



**STATE UNIVERSITY OF CAMPINAS – UNICAMP**

**Institute of Economics**

**Center of Industrial and Technological Economics**

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**Project: Bulletin of Industrial Conjuncture,  
Sectoral Monitoring, Industry Overview and  
Industrial Policy Analysis**

**Bulletin of Industrial Conjuncture**

**September 2008**

The Brazilian economy kept to its growth path in the second quarter of 2008. Data from the System of National Accounts (SCN/IBGE) points to a Gross Domestic Product (GDP) growth rate of 6.1% in relation to the same period of 2007. Considering the rate accumulated over the four quarters that ended in June 2008, this growth reached 6%, a higher level than that of last year (5.4%) (Table 1).

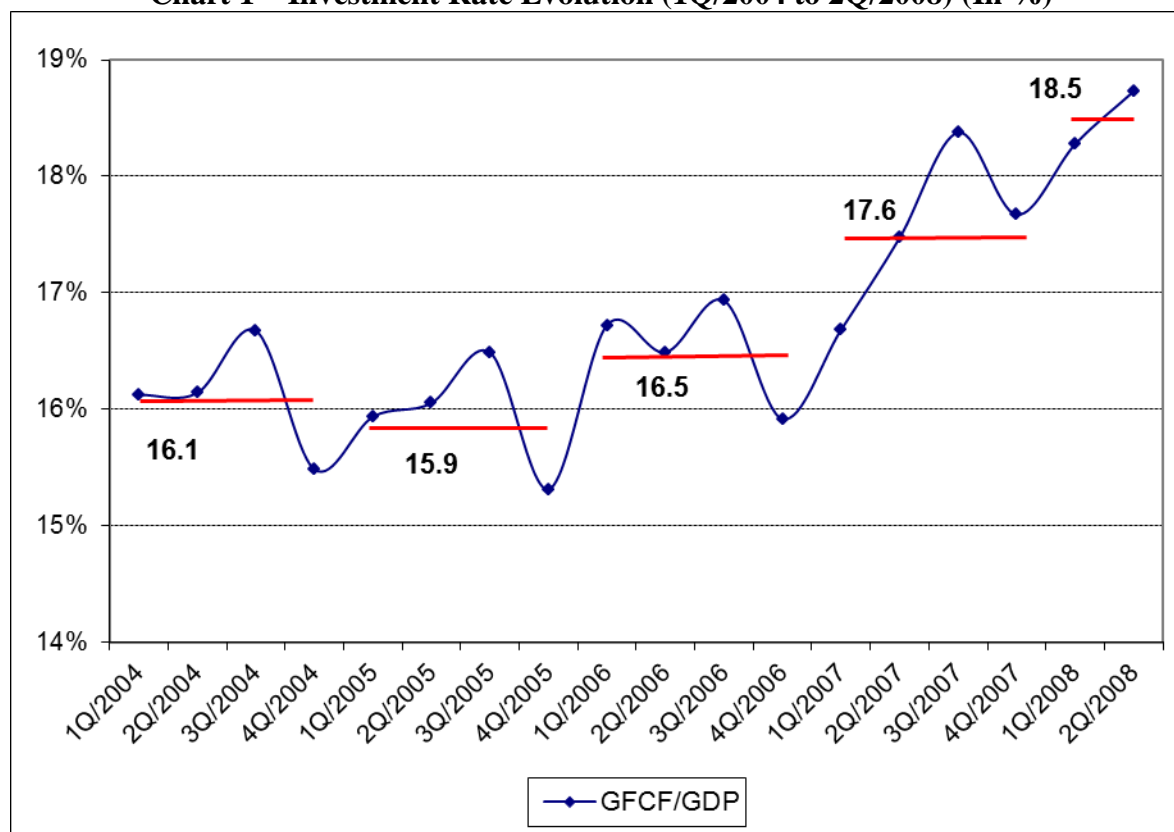
The growth pattern has also been showing continuity in relation to previous quarters. Domestic demand has remained as the main vector of dynamism, with gross fixed capital formation acquiring increasing importance. Considering the total accumulated in the last four quarters, it is possible to observe growth both in family and government consumption. However, it is the high level achieved by the growth of gross fixed capital formation (15.5%) that must be emphasized.

**Table 1 – Components of Demand**  
(rate accumulated over the previous four quarters – 4Q/2007, 1Q/2008 and 2Q/2008)  
(In %)

Components of Demand	4Q/2007	1Q/2008	2Q/2008
GDP at market prices	5.4	5.8	6.0
Household final consumption expenditure	6.5	6.7	7.0
Government final consumption expenditure	3.1	3.6	4.1
Gross fixed capital formation	13.4	14.9	15.5
Exports of goods and services	6.6	4.6	2.8
Imports of goods and services (-)	20.7	20.4	22.2

Source: System of National Accounts (SCN/IBGE).

It is possible to observe that the investment rate has been increasing consistently since 2006 (Chart 1). In 2007, there was a rather vigorous growth, but it suffered a seasonal decline in the last quarter of the year, when it reached a still high level of 17.7%. In the yearly total, the rate reached 17.6%. In the first semester of 2008, it can be perceived a resumption of the upward path of investment rate. It reached 18.3% in the first quarter and 18.7% in the second quarter of 2008, the highest level since the second quarter of 2000. It is also worth emphasizing that the gross fixed capital formation has been growing since the first quarter of 2004 (18 quarters in a row), and that it has been growing above the GDP since the second quarter of 2005 (13 quarters in a row).

**Chart 1 – Investment Rate Evolution (1Q/2004 to 2Q/2008) (In %)**

Source: SCN/IBGE.

On the other hand, the external sector is still contributing negatively to GDP growth, given that imports of goods and services are still growing much more rapidly than exports. Data in Table 1 point to a reduction in the growth of exports of goods and services in the total accumulated in the last four quarters. Considering quantum indexes in exports of goods in the first quarter of 2008, one can observe even a decrease of 1.6% in total exports and of 3.9% in exports of manufactured goods (FUNCEX). As it is going to be detailed further in this bulletin, this is an aspect that deserves attention, mainly due to the prospect of an unfavorable external scenario, which can raise even greater difficulties to exports increase.

From the point of view of industrial production, data from the Monthly Industrial Survey-Physical Production (PIM-PF/IBGE) point to a slightly decreasing trend in the rhythm of industrial growth (Table 2). Growth in the second quarter of 2008, when compared with the same quarter of last year, was of 6.2%, both for the general industrial and the manufacturing and mining sectors. Although still rather high, this level is a little lower than that observed in the first quarter of 2008 (6.3%). Considering the total accumulated over the last four quarters that ended in June 2008, growth rates were of 6.7% in the general and manufacturing industries, whereas the mining industry grew 6.2%. These growth rates were slightly higher than those observed in the total accumulated in the period of 12 months that ended in March 2008, which reached 6.6% and 6.1%, respectively.

**Table 2 – Industrial Production Growth Rate (1Q/2007 to 2Q/2008) (In %)**

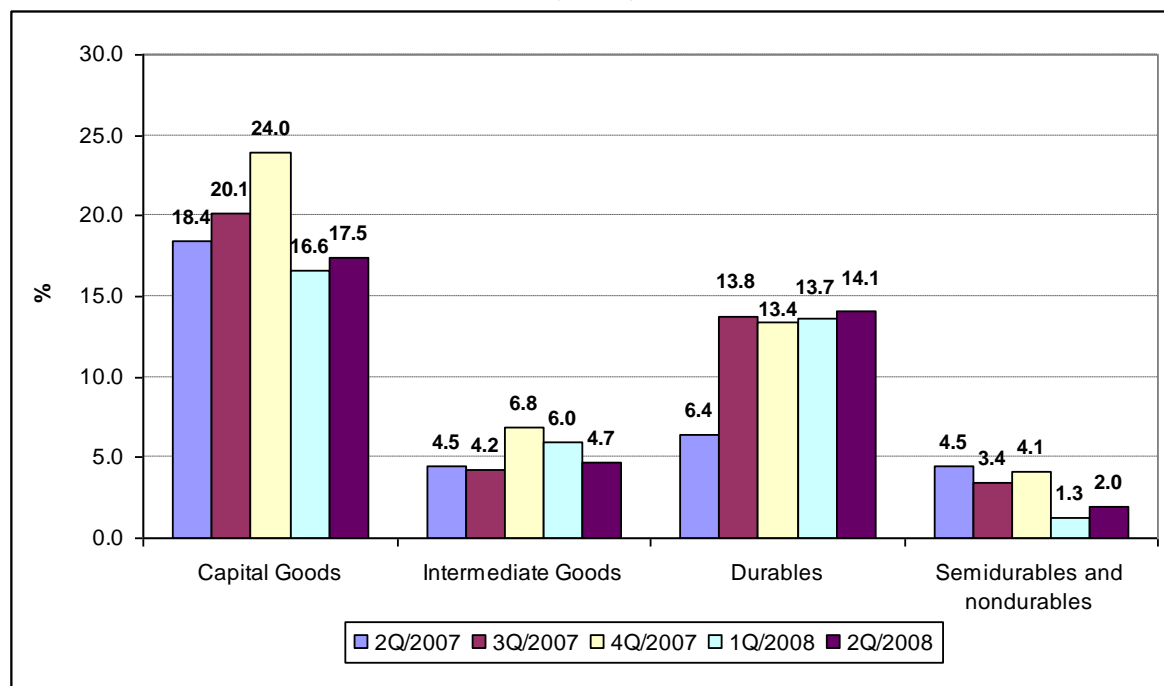
Activities	1Q 2007	2Q 2007	3Q 2007	4Q 2007	1Q 2008	2Q 2008
<b>Quarterly growth rate in relation to the same quarter of the previous year</b>						
<b>General Industry</b>	<b>3.8</b>	<b>5.8</b>	<b>6.3</b>	<b>7.9</b>	<b>6.3</b>	<b>6.2</b>
Mining Industry	5.6	5.8	6.0	6.1	6.5	6.2
Manufacturing Industry	3.7	5.8	6.4	8.0	6.3	6.2
<b>Growth rate accumulated over the last four quarters</b>						
<b>General Industry</b>	<b>2.6</b>	<b>3.9</b>	<b>4.8</b>	<b>6.0</b>	<b>6.6</b>	<b>6.7</b>
Mining Industry	5.7	6.1	6.1	<b>5.9</b>	6.1	6.2
Manufacturing Industry	2.5	3.8	4.7	<b>6.0</b>	6.6	6.7

Source: Monthly Industrial Survey-Physical Production (PIM-PF/IBGE).

Although the industrial production growth has kept its accelerated pace thus far, prospects are that these rates will stay at slightly lower levels as of the second quarter of 2008, in view of both an increase in consumer credit interest rates and statistical effect itself, since the basis of comparison will include periods of stronger growth.

On analyzing industrial production per use category, it is possible to observe that capital goods were still leading the growth, with an increase of 17.5% in the second quarter of 2008 in relation to the same period of the previous year (Chart 2). In the total accumulated in the last four quarters, the growth rate of capital goods reached 19.5%, which confirms a rising movement in the investment rate. Consumer durables have also been showing a rather positive performance, with a growth rate of about 14% since the second quarter of 2007, fuelled primarily by a strong expansion in the automotive industry production.

**Chart 2 – Evolution of Industrial Production per Use Categories  
(growth rate in relation to the same period of the previous year – 1Q/2007 to 2Q/2008)  
(In %)**



Source: NEIT/IE/UNICAMP, based on data from PIM-PF/IBGE.

On the other hand, the production of intermediate goods showed a downward trend in the quarterly rate, growing 4.7%, well below the rate observed in the two previous quarters. However, it is worth noticing that this rate is still slightly higher than that achieved in the second quarter of 2007. As for consumer semidurables and nondurables, although the rate of the second quarter increased in relation to the first one, the lower level observed in 2008 is apparent as compared to 2007.

Observing information per industrial activity, it is also possible to see that sectors related to the production of capital goods or consumer durables take the lead. Five sectors stand out, with the highest growth rates in the total accumulated in the year that ended in June 2008: other transportation equipment (24.5%); motor vehicles (19.7%); machinery and equipment (13.5%); electrical machinery, equipment and supplies (12.2%) and medical and therapeutic equipment, optical instruments and others (9.4%). There was acceleration in the growth accumulated in the sectors of motor vehicles, other transportation equipment, and medical and therapeutic equipment. Considering the growth rate in the second quarter of this year as compared to the same period of last year, one confirms other transportation equipment as the leading sector, reaching the highest level of growth (38.5%) among all sectors covered by the industrial production survey, followed by motor vehicles (17.5%).

On analyzing the contribution of several sectors to the total industrial growth in the second quarter of 2008, these sectors deserve to be highlighted: motor vehicles (25.2%); machinery and equipment (9.5%); other transportation equipment (8.1%); basic metallurgy (6.2%); and other chemicals (5.1%). These sectors were exactly the same that led the composition of growth in the first quarter of 2008, and we should only stress the increasing contribution of the motor vehicles and other transportation equipment sectors.

Some industrial activities managed to overcome the poor production performance seen last year. The negative production performance of the sectors of electronic supplies and telecommunication devices and equipment in 2007 (-1.1%) was reverted in the first

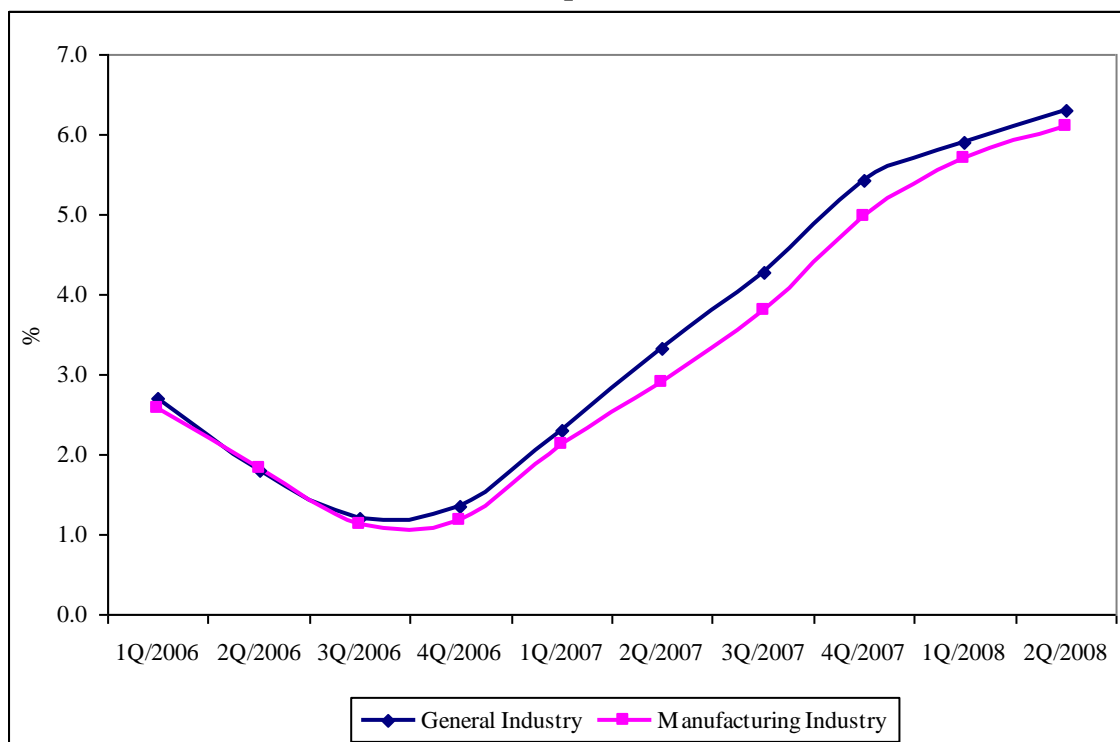
semester of this year. They grew 7.0% in the yearly total accumulated until June 2008, as a result of persistent quarterly increases in production when compared to the same periods of the previous year. The pulp and paper sector, benefited by the external environment, has also improved its production performance, going from an accumulated growth of only 0.8% last year to an increase of 3.6% in the year that ended in June 2008. Finally, the pharmaceutical sector, which performed poorly in 2007 as well (1.9%) and whose production declined in the first quarter of this year when compared to the same period of last year (-4.4%), reached a production growth of 12.0% in the second quarter of 2008 in relation to the same period of the previous year, raising to 3.9% the production growth accumulated in the year that ended in June 2008.

On the other hand, some industrial sectors were characterized by loss of dynamism in production, notably the consumer nondurables sectors. Even considering the positive performance of textiles in the total accumulated in the year that ended in June 2008 (2.6%), one can observe its decline in the second quarter of this year when compared to the same period of last year (-0.5%), after having grown for several quarters. As for the footwear sector, the negative performance of production last year (-2.2%) had been lessened in the total accumulated in the year that ended in the first quarter of this year (-0.5%), but the behavior of physical production deteriorated again in the second quarter, revealing a persistent poor production performance in this sector. Concerning toilet goods, soap, detergent and cleaners, the production decline intensified in the second quarter of 2008 in relation to the same period of last year (-4.7%), contributing to the production decrease seen in the total accumulated in the four quarters that ended in June 2008 (-0.8%). In the group of consumer nondurables, the exception is the apparel cut-and-sew manufacturing, which has been growing substantially since the second quarter of 2007. In the second quarter, the growth in relation to the same quarter of the previous year reached 5.9% and the rate accumulated in the last four quarters reached 7%.

The overall positive performance of industrial production has been contributing to sustain employment growth in industry. Data from the Monthly Survey of Industrial Employment and Wages (PIMES/IBGE) show a 2.7% increase in the number of salaried employees, both in general and manufacturing industry, in the total accumulated in the first semester of 2008, almost doubling the increase of 1.4% observed in the total accumulated in the first quarter of 2007, and exceeding the growth of 2.2% in last year total. Nevertheless, we cannot refrain from mentioning the deceleration in employment growth in the second quarter in relation to the first quarter of this year, when the yearly growth of salaried employees reached a higher level (3.1%).

One can also see an increase of 6.5% in the value of payroll in the general industry, and of 6.6% of the manufacturing industry, in the total accumulated in the first semester of this year, strengthening the growth observed in last year total (5.4% and 5.0%, respectively). In the first semester of 2008, the growth of value of payroll in real terms for the manufacturing industry came nearer the growth observed for the general industry. In the total accumulated in the four quarters that ended in June 2008, increase in real income reached 6.3% for the general industry and 6.1% for the manufacturing industry (Chart 3). Therefore, the favorable performance observed last year remained the same in the first semester of 2008, but also showing a slightly downward trend in its growth pace.

**Chart 3 – Growth Rate of the Value of Industry Payroll in Real Terms  
(rate accumulated over the last four quarters – 1Q/2006 to 2Q/2008) (In %)**



Source: NEIT/IE/UNICAMP, based on data from PIMES/IBGE.

Concerning the expansion of formal employment, data from the General Register of Employed and Unemployed Individuals (CAGED/MTE)<sup>1</sup> show that job vacancies creation remained the same in the second quarter of 2008, reaching 167,700 vacancies in the general industry, 161,400 in the manufacturing industry, and 6,300 in the mining industry (Table 3). Formal employment creation increased 9.5% in the general industry in relation to the first quarter of this year. Comparing it with data on the second quarter of last year, we can observe a decrease of 10.9% in formal employment creation in the general industry and of 11.9% in the manufacturing industry, whereas the mining industry grew 23.5%, but on a significantly lower basis. This means that the second quarter of this year showed lower results in job vacancies creation in the general and manufacturing industry when compared with the same period of last year.

Yet, the total of vacancies created in the industry in the first semester of 2008 (320,800) meant an increase of 7.9% in relation to the same period of last year (297,200), corresponding to almost 83% of the new vacancies creation throughout 2007 (386,600).

<sup>1</sup> CAGED/MTE shows results for all companies that hired/dismissed formally employed individuals in the period surveyed, therefore providing census coverage. Data from 2007 and 2008 were organized based on the new CNAE 2.0, and can be different from data analyzed in the Bulletin of Industrial Conjuncture of March 2008, which used the old CNAE 1.0. PIMES/IBGE, on the other hand, provides sample coverage, including companies with five or more employees. Therefore, divergent trends can be found in the two sources of data, mainly in sectors where small and medium companies prevail.

**Table 3 – Formal Employment Evolution in Industry  
(2007-2008)**

	Job Vacancies Creation (thousands)						
	1Q. 2007	2Q. 2007	1 <sup>st</sup> semester 2007	Total 2007	1Q. 2008	2Q. 2008	1 <sup>st</sup> semester 2008
<b>General Industry</b>	109.0	188.2	297.2	<b>386.6</b>	153.1	167.7	320.8
Mining Industry	4.3	5.0	9.3	<b>14.1</b>	3.4	6.3	9.7
Manufacturing Industry	104.7	183.2	287.9	<b>372.5</b>	149.7	161.4	311.1

Source: NEIT/IE/UNICAMP, based on data from CAGED/MTE.

The industrial activities that headed the creation of new job vacancies in industry in the second quarter of this year were: food (23.2%); oil and alcohol refining (14.0%); apparel and accessories (7.7%); motor vehicles (6.8%); metal products (6.1%); and machinery and equipment (5.5%). The food and apparel sectors, traditional employers, held large shares in the creation of formal employment in the second quarter of this year. On their turn, the motor vehicles and the machinery and equipment sectors, which took the lead in industrial production growth and represented a large share in its composition in the period under analysis, also contributed positively for formal employment creation in the second quarter of 2008.

Information detailed previously shows that the Brazilian economy has kept its dynamism, headed by domestic demand, notably by investments, but also by the expansion of family consumption. From the point of view of industry, this growth has been translating into a vigorous increase in production and employment in sectors related both to capital formation and consumer durables. However, it is worth observing that, although the growth pace remained strong in the first semester of 2008, it is possible to see some signs of deceleration, which points to a decrease in the rates of the second semester of this year. First, it is important to observe that the basis of comparison will be the second semester of 2007, when the industrial production performance was brilliant. Moreover, the recent tightening of the monetary policy may affect the consumption of durables. Growth reduction, especially in the automotive industry, may have important impacts on the total of industry, since this sector contributed to about 25% of growth in the last periods.

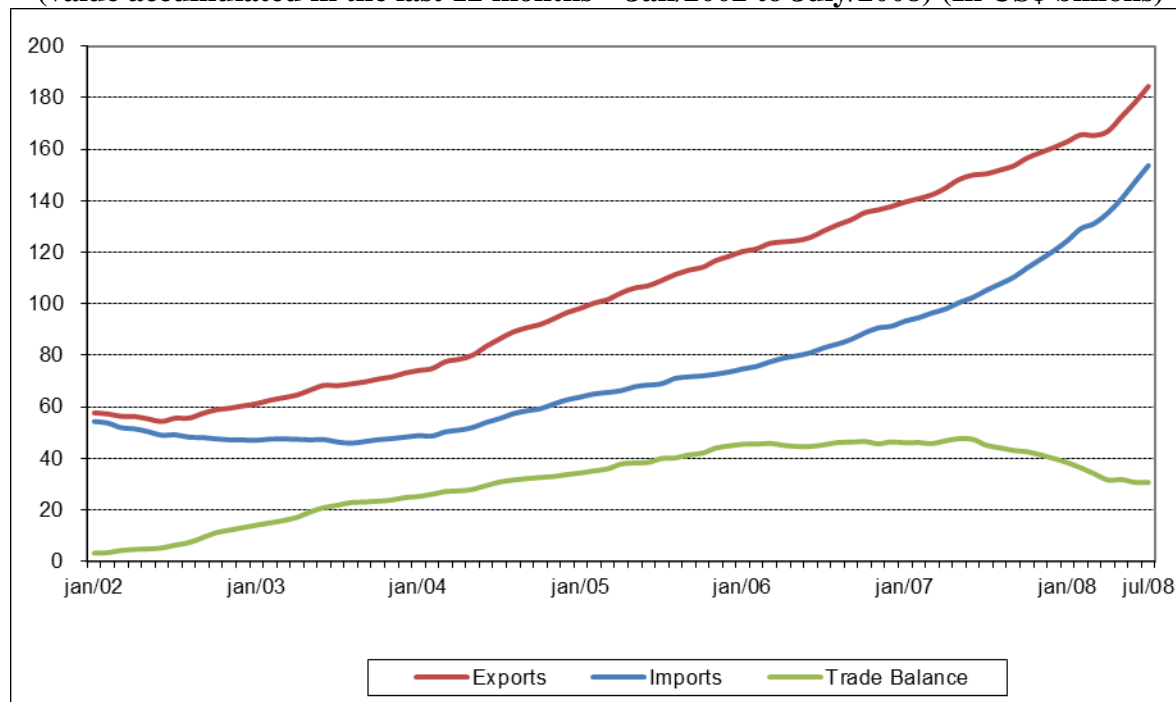
It is also possible to forecast worse results related to foreign trade, due mainly to the world economy deceleration. In this context, the evolution of Brazilian external trade deserves a more careful analysis.

The analysis of data on the Brazilian external trade over the last years shows an upward trend in the trade surplus accumulated in 12 months from October 2002 to May 2007. That is, until mid-2007, the long period of expansion in world economy translated into a major increase in trade surplus, which contributed largely to reduce the degree of external vulnerability in the Brazilian economy.

However, in the second semester of last year, the trade balance started to deteriorate. This behavior can be explained especially by acceleration in the growth of imported values in an environment of economic growth and national currency appreciation, contributing to imports and exports come near gradually (Chart 4). This movement continued in the first semester of 2008. According to data from FUNCEX, the positive trade balance in the first semester of this year (US\$ 11,3 billions) was 45% lower than that of the same period of last year (US\$ 20,6 billions).



**Chart 4 –Brazilian External Trade Evolution**  
**(value accumulated in the last 12 months – Jan/2002 to July/2008) (In US\$ billions)**

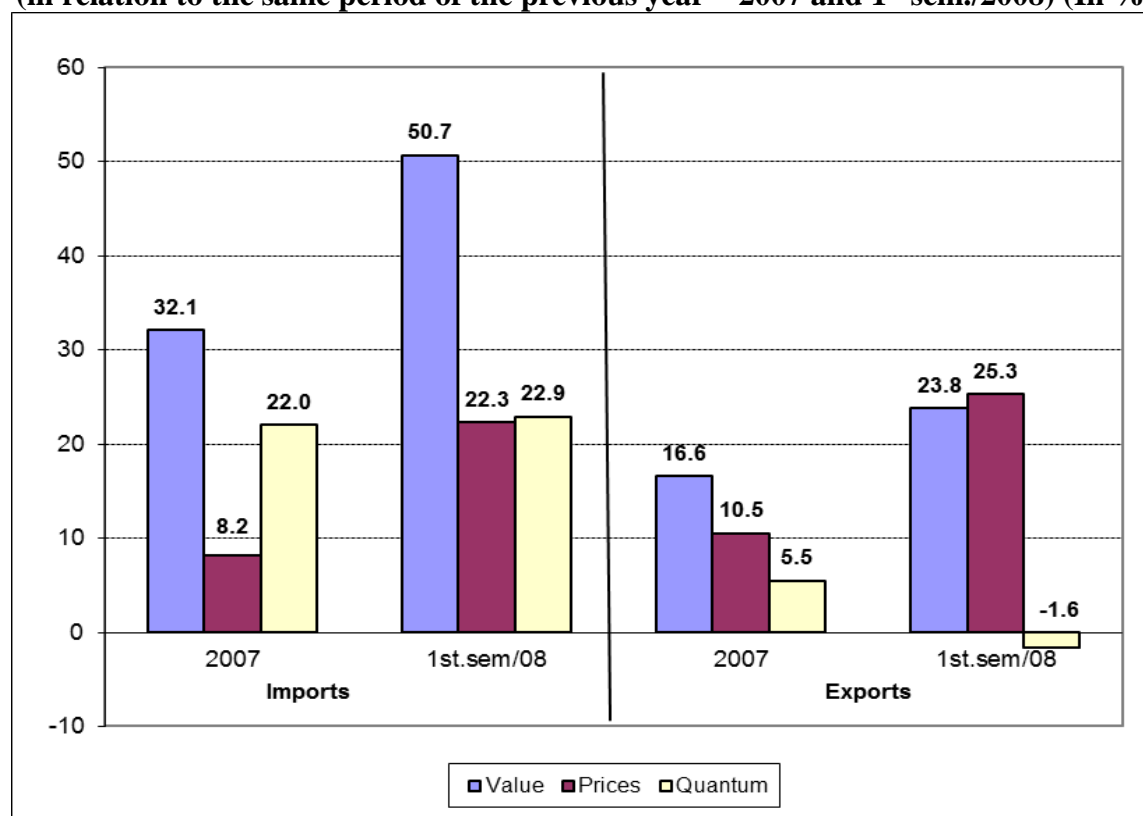


Source: NEIT/IE/UNICAMP, based on data from FUNCEX.

The imports behavior contributed significantly to reduce the trade balance. Brazilian imports reached about US\$ 79,3 billions in the first semester of 2008, growing a little more than 50% in relation to the first semester of last year (Chart 5). This growth resulted both from imports variation in quantum and price – 22.9% and 22.3%, respectively – in relation to the same period of last year. Comparing with the movement of the whole year of 2007, one can notice that the increase in imports prices was considerably higher in the first semester of this year, whereas the quantum index increased, but more timidly.

On their turn, Brazilian exports reached approximately US\$ 90,6 billions in the first semester of 2008, revealing a growth of 23.8% in relation to the first semester of 2007 (Chart 5). A disaggregated analysis of the effects of variation in price and quantum exported in the first semester of this year in relation to the same period of last year produce worrying results. The exports increase was basically related to price increasing (25.3%), which more than compensated for the decline in the quantum exported (-1.6%) in the period under study.

**Chart 5 – Growth Rate in Exports and Imports: value, price and quantum  
(in relation to the same period of the previous year – 2007 and 1<sup>st</sup> sem./2008) (In %)**



Source: NEIT/IE/UNICAMP, based on data from FUNCEX.

An analysis disaggregated by use categories and by sectors shows more clearly the main contributions to increase imports and decrease the quantum exported.

Considering exports, it is possible to observe that the only use category that performed positively in quantum was that of capital goods. The other categories increased in value exclusively as a consequence of price increase. Some categories, especially fuel, intermediate goods and consumer nondurables, showed an increase strongly based on price rise in the international market.

**Table 4 – Exports by Use Category – Selected Indicators  
(1<sup>st</sup> semester of 2008)**

Use categories	Value (US\$ millions)	Value (%)	Growth Contribution (%)	Price Var. (%)	Quantum Var. (%)
Capital Goods	10,174	11.2	10.4	12.0	8.4
Intermediate Goods	52,118	57.5	52.3	22.9	-1.7
Consumer Durables	3,654	4.0	1.2	11.5	-5.1
Consumer Nondurables	15,581	17.2	18.2	28.4	-2.2
Fuel	8,987	9.9	17.1	64.1	-11.5

Source: NEIT/IE/UNICAMP, based on data from FUNCEX.

Observing the sectors of activity that contributed the most to exports growth in the semester, it is possible to see, in the first place, the influence of price rise in food and agricultural commodities, but also of oil and metal commodities. Considering the eight sectors that contributed the most to exports growth in the semester (answering for about 70% of value and for 80% of growth observed), the six first were sectors strongly influenced by the cycle of rising prices in the international market (Table 5).

**Table 5 – Exports in the Main Sectors of Activity – Selected Indicators  
(1<sup>st</sup> semester of 2008)**

Sectors	Value (US\$ millions)	Value (%)	Growth Contribution (%)	Price Var. (%)	Quantum Var. (%)
Agriculture and livestock	10,074	11.1	18.8	39.0	5.2
Food and beverages	15,391	17.0	18.0	28.0	-2.0
Oil extraction	5,478	6.0	11.4	80.4	-18.9
Metal ore extraction	7,127	7.9	10.1	17.5	11.5
Basic metallurgy	9,665	10.7	5.7	20.5	-7.4
Oil and fuels refining	3,586	4.0	5.6	40.9	-1.6
Motor vehicles	7,489	8.3	5.3	12.1	1.3
Other transportation equipment	3,680	4.1	5.0	9.0	20.1

Source: NEIT/IE/UNICAMP, based on data from FUNCEX.

This is worrying, because the cycle of international prices is already showing signs of reverting, both because of world economy slowdown and the dismantling of speculative positions in the world's commodities exchanges. That is, it is possible to forecast a scenario of greater difficulty for exports expansion both in quantum, given the world economy slowdown, and prices.

As for imports, price variation was significant mainly in intermediate goods and fuels. Since the country is not a great food importer, price variation in consumer nondurables imports was much lower than that observed in exports. On the other hand, although all segments have experienced an imported quantum increase, growth was much more significant in consumer durables and capital goods, precisely the categories that have increased more in domestic demand and production.

With regard to consumer durables, although imports growth was considerable, the relative share and the contribution to variation are still little significant concerning the total imported. As to capital goods, imports increase was more important, and clearly associated to the movement of investment expansion. However, it is worth emphasizing that imports increase has been occurring complementarily to domestic production, since the domestic physical production remains heated and the quantum exported has increased as well.

**Table 6 – Imports by Use Category – Selected Indicators  
(1<sup>st</sup> semester of 2008)**

Use category	Value (US\$ millions)	Value (%)	Growth Contribution (%)	Price Var. (%)	Quantum Var. (%)
Capital Goods	10,983	13.9	13.6	9.4	36.5
Intermediate Goods	45,626	57.7	53.0	18.9	21.7
Consumer Durables	3,317	4.2	5.1	4.7	63.1
Consumer Nondurables	4,523	5.7	3.4	11.8	11.8
Fuels	14,674	18.5	24.2	57.4	11.6

Source: NEIT/IE/UNICAMP, based on data from FUNCEX.

Observing the sectors that contributed the most to increase imports, it is possible to see that the three main sectors, according to this criterion, had an important impact on prices, especially as a result of effects on the oil and petrochemicals chain. As for the other sectors, although showing a positive variation in price, they grew mainly as a result of an increase in the quantum imported. These are sectors that include capital goods and supplies and components, and whose quantum imported, therefore, increased mainly as a consequence of domestic demand in a context of appreciated exchange.

**Table 7 – Imports in the Main Sectors of Activity – Selected Indicators  
(1<sup>st</sup> semester of 2008)**

Sectors	Value (US\$ millions)	Value (%)	Growth Contribution (%)	Price Var. (%)	Quantum Var. (%)
Chemicals	15,307	19.3	19.1	29.6	15.1
Oil extraction	9,469	11.9	14.9	60.9	4.7
Oil and fuels refining	6,000	7.6	10.8	52.6	25.6
Machinery and equipment	8,040	10.1	9.7	9.4	35.1
Motor vehicles	6,401	8.1	9.3	8.6	49.9
Electronic and communications supplies	6,138	7.7	6.9	10.8	26.1
Basic metallurgy	3,820	4.8	4.3	12.9	26.3
Electrical machinery, devices and supplies	2,895	3.6	3.2	9.3	30.9

Source: NEIT/IE/UNICAMP, based on data from FUNCEX.

Thus, this is a scenario in which commodities price reduction may have an important impact on exports value and a less significant impact on imports value. The latter, on their turn, may suffer some reduction in their growth pace as a response to both the reduction in the growth pace of the industrial production and the prospect of dollar re-appreciation. In any case, it is possible to imagine that the deterioration process of the commercial balance will continue in the next months, which may contribute to worsen the situation of the current account. In the first semester of 2008, the current account balance had a negative value of US\$ 17,4 billions, which represented -2.5% of the GDP (against a surplus of 0.38% in the first semester of 2008).

On analyzing the movement observed over the first semester of the year, it is possible to conclude that the strong growth seen mainly in the second half of last year continued until the end of the first semester of 2008. However, it is interesting to observe that data also point to a slight deceleration trend, although the level is still high.

In spite of this deceleration trend, from a longer term perspective, this must not mean a reversion in the growth pattern observed thus far. As stressed previously, this pattern has been marked by the dynamism of the domestic market, increasingly fuelled by investments in gross capital formation. The maintenance of GFCF growth above the GDP is essential for this growth to be sustainable on the long run.

The adjustment in industrial production growth rates, as well as the effects of interest rates increase on consumption, must have an effect on GDP growth rates in the next months. However, the fundamental aspect is that, for the moment, investments have not been affected yet. Data analyzed in this bulletin, besides information about ongoing investment projects and the volume of credit approved and disbursed by BNDES, show that investments still maintain a strong rhythm. Therefore, at the moment, it is possible to believe that, in spite of a downward trend in growth rhythm, the growth pattern must not experience important changes.

However, it is worth stressing aspects that can give rise to concern in relation to the maintenance of this pattern. Such aspects are related mainly to the external scenario deterioration. The U.S. economy slowdown, due to the subprime mortgage crisis, is already revealing the contours of a longer crisis that, besides, is not only restricted to the U.S. economy. Europe and Japan show deceleration signs as well. Developing countries, for the moment, are still growing strongly, but must also be affected by the effects of a global crisis. The key unknown is still its effect on the Chinese economy. However, independently of the Chinese economy ability to continue to sustain its high growth rates, the fact is that the world demand must continue to cool down and remain little dynamic for a relatively long time.

Again in this case, the fact that the Brazilian economy is growing based on the expansion of its domestic market can lessen the international crisis effects on the country.

However, although the external demand reduction can be partly compensated by domestic demand, from a macroeconomic point of view, the rhythm of deterioration in the external accounts is an important and worrying factor. The Brazilian trade balance has been decreasing rapidly at the same time as the service and income accounts have shown increasingly negative signs, causing a worrying deficit in the current account. On the one hand, there is a prospect of not so favorable prices for commodities in the international market, both due to demand reduction and dismantling of positions in future markets, a fact that can make imports expansion difficult. Moreover, competition in the markets of manufactured goods tends to become fiercer, since it is possible to forecast a mounting aggressiveness on the part of emergent countries, especially Asian countries, to compensate demand reduction in the developed countries markets. On the other hand, the prospect of a less appreciated exchange rate and the reduction in the margin of industrial growth rhythm will be able to mitigate part of the negative effects on imports, resulting in weaker imports growth.

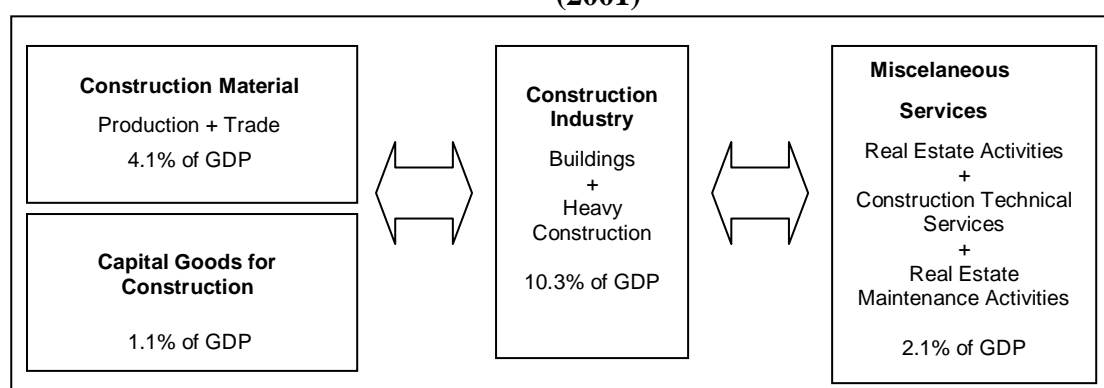
In this context, the Productive Development Policy (PDP) e the Growth Acceleration Program (PAC) become even more important to maintain the current growth pattern, so as to keep investments growing above the GDP in a scenario in which demand for consumer goods must decelerate, therefore exerting a less strong impact on GDP growth, and in face of an unfavorable external conjuncture in the next periods.

Continuity in investments is fundamental both from the point of view of demand, as a component capable of sustaining GDP increase, and to enhance production capacity to prevent discrepancies between supply and demand, with undesirable effects on price levels. Finally, investment expansion, together with efforts for modernization and development of innovation and technology qualification, is also fundamental to establish the bases for improving the external competitiveness of the industrial system and for facing the fiercer competition discerned in the global market from now on.

## The Building Sector: characterization, performance and competitive challenges

The building sector includes the activities of new construction work, alterations, and repairs of residential, industrial, commercial, and service buildings or their parts. Its products are housing units, industrial or commercial storage sheds and buildings, shopping malls, supermarkets, schools, hospitals, hotels, garages, and the like. Together with the heavy construction sector, it constitutes the so-called construction industry. The macro-sector of construction, on its turn, encompasses the sectors of production and trade of construction material and services related to construction, besides the construction industry. In Brazil, the construction industry answered for 10.3% of the GDP in 2001<sup>2</sup> (Figure 1).

**Figure 1 – Macro-sector of Construction and Subsectors Share in the Brazilian GDP (2001)**



Source: NEIT/IE/UNICAMP, based on data from MDIC (2003).

The State plays multiple roles in fostering the building sector. Besides managing economic policies, it is a major consumer of buildings and also a fundamental agent for organizing the financing environment – especially in the housing segment. Moreover, it settles legal and bureaucratic issues concerning real property.

Financing is of special importance for the sector under analysis, which needs previously available resources to both **produce** works (supply) and **sell** them (demand) in great volumes and long terms. The determinant factors of demand for building are, in classical terms, income and the prevailing financing conditions.

It is important to point out that the construction industry – except for the segment that produces supplies – is different from the manufacturing and mining industries, owing to its low global integration. Technical, climate, and cultural standards distinguish the type of building in each region of the world, and often end by representing relevant natural barriers that separate some markets from the others.

<sup>2</sup> IBGE has recently reviewed the data that measure the importance of the construction industry in Brazil. After this change in the checking of National Accounts, the average share of the construction industry in the Brazilian GDP was reduced from 12.0% to 7.6% in the period 2000-2003 (Puga and Nascimento, 2007).

## **Characteristics and performance analysis of the Brazilian building sector**

The Brazilian construction industry is associated with high indexes of informality and low productivity – issues that are frequently interrelated.

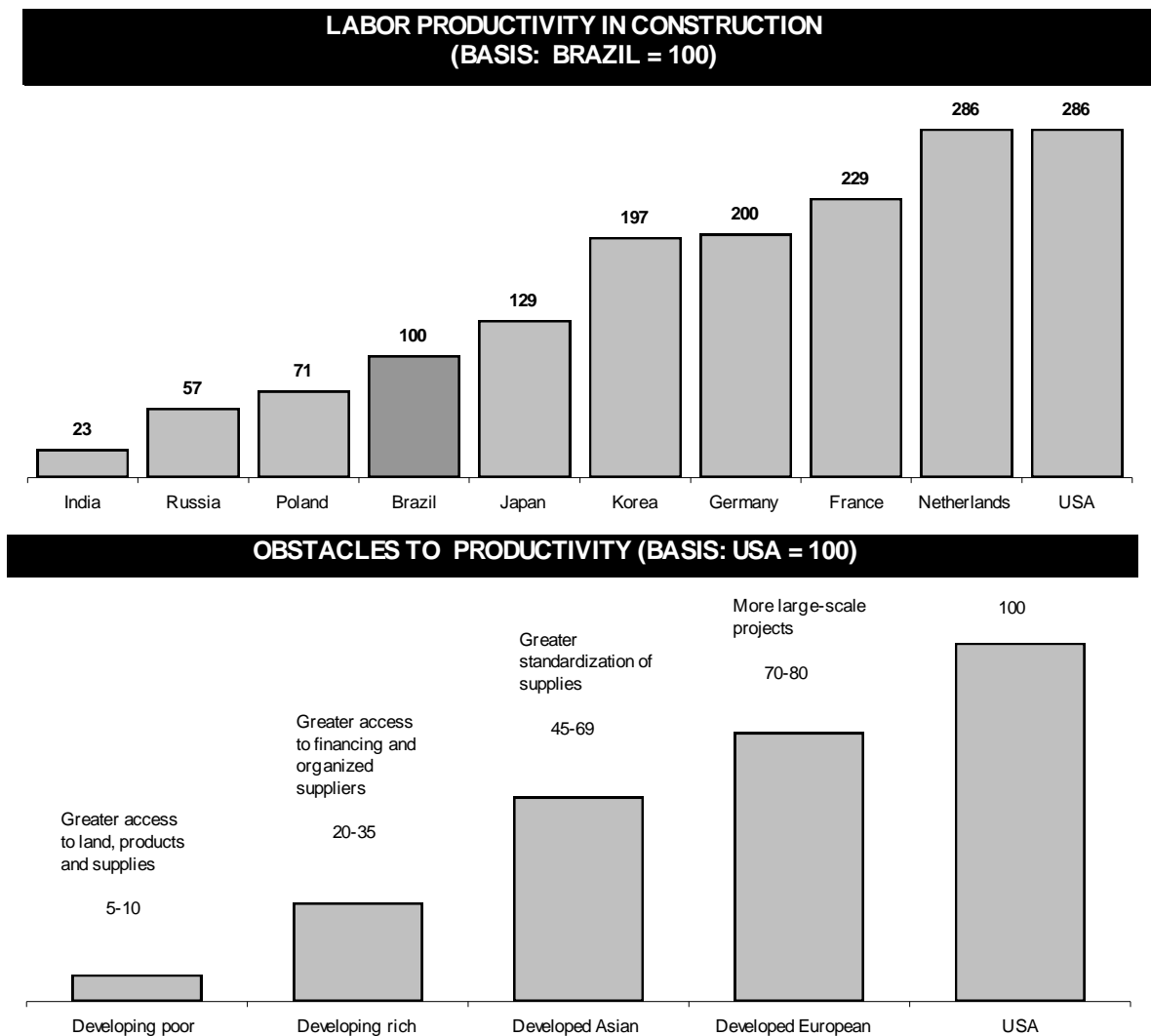
According to the National Household Sample Survey (PNAD/IBGE), out of the total of individuals working in the construction industry in 2006, 50.6% were employees, 42.0% were self-employed, 4.3% were employers, and the others were working for their own consumption or were unpaid. Out of the employees, 47.7% were registered. Considering that contracts with self-employed workers as mostly precarious, more than half of those employed in the construction industry are illegal workers.

Another measure of the size of the informal construction market – now more directly connected to the building sector – derives from the importance of self-management in housing production. In general, one associates this managing method with semi-artisanal production and low productivity. It is estimated that 64% of production in this sector were directed to the construction of “new buildings” and 36% to “alterations” between 2002 and 2004 (Consultoria A.T. Kearney, 2007). The alterations plus 66% of “new buildings” would have been produced according to this self-management system, and only 34% of “new buildings” were built by construction companies and developers. On the one hand, these numbers show strong informality in the sector and, on the other, a great market potential for the formal segment.

Data from PNAD suggest that periods of heated economic activity may be associated with an increase in formal labor relations in the sector – for instance, the proportion of registered employees in construction jumped from 44.2% in 2002 to 47.7% in 2006.

An international comparison shows that there is much room for improving the Brazilian average productivity indicator (Figure 2). The average productivity of the American worker in the segment of housing construction would be about 2.9 times higher than that of the Brazilian worker (Federação das Indústrias do Estado de São Paulo – FIESP, 2004). However, it is worth pointing out that, in the United States, the spreading of industrial construction systems is much wider, favoring productivity gains.

**Figure 2 – Productivity in the Construction Industry**



Source: McKinsey, according to Fiesp (2004).

The Ministry of Development, Industry and Commerce (MDIC, 2003) mentions some factors that, besides low productivity, make it difficult to sustain growth in the construction industry:

- serious problems regarding the quality of intermediate and final products in the production chain and high costs of alterations and after-sales maintenance;
- lack of encouragement for a more intensive use of industrialized components and services, due to high taxes and, consequently, high prices;
- lack of knowledge of consumer market needs for products;
- lack of technical qualification of production chain agents to manage production based on concepts and tools that include the new demands for quality, competitiveness, and costs;
- agents's inability to assess correctly market trends and future economic scenarios, and to identify new growth opportunities.



Other characteristics of the Brazilian building sector can be pointed out, such as the atomization and heterogeneity of its structure. According to CBIC (1999), the Brazilian building sector stands out for:

- the presence of companies of different size and expertise;
- the prevalence of small and medium companies;
- a great internal heterogeneity in both companies' size and technological and managerial qualification.

Bertasso (2008), analyzing data from the Annual Social Information Report (RAIS/MTE), confirmed that, within the scope of formally established companies, there was a downward trend in the number of small companies (up to four employees) between 2002 and 2005, and an increase in the number of medium and large companies (500 to 999 employees), ensuing a concentration movement.

However, the reality is still that of a strongly atomized sector. In 2005, 95% of companies had up to 50 employees. According to the Central Register of Companies (CCE/IBGE), in the "Buildings and Civil Engineering Works" sector, the 12 largest companies did not reach 7% of all labor employed in the sector.

In this context, it is interesting to analyze in more detail the performance of the building sector regarding the behavior of both demand and supply.

According to data from the Quarterly National Accounts, the Brazilian construction industry has shown particularly positive results as from 2006 – which has been pointed out as the beginning of a possible cycle of sustained growth (Bertasso, 2008).

Observing the demand issue more carefully, CBIC (1999) states that the building sector performance depends crucially of private demand, and the evolution of commercial, industrial, and residential construction is closely related to the prevalent financing conditions in the market. However, it is worth emphasizing that the public sector is also an important consumer of buildings for housing programs and public facilities (schools, hospitals, and town, state, and federal entities).

The Annual Survey of Construction Industry (PAIC/IBGE), the main source of economic and financial information for the whole of companies in the Brazilian construction industry, shows that, out of the total value of construction works and/or services performed by companies in the construction sector, 30% (average from 2002 to 2006) was due to the demand from public entities. Over this period, however, the public sector would have curbed its expenditure in 6.1% – which was compensated for an increase of 10.7% in private demand. This has guaranteed a growth of 5.2% in the total of buildings constructed by companies with 30 or more employees.

With regard to the type of work, for the group of companies with five or more employees, considering the average of the same period, 50% of value of works and/or services rendered were related to residential construction; 24% to buildings dedicated to the services sector – which could be roughly associated to "other non-residential buildings" and to "other building segments"; 16% to the industrial sector; and finally, 10% to commercial building. The growth of the value concerning each one of these segments varied significantly. The value of buildings dedicated to the services sector grew 31.2%, to the industry 22.0%, and to commerce 12.8%. The value of residential construction declined 10.8% and, given its weight, the general performance of the building sector grew only 3.1%. Perhaps the withdrawal of the public sector as a consumer of buildings was more deeply felt in the housing sector.

Considering the importance of financing for analyzing the building sector performance, the most recent data point to a vigorous growth in resources supply in conditions well-suited to the demanders's reality.

Financing for buildings production was rather favorable until the international crisis created by the American housing sector, which has been altering liquidity conditions since mid-2007. The public offering of construction industry companies<sup>3</sup>, as well as the use of instruments to fund fixed income in the stock market (especially debentures), has given a new financial breath to construction companies and their expansion projects. The international financial system itself was an important source of abundant and cheap credit.

On the side of demand and financing to commercialization, industry and commerce, at least among large companies, also had access to abundant resources. Nationally, besides counting on conventional bank credit, they have access to special financing lines in development agencies (BNDES, for example) and to stock market instruments. Funding in the international financing system was also part of options available to finance resources.

Institutional investors who own long-term resources and choose to invest them in real property have been a source of funds frequently the commercial segment has been using since the mid-nineties (Vasconcelos and Cândido Júnior, 1996).

The only category that was not responding to good internal and external liquidity conditions was that of financing for residential construction – which changed recently, giving new breath to the sector. Given these changes in the credit sector, recent news from construction business (Valor Setorial, 2008) shows that the target segment of large construction companies, in the next years, will be housing – especially that directed to the lower middle class, a segment that is extremely sensitive to the possibility of breaking down building costs over time, at moderate cost.

In general, when the housing issue is analyzed, one divides population into two groups – the “economic” and the “non-economic”, or that of “social interest”. The first is the one that joins families which can buy a housing unit, even having to finance it in the long run, at market conditions. The second refers to families that do not have enough income to buy real property, not even breaking down its cost over time, at market interest rates. Venturing in the segment of low-income housing means to expand the “economic” portion of consumers, exactly where a considerable stock of pent-up demand (housing deficit) is concentrated. Population strata previously considered “outside” market conditions (families with income ranging from five to ten minimum salaries) became the target of competing financial agents. The more the cost of a housing unit is broken down over time, the greater the chance low-income populations have to buy their “own house”.

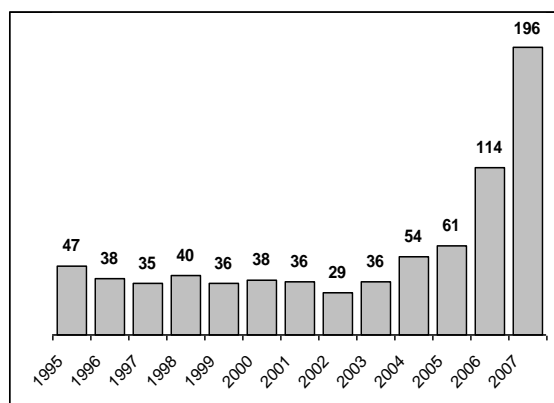
The main arrangement for financing housing in the country is the Housing Finance System (SFH), established during the reorganization of the Brazilian Finance System in 1964. In 1997, the Real Estate Finance System (SFI) was formalized – it is an alternative legal framework that established the securitization of mortgage credit (not only residential). The SFI has shown quite timid results – especially in the housing segment. The SFH restored its good performance in the last years, anchored to three movements: (1) employment and income growth; (2) real lowering of interest rates; and (3) expansion of legal security of contracts.

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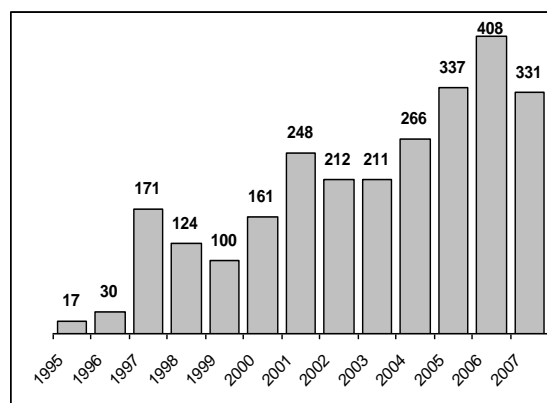
<sup>3</sup> There were 19 IPOs between 2006 and 2007 at Bovespa, which generated a volume of R\$ 11,2 billions for civil construction companies, with foreign capital holding a share of 69% (Valor Setorial, 2008).

There are two instruments for funding: the savings account, within the scope of the Brazilian System of Savings and Lending (SBPE), and the Severance Pay Indemnity Fund (FGTS) – a compulsory savings fund that allocate resources to finance housing, basic sanitation and urban infrastructure. Charts 1 and 2 show the number of housing units financed by different sources of funds from the SFH. The year 2004 marked the beginning of a vigorous growth in this system, representing 279,000 more units financed in 2007 – 160,000 by SBPE and 120,000 with funds from the FGTS. Although financing is not exclusively dedicated to construction, but also to real property commercialization in general, it shows a dynamism that certainly exerts direct impact on the construction of new units – data not entirely gathered by PAIC yet.

**Chart 1 – Units financed within the scope of the SBPE (in 1,000)**



**Chart 2 – Units financed within the scope of the FGTS (in 1,000)**



Source: NEIT/IE/UNICAMP, based on data from the CBIC database (CEF/DIRFI and Basic Statistics-SBPE-SFH/BACEN). Deflator: IPCA/IBGE.

It is worth stressing that the recovery of traditional sources of housing financing can also represent an extra source of funds for companies in the sector. In the eighties and nineties, as a consequence of the official system collapse, large construction companies organized their own arrangements to finance the commercialization of constructed units. Mafra (2006) states that construction companies, on playing the role of real property financier, reduced their productive capacity, since they started to manage return on investments that lasted longer than the cycle of producing buildings. With the viability of official sources of credit observed now, companies in this sector are free from this task, which can represent a source of additional funds.

On analyzing the construction industry and the building sector performance, on the side of supply, some points can be highlighted. First, net sales income declined, especially in the building sector (Table 1). The gross value of the construction industry production remained stagnated and that of the building sector grew little in the period. Second, thanks to cost control, the aggregate value increased both in construction and building.

Even being rather sensible to expect the announcement of better results for 2007 (which is expected for mid-2009), it is important to raise the possibility of underestimating the results presented by PAIC. According to the National Industrial Training Service (SENAI, 2005), the building sector share is larger than the added value of companies that declare building as their main line of business in the survey on the construction industry. Other companies, which do not declare building as their main activity, also provide works and services related to the building sector.

**Table 1 – Construction and Building: sales income, production value, costs and added value<sup>(1)</sup> (2002-2006) (R\$ millions – 2006)**

Year	Net Sales Income		Gross Production Value		Total of Costs and Expenditures		Added Value	
	Construction	Building	Construction	Building	Construction	Building	Construction	Building
2002	83,634	30,105	112,555	26,432	102,692	24,653	54,230	12,325
2003	69,740	23,751	95,392	23,016	86,610	22,095	48,309	10,237
2004	83,168	28,367	110,174	29,988	92,903	26,138	58,720	14,810
2005	73,238	24,788	105,222	26,417	85,261	22,280	57,134	13,522
2006	81,402	26,152	111,605	27,669	90,080	22,921	61,157	14,236
Δ 02-06 (%)	-2.7	-13.1	-0.8	4.7	-12.3	-7.0	12.8	15.5

(1) of companies with 30 or more employees.

Observation: Deflator: Sector index – SINAPI/IBGE.

Source: NEIT/IE/UNICAMP, based on data from PAIC/IBGE.

Third, job vacancies were created in the construction industry and in the building sector in similar proportions (Table 2). However, the wage bill of the building sector increased less than proportionally when compared to the construction industry, leading to a relative fall in average wages.

**Table 2 – Construction and Building: total of wages and average wages in companies<sup>(1)</sup> (2002-2006)**

Year	Employees			Total of wages (R\$ thousands - 2006)			Average Wages (R\$ thousands - 2006)	
	Building	Construction	%	Building	Construction	%	Building	Construction
2002	347,713	900,234	38.6	3,531,136	11,250,149	31.4	10,2	12,5
2003	334,110	911,973	36.6	3,402,596	11,214,202	30.3	10,2	12,3
2004	397,541	1,069,377	37.2	4,175,844	13,347,811	31.3	10,5	12,5
2005	376,985	968,249	38.9	3,720,696	11,628,251	32.0	9,9	12,0
2006	399,591	1,040,112	38.4	3,975,138	13,473,192	29.5	9,9	13,0
Δ total (%)	14.9	15.5		12.6	19.8		-2.0	3.7
Δ annual (%)	3.5	3.7		3.0	4.6		-0.5	0.9

(1) with 30 or more employees.

Observation: Deflator: IPCA.

Source: NEIT/IE/UNICAMP, based on data from PAIC/IBGE.

In 2007, the building sector created proportionally much less job vacancies than the construction industry as a whole, showing a poorer performance, even when compared to all formal activities in the country (Table 3). On the other hand, the average hiring wage in the building sector increased 10.3% in real terms in 2007, against an average increase of 6.5% in the construction industry (Table 4).

Several different subsectors of the construction industry have been complaining more and more about the lack of available human resources to follow its growth. The conjunction of employment growth with a more than proportional increase in hiring wages may have been reflecting this situation.

**Table 3 – Construction and Building: evolution in formal employment creation<sup>(1)</sup> (2006 and 2007)**

	Hired		Dismissed		Job Vacancies Creation		
	2006	2007	2006	2007	2006	2007	Δ (%)
Brazil	12,831,149	14,341,289	11,602,463	12,723,897	1,228,686	1,617,392	31.6
Construction	1,257,480	1,428,582	1,171,684	1,251,827	85,796	176,755	106.0
Buildings construction	614,012	673,953	565,111	612,570	48,901	61,383	25.5

(1) in all companies formally established.

Observation: Data aggregated according to version 2.0 of the National Classification of Economic Activities (CNAE).

Source: NEIT/IE/UNICAMP, based on data from CAGED/MTE.

**Table 4 – Construction and Building: evolution of wage bill and average wages – hiring and dismissal (2006 and 2007)**

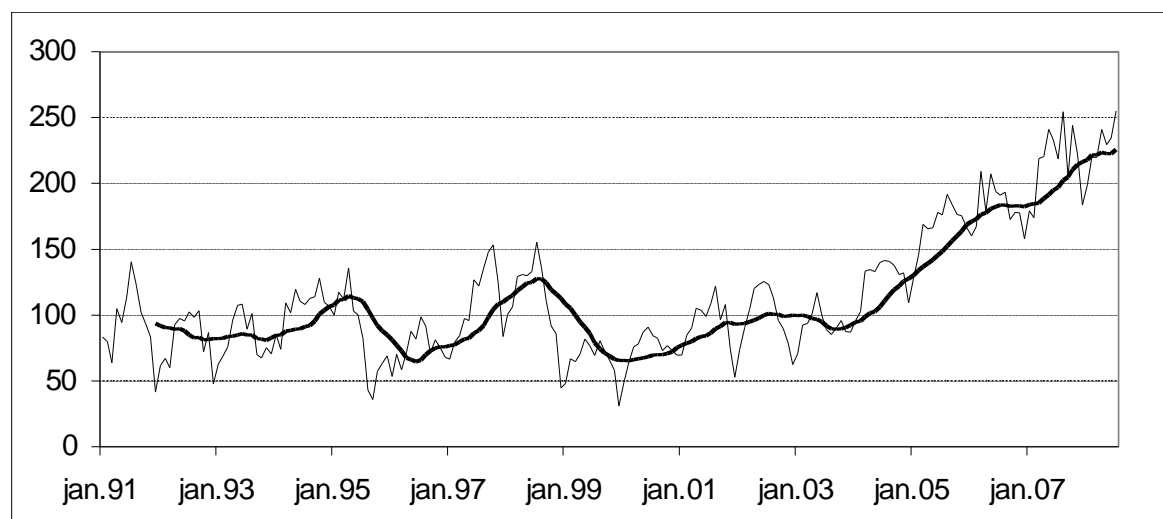
	Hiring wage bill (R\$ millions)		Dismissal wage bill (R\$ millions)		Average hiring wage (R\$)		Average dismissal wage (R\$)	
	2006	2007	2006	2007	2006	2007	2006	2007
Construction	817,90	989,54	831,63	920,07	650,43	692,67	709,77	734,98
Buildings construction	350,55	424,52	336,00	396,98	570,92	629,90	594,57	648,06

Source: NEIT/IE/UNICAMP, based on data from CAGED/MTE.

Observation: data of 2006 at 2007 prices. Deflator: IPCA.

Finally, there has been a virtuous growing movement in the physical production of capital goods for civil construction since 2004, which may be materializing in the modernization of the construction industry (Chart 3). According to CBIC (2007), growth in the production of machinery for construction in higher proportion than job vacancies creation is pointing to productivity gains. This, together with demand increases, encourages new investments, fuelling a virtuous cycle of expansion.

**Chart 3 – Evolution of Capital Goods Production for Civil Construction  
(index number – 2002:100)**



Source: NEIT/IE/UNICAMP, based on data from PIM-PF/IBGE.

## Main Competitive Challenges

The main risk for the current cycle of expansion in the building sector is a deeper or longer international crisis and the “monetary squeeze” adopted by the Brazilian Central Bank.

In the production field, the great challenge for civil construction in Brazil is its “industrialization” – the adoption of construction materials and methods to accelerate productivity gains and reduce losses. It would require changes not only in companies, but also in structural and systemic conditions.

Bertasso (2008) shows as a risk to the sector the great amount of resources immobilized by construction companies and developers when buying plots of land to build large works for the low-cost residential segment, in view of the increased cost of working capital and a possible demand deceleration. The business cycle of civil construction is long. It lasts 36 month on average, and the need for working capital in growing companies is great (Banco Fator, 2007). Therefore, it is necessary to develop alternative sources of credit to prevent costs from increasing in an environment of price competition in the final product.

The recent acquisition of Construtora Tenda, specialized in building housing units for low-income population, by Incorporadora Gafisa may be related to these movements. The former company's stock prices fell sharply after the announcement that sales of housing units slightly "above the expected for the market" had been cancelled. Without pondering over stock market idiosyncrasies, the fact is that that company faced serious difficulty to keep its traditional sources of financing after its stock prices dropped. Perhaps this situation will join the more cautious trend on the part of financial agents – making the day-to-day business in this sector a little more difficult.

On the other hand, if demand remains favorable, the sector will face equipment, material and labor shortage, and even shortage in the supply of suitable plots of land. A stagnation of about 25 years left as its legacy the cost of reduced supply of materials/equipment and qualified labor, so necessary for the development of an industrialized construction.

The Brazilian manufacturers of construction material are expanding their production capacity to meet the vigorous demand, but even so there is inflation in basic supplies and shortage of qualified labor, which will take time to solve (Valor Setorial, 2008). According to recent news, the Brazilian Association of the Industry of Construction Material is concerned with the level of installed capacity use (85%). A certain cost pressure in this sector is unavoidable. Will it be able to increase productivity and reduce waste to overcome this difficulty?

As for opportunities, they definitely derive from the continuity of economic growth. For the time being, industrial, commercial, and housing expansion, in the "new economic segment", may give breath to the sector. Estimates made in the bank market itself are that housing credit will surpass the current 3% and reach 10% of the GDP in 2015. Besides, it is possible to mention the reduction of the housing deficit in the "non-economic" segment – which will come at the core of more extensive urban (and rural) policies, and should be, when it happens, a lasting source of growth for the sector.

Tracking the path towards an answer for some of the stressed challenges, the Productive Development Policy (PDP, 2008), which proposes, in general, to guarantee the sustainability of the present cycle of expansion and the strengthening of competitiveness in important economic activities, has established rather ambitious goals for civil construction: productivity increase of 50% and reduction of losses in similar proportion until 2010. The objectives are to expand and modernize the civil construction sector to reduce housing deficit and the deficit of the market of infrastructure works.

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