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INDUSTRIAL REAL ESTATE DEVELOPMENT IN SAO PAULO, BRAZIL

by

GONZALO G. CORTABARRIA

Master of Business Administration
Montevideo Institute of Business Studies, 1994

Bachelor of Architecture
University of Uruguay, 1991

Submitted to the Department of Architecture
in Partial Fulfillment of the Requirements for the Degree of
Master of Science in Real Estate Development

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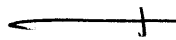
Massachusetts Institute of Technology

September 1997


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Signature of the Author _____

 **Gonzalo G. Cortabarría**
Department of Architecture
July 31, 1997

Certified by _____

 **Blake Eagle**
Chairman, Center for Real Estate
Thesis Supervisor

Accepted by _____


William C. Wheaton
Chairman

Interdepartmental Degree Program in Real Estate Development

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ABSTRACT

In the last four years, Brazil has experienced substantial changes. Economic reforms have given the country back its stability and growth. What is more, they have changed investors' expectations on the future. In this new environment, the Brazilian industry is going through a process of general restructure and opening to the rest of the world. The changes affect the industrial real estate sector and have opened a window of opportunity for foreign investors and developers to participate in the region.

This paper aims at the industrial real estate market in the country's leading industrial and economic region: the State of Sao Paulo. The purpose is to give an overview of the opportunities for development that might exist in the area, from the standpoint of a foreign investor. Also, it provides practical information in order to aid foreign developers who wish to enter the market.

As a general context, the paper reviews the political, economic and industrial conditions that prevail in Brazil. It analyzes the history, present data and ongoing trends, in order to better forecast the future evolution and potential risks. Also, it looks at the regulatory, fiscal and business environment ruling foreign investment. The study explores the reasons that make the State of Sao Paulo the main destiny for foreign investment and reviews the basic characteristics of its industrial sector.

At its core, the thesis looks at the characteristics of both the supply and demand of industrial space and describes the latest concepts in industrial development: the industrial condominium. As an example and a business opportunity, it goes over the general characteristics of this concept, its potential and the future supply. Finally, the study ends with a review of the industrial locations in the State, with an overview of their strategic conditions and price factors.

Thesis supervisor: Blake Eagle
Title: Chairman, Center for Real Estate

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CHAPTER 1 - INTRODUCTION

1.1 BACKGROUND

With more than 150 million potential consumers, a highly diversified economy and a gross domestic product of over \$750 billion, the potential for doing business in Brazil is enormous. For the last three decades, the country's development was marked by closed markets and heavy government involvement. In 1990, however, the government began significant liberalization efforts which included reducing trade and investment barriers, modernizing the regulatory environment, and cutting inflation. The economic reforms have given the country back its lost stability and growth. What is more, they have changed investors' expectations on the country's future.

Reflecting the overall increase in the purchasing power in the country, multinationals are investing in many sectors. Foreign investment grew from about \$5 billion in 1995 to almost \$10 billion in 1996, and is expected to reach \$15 billion in 1997¹. In this new environment, the Brazilian industry is going through a general restructure and opening to the rest of the world. These changes will have an important impact on the industrial real estate sector, both in the design or construction of the physical facilities, and in the financing, renting and management of the assets. Brazil has opened a window of opportunity for foreign real estate investors who wish to participate in its market.

¹ Veja, July 18, 1997

1.2 THESIS OBJECTIVES

Little information is available on the Brazilian industrial real estate market. This thesis aims to understand the realities of the country's industrial demand and supply and somehow predict their future evolution. In turn, it provides a guidance to help foreign parties interested in entering Brazil as potential developers to identify opportunities and constraints. The paper focuses on the leading industrial and economic region within the country: the State of Sao Paulo, home for most of the industrial development in the region. Fair is to say, this study does not aim to provide exhaustive data, but to gather primary information to help foreign developers decide whether to pursue further research in the area.

1.3 APPROACH/METHODOLOGY

The author traveled to Brazil, to the city of Sao Paulo, to conduct most of the research for the thesis. Data and information were gathered from literature and interviews with several players in the industry. Literature was obtained from the main government and state organizations, as well as private consultants, both locals and multinationals. The interviewees included brokers, constructors, developers, journalists, lawyers, market researchers and other people involved in the development process.

1.4 ORGANIZATION

To understand the context of industrial development, Chapter 2 starts by giving an overview of Brazil and its increasing importance in the global economy. It reviews the political, economic and industrial conditions by looking at the history, present data and ongoing trends, as well as the

potential risks. At the end, a section reviews the Mercosul trade agreement, a positive force driving the country towards regional integration.

Chapter 3 focus on the State of Sao Paulo and describes the reasons why it is the main destiny for foreign investment. It reviews the basic characteristics of the State's industrial sector, its historic evolution, present situation and future trends. Finally, it describes the geographical distribution of industries and the tendency of migration to new industrial poles in the interior of the State.

In order to help foreign investors participate in the Brazilian market, Chapter 4 goes over the different areas that conform the industrial business environment. First, an overview on taxes and exchange controls. Second, a description of the rental system and environment controls.

Chapter 5 looks into the industrial real estate market. It starts by an overview of the present market conditions, then describes the demand and supply. As an example, it goes through the characteristics of demand as concluded from a market research conducted by a local broker. The chapter then focus on the latest trends on industrial development: the industrial condominium. It looks at the general characteristics of this concept, its potential and the on coming supply.

Chapter 6 identifies the different factors that determine industrial location, specially the transportation system. The thesis surveys the different industrial locations in the State of Sao Paulo, with an overview of their strategic conditions and price factors. Finally, the thesis includes two appendixes: a summary of the automobile sector with its expansion plans, and a description of the industrial locations on the main freeways around Sao Paulo.

BRAZIL AND ITS POLITICAL DIVISIONS



CHAPTER 2 - BRAZIL

2.1 INTRODUCTION

With 8.5 million sq. km. and 156 million inhabitants, Brazil is by far the largest country in South America in terms of size and population. In 1995, Brazil's GDP reached \$767 billion¹, making it the 9th largest economy in the world. The country exports \$48 billion² and is a major world supplier of agricultural products, raw materials and manufactured goods.

Key information, 1996*

Official name	Federal Republic of Brazil
Total land area	3,286,488 sq. mi. (8,511,965 sq. km.)
Major urban centers (1995)	Sao Paulo (16 m), Rio de Janeiro (10 m), Belo Horizonte (4 m)
Population	158.1 million
Language	Portuguese
Government	Federal republic
GDP	\$766.5 billion
Income per capita	\$4,848
Exports (fob)	\$47.7 billion
Imports (fob)	\$53.3 billion
Exchange rate (av) R:\$	1.006

Source: Economic Intelligence Unit (EIU), Country Profile, 1996-97; Country Report, 1st quarter 1997
* estimates

During the 80's and early 90's, the economy was characterized by high instability and insignificant growth. Since 1994, with the opening of the international capital markets to the country and a monetary stability plan in place, Brazil has initiated its recovery, and enjoyed moderate growth.

¹ Economic Intelligence Unit, Country Report, 1st quarter 1997

Today Brazil has a large consumer market that is increasing its per capita consumption, a sophisticated financial system and an aggressive reform program. These favorable conditions, combined with the size of its economy and a large pool of natural resources, will likely increase the flow of investment to the region. If no accidents happen, Brazil is expected to consolidate and follow its path of economic growth, becoming one of the world's economic leaders in the 21st century.

2.2 POLITICAL BACKGROUND

After 20 years of military rule, Brazil returned to a democratic government when Fernando Collor de Mello was directly elected in 1990. In 1992 and after a corruption scandal, Mr. Collor was impeached by Congress and vice president Itamar Franco became president. The economic situation showed no improvement until May 1993, when Fernando Henrique Cardoso became Minister of Finance. By the following year, he had introduced the Real Plan and the rate of inflation had fallen from 50% to roughly 2% per month. Mr. Cardoso took the presidency in 1994 and since then, he has managed to introduce a series of constitutional amendments influencing the economic development. Other amendment proposals are still pending for Congress approval and would affect the social security, administrative and tax systems. The re-election bill would allow the re-election of the president, governors and mayors, certainly providing further stability to the reform program under course.

² Economic Intelligence Unit, Country Report, 1st quarter 1997

2.3 THE BRAZILIAN ECONOMY

Main Economic Indicators , 1996*

Real GDP growth (%)	3.2
Consumer price inflation (year-end, %)	10.0
Current-account balance (\$ billion)	-24.3
External Debt (\$ billion)	176.6

Source: Economic Intelligence Unit (EIU), Country Report, 1st quarter 1997

* estimates

Evolution

Brazil's development was traditionally based on import substitution industrialization. Between the 1930's and 1970's, the economy expanded very rapidly and a large diversified industry was developed. Brazil benefited from its competitive advantage in some agricultural products and became a major producer of meat, leather footwear, wood products, mineral and metal products. At the beginning of the 80's, however, the protective policies that had favored industrialization, showed signs of exhaustion, investment dropped, hyper-inflation followed, and income per head stagnated.

During the 80's, the economic policy was characterized by a rising rate of inflation and a sophisticated system of price indexation which transmitted past inflation into current and future rates. Between 1986 and 1991, there were five unsuccessful attempts to stabilize the economy. When Fernando Enrique Cardoso became Minister of Finance in 1993, a shift in economic policy began. His Plan Real was designed to eliminate the public-sector deficit and stop the indexation mechanism. The rate of inflation dropped from about 1,000% per year in 1994, to roughly 10% per year in 1996.

Inflation % change, year on year

	1993	1994	1995	1996 ^a	1997 ^b
General Prices	2,708.6	1,093.8	14.8	10.0	9.6

Source: Banco Central do Brasil, Gazeta Mercantil, ^a EIU estimates, ^b EIU forecasts

Falling inflation rates led to a redistribution of income to the lower income classes, an increase in consumption and an expansion of consumer credit. By late 1994, output expansion had almost reached full capacity and was being outpaced by demand. The result was a surge in imports and a slowdown in export growth, pushing the trade balance into deficit and generating inflationary pressure. The Mexico crisis in December 1994 fueled fears about the trade imbalance and the government took steps to “cool down” the economy. It rose sharply import tariffs for consumer durable goods, tightened the credit and raised interest rates. During the second half of 1995, monetary policy was relaxed again, credit restrictions eliminated, and interest rates lowered. The level of economic activity began to rise by the second half of 1996 and since then, the rate of investment has continued to grow.

GDP % change year on year

1995				1996		
1 Qtr	2 Qtr	3 Qtr	4 Qtr	1 Qtr.	2 Qtr.	3 Qtr.
10.3	5.7	1.1	0.0	-2.4	2.3	6.5

Source: Instituto de Geografia e Estadística (IBGE)

An important aspect of the recent economic reform, is trade liberalization. Starting in the early nineties, in only four years, all non-tariff barriers were removed and import tariffs were slashed.

Average import tariffs(%)

1990	1991	1992	1993	1994	1995
32.2	25.3	16.5	14.0	14.0	12.6

Source: Presidency of the Republic, Brazil, 1996

Industrial Sector

Brazil's industrial sector, easily the largest in Latin America, developed through a policy of import substitution and state participation. Significant investment during the 1970's expanded production and exports; but when it ceased in the 1980's, this sector declined. As a result of a long era of protectionism, many industrial sectors had become extremely inefficient.

The dismantling of non-tariff barriers and the lowering of import tariffs, exposed manufacturing companies to foreign competition. At the same time, trade liberalization reduced the cost of importing capital goods, inputs and components. After 1993, the industry benefited from a consumption boom produced by the rise in average real income and from stable employment levels. As a result, the manufacturing industry led the economic recovery which began in 1993.

Manufacturing production (% growth in annual terms)

	1991	1992	1993	1994	1995
Total manufacturing	-2.4	-4.1	8.1	7.8	1.6
Capital goods	-1.3	-6.9	9.5	18.7	0.4
Intermediate goods	-2.2	-2.4	5.5	6.5	0.3
Consumption goods	2.1	-5.4	10.1	4.4	5.7
Durable goods	4.7	-13.0	29.1	15.1	12.0
Non-durable goods	1.8	-3.8	6.6	2.0	4.1

Source: IBGE, Banco Central do Brasil

During the 1980's and early 1990's, the *capital goods* sectors suffered from lack of investment. This sector was negatively affected by the flow of imports and is now object of mergers, acquisitions and joint ventures with foreign companies. The output of *intermediate goods* has been slightly below average during the 90's, yet prospects are not pessimistic. For instance, the steel and petrochemical industries, which have been through major restructuring and privatization, are showing significant improvement.

With strong demand and lower costs, the consumer goods sector, has been the best performing among manufacturing industries. Among *consumer durable goods*, there has been an extraordinary rise in the sales of electronics and domestic appliances. Although the electronics industry imports almost 44% of its inputs, output increased by 27% between 1990 and 1995. Another prominent sector is the automobile industry. Since the government lowered the taxes on cars in 1993, industrial output has been increasing very rapidly.

Within *consumer non-durables*, the beer industry is the one expanding the fastest. Domestic consumption in 1995, increased 27% over 1994 levels. The output in the food industry was slightly above the industry average. In contrast, the output of textiles, clothing and shoes has fallen due to increased competition from Asian products in both the domestic and export markets.

Projected Trends

As export industries suffer from a heavy burden of corporate taxes, high infrastructure costs and a deterioration of services; the trade deficit has worsened. This problem made some people wonder about a change in the Real Plan. Most market analysts, however, believe that this event is unlikely in the short term. With improved expectations, foreign investment should rise and contribute to finance the current account deficit in the short term, and promote exports in the long term.

Additionally, political and economic conditions are favorable, and the government is committed to undertake the necessary reforms. Thus, domestic investment is likely to boost with the privatization program and the concession of public services. Nevertheless, to assure a sustainable recovery of investment and growth, further reforms, such as the administrative, social security and tax reforms, need to go under way.

In particular, 1997 is expected to show continuity in the economic scenario, with only minor policy changes. Both economic growth and inflation rates, are likely to follow a stable path. Brazil should maintain a strong reserve position and abundant capital inflow, while containing the trade deficit by means of incentives and financing on exports, and restrictions on imports.

Projected Statistics

	1995	1996^a	1997^b
Inflation (consumer prices, % per year)	23	10	6-8
Industrial production (% growth)	1.8	2.0	4-5
GDP (% growth)	4.2	3.2	4-5
Investment rate (% growth)	16.6	16.5	17.0
Exports (\$ billion)	46.5	47.8	52.0
Imports (\$ billion)	49.7	53.3	58.5
Trade balance (\$ billion)	-3.2	-5.5	-6.5
Real interest rate (overnight rate per year)	28.5	18.0	12.0
Effective real exchange rate (1995 = 100)	100	105	108

Source : Confederacao Nacional da Industria, Performance and Prospects 1996/1997

^a estimates, ^b forecasts

For 1997, the Confederacao Nacional da Industria (CNI)³ predicts a growth in industrial output of 4 to 5%, with disparities among sectors. In their opinion, GDP growth will end up around 4.5 to 5% and the trade balance will remain negative as both imports and exports grow. Inflation is expected to reach annual rates between 6 and 8%. Price Waterhouse's⁴ estimates do not differ much. It predicts that inflation should fall between 6% and 7% in 1997 and that economic growth should stay at the average of the last four years (3% to 4%).

Risks

Even though its previsions are optimistic, the CNI identifies some risks. On the external side, any disruption in the international financial system, could result in a decline in the flow of funds to Brazil. The number one risk domestically, would be a growth rate than cannot be sustained by the external accounts. The political discussions on Cardoso's reelection might have an impact on the expectations on the economy. In the opinion on the CNI, these factors could interrupt the consolidation of growth but will not affect inflation.

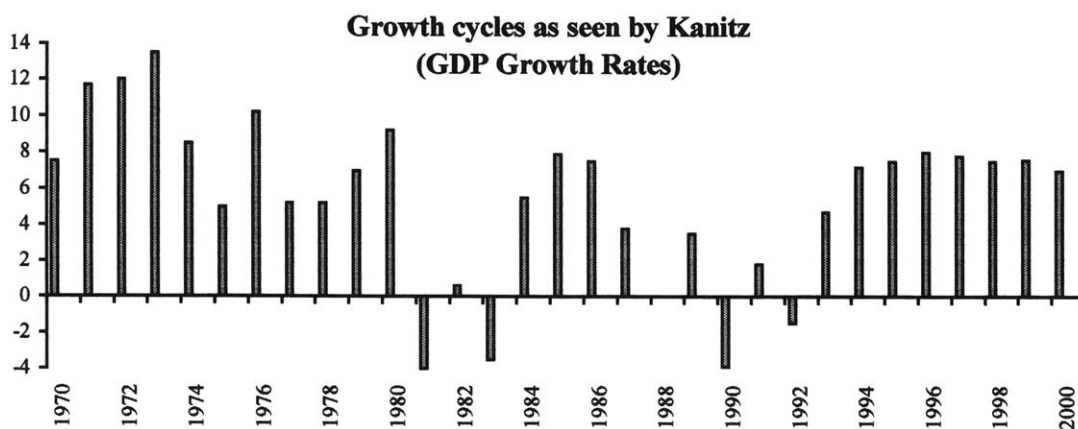
The economic risks for 1997, in Price Waterhouse's opinion, are the following: trade deficit, fiscal deficit and non-performing credits. If exports stay constant or fall, the government might be forced to make a major currency devaluation to make exports rebound. Failure to reduce the fiscal deficit may cause monetary policy to appear unstable, both domestically and internationally, with a consequent reduction of capital inflow. Finally, in their opinion, Brazil has a high proportion of non-performing credits in the financial system, and it still will take a few more years to overcome the 80's debt crisis. A major disruption in the economy, such as a recession or a devaluation, could disturb the roll-over of these debts and further stress the financial institutions.

³ Confederacao Nacional da Industria, The Brazilian Economy, Performance and Prospects 1996/1997

⁴ Price Waterhouse, Highlights of Brazil, 1996 Edition

In his book “Brazil - The Emerging Economic Boom 1995-2005”, Stephen Kanitz argues that the present environment is highly favorable for a new surge of growth, which will continue until 2005. The favorable conditions prevailing are: low international interest rates, low levels of corporate debt, potential reinvestment of 80% of earnings, huge inflows of capital via bank loans and equity markets, and finally, greatly improved management and manufacturing quality.

Kanitz compares Brazil with the U.S. at the beginning of the century. Brazil’s GDP in 1994 was close to the U.S.’s GDP in 1920, Brazil’s top 500 firms sold in 1994 close to what the U.S. ones sold in 1915, the U.S. had 150 million inhabitants in 1910, close to Brazil’s present population. Finally, Brazilian firms are now in the process of transforming family owned businesses into a professionally managed organization, the same discussion that took place in the U.S. at the beginning of the century. Consequently, Kanitz is confident that, having left the big recession behind, the country is prepared for a new cycle of prosperity and growth, similar to the one lived by the U.S. after the Great Depression.



Source : “Brazil - The Emerging Economic Boom 1995-2005”, Stephen Kanitz

2.4 THE SOUTHERN COMMON MARKET (MERCOSUL)

The importance of Brazil extends to the rest of South America. Brazil is the leading member of the southern common market Mercosul (or Mercosur, in Spanish), a free trade area, created in 1991, with Argentina, Paraguay and Uruguay. Its “common market” tag, expresses an aspiration towards the free movement, not only of goods but also of services and capital. From a collection of four largely closed economies, Mercosul members have in six years transformed themselves into a single market of more than 200 million consumers trading mostly freely and generating a GDP of almost \$1 trillion.

Mercosul members (1995)

	Population (m)	GDP (\$bn)	GDP/head (\$)	Export (\$bn)	Import (\$bn)
Argentina	34.3	282.7	8,250	21.0	20.0
Brazil	156.0	676.0	4,350	46.5	49.7
Paraguay	4.9	8.9	1,800	2.0	3.4
Uruguay	3.2	17.2	5,400	2.1	2.7
TOTAL	198.4	984.8	4,964	71.6	45.8

Source: The Economist, December 10, 1996

Outside direct investment to Mercosul countries has risen sharply. Foreign investment totaled around \$6 billion⁵ in 1995, and is likely to get higher in the future as multinationals, especially in the automobile, chemical and food industries, upgrade the existing plants, build new plants or enter regions that they used to ignore. More important perhaps, Mercosul is the glue that helps keep its members on track as they reform their governments and economies. For instance, the expanding trade among Mercosul members, helping to ease Brazil's international trade deficit. The Mercosul

⁵ The Economist, December 10, 1996

might also act as a safety valve for unemployment and high interest rates, both effects of economic stabilization efforts.

Between 1990 and 1995 inter-Mercosur exports increased by an average 26% per year. From \$4 billion in 1990, trade among its four members more than tripled to reach \$14.5 billion by 1995.

Brazilian Trade with Mercosul (\$million, fob)

	1990	1991	1992	1993	1994	1995
Exports	1,320	2,309	4,097	5,395	5,921	6,154
Imports	2,320	2,243	2,229	3,378	4,581	6,933
Total	3,640	4,552	6,326	8,773	10,502	13,087
Growth (%)	2	25	59	21	20	24

Source: Banco Central, Decex, Adebim

The Mercosul offers another potential opportunity for foreign investors in Brazil. Looking five years ahead, by 2001 it will be an integrated, growing, and relatively open market of at least 240 million people, with an output of well over \$1 trillion. Brazil should have with its three neighbors a common foreign-trade policy and, for all but a handful of products, a common external tariff with increasingly convergent and market-friendly macro economic policies. And, what is more, maybe all of the rest of South America will be linked to this core by free-trade agreements.

CHAPTER 3 - SAO PAULO

3.1 WHY SAO PAULO?

There are many reasons why to invest in Sao Paulo. As Brazil's leading state, its area of influence includes the most prosperous region in Latin America, with 34 million inhabitants and a GDP of US\$ 187 billion¹. The Sao Paulo metropolitan area, together with Campinas and Sao Jose dos Campos, is the largest consumer market in South America. The state boasts leading university and research centers and offers cosmopolitan and cultural facilities. With a major port (Santos), three main airports (two international), and a well-developed rail and highway system, Sao Paulo is a major center for domestic and international transportation. It is also the financial and commercial center of the Mercosul, home to Latin America's largest stock exchange, and the world's third-most active commodities and futures market.

The State's urban network of 625 cities is Latin America's most complex area. Sao Paulo's medium-sized cities, which combine a high quality of life with modern infrastructure and qualified labor, are attracting significant multinational investment. Ninety three percent of the population lives in cities of all sizes. In addition to its high degree of industrialization, the State has also pioneered the development of modern agribusiness, in line with the most advanced international trends. Above all, Sao Paulo has a commitment to growth.

In the following table, the State of Sao Paulo is compared to Brazil in terms of population and economic indicators.

¹ IBGE, Central Bank, SEADE, Labor Ministry

Main Indicators

	Brazil	State of Sao Paulo
Surface Area (sq. km.)	8,511,996	248,808
Population (million)	155.8 (95)	33.7 (95)
Density (inhabitants/sq. km.)	18.3	135.4
Life expectancy at birth (years)	66 (91)	69 (91)
Economically Active (million)	66.6 (93)	15.5 (93)
GDP (\$billion)	701.0 (95)	187.1 (94)
GDP per capita (\$)	4,499 (95)	5,670 (94)
Unemployment (annual average)	4.6% (95)	5.2% (95)
No. of Industrial Establishments	194,760 (93)	70,013 (93)
Industrial Workforce (million)	5.2 (93)	2.2 (93)
Illiteracy (15+ year-olds)	17.2% (93)	11.0% (95)
Electricity Consumption (GW/h.)	243,834 (95)	54,716 (95)

Source: IBGE, Central Bank, SEADE, Labor Ministry

3.2 EVOLUTION OF THE INDUSTRY

A relatively late starter among Brazil's important states, Sao Paulo began to boom in the mid 19th century with large scale coffee planting. Primarily because coffee required extensive hand labor, the state attracted some 60% of the 5 million immigrants that came to Brazil between 1886 and 1933. When speculative overproduction brought the coffee boom to an end in the 1920's, Sao Paulo already had the necessary ingredients to become an industrial center: a large and willing labor force, a relatively mobile society, and experience as the commercial center of the coffee region.

By late 50's, advances in industrialization were such that Sao Paulo reached 51% of the whole country's production. The first industries to prosper were consumer goods, mainly clothing, footwear, textile and food products. After 1955, the importance of the consumer goods sector started to decrease in favor of other industrial sectors such as intermediate, non-durable and capital goods. Some of these new industries were mechanical, rubber, plastic, electric and communications material.

In 1970, Sao Paulo's participation in the Brazilian industry would reach its peak at 57% and the city would employ half of the total work-force in the county (see table below). The State's importance as an industrial leader would start declining in the 80's, when Sao Paulo grew at lower rates than the rest of the country.

Participation of the State of Sao Paulo in Brazil (%)

Year	Employment	Production
1960	46.2	54.5
1970	49.8	57.1
1980	45.7	52.4
1985	44.2	47.4

Source: Industrial Census, 1960, 1970, 1980 and 1985

Government Policies

When in the 70's the city of Sao Paulo showed signals of growing congestion, both State and Federal governments started aggressive policies. The Federal government put in place national policies, such as tax incentives in the North and Northeast of the country. Regional development policies were targeted to the "hinterland" or interior of Sao Paulo and took the form of significant investments. The construction of oil refineries by Petrobras (government owned) in Paulinia,

attracted petrochemical companies into the area. Also, the “alcohol program” led to the concentration of the alcohol industry in Campinas and Ribeirao Preto.

The State government purposely constructed freeways in an effort to reduce transportation costs for the industries located outside of the city of Sao Paulo. The construction of the highways of Imigrantes, Castelo Branco and Bandeirantes are some examples. In addition, many interior municipalities started offering incentives to attract new industries, such as tax exemption, land donations, free infrastructure services, and in some cases, the construction of industrial facilities.

The result was a “concentrated dispersion effect”; dispersion because industries began to locate or relocate out of the metropolitan area, and concentration because about 50 municipalities in the interior of Sao Paulo acquired industrial concentration. During the 90’s, the “concentrated dispersion effect” in the interior, became even more evident.

Participation of Metropolitan Sao Paulo in the State (%)

Year	Employment	Production
1959	70.6	73.1
1970	70.0	75.3
1980	67.0	64.0
1988	61.6	59.9

Source: FIBGE, DIPLAT

3.3 THE INDUSTRY TODAY

With economic stability, the industry improved its performance, yet different sectors grew at different rates. While the reduction in tariff barriers exposed some companies to foreign

competition, it helped others by lowering the cost of capital goods and inputs. The following table shows the evolution of the industry, as well as the differences between the main industrial sectors.

Production growth in Sao Paulo State

Year	1992	1993	1994	1995*
Industry in General	-4.9	8.6	8.9	1.2
Mining	-17.1	2.7	14.8	2.0
Manufacturing	-4.9	8.6	8.9	1.2
Non-metallic ores	-10.4	8.2	5.7	9.3
Metal-working	-0.5	5.6	15.5	-5.0
Machinery	-5.8	10.2	19.0	-5.0
Electrical & Communication	-5.4	7.0	12.1	7.2
Transportation	-3.4	21.8	9.7	3.9
Wood	-1.7	13.1	2.8	-2.1
Paper & board	-3.5	5.3	2.6	1.0
Furniture	-16.8	17.2	-1.3	-5.5

Source: SEADE

* "cool-down" effect

The number of people employed in the industry has grown in some regions and decreased in others. Employment levels have increased in towns in the interior, such as Aracatuba, Marilia, Sorocaba, Sao Joao da Boa Vista and Sao Jose do Rio Preto and decreased in the capital². Yet employment does not correlate directly with industrial production as many corporations have recently introduced technological innovations that increase productivity while decreasing labor.

More than half of the 500 largest Brazilian companies, with total sales of \$170 billion, are located in Sao Paulo. From there they control production and distribution to all parts of the country. As

² According to a survey conducted in 1996 by Depea/Decor, a Technical Department of the Sao Paulo Industry Association.

shown in the following table, seventeen out of the thirty largest manufacturing companies in Brazil (in terms of annual sales), have their headquarters in the State.

Brazil's largest manufacturing companies located in Sao Paulo (1994)

Company	No.	Origin Office	Sales (\$ million)	Industry Sector
Autolatina Brasil	1	Germany/USA	9,660	Automobiles
General Motors	3	USA	5,873	Automobiles
Gessy Lever	5	Netherlands	3,445	Hygiene Products
Mercedes Benz	6	Germany	3,249	Automobiles
Nestle	8	Switzerland	2,538	Food Products
Copersucar	9	Brazil (private)	2,341	Food Products
Multibras	15	Brazil (private)	1,611	Electronics
Cosipa	16	Brazil (state)	1,600	Metallurgy
Santista	17	Argentina	1,535	Food Products
Basf	20	Germany	1,181	Chemicals
Philip Morris	21	USA	1,156	Tobacco
Iochpe-Maxion	23	Brazil (private)	1,122	Automobiles
Rhodia	24	France	1,068	Chemicals
Philips	25	Netherlands	986	Electronics
Hoechst	26	Germany	975	Chemicals
Goodyear	27	USA	959	Rubber Products
Robert Bosch	29	Germany	875	Automobiles

Source: SEADE

The State's industry is now dynamic and diversified. The strongest industrial sectors are the auto parts (90% revenue is generated by companies established in Sao Paulo), the automobile industry (86%), and transportation (74%). Other sectors generate at least 60% of their revenues in Sao Paulo: fertilizers, chemicals and petrochemicals, plastics, rubber, textiles, hygiene products and detergents.

As a result of the industrial migration from Sao Paulo to the interior, the capital has turned into a major service provider and the interior has substituted its agricultural activities by industrial operations. The Secretary of Science, Technology and Development confirms this trend: from 140 investment projects for 1996 to 1998 and reaching \$17.8 billion, only 12 are in the Greater Sao Paulo area. The rest are directed to interior regions such as Campinas, Vale do Paraiba, Ribeirao Preto and Sorocaba³.

³ Gazeta Mercantil, December 1996

CHAPTER 4 - THE BUSINESS ENVIRONMENT

4.1 INVESTING IN BRAZIL

To conform with its overall objectives of promoting growth and development, the Brazilian government is implementing reforms aimed at improving the business climate to attract greater foreign investment. In general, foreign investors are free to invest directly in legitimate ventures in sectors not reserved for Brazilian companies. Government policies discourage and/or prohibit foreign investment in certain sectors of the economy, such as those related to the environment, or areas where the government has a monopoly or a protective legislation.

Foreign investors may organize their activities through various business entities, the most common ones being corporations and limited liability companies.

1. Upon the creation of a Corporation (Sociedade Anonima), 10% of its capital must be deposited in a bank account and registration fees and taxes must be paid. A percentage of annual profits (5%) has to be allocated to a reserve until it reaches 20% of capital. Other formalities concerning public disclosure are required as well.
2. A Limited Liability Company (Sociedade por Cotas de Responsabilidade Limitada) is not required to maintain a legal reserve and requires fewer formalities than a "Sociedade Anonima." Yet, its capital structure allows for only one type of equity interest.
3. Other less common forms are: Partnerships, Unlimited Liability Companies and Branches of Foreign Companies. Branches are not too common as the process of setting them up is very bureaucratic.

4.2 TAX REGULATIONS

The following is a brief overview of the main taxes applicable to all companies in Brazil. It should be noted, however, that this area is under continuous change.

Summary Table

Net income	100.00
Social Contribution (8%)	(8.00)
Corporate income tax (15% + 10%)	(25.00)
Net income (after income tax)	67.00
0% withholding income tax on dividend	(0.00)
Net dividend received by shareholder	67.00

Source: Arthur Andersen, Brazil 1997, Basic Business Information

Corporate Income Tax

Corporate income tax is levied based on the calendar year with monthly tax payments. Both corporations and branches are subject to income taxation. The standard rate is 15%, rising to 25% on annual profits in excess of R\$ 240,000¹. Brazilian legislation does not apply the principle of territoriality for defining the taxable income, therefore, income produced outside of Brazil is subject to Brazilian corporate income tax.

Social Contribution Tax

A Social Contribution on Profits of 8% must be paid as well². Its taxable basis is similar to corporate income tax with some adjustments.

¹ Approximately \$234,000, at R\$ 1.03 per dollar.

² Includes changes made by Law No. 9,316, applicable as of January 1, 1997.

Withholding Tax

Any remuneration paid by a Brazilian source to a foreign beneficiary is subject to withholding tax at a 15% general rate. The distribution of profit to shareholders or dividend is not subject to withholding income tax.

Service Tax (ISS)

The ISS is a municipal tax on gross billings for certain services and varies from 2% to 5%. In most cases, the tax is levied by the municipality where the company is head-quartered. In the construction industry, the tax is levied by the municipality in which the work is being performed.

State Value Added Tax (ICMS)

Brazilian states collect this tax on the circulation of merchandise. It is assessed on the increase of the product price in each part of the circulation process. The rate is 17%, except for Sao Paulo, Rio de Janeiro and Minas Gerais, where the rate is 18%. Special rates apply for interstate sales (7 to 12%) and export sales are exempt.

Other Taxes

1. Federal Tax on Industrialized Products (IPI): paid by manufactures on behalf of their customers at the time of sale.
2. Social Integration Program (PIS): 0.65% on gross sales revenues, except exports.
3. Social Contribution on Gross Sales (COFINS): 2% on gross sales, except exports.
4. Individual Taxation: for Brazilian residents or Brazilian-source income. The rate ranges from 10 to 15% depending on the source of income.

5. Real Estate Transfer Tax (ITBI) is due by the buyer of any real estate property. The rate progresses from 2 to 6%, roughly on sales price.

Tax Incentives

The incentive system is a very important factor affecting the selection of an industrial site. States and municipalities offer tax incentives to new businesses, such as reduced value-added tax, service tax, or cheap land for buildings or industrial plants. For instance, companies engaging in projects in the Northeast and North regions of Brazil, receive a 10 year federal income tax exemption or 50% tax reduction.

Payroll and Social Security Contributions

Employee benefits and social security amount on average to an additional 70% to 80% of direct salary expenses. Labor laws require that two-thirds of a corporation's employees are Brazilian.

4.3 EXCHANGE CONTROLS

Brazil has traditionally maintained exchange controls. The exchange market is subdivided into two main segments: one controlled by the Central Bank and another less formal segment.

The controlled segment can be in turn divided into the commercial and the floating rate market.

Import/export transactions and financial operations, such as loans, commercial papers, royalty payments, dividends, lease payments, etc., take place in the so called *commercial* rate market.

They need to be authorized by the Central Bank if amounts exceed R\$10,000³. This rule applies only for residents abroad. A foreign investor planning to incorporate a company, may capitalize it

by subscribing capital shares or by means of loans. In both cases, funds must be converted to Reais through the commercial rate market and the exchange contract must be made through an authorized financial institution. Tourists, both Brazilian and foreign, are served by the *floating* rate market which is normally more expensive than the commercial one.

Finally, the informal exchange market, allows any person to transfer Reais out of the country. Through this procedure, many multinational corporations use Uruguay as a step in their international transfers.

4.4 THE RENTAL SYSTEM

Useful Information on Rental and Sale Transactions

Representing both parties	A broker usually intermediates between the tenant/owner and the buyer/seller.
Rental terms	Two to four years, but can reach ten years with periodical adjustments and extensions
Rental revisions	Annual rent adjustment according to an inflation index specified in the contract.
Subletting	In general, subletting is not permitted, except when explicitly considered in the contract
Guarantees	Guarantor approved by owner, bond issued by bank or insurance company.
Rental payment	Rent is paid monthly (at the end of the month).
Broker commission	on rent Value of the first month rent. on sale 6% of the sale price.
Other sale costs	Transmission tax, contract costs, real estate registry, archives.

Source: Data Bolsa

³ Approximately \$9,708, at R\$ 1.03 per dollar

Brazilian legislation does not equally treat landowners and tenants in lease contracts. Once the property has been transferred from the landowner to the tenant, the landowner loses some of its legal power. Thus, landowners should proceed with special care when contracting. Brazilian law also extends special rights and privileges to non residential occupiers after five years of occupation. Because of this, some owners are unwilling to lock themselves into contractual obligations of five years or more.

Given the actual stability of the Real currency, it is now less frequent for negotiations to be conducted in dollars. No matter what the unit of negotiation is, Brazilian law requires that all contracts are expressed in national currency. Contracts must be drawn in Portuguese and they must be registered in the appropriate public notary office. The contract should contain a full inventory of the installations and equipment that are part of the agreement.

Rental operations are normally backed up by a guarantee. Small companies often have a private individual as guarantor when his properties exceed potential liabilities. Commercial and industrial rentals usually have a bank as guarantor. Yet most guarantees do not assure the landowner that he would be properly indemnified if the property were damaged or the tenant breached in his/her payments. Major multinational companies normally guarantee their rent by means of a letter from their head quarters.

The rent is generally paid in Reals and on a monthly basis. Most contracts provide for the adjustment of the monthly value to past inflation. The frequency and index for these adjustments make part of the overall price composition and are spelled out in detail in the contract. As Brazil's economy stabilizes, rent adjustment procedures are gradually changing. As part of its anti-

inflationary policies, the government used to define the frequency and index for adjustment; but, as the economy stabilizes, the country is moving towards a free system.

The standard broker commission on a rental operation is payable by the owner and is normally equivalent to one month's full rent plus initial incentives. When two brokers are involved, the commission might be split between them. With the new economic stability, the period for many contracts is extending and this could lead to a slightly higher commission.

4.5 INDUSTRIAL REGULATIONS

In the case of industrial operations, permission has to be granted for a specific company and purpose, and is not transferable. The purchase or rental of an existing industrial building, does not guarantee the applicability of any prior permission for operation. The approval process for an industrial business normally takes about four months (provided that the application is made correctly and to the relevant parties).

An industrial operation is potentially subject to regulations from three government entities: federal, state and municipal. Federal regulations do not affect the industrial operations taking place in most of the developed areas of the country. Instead, the federal government regulates those operations taking place in national security areas, in country borders or national parks. Also under federal influence is environmental protection: protection of endangered species, natural vegetation and Indian reservations. Besides federal restrictions regarding deforestation apply on wooded or partially wooded sites.

The Brazilian Constitution grants the states power to enact and enforce legislation on environmental protection issues. Such legislation varies from state to state, and so does the degree in which it is enforced. For instance, potentially polluting activities tend to be more vigorously enforced in more densely populated states. Another area of primary concern and regulation for many states is the safeguard of water resources.

Brazilian states are divided into municipal districts, each of which is governed by an elected mayor and local council. Municipalities are required by federal law to have zoning legislation, and to classify land areas by type of permitted use, however, only a few municipal administrations fully comply with this requirement. Effective zoning controls can differ greatly from one municipality to the other. Although most municipalities use the classification system defined for them in the federal law; there are substantial differences among them in the way they interpret and apply it. Most municipal regulations only control urban land use, traffic congestion, noise, vibration and visual pollution.

Zoning and Environmental Regulations in the State of Sao Paulo

Sao Paulo's state zoning classifications apply to areas also covered by municipal zoning. In all cases a project must comply with both sets of requirements, which effectively means complying with the more restrictive zoning requirement. Compliance with state zoning does not free an industrial project from complying with other federal, state and municipal legislation regarding industrial location. The zoning system in the state of Sao Paulo classifies industries within one of following categories:

Zupi 1: primarily for industrial use, these areas have no restrictions on size for an industrial facility.

Zupi 2: predominantly for industrial use, but restricted to projects with a constructed area of 10,000 sq. m. (107,640 sq. ft.) or less.

Zud: areas for diversified use, an industrial development is limited to 2,500 sq. m. (26,910 sq. ft.) in total constructed area.

Regarding environmental control in the State of Sao Paulo, all industrial projects are evaluated by the State's Department of Environment Protection and by the state-run Environmental Technology Company (Companhia de Tecnologia de Saneamento Ambiental). The latter looks at the proposed waste disposal system and will take from two to three months to rule on a project.

CHAPTER 5 - THE REAL ESTATE MARKET IN SAO PAULO

5.1 MARKET OVERVIEW

Brazilians have always viewed industrial real estate as a need, and not as an investment opportunity. Most industrial plants have been built for a particular occupant without allowing flexibility for future uses. In contrast with the office and retail markets, where space is primarily occupied by tenants, the industrial market is individual and owner occupied.

During the last decade, industrial real estate went through various cycles as it followed the instabilities of the economy. At the beginning of 1991 the market entered a crisis, demand for space collapsed, and values dropped between 30 to 70% of 1991 before-crash values¹. This downside lasted until the end of 1994, when the economic stabilization program started showing results. Demand for space recovered, specially for units within 150,000 to 200,000 sq. ft and it peaked at the beginning of 1995. As in that year, the economy began to “cool down”, so did the demand for industrial space. But after the second half of 1996, demand recovered and has been strong since then.

Even though inflation is under control, inflationary risk is still a cause for concern and disrupts the real estate market. At around 20% annual rates, interest rates make bank financing extremely costly. Hence, most corporations choose renting over investing in huge construction projects that involve inflationary risks and that use their scarce capital. Companies rather apply their cash flows to financing production and growth, instead of freezing them into long term assets. As a

¹ Rosa Symanski, “Mercado Brasileiro do Imoveis Industriais”, Panorama Setorial, July 1997

result, investment in industrial real estate has been at its minimum for many years and there is a lack of space in the market. The consequence is a distortion between rental and property values. While rental prices are now about 20% higher than 1991 values, sale prices are still below 1991 values (in constant Reais)².

The industrial real estate market is also going through geographical redistribution. In Sao Paulo and other big cities, old industrial real estate is often located at valuable sites and buildings have increasing environmental restrictions and access problems. Thus, many of this buildings are being redeveloped into other uses. Sometimes by doing a small rehabilitation, old buildings can be turned into retail, residential or office space. Other facilities are being transformed into storage and distribution centers, or administrative departments. Manufacturing activities are increasingly being relocated to the interior of the State, where labor is less expensive and the influence of unions is smaller.

5.2 SUPPLY ANALYSIS

The supply of industrial space is in hands of a few development and construction companies. They focus on build-to-suit projects for specific users and rarely build industrial space for rent. As expectations for the future improve, however, industrial real estate is becoming an interesting alternative for speculative development. Constructors are now getting together with investors with the idea of developing industrial space for rent. Other investors, such as pension funds, acquire industrial space that is rented to good credit tenants. They usually require a monthly return (cash on cash) of 1.00 to 1.50 %³.

² Rosa Symanski, "Mercado Brasileiro do Imoveis Industriais", Panorama Setorial, July 1997

³ Gustavo Halbreich, Construtora Gustavo Halbreich

In addition to the rise in rental values, other changes have made the rental market less risky. With economic stability, tenants are more willing to lock themselves into long term agreements. Leasing contracts, that usually extended for a five year period, are now being set for longer terms, sometimes ten years. The participation of Triple A and multinational companies in long term leases, has also reduced the investment risk.

5.3 DEMAND ANALYSIS

Little research has been done to quantify the demand for industrial space in Brazil, however, industry experts believe that the demand for space is strong. The fact that rental values for industrial properties, have been growing steadily is an indicator of the growing demand. Monthly rental values for upgraded facilities in strategic locations, are almost one dollar per sq. ft. Annual rentals for warehouse facilities now range between 17% and 25% of the development costs, depending on the building's features and location. State reports indicate that the unsatisfied demand for industrial space in the State of Sao Paulo is roughly 14 million sq. ft.⁴ Herzog, an industrial real estate broker, points out that the unsatisfied demand for industrial space (at a distance of 60 miles or less from the city of Sao Paulo) is 6 million sq. ft. In his opinion, this demand in the Campinas area, reaches 1 million sq. ft.

Whatever the exact size of demand, it should continue to grow driven by the growth in industrial output. Given the predicted industrial growth of 5% annual rates⁵, the demand for industrial space should follow the same growth pattern. The demand for space will not grow uniformly among the

⁴ Mauro Pincherle, Walter Torre Jr.

⁵ CNI, *The Brazilian Economy, Performance and Prospects*, 1996/1997

different sectors, but should come largely from the light manufacturing and distribution sectors. The demand for manufacturing space is derived from the expected level of manufacturing output, and the demand for distribution space is derived from the volumes of inventories held. Unfortunately this data is not available in the Sao Paulo area.

With foreign capital rushing into Brazil, international companies are the most likely “customers” for industrial development. Direct foreign investment in Brazil reached nearly \$5 billion in 1995, almost \$10 billion in 1996, and is estimated to reach \$15 billion in 1997⁶. According to Emerson Kapaz, Secretary of Science, Technology and Development of the State of Sao Paulo during 1997 and 1998 together, a total of US\$ 15 billion will be invested in Sao Paulo’s industrial sector⁷. This represents almost double the amount invested in 1995 and 1996 together (\$ 7.8 billion).

In a study of the industrial real estate market in the U.S., William Wheaton and Raymond Torto⁸, compared investment in real estate with occupancy rates. Their model implied that changes in investment should contain essentially the same information as changes in market occupancy. In their opinion, a declining investment signals a worsening market, and a growing investment signals an improving one. One can make an analogy with the Brazilian industrial market. Given the level of investment, the future of the industrial real estate market is promising.

Wheaton and Torto also looked at the cycles in real estate. As the construction of new industrial buildings takes little time, the lag between new demand and new supply is very short. Therefore, the industrial market should be less cyclical than other real estate markets, such as the office

⁶ Veja, July 18, 1997

⁷ Gazeta Mercantil, December 1996

⁸ Forecasting Future Demand and Supply in the Industrial Real Estate Market, August 1989, William Wheaton and Raymond Torto

market. In the case of Brazil, construction of industrial buildings also takes little time, roughly eight months. Hence, the Brazilian industrial market should not experience over-building.

The high interest rates that characterize the Brazilian economy, play an important role in the industrial space market. In the case of supply, development periods are relatively short, therefore financing costs are relatively unimportant. From the perspective of demand, however, interest rates influence the internal cost of raising capital for development. This explains why most industrial space is owner built, and why many corporations choose to rent instead of investing in long term assets. Under high interest rate conditions, the demand for industrial space for rent should grow the most.

Another source of potential demand, are local companies who wish to relocate or modernize their industrial plants. Many corporations are investing in their production systems to be able to compete globally by adopting new technologies and manufacturing concepts. With the new industrial processes, industries will require additional features: simple designs, rational layout and efficient use of space. The installation of new automobile manufacture plants in Brazil, will be another driving force in the industrial real estate market. Though many automobile companies build-to-suit, a great number of suppliers will need to locate close to the main manufacturing centers, and will become an important source of demand for speculative space in the area. Appendix I looks at the automobile industry, its present and future plans for expansion.

A Research on Demand

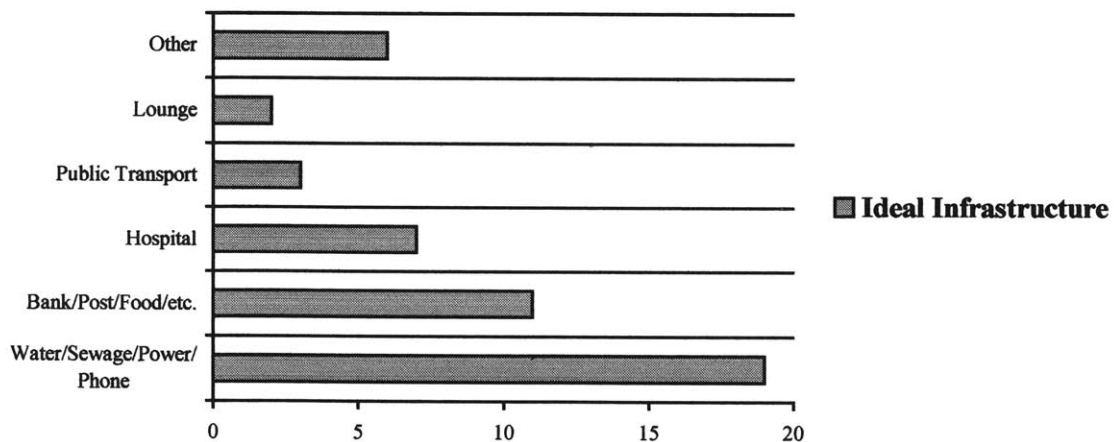
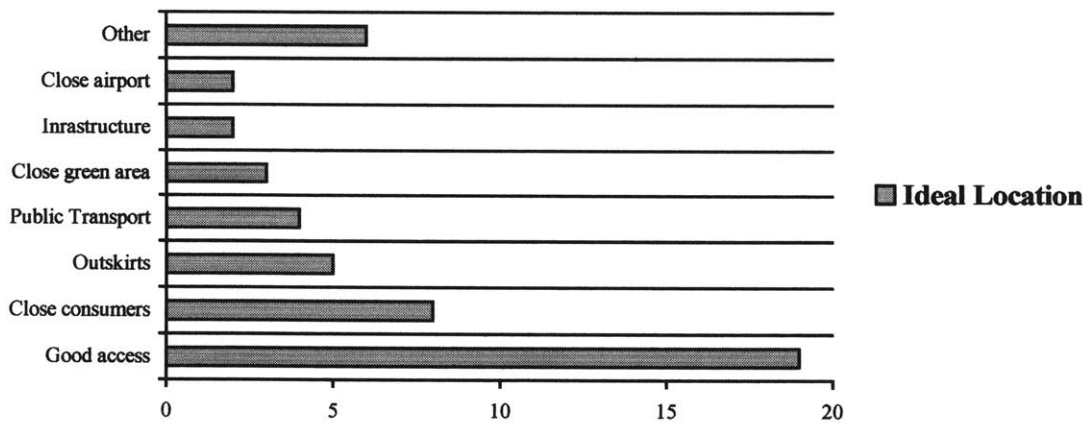
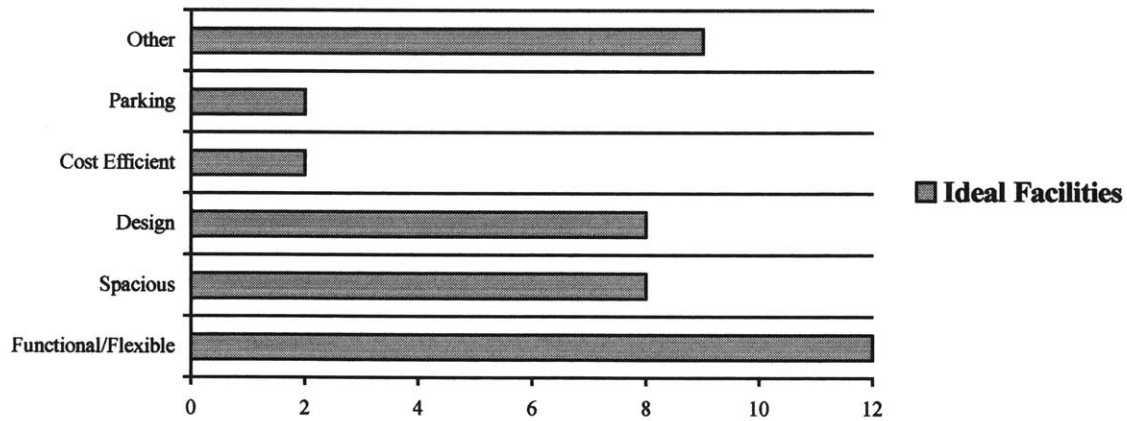
As explained in previous sections, with the opening of the economy the industrial sector was suddenly exposed to foreign competition. Almost overnight, local industries were forced to restructure their production systems to meet the new market conditions. New technologies and

processes were put in place changing the needs for industrial facilities. Demand for industrial space in Sao Paulo was researched by Fernandez Mera in 1993⁹. He interviewed thirty executives from manufacturing industries, responsible for decisions on the location and use of industrial plants. The following conclusions are based on this research.

1. Surprisingly, almost half of the executives stated that their workplace was far from ideal. They complained that their facilities were located in regions with dense traffic and pollution, and without sufficient green areas.
2. The decision *to relocate* was found to be triggered by the need for more space, improved comfort for employees, and fiscal incentives. The decision on *where to relocate* was based on payment facilities, leasing availability, proximity to a residential area, basic infrastructure, easy access and enough space for future expansion. What mostly *prevented* companies from moving was the need to relocate skilled laborers and the moving costs as a whole.
3. When designing an industrial plant, a developer should focus on three main aspects. *Facilities* should be functional, efficiently divided, flexible, comfortable, spacious and visually attractive. With regard to *location*, the site should have access to a main highway and be near to the consumer market. Finally, *infrastructure* should not only include the basic services (water, telephone, power, sewage) but also more complex ones (bank, post office, restaurant, medical services, etc.).
4. *Services* considered important to be provided on a collective way were bank, garbage collection, truck scale, shopping mall, day care, telephone network and fire service. By contrast, dining areas and accounting were preferred to be private.
5. Most of the executives preferred *industrial parks* over “stand-alone” plants. The reasons cited were: better planning, lower infrastructure costs, better bargaining power (when negotiating

⁹ Fernandez Mera Negocios Imobiliarios, Projeto “Intervias”, August 1993

incentives with the authorities) and the synergy created among the different industries located in the same park. Following are the summary tables of the demand research¹⁰.



¹⁰ Fernandez Mera Negocios Inmobiliarios, Projeto "Intervias", August 1993

5.4 THE INDUSTRIAL CONDOMINIUM

Ever since the Brazilian economy opened, the industry has had to adapt to new times, and face new challenges. Manufacturing processes have become more complex and now involve more suppliers. Also industrial plants have experienced increasing fixed costs and security problems. Consequently most medium to small sized companies, now prefer to be part of industrial agglomerations, in order to share infrastructure costs and to benefit from the synergies obtained by working in a group.

Following this trend in demand, the construction of industrial space has evolved towards a new prototype: the industrial condominium. It groups several industries together so that they share the same plot of land and a set of common services. The concept has been broadly tested in developed countries, but is new for the Brazilian industrial sector. The few industrial condominiums that have been recently built target multinational companies and local companies looking to expand and reduce operative costs. Due to the advantages of this prototype and the general restructuring of the industry, condominiums are expected to be very successful in Brazil.

Industrial condominiums are regulated by Law 4,591 (also applicable for residential condominiums). This law requires the presence of control functions, such as internal auditing. Two types of condominiums can be recognized in Brazil, the "*business parks*" and the "*industrial condominiums*". They differ on the services and infrastructure provided. Industrial condominiums usually have units of 5,000 to 10,000 sq. ft. and the common services are basic: security, parking, controlled access gate and loading equipment. Business parks are huge industrial complexes that sometimes have office and retail buildings together with industrial plants.

The services offered vary with each project. Some of them are: security, access posts; post office, internal telephone network, maintenance, garbage collection and disposal, storage space, truck scale, water reservoir, dining facilities, day care, bank, fire service, recruiting center, convention center, show rooms, car and truck parking area.

5.5 THE INDUSTRIAL CONDOMINIUM-COMPETITIVE ANALYSIS

The first company to build an industrial condominium in Brazil was Albuquerque Takaoka, a domestic construction company. The park was built in the 70's, in Alphaville, north of the Castelo Branco Highway. It was occupied by industries moving out of the city of Sao Paulo in the search for lower land values. More recent developments in the Sao Paulo area have been undertaken by Walter Torre Jr., Freire Participacoes and Direta.

Walter Torre Jr., Administracoes e Participacoes

Walter Torre Jr., a local construction company, is responsible of four projects in the Sao Paulo area, in Barueri, Alphaville, Osasco and Jundiai. Multiplo Tambore, located in *Barueri*, was the first one and was finished in 1993. It contains 20 warehouses and a total of 300,000 sq. ft. Most of the buildings in this park are used for storage, distribution and services.

Their second project is located in *Alphaville*, on the Castelo Branco Highway. Total investment will be \$16.7 million and the project is expected to be ready for occupancy by the end of 1997. It is targeted to companies in demand for assembly and storage space. The site is considered to be very strategic because it has very good access to the interior of the State of Sao Paulo, to the North of the State of Parana and to the highway network leading to the other Mercosul countries.

Companies located in this site will benefit from municipal tax incentives (exoneration of IPTU and

ISS). The project includes 28 warehouses and a total area of 500,000 sq. ft. Unit areas range between 12,000 sq. ft. and 24,000 sq. ft. From the total space, 70% is aimed for production and manufacturing and 30% for storage and distribution. This condominium offers a wide variety of services, such as medical department, dining rooms, meeting rooms and a small convention center. Rents are expected to reach \$0.80/sq.ft. per month (\$9.60/sq.ft. per year) and sale prices \$64/sq.ft.

At the end of 1997, Walter Torre Jr. will be launching two new projects in the cities of *Osasco* (850,000 sq. ft.) and *Jundiai*, (800,000 sq. ft.). Infrastructure and services are expected to be similar to the Alphaville development.

Direta Assesoria e Planejamento

This company has participated in the development of four industrial condominiums in the Sao Paulo area. Their first project was *East Park I* in the Sao Mateus neighborhood, east of the city of Sao Paulo, and was finished in April of 1997. The condominium has five warehouses with 6,000 sq. ft. each. Services include security, audit, storage site and parking. Direta expects to launch two more projects in the same neighborhood before the end of 1997: *East Park II*, with eight warehouses of 5,000 sq. ft. each, and *Sao Gabriel*, with five warehouses of 20,000 sq. ft. each.

Direta's most important project is the *Tambore Business Center*, on the Castelo Branco Highway, in the Municipality of Barueri. The project will be constructed in a 250,000 sq. ft. piece of land and will contain eight warehouses of 25,000 sq. ft. each, aimed for manufacturing, distribution and services. The condominium will also have a six story office building (60,000 sq. ft.), a convention center with an auditorium for 150 people, and underground parking space. Special facilities include side access for each unit and covered loading areas. The space will be available only for

rent, not for sale. Monthly values are expected to average \$1.00 to \$1.20 per sq.ft. of warehouse, and \$2.2 per sq. ft. of office.

Industrial condominiums in the State of Sao Paulo

Location	Developer	Area (sq. ft.)
Barueri *	Walter Torre Jr.	300,000
Alphaville	Walter Torre Jr.	500,000
Osasco	Walter Torre Jr.	850,000
Jundiai	Walter Torre Jr.	800,000
Sao Paulo (Sao Mateus) *	Direta Assesoria	30,000
Sao Paulo (Sao Mateus)	Direta Assesoria	40,000
Sao Paulo (Sao Mateus)	Direta Assesoria	100,000
Barueri	Direta Assesoria	200,000
Sao Lorencó	Direta Assesoria	200,000
Alphaville	Freire Participacoes	160,000
Total		2,980,000

* Finished projects

CHAPTER 6 - INDUSTRIAL LOCATION

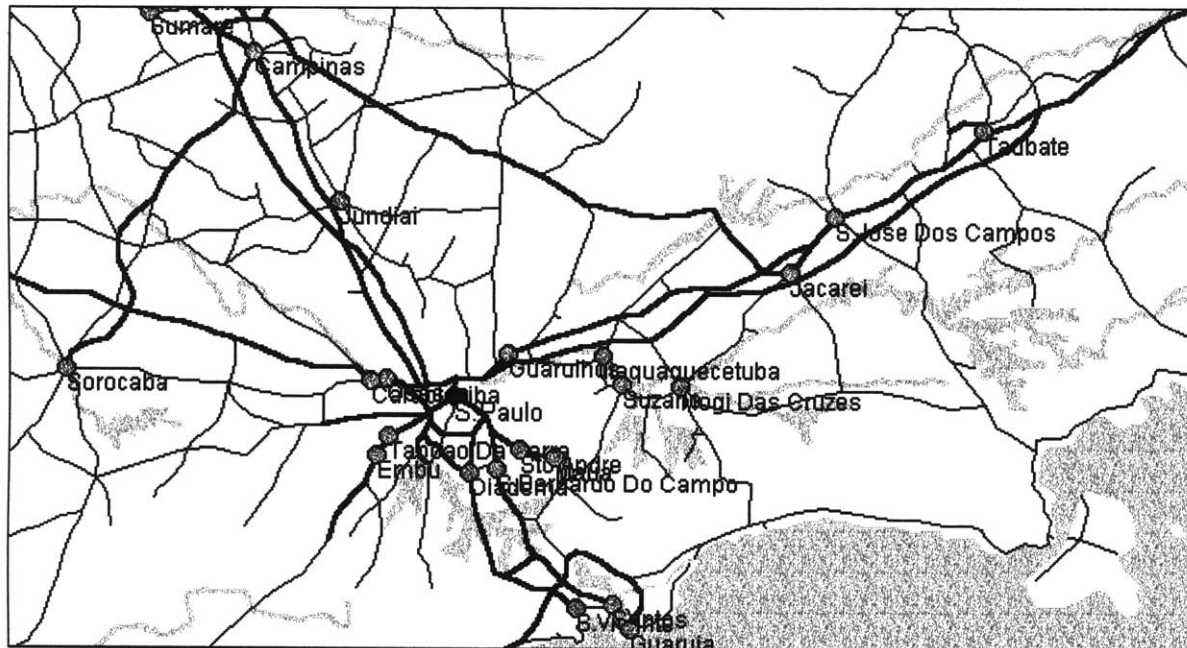
6.1 INTRODUCTION

The success of an industrial proposal, or of any development project as a matter of fact, relies heavily on its location. When deciding about an industrial location in Brazil, the State of Sao Paulo appears as the optimal region. It accounts for 40% of the country's industrial product and constitutes the main manufacturing center of the continent. This important industrial concentration further attracts new industries, as it guarantees the presence of suppliers, infrastructure and labor. Additionally, with its 19 million people, Metropolitan Sao Paulo is one of the largest urban areas in the world, and needless to say, a very important consumer center. As Sao Paulo emerges as the heart of the Mercosul, its industrial future looks even brighter.

During the so called "miracle years" of late 60's and early 70's, the Brazilian economy grew at 11.2% annual averages and Sao Paulo experienced an industrial boom. Following growth would come an increase in pollution and traffic congestion and, consequently, a decline in public health and living standards. As a result of these worsening urban conditions and the rising costs of land and labor, a decentralization process began. Industries started to favor areas in the interior of the State over the metropolitan area. Other incentives for this outward movement have come from the government and have taken the shape of investments in infrastructure in secondary cities (highways, electricity, etc.). More recently, the government has put in place stricter environmental controls within the metropolitan area, and polluting activities (such as iron smelting, steel works and petrochemicals) are now locating themselves in surrounding cities.

Many of the industrial corporations moving out of the metropolitan area, have chosen to relocate close to Sao Paulo to be near to its large consumer market. Migration to “not-so-distant” areas led to the growth of mid sized industrial cities connected to the capital by the many highways that serve the region. Some of this cities are: Campinas, Jundiai, Americana, Sorocaba, Itu, Indaiatuba, Paulinia, Sao Jose dos Campos, Itatiba, Braganca Paulista and Rio Claro.

Sao Paulo Industrial Region



6.2 LOCATION FACTORS

This section explores the reasons why the manufacturing companies in Sao Paulo decide to relocate their plants and the factors that influence the choice of a new site or building. Site requirements vary with the nature of the industrial process. Yet there are many common considerations to all companies. Some of the issues taken into account when selecting a site are¹:

¹Research by Simonsen Associados, EXAME, May 26, 1993

closeness to customers, distance to suppliers, provision of services and infrastructure (water, electricity and telephone) and availability of land at reasonable values.

With regard to labor, there are several considerations to be taken: overall supply, availability of skilled laborers and the presence of unions. Educational facilities, such as schools, colleges and universities, determine the skills of the labor force. Regarding employees' quality of life, aspects such as safety, commuting distances and leisure are relevant.

Governmental and environmental considerations can also play an important role in the location decision. Many local governments offer incentives and cooperation for new industries. These incentives can take the form of tax exemption, reduced bureaucracy, lower prices of land (sometimes given for free) and public services.

In his research on decentralization factors in Sao Paulo, Peter M. Townroe interviewed 581 industrial companies². Surprisingly, responses to the survey coincided with similar surveys conducted in North America and Western Europe. The few differences came from the fact that, in Brazil, companies were more concerned about having access to reliable utilities, but less worried about the availability of labor. In Townroe's opinion, when choosing a new site, the "pull" factors were: access to highways (leading to customers and suppliers), the availability of private services (maintenance and technical assistance), access to public utilities (electricity and telephone lines), the availability of land for future expansion, and abundant labor supply. The main "push" factor was the need for additional space in order to expand production lines.

² "Location Factors in the Decentralization of Industry, A survey of Metropolitan Sao Paulo, Brazil", The World Bank Staff Working Paper Number 517

6.3 TRANSPORTATION SYSTEM

The transportation system is key in any industrial location analysis. Of all the transportation systems available in Brazil, the highway system is the most dependable. The government has invested considerable resources in upgrading and extending the highway network. The railway system covers few areas and is much slower than highway transportation. Air cargo services, both domestic and international, are relatively efficient, but congestion does occur on the ground handling facilities in Sao Paulo and other major cities.

The coastal shipping is deficient. Unfortunately, Brazilian ports are currently among the most expensive in the world, due to the near-monopolistic labor and the managerial situation. The Federal government has introduced some changes into port legislation but they will probably be altered by Congress. As an example, the ports of Santos and Porto Alegre (almost 1,000 miles away) have been traditionally connected by land and not by water. The most important seaports are Santos and Rio de Janeiro. Both have extensive facilities, including warehouses and grain installations, and are undergoing further improvements and expansion.

6.4 MAIN INDUSTRIAL LOCATIONS

This section identifies the most important areas for industrial development in the State of Sao Paulo, their strategic advantages, the average cost of land, and the main companies located in each area. In order to simplify the analysis, the study has been divided into four parts:

Part 1 - Greater Sao Paulo (Metropolitan Area)

Part 2 - The freeways around Greater Sao Paulo

Part 3 - The Big Cities of the State of Sao Paulo

Part 4 - The Small Cities of the State of Sao Paulo

6.5 THE GREATER SAO PAULO AREA

Industrial regions within the Metropolitan Area are situated along the main highways that cut across the city (Avenidas). The following table shows an overview of the principal urban locations.

Greater Sao Paulo

Industrial Areas	Land Value (\$/sq.ft.)	Main Companies
Avenida das Nacoes Unidas	15.00-30.00	Toshiba, Avon, Walita, Rhodia, MWM, Stanley Home, Pial Legrand, Amway, etc.
Avenida do Estado	15.00-20.00	Ford, Black & Decker, Arno, Armco, Rhodia, Lion, Carrefour, Sam's Club, Valisere, etc.
Maua	1.00-2.00	Philips, Brastemp (Whirlpool), Gerdau, Petrobras, Votorantim, Coral, TRW, etc.

Source: How to locate your factory in Brazil, Amcham Brasil and Herzog Imobiliaria

6.6 THE FREEWAYS AROUND GREATER SAO PAULO

The main freeways in the south of Brazil, cut through the city of Sao Paulo. Important industrial sites lie along this network. There is plenty of land available and there are aggressive incentive programs for industrial location. The metropolitan region will undergo substantial change in its freeway system with the construction of the Sao Paulo Beltway. With its 107 miles of limited-access highway, it will make a complete loop around the region and will link the major highways at a distance of 15 to 25 miles from the city's center. Despite its importance, the project has no

effective timetable yet, and the \$2 billion budget has not met financing. When finished, the Beltway will reduce traffic congestion in the metropolitan region (particularly in the Marginal Pinheiros and Tiete expressways) by bypassing the city and will call for the designation of specific industrial areas along the route.

Freeways around Greater Sao Paulo

Freeways	Land (\$/sq.ft.)	Main Companies
Regis Bitencourt	2.00-10.00	Dow Corning, KNP Pirelli, Ciba-Geigy, Boheringer, Natura, Cinpal, Liotecnica.
Raposo Tavares	4.00-10.00	Renault, Reckit & Colman, Rohm&Haas, Levi Strauss, Microtec/Digital, Wellcome.
Castelo Branco	1.00-20.00	Ford, Texaco, Nissan, Alpargatas, Lada, Batavo, Dismac, Sadia Concordia, Loctite.
Anhanguera and Bandeirantes	2.00-10.00	Gessy Lever, Etti, Bosch, Danone, Siemens, Moore, Parker, Moellers, Klabin.
Presidente Dutra and Ayrton Senna	3.00-15.00	Ford, Nestle, Fuji, G.M., Kodak, National, Hitachi, Electrolux, Johnson & Johnson, Panasonic, Philips.
Anchieta-Imigrantes	5.00-15.00	Volkswagen, Mercedes-Benz, Paramount, Scania, Martini, Sherwin-Williams, Alcatel.

Source: How to locate your factory in Brazil, Amcham Brasil and Herzog Imobiliaria

Appendix B provides more details about the various industrial locations on the main freeways

6.7 THE BIG CITIES IN THE STATE OF SAO PAULO

According to a survey conducted by Simonsen Associados in 1993³, six of the best ten cities to start a business in Brazil, were situated in the State of Sao Paulo. Also half of the 50 best were in

³ Simonsen Associados, EXAME, May 23, 1993

the State. Clearly the city of Sao Paulo continues to be the driving force of the Brazilian economy. As a general rule, all of the cities selected by the survey had easy access by highway, airport or port, good infrastructure, federal or state universities, and collaborative governments.

The Best Cities to Locate a Business in Brazil (over 150,000 inhabitants)

Rank	Town	Strategic Aspects
1	Bauru	Highway access, “Hidrovia Tiete-Parana”, infrastructure, universities, technical schools, municipal incentives.
2	Campinas	Main industrial area (2.5 million people and 8% of national GDP), highway access, airport, infrastructure, universities.
3	Ribeirao Preto	Main agro-industrial region, high income per capita, highway access, airport, municipal incentives.
7	Sao Jose do Rio Preto	High income per capita, highway access, infrastructure, universities, technical schools.
8	Franca	Center of shoe industry, high income per capita, highway access, infrastructure.
9	Araraquara	Highway access, technical schools, municipal incentives.
10	Sao Paulo	Various (described in Chapter 3)

Source: Simonsen Associados, EXAME, May 23, 1994

6.8 THE SMALL CITIES IN THE STATE OF SAO PAULO

There are increasing benefits from locating a company in a mid sized town, far from the big urban areas. For instance, there are less space limitations and environmental restrictions, lower land values, easier transportation modes, and reduced labor unions. In a second survey, Simonsen Associates identified the best cities under 150,000 inhabitants where to locate a business in Brazil⁴. Again, the State of Sao Paulo had a strong predominance. Out of the ten towns ranked first, eight

were situated in the State. Also, more than three quarters of the best thirty towns, were in Sao Paulo. The towns ranked highly had one condition in common. They were sufficiently distant from a major city, to avoid the problems of urbanization, but close enough, to reach suppliers and consumers. In all of them, private companies had a close relationship with the workers and the authorities, resulting in reduced bureaucracy, no strikes and less employment turnover.

The Best Cities to Locate a Business in Brazil (under 150,000 inhabitants)

Rank	Town	Strategic Aspects
1	Rio Claro	Highway connection to Sao Paulo, Minas Gerais and Rio de Janeiro, infrastructure, skilled labor, municipal incentives.
2	Jau	Shoe industry, "Hidrovia Tiete-Parana", highway access.
3	Itatiba	Textile industry, highway access, municipal incentives.
4	Itu	Highway access, close to Sao Paulo.
5	Braganca Paulista	Houses 800 small sized industrial companies, highway access.
7	Indaiatuba	Auto parts and textiles, highway access, airport.
8	Paulinia	Oil industry, highway access, municipal incentives.
10	Pindamonhangaba	Highway access, infrastructure, municipal incentives.

Source: Simonsen Associados, EXAME, September 14, 1994

⁴ Simonsen Associados, EXAME, September 14, 1994

CHAPTER 7 - CONCLUSIONS

Brazil represents a world of opportunities. The market offers scale and potential for growth. Its rapidly expanding economy will lead to significant growth in industrial output, which in turn, should drive the demand for industrial real estate. After a decade of little investment, the industry is now insufficiently served by the existing facilities. With apparently few vacancies and evidences of a growing demand, there seems to be opportunities for development.

Industrial development seems like an ideal entry strategy to Brazil. It has certain characteristics that reduce the development risk. Construction periods generally take less than one year, and the cost of land is low (sometimes given for free), making the pay-back period relatively short. Also, as construction periods are not long, there is little lag between supply and demand. Developers are able to follow the need for space, minimizing over-building and smoothening real estate cycles.

Industrial development in Brazil has yet another advantage, the market offers an easy exit strategy, institutional investors such as pension funds, are increasingly willing to invest in this sector.

The State of Sao Paulo is Brazil's industrial heart and presents interesting opportunities for industrial development, particularly in speculative building. Growing demand and limited supply for rental space make this sector attractive. The industrial condominium is specially suited for the current market because, with the opening of the economy, industries require additional services and better facilities at lower costs.

Participating in the Brazilian market, however, is not easy. Information is scarce and disorganized. For example, there is no historical data on rental values, vacancies or construction. Under these

conditions it is not easy to identify the new demand or new supply of space. Without accurate information the risks are higher, specially for speculative building. Also, developers should look carefully at the way the rental system works. Since Brazilian legislation favors tenants over landowners, they should be cautious when contracting in order to avoid legal problems.

Brazil has low political risk. Although political power might change hands in the future, the country is expected to continue being receptive towards foreign investment. Medium term investors, however, should be aware of the monetary risk. With the current trade deficit, the Plan Real is fragile and investors should hedge against a possible currency devaluation. Particularly, leases should ideally be long term, in hard currency, and with credit-worthy tenants, as a hedging strategy.

As in other Latin American countries, the business environment in Brazil is very different from the U.S. Even though the country has similar business standards, local particularities should be taken into account. Some of the main differences are reflected in the business relations, the legal environment, and the interaction with the government. Despite the size of the real estate market, there are few industry players and they operate in close coordination with each other.

Through this paper the reader may have wondered about the competitive advantages of foreign companies over local constructors in this market. The following aspects should provide an answer. In a market with high interest rates, industrial and development companies are capital constrained. Foreign companies have access to capital at lower costs and therefore they have an edge over local competition. Another important characteristic of foreign developers is the relationships they have with multinational tenants, specially because in Sao Paulo they constitute an important source of demand. Multinationals are becoming increasingly global and are likely to select a supplier that

can provide similar facilities around the world. Finally, foreign companies have extensive development expertise and managerial know-how, and should be able to compete both in quality and costs.

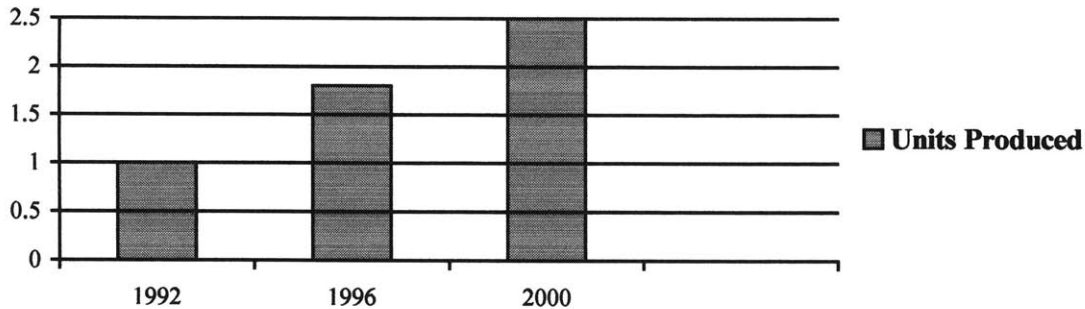
Despite the advantages of foreigner developers, newcomers should consider entering the market through a partnership with a local developer. Apart from sharing the risks, local companies are invaluable sources of market “know-how” and market “know-who”, both important aspects of the Brazilian business environment. Local developers are specially knowledgeable with respect to site selection, construction procedures, legal issues and government negotiation.

The market is inviting and the future promising. Those who join early enough could benefit from the growing gap between supply and demand. Also first-movers may gain access to strategic sites, lower costs of land and premium rental values. Brazil undoubtedly presents big challenges and big problems. It also presents big opportunities.

APPENDIX A - THE AUTOMOBILE INDUSTRY

Brazil is currently considered to be one of the world's fastest-growing automobile markets, as well as a springboard to the rest of South America, especially through the Mercosul customs union. The country has the potential to become one of the top five producers in the world. Lower tariffs, lower taxes and lower inflation have fueled a sudden consumer boom. Between 1995 and 1996, output grew 16%, from 1.65 million to 1.8 million units, and by even the most conservative estimates, sales will top 2.5 million by the end of the decade. Auto manufacturers already represented 40% of total foreign investment in 1995 and 1996, and this participation is expected to grow. Following demand, multinational auto makers plan to invest between \$ 10 and 13 billion on the period from 1996 to 2000¹.

Vehicle Output (in millions)



Source: Anfavea, Brazil Vehicle Manufacturers Association

Each of the four long-established companies: GM, Ford, Volkswagen and Fiat, plans to invest in new facilities and expand production. European and Asian companies such as Renault, Mercedes-

¹ Thomson Corporation Company, "ESP-Business Opportunities in Latin America", January 1, 1997

Benz, Peugeot, Toyota, Hyundai, Asia Motors and Honda, have also announced factory start-ups. Meanwhile, Brazilian states are hungry for employment and development opportunities and are offering sweet deals for manufacturers by tax incentives, land deals and subsidies.

General Motors had 23% of market share in 1994, yet in 1995 it lost nearly 8 points, not to competition, but because it could not keep up with the booming demand. The company is thinking of expanding its production capacity to at least 500,000 units a year. It plans to invest \$1,250 million in order to build 3 plants in the country. \$600 million will be destined to an assembly plant, at an undisclosed site in the state of Rio Grande do Sul. Another \$500 million are committed for the construction of a components factory in the State of Santa Catarina. In addition, \$150 million are to be invested in a unit in the State of Sao Paulo to produce body parts. Local suppliers are expected to provide 40% of the investment which should be completed by 1999.

Audi will build a new factory to produce its A3 model in 1998 and *Volkswagen*, Audi's parent company, has announced it plans to put \$ 500 million into the new plant. It will probably be built in the Sao Paulo's industrial suburbs, and will have a yearly capacity of 150,000 vehicles for both Audi's A3 and Volkswagen Golf.

Both the other major manufacturers, Fiat and Ford, will set production records this year. *Fiat* will dedicate a new plant building for the new Palio. *Ford* launched production of its Fiesta small car at its Sao Bernardo plant. The factory accounts for \$700 million of the \$2.5 billion that Ford will spend in Brazil through 1999.

After being courted by various states, *Renault* is locating its new factory in Sao Jose dos Pinhais, near Curitiba, in the State of Parana. The State is a partner in the project, and will be the leader

investor in the \$1 billion investment. Parana is providing the land, giving a 10-year state tax exemption, reducing energy costs, and providing \$200 million per year in subsidies. Suppliers will contribute 7% of the total investment.

Mercedes-Benz announced that it will invest \$ 400 million in a factory in Juiz de Fora (Minas Gerais), to produce up to 80,000 units of a compact car. The company intends to invest \$ 430 million to upgrade its plant in Campinas to move its truck and bus manufacturing from Argentina to Brazil.

Japanese companies are also racing to enter the market. Last November, *Toyota* announced plans for a Brazilian factory which would produce 50,000 small cars annually by 1997. The Japanese industry press reports that Toyota plans on producing corollas in Brazil by 1999. *Honda* says that, before the end of 1997, it will invest \$ 100 million in a plant assembling 15,000 civics annually, but it wants federal government help with incentives (such as tax breaks, free land, and training for its work force). Honda owns a sizable piece of land in Sumare, near Sao Paulo city, but is also looking in the states of Minas Gerais, Santa Catarina, and Rio Grande do Sul. *Mitsubishi* has apparently shelved previously announced plans to invest \$ 150 million in a facility to manufacture 30,000 trucks annually. The plans may be revived, however, as the company looks at the auto regime and the lowered import tariffs for local producers. Mitsubishi was producing 120 pickups per month at a small factory in the Manaus free trade zone, but decided to close the facility last month in favor of looking for a bigger plant in the south.

Even though some insiders at major manufacturers in Brazil have expressed doubts that the Korean auto makers are serious about coming to Brazil right now, some companies have made sound announcements. *Hyundai* speaks of investing as much as \$ 900 million in a manufacturing plant in

Brazil to produce annually 50,000 units of its Accent model by 1999. Rio Grande do Sul, Parana, Sao Paulo and Minas Gerais are most seriously in contention. *Asia Motors* has announced plans for a factory at an yet unspecified site. The second largest importer of cars into Brazil in 1995 (12,648 units), Asia plans to invest \$ 500 million and produce 50,000 vehicles a year as of 1999. *Kia* announced it would invest \$ 100 billion in an assembly plant in Vitoria, Espiritu Santo, and *Daihatsu* claimed it was interested in setting up a factory in central Minas Gerais. There has been no news of the two last companies since then.

New Plants in Brazil

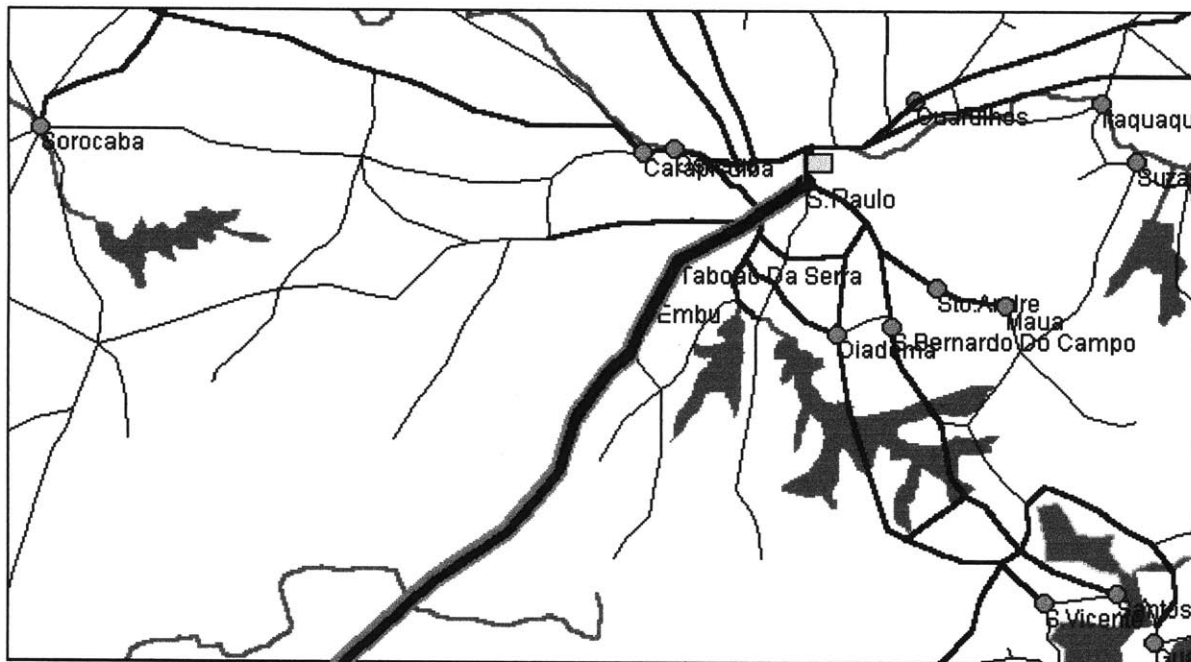
Company	Investment (million)	Location
General Motors	600	Rio Grande do Sul
General Motors	500	Santa Catarina
General Motors	150	Sao Paulo
Renault	1,000	Parana
Ford	700	Sao Bernardo, Sao Paulo
Peugeot	n/a	n/a
Toyota	n/a	n/a
Honda	100	Sao Paulo
Mitsubishi	150	n/a
Audi-Volkswagen	500	Sao Paulo
Mercedes Benz	400	Minas Gerais
Mercedes Benz	430	Campinas, Sao Paulo
Hyundai	900	Rio Grande/Parana/Sao Paulo/Minas Gerais
Kia	100	Espiritu Santo
Asia Motors	500	n/a
Daihatsu	n/a	Minas Gerais

Sources: Thomson Corporation Company, Export Sales Prospector -Business Opportunities in Latin America & the Caribbean, January 1, 1997. The Time Inc. Magazine Company, International Edition, December 18, 1995. Brazil, Auto Market News, Market Reports, April 15, 1996
n/a: not available

APPENDIX B - THE FREEWAYS AROUND SAO PAULO

Regis Bitencourt Highway

The Regis Bitencourt highway links Sao Paulo with the city of Curitiba (State of Parana), and from there, with the south of Brazil. This so called “Mercosul Highway” connects Sao Paulo with the neighboring countries of Uruguay and Argentina. The flow of goods will continue to grow as the Mercosul consolidates, and investments in infrastructure increase the highway trade between its members. Industrial locations on the Regis Bitencourt Highway have good access to the ports of Paranagua (State of Parana), and Itajai (State of Santa Catarina). The highway suffers from serious overcrowding, however, this is expected to improve when works to transform it into a divided highway are finished. Land prices can reach \$10.00/sq.ft. for the first 12-16 miles out of Sao Paulo, then falling to around \$2.00/sq.ft. because of environmental restrictions.



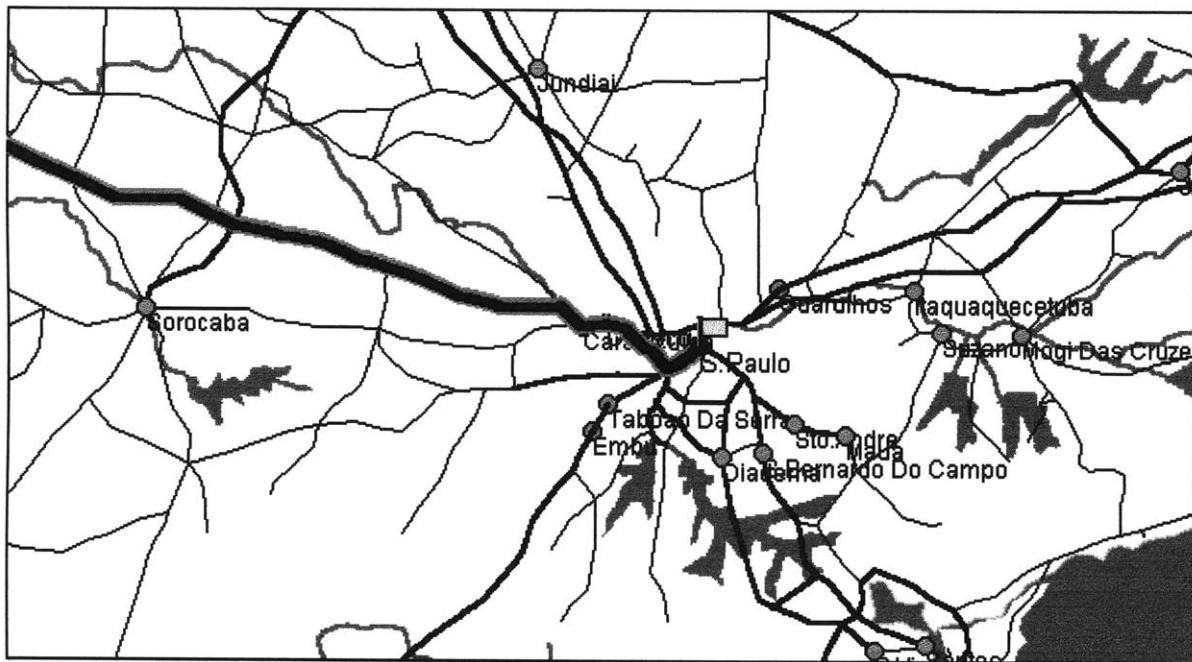
Raposo Tavares Highway

The Raposo Tavares highway links Sao Paulo to the city of Sorocaba, an important industrial center in the State. Then it continues towards the south of the country. The highway has many access points and it constitutes a convenient alternative for companies geared towards the Greater Sao Paulo market. Land prices can reach \$10.00/sq.ft. close to Sao Paulo and fall to \$4.00/sq. ft. further away.



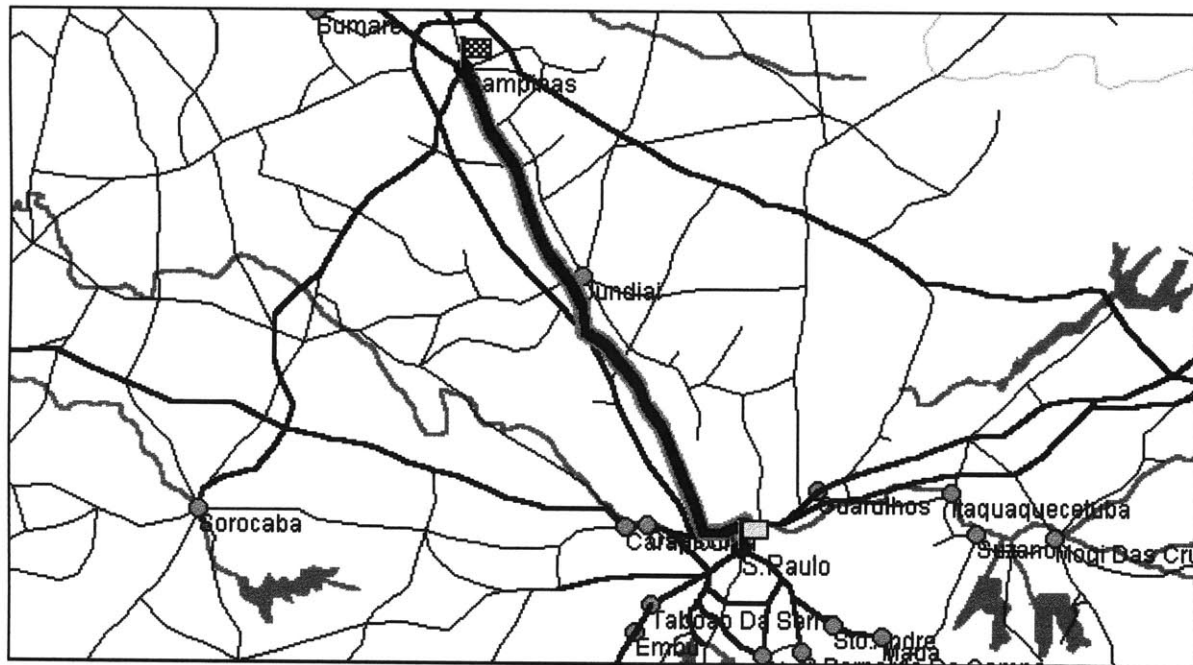
Castelo Branco Highway

The Castelo Branco highway links the city of Sao Paulo with the west of the State, a region of major agricultural development. Land prices can reach \$20.00/sq.ft. close to the Capital, then falling to around \$0.50-1.00/sq.ft. around 19 miles out.



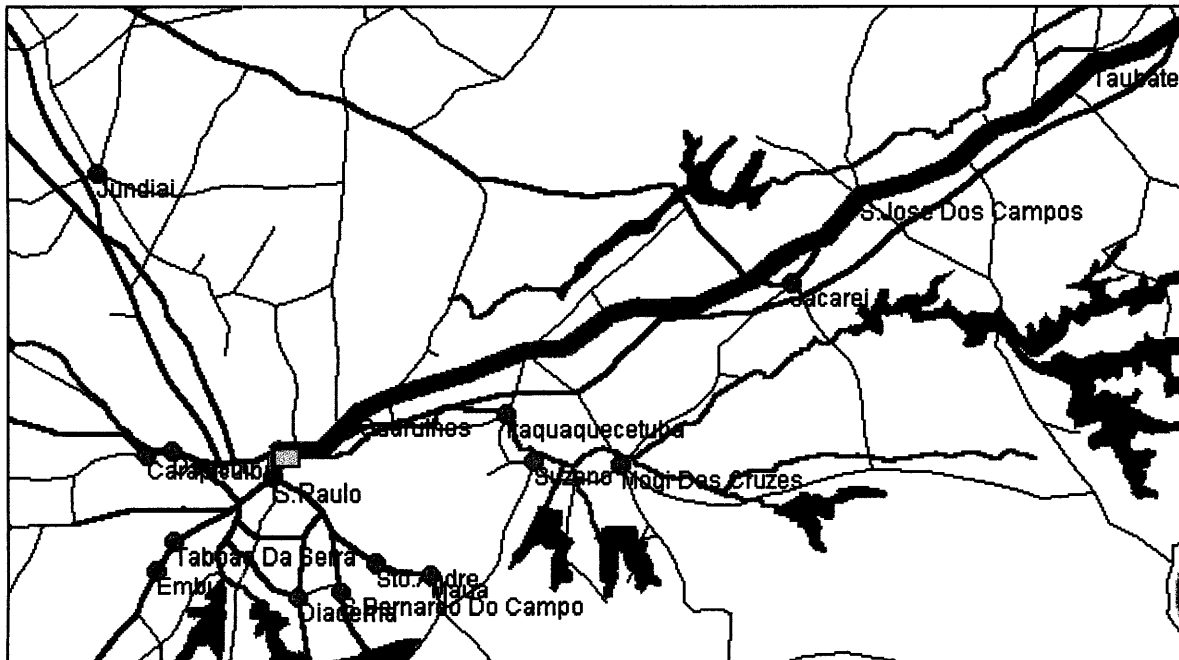
Anhanguera and Bandeirantes Highways

The Anhanguera and Bandeirantes highways link Sao Paulo with Campinas and Ribeirao Preto, both important cities of the interior of the State. Industrial sites in this area have excellent access to the Campinas Airport (Viracopos). The maintenance and operation of the Anhanguera highway is about to be privatized. Land prices can reach \$10.00/sq.ft. close to Sao Paulo, falling to \$2.00/sq.ft. around 12 miles out of Sao Paulo.



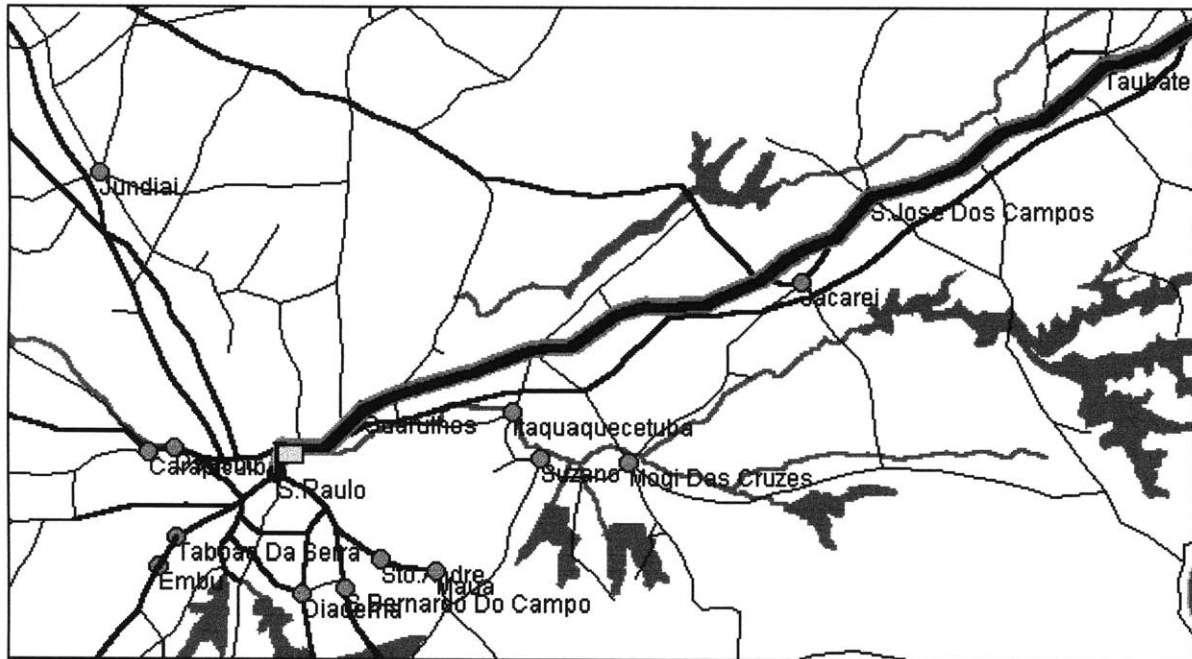
Presidente Dutra and Ayrton Senna Highways

The Presidente Dutra and Ayrton Senna corridor has the heaviest traffic in Brazil. It links the cities of Sao Paulo and Rio de Janeiro (both metropolitan areas hold together 30 million people). It leads through major industrial centers, such as Sao Jose dos Campos and Taubate, and connects them with secondary highways to the ports of Sao Sebastian and Sepetiba. Land prices can reach \$15.00/sq.ft. close to Sao Paulo, then falling to around \$2.50/sq.ft. further away.



Presidente Dutra and Ayrton Senna Highways

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Antonio Marson Neto, President, MARSON CONSTRUTORA

Felipe Fucher, Marketing, BUTLER MANUFACTURING COMPANY (BRAZIL)

Cristina Mussi, PRICE WATERHOUSE

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Peter Stern, International Trade Manager, AMERICAN CHAMBER OF COMMERCE

Maria Angela Conrado, Socia Diretora, SIMONSEN ASSOCIADOS