A dry port must fit into a complex system where the necessary supporting infrastructure (roadways, railways) is in place, maintenance is assured, and the regulatory and institutional systems are properly designed to optimize the involvement of both the public and the private sector”. (p. 19)
One of the 64 inland ports in Brazil is located in Belo Horizonte Metropolitan Region. The inland port Granbel is located in the city of Betim, and was established in 1997. The port has a total area of 75,000 square meters and is directly connected to a railway station. The port was upgraded into an industrial inland port in 2007. By the name industrial, it means that, similarly to industrial airports, industries and companies are allowed not only to store, consolidate, forward and clear cargo in the facility but also to process and manufacture goods, establishing industrial facilities and plants inside the port. Such companies and industries receive similar tax and duty exemptions as the ones located in the International Airport Tancredo Neves (SEBRAE, 2005).

---

*Figure 13. Operational flow of an Inland Port*
Without access to the shore, such special customs zones are important to the competitiveness of trade oriented industries located in the state of Minas Gerais. Granbel Inland Port is located approximately 20 kilometers from IATN, corroborating for a pro-business environment in the region and facilitating logistics for the companies that rely on air transportation to both import and export (Lara & Soares, 2005).

Figure 14. Inland/Dry Port Granbel – Betim

5.3.3 Northern Ring Road

The Northern Ring Road is a project elaborated by the Minas Gerais State Government, through its Secretariat for Economic Development. According to interview conducted with the coordinator of Foreign Trade Affairs of Minas Gerais State Secretariat for Economic Development, the Northern Ring Road was designed to improve
accessibility to IATN, integrating into the existing network of ground transportation in the Belo Horizonte Metropolitan Area.

According to the coordinator, the combination of the International Airport Tancredo Neves and Granbel Inland Port has generated a significant increase in heavy truck traffic in the northern part of the Belo Horizonte Metropolitan Area. The Northern Ring would be a fully access-controlled highway system. The ring road should minimize any negative impact of truck traffic on the local roads. The road will also prevent heavy traffic coming from other main adjacent metropolitan areas such as São Paulo, Brasilia, and Vitoria to congest local roads in the Metropolitan Area.

The Northern Ring Road is being designed to have 45 kilometers of roadway, and will form the backbone of the road network to support the development of a pro-business environment in the region, as well as provide more efficient transportation as shown in figure 15.

As for the time this research was conducted, the Northern Ring Road remained exclusively as a designed concept. Its implementation had not started as of January 2012.
Figure 15. Projected Northern Ring Road (1)

Figure 16. Projected Northern Ring Road (2)
CHAPTER 6: PLANS ON THE IATN – THE STATE GOVERNMENT’S LONG TERM STRUCTURE PLAN

As examined in the previous chapter, several infrastructure projects are currently undergoing, in an effort to leverage International Airport Tancredo Neves as a regional driver for development and competitiveness by the state of Minas Gerais. The IATN is a major driver for economic development and an important piece in turning Belo Horizonte into a more international oriented metropolis; at least that is how the state government has been promoting the airport and its recent investments to the general public.

During the months of June, July and August of 2011, meetings and interviews were conducted with Minas Gerais’ state authorities working on the IATN development. Based on the interviews conducted, this chapter seeks to examine the expectations of the state government for the IATN, with particular focus on the potential positive effects on the urban competitiveness and development of Belo Horizonte and its Metropolitan Area, as well as its role in promoting the city status.

6.1 The Upgrading Plan of the IATN

According to the interviews conducted at the Minas Gerais Secretariat for Economic Development, the state government has high expectations for the role of IATN in the regional economy. They seek to leverage the airport as a driver for regional competitiveness and growth. According to the interviews, IATN is the central focus of a long term structure plan, being designed until 2030 to guide the Belo Horizonte
Metropolitan Area’s economic development and path to a regional center and eventually a world-class city. This structure plan is being developed around IATN and timely implementation of appropriate infrastructure is being designed in conjunction to IATN’s upgrading as well. Those complementary investments are being designed in order to optimize and maximize the airports economic influence zone as shown in figure 17. The economic development of the northern region of Belo Horizonte’s Metropolitan Area is being directly connected to the upgrading of the IATN.

Figure 17. IATN’s projected economic influence zone

Furthermore, Minas Gerais Secretariat for Economic Development has been working in conjunction with two international consulting firms, named Jurong
International and Changi Airports International, in the development of the long term structure plan. Jurong International is an international consultancy firm based in Singapore and specializes in urban planning and development (Jurong International, 2012). Changi Airports International, another Singaporean firm, is an international investment and consultancy group specialized in airport management and development (Changi Airports International, 2009). These international firms have been providing the state government with technical support and determining how the upgrading should be conducted.

As part of the structure plan, designed by the state of Minas Gerais, in cooperation with the international groups, is the expansion and modernization of IATN current facilities as well as its operational capacity. The upgrading, according to the interviews, seeks to provide the region with a cutting-edge airport facility, as the IATN is under development to become the second most important gateway of Brazil in the next 10 years.

The expansion and modernization take into account the recent growth trend of air traffic and is scheduled to take place in four development stages through 2030. As far as expansion of the physical facilities, the addition of two more Passenger Terminals, a new Cargo Terminal and a new Runway are included in the structure plan as shown in figures 18 and 19.
Figure 18. Projected addition of Terminals 2 and 3 at the IATN

Figure 19. Projected new cargo terminal

The increase in operational capacity is a result of the physical expansion and upgrades projected to happen at the IATN in the near future. The four development stages are scheduled to be implemented as following:
Development Stage 1 (2009 – 2013)

The main upgrades during the first development stage include the modernization of the current passenger terminal and the addition of a second one. The airport overall operational capacity is projected to be increased. In this sense, IATN would be able to handle an annually traffic of 13 million passengers and handle 84,840 tons of cargo annually. Stage one takes into account the air traffic growth forecast for 2018, and is expected to be concluded in time to absorb traffic spikes that the FIFA World Cup in the summer of 2014 is expected to generate.


During the second development stage, the main upgrades include the expansion of the existent cargo terminal and the expansion of the industrial district zone. It also includes the expansion of the passenger terminal 2 and the construction of a second runway. With the upgrades, annual traffic capacity is expected to escalate from 13 to 17 million passengers and cargo to increase from over 84,000 to approximately 200,000 tons by 2018. Stage two takes into account the air traffic growth forecast for 2022.

Development Stage 3 (2019 – 2022)

Among the main upgrades is the addition of a third passenger terminal. Stage three also includes the expansion of the aircraft stands, addition of a second cargo terminal and the construction of a Maintenance and Overhaul Center. The upgrades should result in an increased annual traffic capacity of estimated 27 million passengers and cargo handling capacity of estimated 296,000 tons yearly. Stage three takes into account the air traffic growth forecast for 2029.
Development Stage 4 (2023 – 2029)

Lastly, the development stage four includes the expansion of both cargo terminals for an expanded cargo handling capacity. It also projects the expansion of the third passenger terminal and another expansion of the delimited industrial district zone. The expansion in capacity is designed in coherence with the forecasts for 2039, and is projected to result in an annually passenger capacity of 37 million passengers and cargo handling capacity of approximately 437,000 tons.

6.2 IATN for industry/business attraction and job creation

The previous section looked at how the state of Minas Gerais plans to upgrade and expand the IATN physical facilities and operational capacity for the next 18 years. Based on the projected investments, it becomes clear that the airport is approached as a central piece of the state government’s long term plan to promote its regional competitiveness and economic development. This section seeks to examine how the state of Minas Gerais’ government approaches the issue of industry and business attraction as well as employment based on the development of IATN as a driver for growth.

One element considered to be fundamental of the new role performed by airports in recent years it is its impact in a wide range of new business and industries not necessarily aviation related. According to the interviews conducted, this section examines precisely which industry sectors are being targeted by the government as being most likely to benefit from the airport project. It looks at which sectors within each industry are
expected by the government to move to the region. It also examines the role of each of those targeted industries in job creation until 2030.

According to the structure plan, the following industries are being expected to grow and be leveraged by the airport once IATN’s upgrading and its special custom regime are put in place:

1. Electronic Components
2. Info-Tech
3. Life Science
4. Tourism
5. Distribution Logistics and Wholesale Trading
6. Education
7. Aerospace and Defense

For each of the industries targeted, the following sectors within the industries have been identified by the state government as potential sectors to develop in the region, leveraged by the airport. The sectors expected to benefit from the upgrades in IATN as shown in table 5:
<table>
<thead>
<tr>
<th>Focus Industry</th>
<th>Sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic Components</td>
<td>- Semiconductors</td>
</tr>
<tr>
<td></td>
<td>- Electronic Manufacturing Services</td>
</tr>
<tr>
<td>Info-Tech</td>
<td>- Microprocessors</td>
</tr>
<tr>
<td></td>
<td>- Product development</td>
</tr>
<tr>
<td>Life Science</td>
<td>- Pharmaceutical</td>
</tr>
<tr>
<td></td>
<td>- Manufacturing and product development</td>
</tr>
<tr>
<td>Tourism</td>
<td></td>
</tr>
<tr>
<td>Leisure</td>
<td>- Accommodations and Hotels</td>
</tr>
<tr>
<td></td>
<td>- Restaurants/Catering/Food and Beverage Outlets</td>
</tr>
<tr>
<td>Business</td>
<td>- Convention/Exhibition Venues/Meeting Facilities</td>
</tr>
<tr>
<td>Medical</td>
<td>- Human Health Activities</td>
</tr>
<tr>
<td></td>
<td>- Residential Care Activities</td>
</tr>
<tr>
<td>Distribution Logistics &amp; Wholesale Trading</td>
<td>- Freight Transporting</td>
</tr>
<tr>
<td></td>
<td>- Warehousing</td>
</tr>
<tr>
<td></td>
<td>- Material Handling</td>
</tr>
<tr>
<td></td>
<td>- Protective Packaging</td>
</tr>
<tr>
<td></td>
<td>- Inventory Control and Ordering Processing</td>
</tr>
<tr>
<td></td>
<td>- Plant and Warehouse site selection</td>
</tr>
<tr>
<td></td>
<td>- Customer Service</td>
</tr>
<tr>
<td></td>
<td>- Merchandise Wholesaling</td>
</tr>
<tr>
<td>Education</td>
<td>- Secondary</td>
</tr>
<tr>
<td></td>
<td>- Tertiary</td>
</tr>
<tr>
<td></td>
<td>- Vocational/Technical</td>
</tr>
<tr>
<td></td>
<td>- Non-formal</td>
</tr>
<tr>
<td>Aerospace &amp; Defense</td>
<td>- Manufacturing of Commercial and Military Aircrafts</td>
</tr>
<tr>
<td></td>
<td>- Maintenance, Repair and Overhaul of Aircrafts</td>
</tr>
</tbody>
</table>

Source: Minas Gerais State Secretariat for Economic Development

It is noticeable that a wide range of new industrial sectors are being projected by the state government to be implemented in the regional economy as consequence of the IATN expansion and modernization. The rationale of why the particular industries described above are being targeted is shown on table 6 below:
Table 6
Rationale behind the target industries at IATN’s complex

<table>
<thead>
<tr>
<th>Focus Industry</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic Components</td>
<td>- Enhances productivity</td>
</tr>
<tr>
<td>Info-Tech</td>
<td>- Enhances productivity</td>
</tr>
<tr>
<td></td>
<td>- Generates high-added value outputs</td>
</tr>
<tr>
<td></td>
<td>- Fosters R&amp;D and innovation</td>
</tr>
<tr>
<td>Life Science</td>
<td>- Generates high-added value outputs</td>
</tr>
<tr>
<td></td>
<td>- Fosters R&amp;D and innovation</td>
</tr>
<tr>
<td></td>
<td>- Nurture further growth of existing and well established sector</td>
</tr>
<tr>
<td>Tourism</td>
<td>- Fulfills the broader strategic intentions of the State</td>
</tr>
<tr>
<td></td>
<td>- Leverages proximity to tourism centers</td>
</tr>
<tr>
<td></td>
<td>- Provides stability to the economy as it is less affected by business cyclicity</td>
</tr>
<tr>
<td>Distribution Logistics &amp; Wholesale Trading</td>
<td>- Supports the needs of traditional and non-traditional industries</td>
</tr>
<tr>
<td></td>
<td>- Leverage IATN and Granbel Inland Port as drivers for growth</td>
</tr>
<tr>
<td></td>
<td>- Plugs existing leakage of distribution and logistics-related revenue</td>
</tr>
<tr>
<td>Education</td>
<td>- Trains the requisite manpower to support the other focus industries</td>
</tr>
<tr>
<td></td>
<td>- Leverages BH-Tec</td>
</tr>
<tr>
<td></td>
<td>- Fosters R&amp;D, innovation and creativity</td>
</tr>
<tr>
<td>Aerospace &amp; Defense</td>
<td>- Leverages IATN as a driver for growth</td>
</tr>
</tbody>
</table>

Source: Minas Gerais State Secretariat for Economic Development

The geographical dispersion of these industries would follow a similar pattern identified by Guller & Guller (2001), where activities are divided in core aeronautical, airport related and airport oriented activities. The core activities will remain within the fenced perimeters of the airport, a secured area, and will concentrate the activities directly related to aviation activity (e.g. cargo & goods handling facilities and inter-modal interfaces). Among the industries expected to be leveraged by the IATN upgrades, only the logistics, distribution and wholesale and aerospace and defense industries would fit under this category.

The airport related activities will be dispersed up to 10 kilometers outside the airport. Among those activities are the ones which still rely on aviation to operate and
include time sensitive industries and companies, distribution centers and bonded warehouses, for example. In accordance to the industrial sectors expected to develop at the IATN surrounding area, this category would include mainly logistics, distribution and wholesale and life science industries.

The airport oriented activities will be located up to 25 kilometers outside of the airport, and includes activities that are indirectly impacted by aviation; it will also include industries and companies seeking low real estate costs. Such activities include industrial parks, shopping centers and hotels/resorts. All the seven industrial sectors projected to develop on the IATN surroundings can be classified under this category at some extent.

An important component and outcome of this long term structure plan being implemented around the IATN is the impact in regional economic development. One, if not the most important measure of economic development is employment and consequently job creation. Lewis (2009) defines economic development as the “process of retaining, expanding and attracting jobs” (p. 6). These targeted industries are expected by the state government to foment employment at the regional level. Table 7, shows the projections until the year 2030 for each individual industry in terms of job creation.
Table 7
Forecast on employment creation until 2030

<table>
<thead>
<tr>
<th>Focus Industry</th>
<th>YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2015</td>
</tr>
<tr>
<td>Electronic Components</td>
<td>3,210</td>
</tr>
<tr>
<td>Info-Tech</td>
<td>6,530</td>
</tr>
<tr>
<td>Life Science</td>
<td>970</td>
</tr>
<tr>
<td>Tourism</td>
<td>5,730</td>
</tr>
<tr>
<td>Distribution Logistics &amp; Wholesale Trading</td>
<td>2,200</td>
</tr>
<tr>
<td>Education</td>
<td>250</td>
</tr>
<tr>
<td>Aerospace &amp; Defense</td>
<td>610</td>
</tr>
<tr>
<td>TOTAL</td>
<td>19,500</td>
</tr>
</tbody>
</table>

Source: Minas Gerais State Secretariat for Economic Development

According to government of Minas Gerais’ projections, the IATN will in the short term (until 2015) IATN be stimulating and impacting the creation of 19,500 direct jobs. For the long run (2030), this figure increases to a total of 382,000 direct jobs. Those jobs would be dispersed through the seven targeted industries along a range up to 25 kilometers outside of the airport center.

6.3 IATN promotion as an International Gateway

Not only has the state of Minas Gerais’ government been projecting IATN to be a central part of the state economic development in upcoming years, it has also been promoting and justifying this large public infrastructure project. The past sections looked at the Minas Gerais Secretariat for Economic Development projections on IATN’s physical and capacity expansions, as well as its potential to attract and leverage new
industries and create new jobs. This section examines how those expectations towards IATN are being approached by the government for the general public. In order to do so, this research analyzes government-published advertisement materials, such as brochures, flyers and videos being used to promote IATN by the state of Minas Gerais’ government.

This research has learned through the material collected and the field trips taken to the IATN complex that Belo Horizonte and its metropolitan area are indeed going through an identity change, along with the upgrading and expansion of its main airport. Although Belo Horizonte is still a second-tier city in Brazil, massive efforts are being made to incorporate a new set of core values into the city. These core values reflect the desired image that local authorities are trying to achieve for the city. Local authorities, in this regard, determine the desired core values they aspire for the city. This re-shape in identity at the city level relies on capital investment and physical changes, (Pagano and Bownman, 1995) directly impacting urban planning, as the core values desired are incorporated to the cityscape in the form of skyscrapers, parks, museums, sports complexes and other physical manifestations. The modification of the cityscape as a result of an envisioning process is what Paul (2004) refers to as “Imagineering”.

As for Belo Horizonte, the notion of being a globalized and competitive urban center seems to define the main core values of the city desired by the local authorities; in this particular case the state of Minas Gerais’ government. This theory is supported by the following brochures as shown on figures 3 (see page 44) and 20. The theory is also corroborated by Mr. Santos Jr., Minas Gerais’ coordinator of foreign trade affairs. He claims that Belo Horizonte is a modern city, but in order to compete with other global cities provision of proper infrastructure is critical. By providing what he considers to be
the “necessary tools”, the city can become a more competitive urban center in both the national and international arenas. The need for globally-connected and oriented transportation infrastructure has been fully acknowledged by state government officials and furthermore the need has been justified in relation to Belo Horizonte’s future vision of a world class city.
Figure 20. Brochure used by the state of Minas Gerais’ government to promote Belo Horizonte and IATN (2)
Becoming a globalized city and going global are commonly strategies adopted by second-tier cities as part of their development strategies (Rutheiser, 1996). Local authorities would often describe this as a part of their desired core values, as they seek to build an international reputation. This is particularly true for Belo Horizonte. This is how the state of Minas Gerais’ government in conjunction with international consultants summarized the current Belo Horizonte competition environment.

“In this modern era of rapid economic changes and intense global competition, Belo Horizonte has to compete not only against other Brazilian cities such as Rio de Janeiro and Sao Paulo, but also with other global cities such as London, Tokyo, New York etc. Competition will not be for Foreign Investment alone, but also for human capital and global talents. The latter is critical, specially to drive the future economy, where industries are increasingly on knowledge innovation and creativity” (Jurong International, 2010, p. i)

According to Ms. Bagwell, in charge of the Minas Gerais Secretariat for Economic Development’s public affairs, the upcoming 2014 FIFA World Cup and 2016 Summer Olympics (being hosted in Brazil) would offer Belo Horizonte a unique opportunity for international exposure and media attention at national and international levels.

In this scenario, IATN plays a critical role. By stating that Belo Horizonte is an “emerging gateway for worldwide business” or that IATN is an “aerotropolis going global” as shown in figures 21 and 22, the government is directly associating a more competitive and globally immersed Belo Horizonte to its commitment to the upgrading of the airport. The government advocates that an improved airport is an indispensable
condition in order for Belo Horizonte to become more competitive and more
internationally oriented in the era of globalization.

In this sense the justifications for large transportation infrastructure investments at
the city level can be credited as local government efforts to re-shape its identity. In the
case of Belo Horizonte, justifications for large investments in the upgrading of IATN are
set as necessary and essential conditions for the city to become a competitive global city,
and have certainly been promoted this way.
Figure 21. Brochure used by the state of Minas Gerais’ government to promote Belo Horizonte and IATN (3)
Advantages of the 1st Brazilian Industrial Airport Customs Procedure
(under regulation of the Federal Revenue and Customs Bureau)

General
Companies must pay the necessary import and domestic taxes when importing parts or components, and domestic taxes when buying them on the domestic market. If they sell their products on the domestic market, they must pay domestic taxes. If they export, the products are exempt from domestic and export taxes. *Except tobacco and raw leather.

Drawback
If they export their products, they do not have to pay either for domestic or export taxes.
- Refund: Companies must pay the necessary import and domestic taxes when importing parts or components, and domestic taxes when buying them on the domestic market. When they export their products, they have to request the tax credit in the next 2 to 4 months.
- Suspension: When importing parts or components for goods to be exported, imports and domestic taxes will be temporarily suspended.
- Exemption: Companies must pay the necessary import and domestic taxes when importing parts or components, and domestic taxes when buying them on the domestic market. When they export their products, they have to request the tax credit in the next 2 to 4 months in order to import similar parts and components without paying taxes, replacing their stock.

Industrial Airport (Special Development Zone)
- Companies may import parts or components, or buy them on the domestic market, without paying any taxes. They are immediately sent to their assembly lines, and further processed and exported with tax exemption, increasing their competitiveness in the international market.
- Operations allowed: manufacturing, storage, exhibition, demonstration, testing, overhaul and repair.
- The production can be sold on the domestic market as well; in this case, the import and domestic taxes only have to be paid when the goods leave the industrial airport.
- Computerized control: agility and speed for customs clearance and goods supervision.
- Reduce costs of storage, security, transportation and taxes.
- Priority for high technology industries and added-value goods manufacturers for worldwide markets, such as medical and hospital equipments, biotechnology, electronic trade and aeronautics.

Figure 22. Brochure used by the state of Minas Gerais’ government to promote Belo Horizonte and IATN (4)
CHAPTER 7: BELO HORIZONTE, THE IATN AND GOING GLOBAL STRATEGIES

The previous three chapters have examined why and how the state of Minas Gerais’ government has made large public investment in the upgrading of the IATN and how the city of Belo Horizonte have benefited, and is expected to continue to benefit from it in terms of national and international exposure, attracting foreign investment as well as improving local businesses’ competitiveness in the global markets.

This chapter seeks to examine the role that the IATN indeed plays in Minas Gerais and Belo Horizonte’s regional economy. It assesses the IATN’s position in the national air sector in comparison to other international airports and its current capacity and operational levels and trend over time. Furthermore, it analyzes the current stages in its upgrades and the actual impacts in attracting new industries to the region. Lastly this chapter investigates the impact in terms of attracting new industries and businesses performed by the IATN.

7.1 IATN in comparison to other Brazilian airports

This section examines how the IATN is positioned in comparison to other airports in Brazil. In order to do so, this research compares the IATN’s performance in terms of aircraft, passenger and cargo traffic levels as well as the total imports and exports operated, to other airports’ performance across Brazil.

Due to the large number of airports located in Brazil, and for didactic purposes, just the 10 most relevant airports in 2011 (according to INFRAERO statistics) are
included in this analysis. The airports examined are located in seven different metropolitan areas in Brazil as shown on figure 23:

![Map of major international airports in Brazil]

*Figure 23. Major International Airports in Brazil*

### 7.1.1 Aircrafts Traffic

In 2011, a total of 2,893,323 aircrafts flew in and out Brazilian airports. This number is 7.7% higher than the previous year. Figure 24 shows the trend over time in the number of aircrafts in the top 10 busiest airports in the nation.
The airport with the largest flow of aircraft was Guarulhos, with more than 270,000 flights, accounting for almost 10% of the national total. With the exception of Sao Paulo’s Congonhas airport, all the other airports have shown a consistent growth in air traffic. Although the IATN has been following this trend, it still accounts for less than 4% of the total number of flights in Brazil.

Out of the more than 2.8 million flights in Brazil, in 2011, approximately 6.5% were international flights. Figure 25 illustrates the share each airport has of the total international flights in 2011.
The number of international flights are highly concentrated in a fewer number of airports. Guarulhos had more than 83,000 international flights, which accounted for 44.5% of the national total, being the foremost Brazilian gateway. The airport of Galeao in Rio de Janeiro also had a noteworthy share of international flights. Close to 140,000 international aircrafts were operated by Galeao representing 17.5% at the national level. IATN had a total of 6,522 international flights in 2011. The airport is ranked 7th in the nation in terms of number of international flights with a total share of less than 3.5%. Although its ranking has moved up over the years, it still lags fairly from behind the airports in Sao Paulo and Rio de Janeiro.
7.1.2 Passenger Traffic

The total number of airline passengers to/from Brazilian airports, accounted to almost 180 million in 2011. This number accounts for an increase of almost 16% from the previous year. The trend over time in passenger traffic by individual airports is described by figure 26.

![Figure 26. Trend in passenger traffic in Brazil over time](image)

Once again Guarulhos stands out, handling more than 30 million passengers a year. The airports of Brasilia, Congonhas and Galeao also account for a significant share of total passengers, respectively.
IATN has experienced a substantial growth of passenger flow across the past decade, and is now ranked 5th in the nation, with almost 10 million passengers arriving and departing in 2011. From the 180 million passengers in Brazil, in 2011, just over 10% were international. The share of each of the top 10 airports in Brazil is shown on figure 27:

![Figure 27. Share in Brazilian passenger traffic by airport - 2011](image)

Guarulhos handles almost two thirds of the international passengers flying to and from Brazil, confirming its status of Brazilian main international gateway, followed by Rio de Janeiro.

IATN handles less than half a million international passengers, accounting for 2.3% of the total international passengers flying to and from Brazil in 2011. Yet, the
IATN was still ranked 4th in Brazil in terms of international passengers, which reveals the high concentration of international passengers in the nation’s top two airports.

7.1.3 Air Cargo

The previous two sections looked at the number of aircrafts and passengers handled by the top ranked airports in Brazil and their relevance to the national context. It is noticeable that the state of Sao Paulo plays a predominant role in Brazil, much more than other regions of the country, as far as these two variables are taken into account. Guarulhos has established itself as the most important airport in the nation by a large margin. This predominance becomes even more perceptible in terms of internationally orientation. Although IATN has experienced some steady growth in recent years and has demonstrated to be established among the top 10 most relevant airports in the nation, it is still a long way from achieving the figures of the first tier airports. Moving on from the aircraft and passengers traffic levels this section examines the distribution of cargo handled by these airports.

The airports located in the state of Sao Paulo account for over 54% of the total air cargo handled by Brazilian airports. An analysis of both aircraft and passenger traffic makes it very clear that Brazil’s airline industries, in general, are highly concentrated in the Sao Paulo area. Just the airport of Guarulhos alone, accounted for almost one third of the total cargo handled in the country in 2011. For this year, a total of 1.56 millions of tons of air cargo were handled at Brazilian airports. This figure represents an increase of
over 25% from the previous year. The share of each airport in the total cargo handled by Brazil is shown on graph 28:

Figure 28. Share in total air cargo by airport in Brazil – 2011

IATN accounted for a very timid percentage of the total air cargo handled in Brazil in 2011. The airport handled just under 15,000 tons of cargo, accounting for less than one percent of the national total. Figure 29, shows the trend over time in the amount of cargo handled by IATN, and there is a certain degree of inconsistency in the results.
Figure 29. Trend in total air cargo at the IATN (Kg)

In aircraft and passenger traffic levels the IATN has shown a significant increase over the past decade, but these increase levels were not experienced by the levels of cargo handled by the airport. Even though from 2003 to 2011 there is an overall increase in total cargo handled, the annual rate was less than 2.5% during this period. This rate is considerably lower than aircraft and passengers traffic levels. This culminated for the very low total share of IATN at the total cargo handled by Brazilian airports.

Approximately 52% of the total air cargo consisted of international cargo in 2011. This percentage reassures the importance played by the air sector in trade, as more than half of the total cargo was originated at or destined to international markets.

In the international arena, there is an even stronger concentration of operations in the Sao Paulo’s airports. They accounted for almost 75% of the national total, which represents 600,000 tons of cargo as shown on figure 30:
Once again, IATN makes up for a small share of the national total. In 2011, the airport based out of Minas Gerais handled just over 5,000 tons of international air cargo, accounting for less than 1% of the national total. However, IATN was still ranked 7th among Brazilian airports, corroborating with the high levels of concentration of the air sector in Brazil, especially in the international level.

It is relevant to mention that the data above takes into account only cargo transported by airplanes. Some airports might have handled a higher amount of total cargo in 2011 due to other types of operations such as inland ports for instance.

Furthermore, the figures above represent only the weight dealt by each, and not monetary values of cargo. Nonetheless, it is fair to say that the many promises and claims made by the state government in the previous chapter, regarding the upgrading of the IATN, are yet to be realized.
7.1.4 Import and Export

Air transportation plays a critical role in Brazilian trade. In 2011, 17.5% of the total value imported and 4.4% of the total exported was transported through air (INFRAERO CARGO, 2011). Historically the value imported is significantly higher than the value exported, due to the characteristics of the products trade by Brazil. The country is known for commodity exports which are often transported by sea. The imports on the other hand, tend to concentrate in high value added goods that are more likely to be transported by air. The differences between the characteristic of imported and exported goods explain the discrepancy between the shares played by air transportation in the trade context in Brazil.

In 2011 the total exported through air transport by Brazil accounted for US$ 14.2 billion (FOB). The airports located in the State of Sao Paulo once again stand out among other airports in the nation. A total of US$ 7.75 billion was exported through Guarulhos and US$ 3.35 billion by Campinas. Combined these two airports account for more than 78% of the total national exports in terms of value. Only US$ 176 million was exported through the IATN, accounting for just over 1% of the national exports.

The total value imported through air in 2011 is more robust than the value exported, representing a total of US$ 39.5 billion (FOB). Once again there is a significant concentration of operations in Sao Paulo area. Combined Guarulhos and Campinas airports accounted for two thirds of the national imports in terms of value in 2011. When compared to these two, IATN has rather modest numbers accounting for 2.6% of the total during the same year.
Despite the small percentage share in terms of value imported and exported, there seems to be a definitely positive trend going for IATN in recent years as shown on figure 31:

![Figure 31. IATN’ exports and imports over time (in US$)](image)

The IATN has presented a steady increase in import and export values over the past several years. The airport had a robust growth in export levels of 69% from 2010 to 2011. This increase is substantially above the national average that grew over 16% during the same period. The same thing can be identified in import levels as the numbers rose from about US$ 300 million in 1999 to over US$ 1 billion in 2011.

The IATN has been experiencing a significant increase in its operational levels as examined in this chapter. The airport has positioned itself as the predominant gateway in the state of Minas Gerais. However, this positive trend over the years has also been experienced by other major international airports in Brazil. This is a result of the increasing role of air sector in trade and consequent increase in demand. With the
advances brought by globalization, most countries have been also experiencing such
growth and positive trends in their air industries (Bowen, 2011).

This increased performance by the IATN in recent years has not been reflected in
an increased relevance to the Brazilian air industry. Although the IATN is ranked
among the 10 most relevant airports in Brazil, there is still a big gap in comparison to
other, more traditional and predominant airports. As a matter of fact this distance is
indeed widening over the years. Let’s take for instance the IATN variation in export
levels. From 2010 to 2011 the level of exports through the IATN grew 69%. During the
same time frame, Guarulhos experienced a much lower percentage increase, accounting
for almost 17%. These are relative values. 69% increase at the IATN accounts for just
under US$ 72 million while a 17% increase in Guarulhos exports account for over US$
1.1 billion. In real values, Guarulhos’ airport had a much more significant increase,
spreading the margin from the IATN in terms of export levels. This was also true for the
further variables examined in this chapter.

In the Brazilian air industry context, the IATN current plays an important role to
the overall industry, but it is still not capable to compete with first tier airports in the
nation. In this sense Guarulhos has established itself as the most relevant gateway,
especially internationally.

7.2 New Industries

The previous section looked at the IATN’s factual performance. It examined
flight, passenger and cargo traffic levels, as well as trade values for the year of 2011 and
their variation over recent years. It positions the airport’s relevance in the Brazilian air sector as it compares the IATN’s performance with other major international airports within the country. It concludes that despite the recent improvements in overall traffic levels, the IATN still does not compete in the same level as other predominant airports in the Brazil, regardless of recent investments and upgrades.

This section examines how successful the investments at the IATN have been in terms of impacting regional competitiveness and economic development. In order to conduct such assessment the section looks at the repercussion in terms of new business and industries experienced by Belo Horizonte Metropolitan Area thanks to the IATN project. According to government projections, as demonstrated in the previous chapter, the airport site is expected to attract and leverage seven main industrial sectors. With the intention of monitoring recent industrial activity in the region, two field trips were conducted to the airport site with the purpose of identifying how many industries, if any, have indeed been established in the region.

The initial industrial airport project implemented at the IATN was divided in two stages, having the first one scheduled to occur from 2006 to 2012. The first stage was designed to attract a total of eight new industries to the airport perimeter during this period. As the conclusion date of this initial phase is imminent, an evaluation of its current status was conducted.

There were only three companies currently operating within the airport complex as of December of 2011. They are:

1. GOL Maintenance, Repair and Overhaul Center – The center was established at IATN on September of 2006, and is current the largest MRO facility
in Brazil. It is the largest industry located at the IATN complex in terms of physical occupancy as well as employment levels. The center was expanded in 2010 and it current has three hangars and can service 120 aircrafts yearly (Braga & Moreira, 2011).

2. **VMI-Phillips Medica Systems** – VMI is a Brazilian company specialized in healthcare and x-ray equipment manufacturing. It was, in 2007, acquired by Phillips as part of the company’s international strategy of expanding to Latin America. The company has been benefiting from the fiscal and logistic benefits as it relies on imported components to manufacture its final products, and a significant percentage of these products are export-oriented.

3. **Clamper Electronics** – The company works with development and manufacturing of electronic components. Clamper electronics export to nine different countries within the American continent and relies on import of silicon to manufacture its main products. The special customs regime increases the company’s international competitiveness. It was the first industry to be implemented at the IATN, and currently is the only one with an industrial plant within the airports’ cargo terminal.

These are currently the only three industries located and operating within the IATN perimeter. Their answers to why they decided to locate there and how they have benefited from the location reflect the glaring gap between what the state government has projected and what really happens on the ground. The government established goal of eight new industries to be operating under the special customs zone at the IATN by the end of 2012 it is currently not feasible and will not be achieved in time.
Those are, however, the industries that were directly impacted by the implementation of the industrial airport concept and the special customs zone at the IATN area. The structure plan designed by the state government of Minas Gerais, with the support of international consultancy firms, is based on the airport city concept. This concept takes into account a more profound economic influence of the airport role in the regional economy which incorporates a wide range of businesses and industries to an airport site. In this sense infrastructure investments are designed to expand and leverage the IATN economic influence zone to a radius up to 25 kilometers from the actual airport facility.

In this regard, not only the industries located within the IATN perimeter are taken into account when assessing its impact in economic development and competitiveness. There are other businesses and industries that have located in the region due to the recent increases in the IATN’s operational levels, the upgraded infrastructure in the region and the increased demand created by the airport including:

1. **Mecan** – Mecan is not an export-oriented company, but have located in the region to provide technical assistance to the development of other industrial activities. The company is in the construction equipment retail and rental sector, supporting other activities and have indirectly benefited from the investments at the IATN.

2. **Ramada Airport Hotel** – The hotel has been just recently added to the airport complex. It was inaugurated early 2011 and is equipped with 130 rooms. The facility is located nine kilometers from the IATN and is the first business in
this segment to locate in the region. The hotel is also a convention and exhibition center as it offers 6 private conference rooms. The construction of the airport and its convention centers were a consequence of the increased flow of people created by the recent expansion of the IATN’s traffic levels.

The proximity of the IATN to adjacent urban centers imposes a limitation on a more precise and comprehensive assessment of the airport’s impact in regional competitiveness and economic development. There are many cities situated within a 25 kilometer radius from the IATN. Although there seems to be additional industrial activities in the region indirectly impacted by the IATN, it is very difficult to identify them, let alone measure the positive effect of the airport on their businesses. Consequently, there are businesses and industries located within the 25 kilometer range from the airport that were not encompassed by this evaluation due to the difficulty in determining a causation relationship between them.

An important relationship was identified between the industries located at Granbel Inland Port and the IATN. The proximity between both facilities allows industries to locate at the inland port and still use the airport as a gateway for their products destined to international markets. By doing so, they are able to benefit from the intermodal connectivity and the upgraded infrastructure provided by the inland port, and still have an international airport just a few kilometers away. This interchangeable scenario corroborates for an overall pro-business environment stimulated by local authorities in the region. In addition it benefits regional competitiveness and economic development of the region as it provides different options to new industries. The
identified industries that have been currently located at the inland port in consequence of the proximity to the IATN are: Maxtrack, Jabil electronics, Swisbrass and Muller.

1. Maxtrack – Maxtrack manufactures electronic tracking and monitoring devices used by logistic companies. It currently exports to several countries in Latin America, as well as Europe, Asia, Africa and North America.

2. Jabil electronics – The industry manufactures and assembles electronic products, parts and components. It is a subsidiary of Jabil Circuits, and utilizes the airport facilities in Minas Gerais to reach and distribute part of its production throughout South American markets.

3. SwissBrass and Muller - both companies are specialized in the production of thermoplastic injection mainly for exports. They rely on a variety of imported inputs, but export a large share of their final goods through the IATN. Despite the difficulty in obtaining an accurate measurement of the extent in which the IATN has contributed, directly and indirectly, to Belo Horizonte’s economic development and international competitiveness, it was possible to identify that some industrial sectors have been indeed attracted to the region as a result of the recent efforts by the public sector to invest in the airport development. Even though the IATN investments have generated an impact in the regional economy, the extension of this impact is yet very moderate and incipient. The initial projections on the arrival quantities of new businesses in response to the infrastructure investments at the airport have not been materialized. The feasibility of the future projections to the regional economy is questioned by this research, as there is little evidence to support such projections.
CHAPTER 8: CONCLUSIONS

The Brazilian air industry has experienced a significant growth in recent years. However its airport infrastructure has not kept pace with this growth which has resulted in congestion and inefficient services at major airports constraining the country’s and its major cities’ competitiveness and development. The lack of proper transportation infrastructure imposes a burden on nationally-based companies and has been captured by academia as “Custo Brazil” (BNDES, 2009).

In an effort to reduce “Custo Brazil”, the Brazilian government, federal and state, has initiate public projects to upgrade and expand several airports across the country. The airport’s traditional role as an exclusively transportation facility is changing worldwide. An increased flow of passengers and cargo and the pursuit of alternative revenue sources have been allowing for the emergence of modern airports into mixed-use commercial and industrial centers. Progressively a new range of industries and businesses have been incorporated to the airport complex. More and more, the modern airport have been managed in a way to leverage not only the traditional aviation industries and passengers, but also new non-aviation industries and businesses and non-passengers (Kasarda, 2010). As airports can potentially attract a wider range of industries and businesses, and concentrate a large flow of people (passengers and non-passengers) they can consequently expand their economic influence zone, becoming an important piece to regional economic development and competitiveness.

Another important element related to the new airport model, and consequently resulting in airport infrastructure management is the potential role an international airport
has in increasing a city’s global connectivity. Boschken (2008) lists the main characteristics shared by global cities, and one important feature is the presence of international transport gateway. This globally-connected desired city image often used as an urban development strategy. Based on the pursuit of the new aspired city identity, local government will invest, reshaping cityscape.

The process of physically transforming a city in response to a new desired image is what Paul (2004) refers to as “imagineering”. The investment in the construction or expansion of an airport is a recurrent way in which the “global imagineering” process, designed by local authorities, materializes in the city level.

Going global strategies are particularly common among urban development in second tier cities across the world. By going global those cities seek to increase competitiveness, attract foreign direct investment, achieve robust economic development and, in the long run, to promote the city status. Short and Kim (1999) refer to those as “wannabe world cities”. This strategy is implemented by second-tier cities as they envision dynamic growth, and in many cases, a promising path to reach first-tier status.

This is particularly true for the city of Belo Horizonte, Brazil. This research has examined the recent and projected investments taking place around its International Airport Tancredo Neves. The airport has experienced the implementation of the Industrial Airport concept and the addition of a special customs zone sponsored by the Federal Government. Furthermore, the state of Minas Gerais’ government has developed a long term structure plan to expand IATN for the next 20 years. The airport has a critical connotation to the regional economy. In addition to the investments in the airport itself, the state and city government have been sponsoring complementary projects in the region
including an inland port and a technological park as well as infrastructure improvements including the renovation and expansion of the MG-10 and the projection of the ring road.

According to the coordinator of foreign trade affairs of the state of Minas Gerais, such investments are providing the region with the necessary tools for long term economic development, and increasing competitiveness of regionally based, existent and potential new businesses and industries. In other words the investments at the region are to create a pro-business environment in the region. According to the state of Minas Gerais’ government projection and forecasts in terms of new industries and employment created by this pro-business environment. By 2015 almost 15,000 direct new jobs are expected to be leveraged by IATN and just under 400,000 by 2030.

In reality, however, many of these projections have not materialized yet. Academic debates on what drives competitiveness and development have drastically changed over the years, as many factors that were once believed to determine and impact competitiveness have turned out inconclusive. Nonetheless, it has not stopped policy makers, such as those of Minas Gerais and Belo Horizonte, from picking up many of the inconclusive, uncertain, exaggerating theories and applying to their cities, claiming and expecting desirable competitiveness. The state government claims and projections on the economic impact caused by the investments at the IATN are empirically and theoretically unfounded, and have turned out once to be inaccurate. The location of at least eight new companies by the end of the first phase of the implementation of the Industrial Airport concept, projected by the state government, has proven to be too good to be true. Therefore, the credibility of further projections is questionable.
This research is not arguing against the investments at the IATN nor is by any means stating that the projected goals cannot be accomplished. John Kasarda (2007) for instance, has identified that Belo Horizonte’s metropolitan area has received more than one hundred electronic firms since 2003. According to him, this can certainly be classified as initial stages of an industrial cluster. Due to the characteristic of the industry, an improved airport can certainly positively affect competitiveness. The economic projections may or may not come about to be true. However this research has not found empirical or theoretical evidence that corroborates with such claims.

Another aspect examined by this research is how the investments at the IATN are being promoted as part of a going global development strategy. In Belo Horizonte, local officials have been promoting the importance of investing in the airport as a way of their city becoming a more competitive urban center as it will increase the city’s linkage and connectivity with the wider world. The brochures analyzed throughout this research corroborate with this notion as they call the IATN “an emerging gateway in the heart of Brazil”, “an aerotropolis going global” or by affirming that the IATN will be “second most important gateway of Brazil in the next 10 years”.

Although the issue of global cities has been well captured in the academia, its definition is still very much broad. Different authors utilize different criteria to base their definitions on. There is also a degree of subjectivity on how to classify a city as global, what are the characteristics shared by those cities and what is the path to becoming one. Under some definitions the presence of an international airport would be considered to be one of the key characteristics shared by global cities. (Boschken, 2008; Taylor et al, 2002; Markussen, 2001). In this regard, the authors are not referring to any international
airport. Their definitions take into account international logistic hubs. As examined in this research, as of 2011 the IATN accounted for a small share of the total flights in Brazil, especially internationally.

In contrast, Abu-Lughod (1999) bases her definition on the historical significance of the city in international politics and economy, and Sassen (2001) relates the presence of financial centers to global city status. Neither of those definitions encompasses the presence of an international airport as a key indicator of global or world-class cities.

Similarly to the issue of urban and regional competitiveness this lack of agreement has not stopped local politicians from “picking and choosing” definitions that would more conveniently suit their city, and use those as justifications for public investment. This is precisely the case with Belo Horizonte. Additionally it is valid to emphasize that there is no evidence linking a city’s “global” status to its actual economic performance.

In conclusion the research has been drawing attention to the fact that the in many cases the rationale used to promote large infrastructure investment, especially at the city level, has little theoretical and empirical foundation. In many cases it is difficult to link such investments to actual economic benefits. Tews (1993) analyzes the impact of massive public transportation infrastructure investment at the regional level and he verifies that often the returns expected by the investments are not met, but indeed they turn out to be the turning point to public deficit and indebtedness.

Nevertheless, the politicians behind those projects are able to benefit from such investments; even if the projected returns and outcomes do not turn out as expected. They are able to wield political power and exposure by relating their administration to a big
event hosted by the city, construction of a tall skyscraper or in the case of this research an airport. In this regard, Paul (2004) concludes:

“While certainly having economic purpose, those structures which constitute the cityscape (office towers, highways, airports, houses, parks) as well as the spectacles which celebrate urban life (cultural festivals, museums, sporting events) is not simply vehicles of capital accumulation. They narrate and advance a particular definition and interpretation of the city. Those behind such projects are able to wield political power through them by imposing their vision upon space and cultivating it in the minds and actions of urban residents, increasingly a vision of cosmopolitan values, global connectivity, and wealth embodied in transnational capital”. (p. 576)

Overall there is a degree of discrepancy between how the airport has been promoted by the state of Minas Gerais’ government and what actually happens on the ground. The claims and justification for massive transportation infrastructure investment are not necessarily empirically or theoretically supported. The economic and social outcomes to the region are uncertain, but the political benefits are assured.
LIST OF REFERENCES


GaWC. (September de 2011). *The world according to GaWC 2012*. Acesso em 20 de December de 2011, disponível em http://www.lboro.ac.uk/gawc/world2010t.html


http://www.jurong.com/about-us/profile

Kasarda, J. D. (July de 2006). *Airport Cities and the Aerotropolis*. Acesso em January de 2012, disponível em Aerotropolis:


Twickenham, United Kingdom: Insight Media.


