

# Chapter 1

## Macroeconomic Uncertainty and the Brazilian Industry

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### I. Introduction

Uncertainty and vulnerability to volatile external factors are becoming major issues of the current discussion on development prospects of Latin American economy (ECLAC, 2002). In fact, vulnerability has been an old theme for the region since the “Manifesto” by Raul Prebisch (1962), although it has been discussed in different means in different context<sup>1</sup>. The case in point now is the volatility of international capital flow to emerging markets. While internationally concerted efforts are needed to control a fluctuation, each net debtor country’s active undertakings to build robustness should be highly beneficial.

Yet, it is still puzzling to workout reduce the vulnerability. Theories of aggregate investment alert that if we take an irreversibility of investment and imperfect competition into consideration, uncertainty should reduce investment (Caballero and Pindyck 1996). Because of irreversibility it is costly to undo an investment in bad times, then firms facing high degree of uncertainty discount cash flow obtainable from the project. For a good time, in turn, although the demand may expand for an industry as a whole, a firm under imperfect competition facing a downward sloping demand curve expects new entries truncating the demand for this firm. Thus, even a symmetric uncertainty will discourage investment.

Brazilian economy has experienced substantial change in the 1990s. Although the effective stabilization program finally ceased hyperinflation, the macroeconomic condition remained under high tension of vulnerability to external shocks. Moreover, the structural reform with deregulation and trade liberalization provoked substantial

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<sup>1</sup> As one might recall, the original discussion of the terms of trade deterioration led to import substituting industrialization, then claims for dependence on foreign intermediate goods as the cause of external imbalance provoked argument for advancing import substitution, and unhappy net resource transfer to abroad as a form of debt service justified the moratorium.

change in rules of the market and the restitution of new market order is still underway. This added further uncertainty in institutional aspect.

This paper analyzes the source and determinants of uncertainties of the current Brazilian economy. The next section concentrates on macroeconomic issues, followed by a section addressing the institutional changes. The final section concludes the discussion.

## II. Problems of macroeconomic uncertainties

### Background

Brazilian economy grew at annual average rate of 1.2% per capita in real term in the second half of the 20<sup>th</sup> century. As Table 1 details the growth performance during the fifty years, stark contrast can be made between the first 30 years of sustained high growth (1950-80) growing constantly 4.3% per year and the last 20 years where the economy registered practically zero growth (0.4% annually).

Table 1. Brazilian real GDP per capita growth during the second half of the 20th century

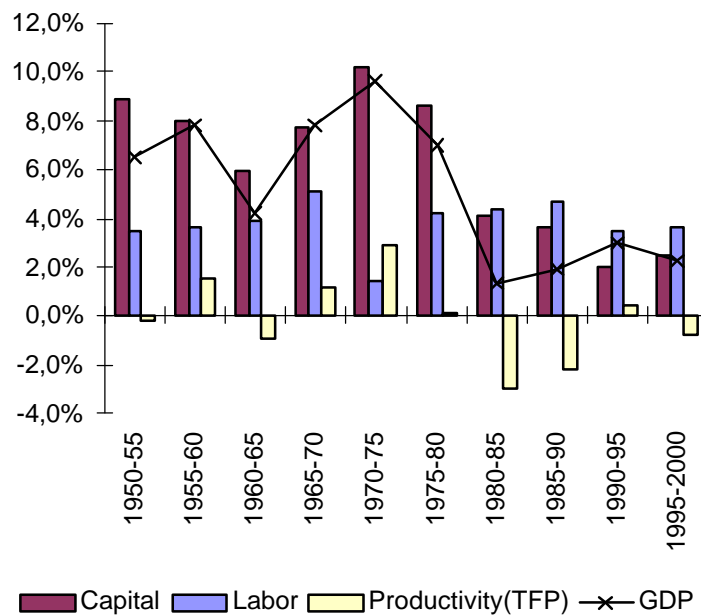
| <b>Period</b> | <b>Growth rate</b> | <b>Period</b> | <b>Growth rate</b> |
|---------------|--------------------|---------------|--------------------|
| 1950-55       | 3,6%               | 1975-80       | 4,1%               |
| 1955-60       | 4,8%               | 1980-85       | -0,8%              |
| 1960-65       | 1,3%               | 1985-90       | 0,1%               |
| 1965-70       | 5,0%               | 1990-95       | 1,5%               |
| 1970-75       | 7,0%               | 1995-2000     | 0,9%               |

(Source) IPEA Data (<http://www.ipeadata.gov.br>)

The growth accounting in Figure 1 reveals that the high growth period was driven by active resource mobilization, with particularly strong correlation of growth of GDP and capital input. Productivity growth was not very significant initially but started to be significant in early 1970s but dropped afterwards. Import substituting industrialization (ISI) was made relatively successfully with consumer-durable goods such as automobile and electronics, the heavy capital investment in the 1970s to proceed to the second phase of ISI, including technology based industries such as informatics and upstream products such as petrochemical, never obtained economically viable scale because of the economic crisis in the 1980s. This may partly explain the rise and fall of

the total factor productivity in Brazil. The figure also shows that in the low growth period of the 1990s the productivity growth made com-movement with GDP growth, although low capital growth was responsible for the low level of GDP growth. This fact provides an open question whether internal efficiency was improved by productive restructuring by firms, or it has to do with ownership change (M&A and privatization).

Figure 1. Factor decomposition of the growth of the Brazilian economy (1950-2000)



(Note) Total Factor Productivity (TFP) is by author's own calculation based on the assumption of the Cobb-Douglas production function with the labor income ratio of 0.4 and annual depreciation of 0.6. Labor service was calculated multiplying the number of employed workers with estimated average years of schooling.

(Source) IPEADATA for capital stock and real GDP. Summers, Heston, and Atten, Penn World Table Mark 6.1 at <<http://pwt.econ.upenn.edu/>> for number of workers and Human Capital Updated Files <<http://www.cid.harvard.edu/ciddata/ciddata.html>> for the average year of schooling.

In the high growth period, Brazil implemented extensive import substituting industrialization program. The sizable domestic market was protected from competition with foreign products. The developmental state style government constructed huge resource mobilization apparatus such as: state enterprises (CSN – National Steel Company, Embraer – Brazil Aeronautic Enterprise), natural resource monopoly (Petrobras, CVRD), public utility holding companies (Telebras <telecommunication>

and Eletrobras <electric power>), development bank (BNDES-National Bank for Economic and Social Development), and commercial banks (Banco do Brasil, Caixa Economica Federal, and local state banks). Moreover, balanced national integration was pursued through the construction of Brasilia and development projects of the regional development agency (SUDENE, SUDAM).

Although limited internal saving capacity could have been a bottleneck for such ambitious investment projects, the confidence level of the growth potential of the Brazilian economy was so high that it attracted abundant investment and finance from abroad. There was thus mutually reinforcing relationship between favorable external evaluation and high degree of autonomy of the development policy.

On the contrary, the unsatisfactory performance in last two decades can be characterized by a vicious circle of a loss of confidence imposing more and more tight external constraint and a loss of the autonomy. After the Mexican balance of payment crisis in 1982, access to foreign savings was largely denied during the 1980s until the mid-1990s. The weak capability to comply with external obligations led Brazil to look for rescue packages from the International Monetary Fund several times. In the 1980s, the government was unable to conduct autonomous structural reform fitting to the new reality, although it was apparent that the overweight public sector was not sustainable due to the hard fiscal constraint. The reluctance left Brazilians no other choice than inflationary financing (budget deficit with money printing), leading to hyperinflation despite of some ad-hoc attempts of price controls.

This new situation brought tremendous uncertainties to Brazilian economy. Inflation destroyed relative price structure among goods and services and distorted the resource distribution. Exchange rate had to be adjusted daily basis and it was hard to predict even a near future.

On the other hand, the government's maintenance of market protection policy let domestic industries remain under little threat of external competition. This allowed firms to take defensive strategy of avoiding investment and longer utilization of capital goods, cost reduction by smaller variety and higher scale production, and high mark-up pricing.

The reform plan of the Collor administration in 1990, including "elimination of fiscal deficits", "trade liberalization" and "privatization", was new for Brazil at that time. The list of import prohibition was eliminated and the import tariff was reduced. The

National Privatization Plan (PND) predicted comprehensive transfer of ownership of government owned productive assets such as steel mills, petrochemical complex, and aircraft industry to the private sector. Although the administration's inflation stabilization program including confiscation of bank deposit and freezing of price and wage was complete failure, and the president was impeached in 1992 for his involvement in illegal drug money operation, their structural reform idea had lasting effect which was later inherited by the Cardoso administration. The climate of uncertainties increased because of even intensified inflation and the liberalization and the privatization were changing the market condition and it was hard to predict how will be and should its ultimate shape.

The FHC era was initiated with recovery of growth in 1995 induced by successful implementation of the stabilization policy – Real Plan which brought the annual four digit hyperinflation to one digit by means of quasi-fixed nominal exchange rate as an anchor of the monetary policy. A direct effect was the surge of domestic demand because of the real income growth due to the end of inflationary tax and recovery of faith in local currency. Thanks to the price stabilization, external finance returned to Brazil. The access to foreign saving was important to maintain the quasi-fixed exchange rate without losing the foreign exchange reserve while the current account was in sizable deficit because of the surge of import.

The external saving dependent stabilization was proved to be vulnerable to external shocks. By the nature of the exchange rate control, deterioration of the balance of payments should be defended by raising the interest rate to stop the capital outflow and to curb the import growth. For this end, interest rate was shot up several times above 40%, especially during the turmoil of the global emerging market financial crisis in 1997-99. As seen in Figure 2, the loss of foreign reserve triggered interest rate hikes. This kind of policy response failed to restore the external imbalance in the late 1998 and the Real Plan had to be abandoned, paving the way to the floating exchange regime.

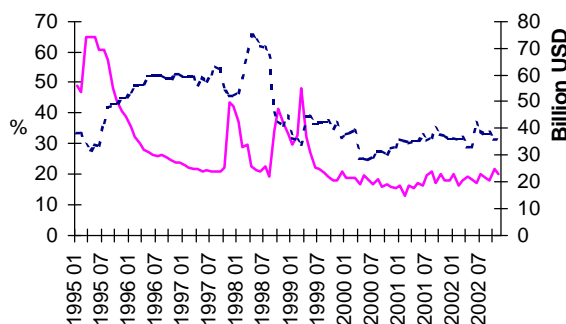
At that systemic change, a resurgence of inflation was much afraid of. Yet, the Central Bank successfully contained the inflationary pressure by establishing inflation targeting as a new monetary policy rule, and the Ministry of Finance perfectly combined forces by tight fiscal policy to generate sufficient primary budget surplus. Brazil muddled through the crisis of 1999 and there was a sign of strong recovery with investment and employment growth in late 2000.

Table 2. Recent Economic Growth

|      | Growth rate (%) |
|------|-----------------|
| 1995 | 2.8             |
| 1996 | 1.2             |
| 1997 | 1.9             |
| 1998 | -1.2            |
| 1999 | -0.5            |
| 2000 | 3.0             |
| 2001 | 0.2             |
| 2002 | 0.2             |

(Source) IPEA data.

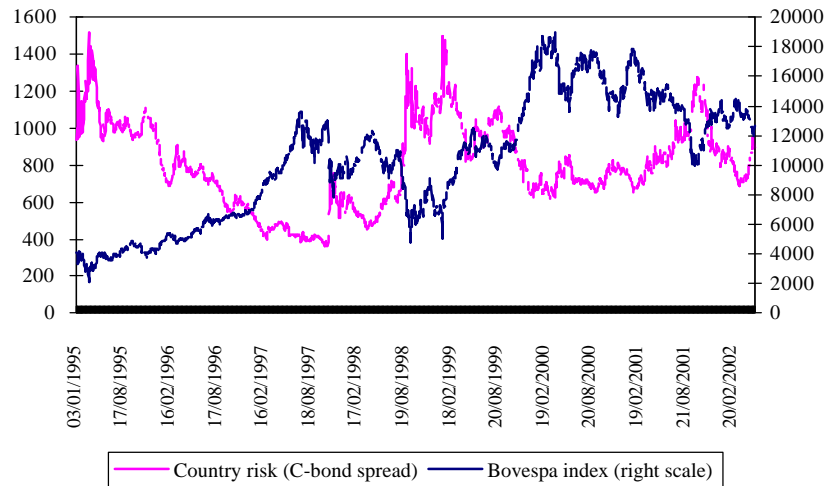
Figure 2. Instability of interest rate



However, the economic recovery plunged as the economic environment returned unfavorable with the countrywide serious electric power shortage for almost a year in 2001 and political uncertainty in the expectation of opposition party's winning the presidential election in 2002 and predicted substantial change in economic policy. Net foreign capital inflow fluctuates quite sensitively to outsiders' evaluation of country risks, which then has an effect on the country's economic stability. Thus, although Brazil's macroeconomic confidence rose by the virtue of inflation stabilization, the country still has not got rid of vulnerability to external factors. Notice that, in contrast to the previous hyperinflation period in which the government was virtually bankrupt and inflation accommodative monetary policy was taken, during the post-1999 crisis period inflation rate has been kept under control and the Brazilian government was truly committed to the compliance of the fiscal and monetary policy target agreed with the International Monetary Fund and its economic fundamentals were considered sound. Still, as Figure 3 shows, country risk premium (represented by the spread of C-bond, the most traded Brazilian external bond) makes up down swings, which, in turn caused great fluctuation to the capital inflow and contracted the level of liquidity in the domestic financial market, as partly evidenced by the opposite movement of the Sao Paulo Stock Market (BOVESPA) index. The real sector performance is also strongly influenced by such unstable financial indexes (Figure 4).

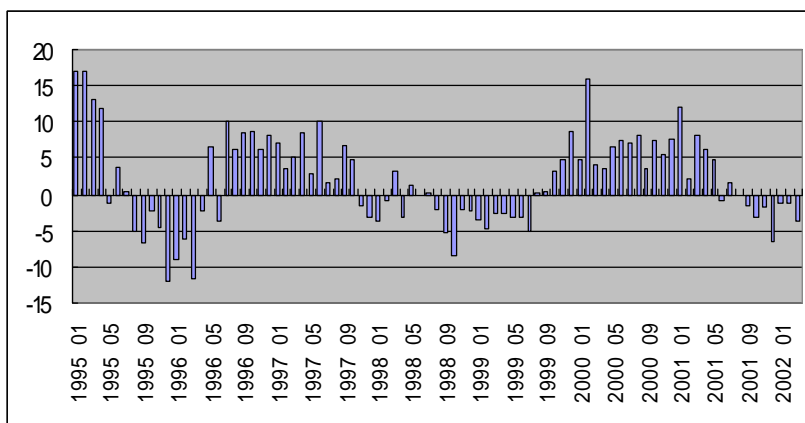
So, Brazil is doing their best to keep its house in order: then, who should be blamed and what can be done? In the next section, we will pay attention to the perverse logic of current macroeconomic policy.

**Figure 3. Country risk and stock market index**



(Source) IPEADATA

**Figure 4. Industrial production index growth rate ( 12 months, % )**



Source of Vulnerability

According to the research done by ECLAC (2002), external vulnerability of Latin American economy has been strengthened during the 1990s. It is particularly noted that: (1) availability of domestic credit is strongly influenced by influx of external financing which fluctuate depending on the external factors than internal ones; and (2) fiscal policy behaved in a pro-cyclical way such that in a low growth phase

governments reduce fiscal expenditure to avoid the government debt / GDP ratio to rise. The latter question amplifies vulnerability due to inability to implement anti-cyclical macroeconomic policies to mitigate an impact of the external shocks.

The success of the Real Plan, ironically, revealed that the public finance of Brazil had depended much on inflationary tax and substantial reform was required to establish sustainable balanced account. The fall of primary fiscal surplus in 1994-98 was alarming. In this initial period of the FHC era, although some adjustments were done<sup>2</sup>, they were not enough to save the primary balance from turning into deficit in 1996-98. The situation was particularly worrisome in local government. Besides, Figure 5 shows that public debt service burden almost doubled as a proportion to GDP in 1997-98 due to the sharp rise of interest rate, leading to the sharp rise of the public debt to GDP ratio as seen in Figure 6. Thus, it was noticeable that the interest rate rise responding to external shocks was translated into public deficit which should be financed by additional issuance of debt. Notice that these are domestic bond (Figure 7) assumed by local financial institutions.

Obviously, increasing debt-GDP ratio was not sustainable and the Brazilian government had to face two major policy reforms. One is to abandon the nominal exchange rate anchor in order to avoid the galloping interest rate to defend the exchange rate and international reserve. At the same time, the government implemented bold structural reforms. Most notably the government passed a constitutional amendment in 1998 to reform the social security system and the Law of Fiscal Responsibility in 2000 ruled at three administrative level (federal-state-municipal) compulsory commitment to fiscal goals, setting limits to personnel expenditure and debt contract. These measures boosted the cash generating capacity with the return to the primary surplus.

After the floating of the exchange rate, the domestic financial institutions demand that their yield would be linked to exchange rate to neutralize the exchange rate risk to which they are exposed in external funding. The proportion of the public debt indexed to exchange rate has been increased considerably. Any substantial depreciation of the real affects fiscal account through increase of interest payment and increases the necessity of the borrowing. Any external shock leading to depreciation of the real should be concerned for two reasons: inflationary pressure and rising debt/GDP ratio.

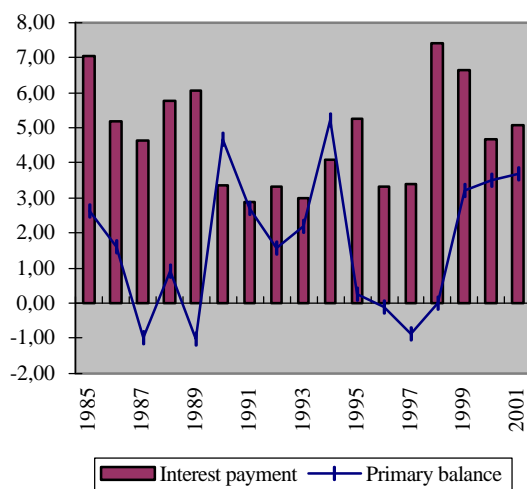
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<sup>2</sup> There were initiatives such as collection of new tax (i.e. CPMF- Provisionary Financial Transaction Tax) and introduction of FEF-Fiscal Stability Fund to retain a part of the transfer to local government in the central government treasury, in addition to privatization of several public enterprises.

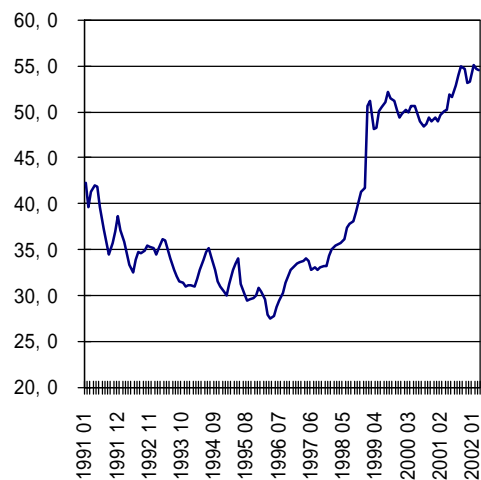


This gives the central bank a motive for raising interest rate, which, yet adds undesirable pressure to debt/GDP ratio. Since higher indebtedness raise sensitiveness of foreign creditors, the government is induced to announce tighter fiscal policy to boost the debt payment capacity. The pro-cyclicality of macroeconomic policy is thus institutionalized, as ECLAC (2002) points out, limiting autonomous reaction to external shocks.

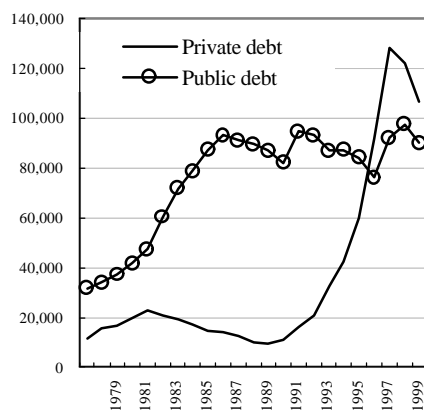
**Figure 5 Fiscal balance and interest payment (% GDP)**



**Figure 6. Evolution of the public debt (% GDP)**



**Figure 7 Evolution of external debt by holders**



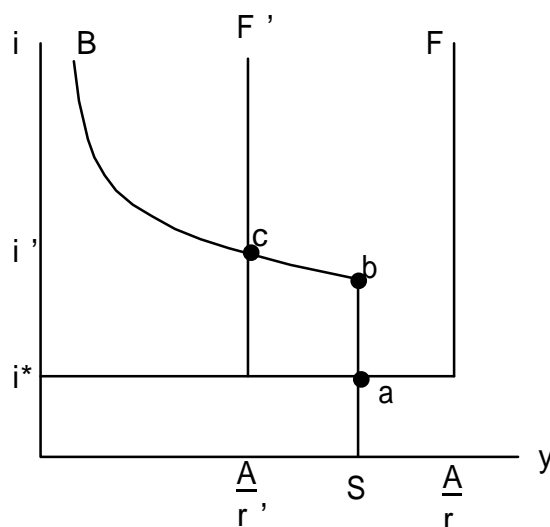
Vulnerability to external shocks

These arguments point to the basic problem of the current Brazilian economy. Let us illustrate with a model depicted as Figure 8, which is a modified interpretation of Caballero (2000). We take the following minimalist approach to attribute the vulnerability of an economy on two factors. One is weak international financial links that constrain access to external financing especially when it is needed. The other is limited role of the domestic financial market whose credit creation policy is so conservative.

Departing from the original Caballero (2000) model, we consider that the final credit taker is a government who needs liquidity to finance the current deficit by pledging the future fiscal surplus ( $S$ ) based on its sovereign credibility. We assume that the government will not borrow from the foreign creditors directly and only finance through the domestic financial market. Although the government can be loaned directly in reality, this assumption is plausible in light of Figure 8 which demonstrates that the private external debt rose sharply while the public sector external debt stagnated in the 1990s.

Consider that foreign creditors depicted by F-curve lend money to the banking sector of this country at the international interest rate  $i^*$  up to its asset value  $A/r$ , where  $A$  is the nominal value of the asset and  $r$  represents a country risk. The graph also expresses that since the international financial link is so weak that the foreign creditors will not supply credit more than  $A/r$ , which is regarded as the ultimate collateral.

Figure 8 External finance constrained crisis model



The domestic banking sector, in turn, lends this money to the government which has the financing requirement  $S$ . No further financial demand exist beyond this amount, therefore the B-curve is vertical at this point. Banks require interest rate premium upon  $i^*$  as the reward for the financial intermediation. We assume that the higher the predicted default risk, the higher the premium would be, and the smaller the amount of the future budget surplus that the government can pledge and accepted by the banks. Therefore, the B-curve slopes downward.

In a normal situation where the country is sufficiently creditworthy,  $A/r > S$ , therefore there is enough external finance at point  $a$  with  $i^*$ , satisfying the government's financial need  $S$  at the interest rate margin corresponding to the distance between  $b$  and  $a$ . Suppose, then, that, for whatever the reason<sup>3</sup>, the country risk of this country rise, becoming  $A/r' < S$  and shifting F-curve left-ward to  $F'$ . If the domestic banks would believe that the external shock would not affect the government's promise to comply with the future surplus creation of  $S$ , they would create additional credit to maintain point  $b$ . However, conservative domestic banks will reduce the finance to the government in accordance to the availability of the external credit and require higher risk premium at point  $c$ . The government, in turn, cannot fully finance  $S$  and should curtail a current fiscal expenditure, which may negatively affect economic growth.

This simple model represents a perverse situation of the Brazilian economy. Due to the fiscal fragility with dependence on the external financing, coupled with the conservative decision of the domestic financial sector, the impact of the external shock is directly translated to the domestic interest rate. Moreover, contrarily to the standard macroeconomic theory, the fiscal policy should become pro-cyclical because the government should take restrictive fiscal policy against the negative external shock. Thus, the country's inability to take counter-cyclical macroeconomic policy will make it highly vulnerable to external shocks.

Our result resembles to Razin and Sadka's (2002) assertion on strong influence of external factors on Brazilian economy. They assume that an economic growth depends on the growth of investment which is basically financed by external borrowing. The model results in two equilibriums: a good equilibrium with low risk premium, higher investment and higher growth and bad equilibrium with high risk premium, low

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<sup>3</sup> A reader can imagine the situation when the Brazil faced contagious effect from financial crises in Russia (1998) and Argentina (2001), or when the pre-election political uncertainty in 2002.

investment and doomed economic growth. The authors argues that the switch from good to bad equilibrium may occur abruptly because the investment level critically depends on the pro-cyclical formation of external rating of country risk. The gloomy fate of this story is no matter how well the government and the central bank get the economic fundamentals right, the crisis may come if external evaluators cannot believe and there is nothing that policy makers can do against that.

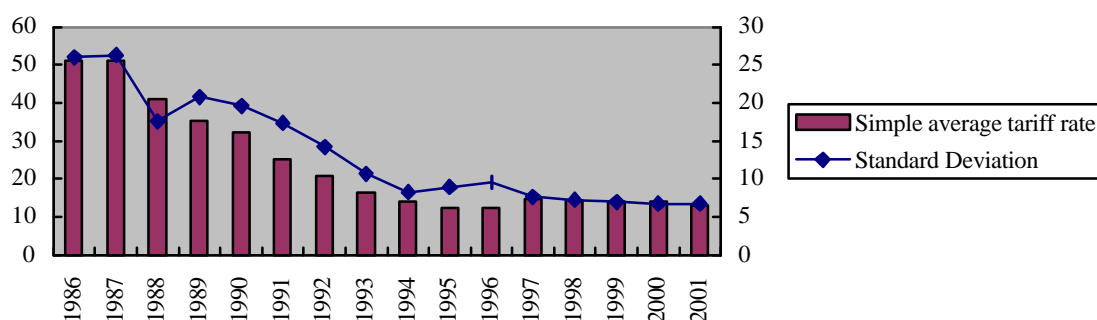
Notice that occurrence of this problem depends crucially on the assumptions of the weak link with the international finance and the conservative domestic banks which will not create credit beyond the availability of external funding. If these conditions are relaxed, then we will have positively smoothly sloping F-curve for  $y > A/r$  and vertical B-line on the pledged future surplus level  $S$ . This means that foreign creditors' provision of finance will not be constrained to the level of the country's current convertible asset. For this, there is strong need for structural measures to restore policy autonomy. It is true that the restoration of policy autonomy and attaining the foreign creditors' confidence cannot be done immediately. As pointed out by Garcia (2002), an important transitory measure is to increase "exportability" of the economy, which stands for about 14% of GDP although it has picked up from 8% in 1997. This can be interpreted as the leftward shift of the F-curve of Figure 8, making the psychological border  $A/r$  less probable to bind in the event of small shocks. As for the domestic financial market is concerned, reform should include maintenance of debt to GDP ratio at manageable level, increase domestic savings, and promote domestic financial intermediation by removing systemic obstacles such as tax system increasing the cost of financial transaction.

### III. Institutional changes and structural uncertainties

This section analyzes instability of the current Brazilian economy from different angle. The argument here is that the structural reform implanted in early 1990s by the Collor administration and deepened by the Cardoso administration has changed the rule of the game of the industrial sector, and firms by and large adapted defensive strategy during the transitional period.

#### Trade liberalization

Figure 9 Tariff reduction: 1986-2001



(Source) WTO, Brazil Trade Policy Review Secretary Report 1996 and 2000, Geneva and for 1997-2001 figures ALCA net

The process of trade liberalization was already launched in the late 1980s. According to Figure 9, the average import tariff was reduced from 51% in 1987 to 41% in 1988 and 36% in 1989. It was further deepened in the beginning of the 1990s under the Fernando Collor Administration by which the average tariff was brought down below 20%, coupled with abolishment of the import prohibition of 1,300 items listed in the Annex C of the Tariff Code. Tariff structure was also simplified as being shown by the decrease of standard deviation, implying reduction of the maximum tariff.

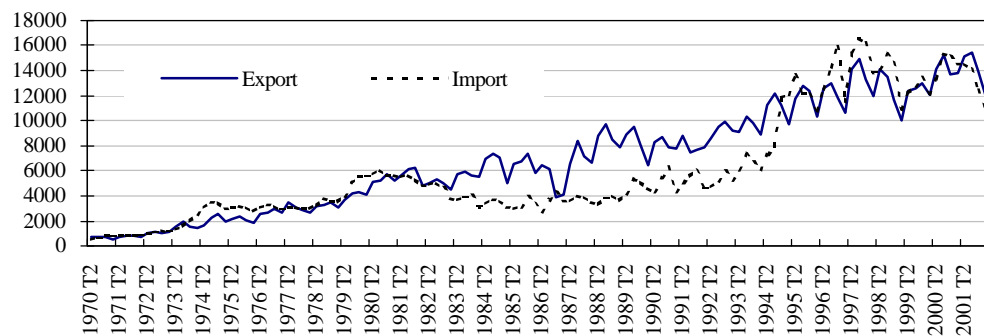
Brazil adopted Mercosur common external tariff (CET) in 1995. Initially, four categories of goods were excluded from immediate adherence to CET: sugar, automobile and its parts, capital goods, and informatics and telecommunication equipment. For the latter two, gradual conversion to CET, by 2001 for capital goods and 2006 for informatics and telecommunication equipment, was initially scheduled. Sugar and automobile are administered under special regimes leaving room for future negotiations.

As being hit by several emerging market financial crises, Mercosur countries agreed to levy 3% points of surcharge on most of items, increasing the average tariff from 12.6% in 1996 to 14.7% in 1997. Although the surcharge was originally planned to go off by the end of 2000, it is still partly maintained after being slashed 1.5% point by 2002. This makes the average tariff rate in recent years is higher than the 1995-96 level, yet the standard deviation continued to decrease owing to the reduction of tariff

on capital goods as the consequence of its conversion to CET (14%) and further reduction to 5% in 2001 for those which are not manufactured in Brazil.

Impact of the tariff reduction was rather dramatic. According the Figure 10, imports had been contained through high tariff and undervalued exchange rate since the occurrence of the balance of payment crisis in early 1980s, mainly to generate the capacity to repay external debt. The Real Plan introduced in 1994 brought strong local currency whose income effect coupled with the lowest tariff level in many decades boosted imports and created sizable amount of trade deficit. The level of imports was more or less equalized after the exchange rate was floated.

**Figure 10 Exports and Imports**



(Source) IPEADATA

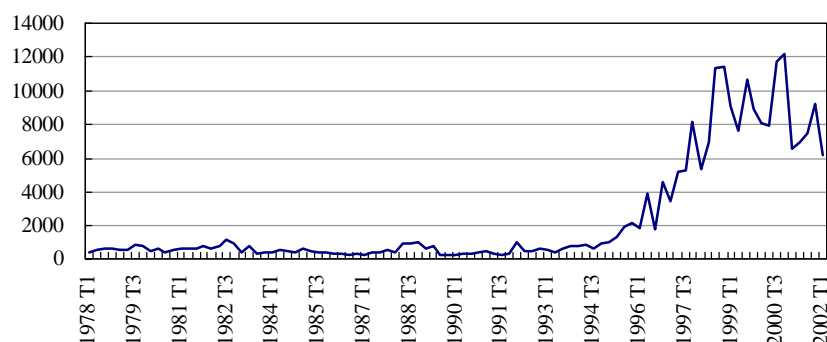
### Deregulation and internationalization of ownership

Another important aspect of the institutional changes during the FHC era was a deregulation. Most importantly, many public enterprises were privatized and investment opportunities were open to foreign capital. Likewise the trade liberalization, privatization was put into practice under the Collor administration by launching the National Privatization Plan (Plano Nacional de Desestatizacao: PND) in 1990. Cardoso administration amended the constitution to eliminate differentiation between national and foreign capital and opened formerly closed sectors such as distribution of gas, mineral exploration and extraction (including hydrocarbons), maritime coast liner and river and lake transport, telecommunication services, financial services, and reinsurance operations. Then the original PND was reformed with the approval of the Law No. 9491 of 1997 to add these sectors. As a related legal reform the Concession Law (Law

No. 8987 of 1995) institutionalize a general rule of the provision of concession of public service, complemented by the Law No. 9074 of 1995 for the electric power and Law No. 9295 of 1996 for a mobile telephone, and Law No. 9472 of 1997 (General Law of Telecommunication) for fixed telephone service. As for the banking sector, many banks were in deficit after the loss of the float revenue by the end of high inflation. The central bank had to make intervention to badly managed banks to consolidate the soundness of the financial system. These bad banks were recapitalized and cleaned the balance sheets, and then merged with, and acquired by other healthier banks. Such operation were initiated for private banks by PROER and then extended to state owned banks by PROES. In this process, foreign banks played major role as acquires.

Table 3 illustrates this profound ownership structure change. Among the large industries listed in the Gazeta Mercantil's Balanco Annual, the share of the government decreased from 52.4% to 33.8% in capital in equity and from 48.7% to 22.9% in net operational revenue in ten years between 1990-2000. On the other hand, both foreign companies and private national companies increased their share, while the increase was much more remarkable for the foreign companies.

**Figure 11 Net Foreign Direct Investment Inflow**



**Table 3 Shares of state, foreign capital and national private**

|         | Shareholders' equity |      | Net operational revenue |      |
|---------|----------------------|------|-------------------------|------|
|         | 1990                 | 2000 | 1990                    | 2000 |
| State   | 52.4                 | 33.8 | 48.7                    | 22.9 |
| Foreign | 8.5                  | 21.0 | 10.1                    | 27.9 |
| Private | 39.1                 | 45.2 | 41.2                    | 49.2 |

(Source) Gazeta Mercantil, Balanco Annual.

De Paula, Ferraz, and Iooty (2002) explains that under the trade liberalization and increasing presence of multinationals in the domestic market, Brazilian enterprises found themselves under-capitalized and lacking the technology necessary to maintain local market share and enter international markets. Then the financial fragility forced a large number of firms either to seek new partners or to sell-off assets to new entrants. Thus, in the last decade the Brazilian industry witnessed major ownership change

Kupfer and Rocha (2002) showed that the participation of multinational firms increased in every sector. It does not necessarily mean, however that the Brazilian market was captured by foreign companies and it became less competitive. On the contrary, Kupfer and Rocha (2002) showed that as the result of the break down of the state monopoly in several sectors and survival of local companies through defensive specialization strategy, the intensity of market competition actually has increased. In some sectors national private enterprises achieved notable growth through acquisitions.

#### Diversified reactions

It is still an open question whether this ownership structure change has led to expansion of productive capacity and improvement of technology at each industry level. Although it requires careful and in depth analyses, Ferraz, Iooty, and Kupfer (2003) analyzed the recent trend of investment and reached the following conclusion. There were some capacity expansion investment but specialization to limited type of production and market consolidation through M&A was widely seen. In general, interest in innovation has been low, with just one third of firms investing in any kind of innovative activities. Larger firms were more likely to innovate. Some sector specific characteristics were observed:

<Durable consumer goods> In automobile and parts, investment in capacity expansion and modernization of existing capacity of automobile assembly makers and consolidation in autoparts firms through M&A. In electronics, capacity expanded toward 1996, then most recently the sector concentrates in specialization and consolidation. M&A occurred and promoted concentration in home electrical appliances.

<Capital goods> Generally weakened competitiveness after the market liberalization. Telecommunication equipment industry expanded after the



deregulation of the telecommunication sector. Some multinationals entered the market through M&A which now has dominant position. Other industrial equipment industry did not invest.

<Intermediate goods> In both steel industry and petrochemical industry, privatization marked a process of asset ownership restructuring, which is not concluded yet and larger scale of consolidation is expected. Some investments were made for production of more noble line of products.

<Non-durable consumer goods> Footwear industry, export-oriented, made a scrap-and-build investment shifting production base to low wage area to gain competitiveness and maintained the production level. Such cost-effectiveness strategy was common to some extent for textile, but the latter lost production capacity due to the lack of competitiveness having obsolete technology.

In order to follow this characterization numerically, we constructed Table 5 and 6 from firm accounting data published in Gazeta Mercantil's *Balanço Anual*. Unlike Ferraz, Iooty, and Kupfer (2003), our data is not restricted to the manufacturing. Table 4 reports the evolution of total asset during 1994-2001. Based on this data we calculated increments of the total asset in two periods, 1994-98 and 1999-2001, corresponding to periods of controlled exchange rate and the floating regime. The total increments during the whole years are divided by the initial position in 1994 and the sectors are sorted by this index to identify the ranking of investment performance. Table 5 was thus created. Table 6 shows the evolution of profitability (net profit to equity ratio).

Table 5 identifies that home electric appliances, telecommunication, food, retail and petroleum & gas are most highly ranked sectors in investment performance in the 1990s. Among these, telecommunication and petroleum & gas are noticeable in terms of the volume of increments in asset. The high performance of the two sectors was a result of deregulation. Privatization of fixed telephone and mobile phone service formerly owned by Telebras, as well as the auction of the concession of so-called mirror providers (competitors in each privatized service area) were implemented in 1998. Petrobras has not been privatized but its monopoly over petroleum and natural gas was opened to competition. This resulted in not only new entrants' investment in petroleum exploration and distribution of fuels but also conveyed Petrobras itself to more aggressive finance and investment strategy. Home electric appliance industry, food

industry, and retail service were marked by significant number of acquisition of local brands by foreign firms enlarging market share in the Brazilian market.

Among the middle-high investment performance sectors with the index above the average, holding companies and banks were also driven by M&A including foreign investment<sup>4</sup>. It should be noted that the recent M&A wave gave rise to many holding companies controlling horizontal conglomerates, such as the case of AmBev resulted from the merger of Brahma and Antarctica.

In the following groups, the lower performance of the electric power sector noticeable, especially when it is compared with the telecommunication sector that also experienced privatization. It is commonly said that the privatization of the electric power did not contribute to investment increase<sup>5</sup>.

It should be also noted that, according to our indicators, technology intensive sectors such as informatics & information technology, electronics, and automobile were comparatively lower profile in invest performance. Consumer non-durables were differentiated between food and leather & shoes (high), beverage & tobacco (middle), and textile and furniture (low).

From Table 6, the following relevant observations can be drawn with regard to profitability:

- (1) Among the high investment performance group, bank, leather & shoes, petroleum, and pharmaceuticals continuously show high profitability<sup>6</sup>. Retail service and home electric appliance, and telecommunication apparently suffered a negative impact of low economic growth in the post-devaluation period.
- (2) Although not being outstanding in the investment performance, sanitary products, beverage & tobacco, mining, and non-metallic mineral products showed high profitability throughout the recent years.
- (3) Electronics and informatics & IT were influenced by the downturn of the telecommunication sector as being the main client. Electric

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<sup>4</sup> Another notable feature in this group is the quite contrasting performance of the construction industry before and after the exchange rate system change.

<sup>5</sup> This problem is analyzed by Hamaguchi (2002).

<sup>6</sup> Banks' negative profit in 1996 was influenced by a large loss of Banco do Brasil in that year. If we consider only private (national & foreign) banks, the profitability was 0.157.

equipment picked up in 2000-01 owing to the temporary surge of demand for power generation and energy saving equipment after the power shortage in 2000.

- (4) Profitability of automobile<sup>7</sup> (including other transport equipment such as air craft) and paper & cellulose, and metal is recovering after the devaluation, partly due to higher exportability.
- (5) Low profitability coincides with low investment performance in such sectors as agribusiness related ones (agriculture and livestock, sugar and alcohol), plastic & rubber, and wood & furniture.

To summarize, we could confirm the argument by Ferraz, Iooty, and Kupfer (2003) regarding the discordance of the investment trend by sectors. Thus, it cannot be said that the macroeconomic uncertainty covering the whole economy affect all sectors uniformly. It is therefore important to take into consideration impact of institutional changes that may overwhelm the macroeconomic effect. Deregulation of unfulfilled demand and unexplored resource, such as the case of telecommunication (the former case) and petroleum & gas (the latter case) is certainly investment enhancing, although macroeconomic effect is becoming increasingly dominant in the case of telecommunication in the recent scenario. Otherwise, as the leather and shoe industry demonstrates, high degree of export orientation makes the sector rather prone to economic fluctuation in the domestic market. Having these exceptional cases, combination of macroeconomic and institutional uncertainties is conducive to defensive concentration. Consider that an expected shock is symmetric; i.e. fluctuation is expected but there are equal chances of good times and bad times in the future. In this case, by eliminating competition a dominant firm can capture the expanded market taking advantage of scale economy to deter entry of new competitors. In the bad times, the firm can avoid a war of price reduction and assure a profit. The interpretation leads us to understand the recent M&A boom in Brazil not as aiming at short-term monopolistic rent or as means to earn capital gains, but as a long-term strategy to cope with uncertainties of the economy. Whether the productive capacity expands still depends on the macroeconomic prospects but the institutional changes have promoted

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<sup>7</sup> The figure of the automobile sector cannot be considered representative because most of principal assemblers in the Brazilian market (Volkswagen, GM, Ford, Daimler Chrysler) are not reported in the original data source.

deep capital ownership restructuring in a number of sectors. Should a policy can enhance economic autonomy, it will enable to reduce external constraint contributing to sustained growth.

#### IV. Conclusion

This paper raised the question about the meaning of uncertainty for the current Brazilian economy. We first examined that economic growth has been doomed despite the achievement of price stability under the Fernando Henrique Cardoso administration. This was mainly due to low growth of capital stock which had been the main engine for the past fifty years. As the aggregate investment theory showed, investment might be discouraged by macroeconomic uncertainty. As sources of economic uncertainty, we paid particular attention to the fact that: (1) external financial linkage is weak; and (2) domestic financial market is shallow and conservative. With these factors sudden interest rate hike is likely under external shocks and the question of vulnerability is structural because of the lack of ability to implement anti-cyclical fiscal policy.

Although the stagnation of capital stock increase is observed at macro-level, we call attention to the fact that the trend of investment is discordance by sectors. This fact is attributable to heterogeneous impact of institutional reform and further uncertainties brought by the reform. The recent M&A wave is probably related to such economic environment.

Our analysis left many unanswered questions. Firstly, we did not discuss the impact of uncertainties on productivity and labor, being particularly important the case of the former and its relation to profitability. It is also of interest how uncertainty affects innovative activity of firms. Secondly, the issues of firm strategy should be more carefully discussed. Uncertainty should increase idiosyncrasy of firms' reaction, which in turn change the sectoral structure. Thirdly, the relation between uncertainties and concentration of ownership should be examined with more theoretical rigor. This, then, will pave the way to a question of impact of concentration on productivity and profitability, related to the first question above. Finally, the role of export is important for the policy analysis. Our analysis suggested that higher degree of export would make an industry less vulnerable and more conducive to investment. It was also pointed out that higher exportability would all wider slack of external finance constraint and reduces

the macro-level vulnerability. This should be however contrasted with the view on vulnerability on high dependence on external demand, like the debate on the case on Chile and Mexico suggests.

#### Reference

- Caballero, Ricardo J., (2000) Aggregate volatility in modern Latin America: causes and cures, <http://web.mit.edu/caball/www/>
- Caballero, Ricardo and Robert Pindyck (1996) "Uncertainty, investment and industrial evolution," International Economic Review, August 1996: pp. 641-662.
- De Paula, Germano, Joao Carlos Ferraz, and Mariana Iooty (2002), "Economic Liberalization and Changes in Corporate Control in Latin America," The Developing Economies 40(4): pp. 467-96.
- ECLAC (2002) Globalization and Development, Santiago, United Nations.
- Ferraz, João Carlos, Mariana Iooty, and David Kupfer (2003) "Diversidade descoordenada: investimento e inovação na indústria brasileira no limiar do século XXI," mimeo, Rio de Janeiro, IE-UFRJ.
- Garcia, Márcio (2002), Brazil in the 21st Century: How to Escape the High Real Interest Trap? Texto para Discussão No.466, PUC-Rio.
- Hamaguchi, Nobuaki (2002) "Will the market keep Brazil lit up: Ownership and market structural changes in the electric power sector," The Developing Economies 40(4)
- Prebisch, Raul (1962) "El desarrollo económico de América Latina e algunos de sus problemas principales," Boletín Económico de América Latina vol. VII no. 1, Santiago, ECLAC.
- Rocha, Frederico and David Kupfer (2002) "Structural Changes and Specialization in Brazilian Industry: The Evolution of Leading Companies and the M&A Process," The Developing Economies 40(4), pp. 497-521
- Razin, Assaf and Efraim Sadka (2002) "A Brazilian Debt Crisis," NBER Working Paper 9160.

Table 4 Evolution of total asset by sectors (Unit: R\$ billion)

| Total Asset                   | 1994   | 1996   | 1997   | 1998   | 1999   | 2000   | 2001    |
|-------------------------------|--------|--------|--------|--------|--------|--------|---------|
| Petroleum & Gas               | 30.30  | 44.43  | 47.74  | 50.68  | 65.02  | 87.99  | 98.58   |
| Automobile & parts            | 11.32  | 15.23  | 17.15  | 19.61  | 25.08  | 26.21  | 18.70   |
| Metal                         | 41.40  | 51.48  | 53.95  | 55.55  | 73.50  | 80.59  | 87.14   |
| Chemical & Petrochemical      | 22.08  | 26.55  | 30.79  | 32.13  | 39.99  | 46.46  | 49.64   |
| House electric appliances     | 2.10   | 3.50   | 3.74   | 6.59   | 4.38   | 8.55   | 10.68   |
| Informatics & IT              | 5.33   | 3.68   | 3.13   | 5.75   | 6.91   | 9.43   | 9.23    |
| Paper & Cellulose             | 13.40  | 22.60  | 20.71  | 20.98  | 26.88  | 30.37  | 32.60   |
| Mining                        | 17.02  | 22.06  | 23.03  | 24.84  | 26.19  | 30.86  | 35.67   |
| Textile                       | 10.08  | 14.90  | 13.32  | 12.43  | 14.14  | 16.44  | 16.56   |
| Non-metallic mineral products | 13.51  | 17.81  | 16.47  | 18.28  | 20.90  | 24.97  | 21.86   |
| Machinery                     | 5.46   | 7.97   | 6.79   | 7.57   | 9.68   | 9.72   | 11.57   |
| Sanitary & cleaning product   | 2.48   | 1.87   | 3.20   | 4.74   | 6.37   | 7.04   | 5.31    |
| Electric equipment            | 2.62   | 3.71   | 5.71   | 6.75   | 7.07   | 5.07   | 6.20    |
| Pharmaceutics                 | 2.32   | 2.70   | 2.51   | 4.12   | 6.26   | 6.42   | 6.19    |
| Plastic & rubber              | 3.74   | 4.68   | 4.16   | 4.47   | 7.01   | 6.94   | 7.01    |
| Electronics                   | 4.46   | 12.91  | 12.71  | 14.23  | 17.24  | 11.18  | 7.64    |
| Leather and shoes             | 1.46   | 2.12   | 1.78   | 2.51   | 2.69   | 3.40   | 3.87    |
| Wooden products & furniture   | 4.21   | 6.65   | 6.66   | 7.12   | 9.24   | 6.58   | 7.08    |
| Electric power                | 95.36  | 147.12 | 126.21 | 163.39 | 176.59 | 168.30 | 210.60  |
| Telecommunication             | 26.96  | 45.04  | 50.13  | 64.49  | 77.64  | 105.95 | 119.64  |
| Transportation & logistics    | 50.59  | 76.75  | 71.94  | 73.81  | 65.11  | 72.15  | 74.19   |
| Construction                  | 25.94  | 50.46  | 61.46  | 69.11  | 68.04  | 78.43  | 78.26   |
| Retail                        | 7.00   | 15.03  | 14.88  | 18.64  | 22.72  | 23.57  | 23.74   |
| Wholesale                     | 4.95   | 6.08   | 6.56   | 8.67   | 5.75   | 18.51  | 7.64    |
| Food                          | 9.24   | 17.27  | 17.50  | 19.89  | 25.76  | 33.56  | 37.01   |
| Beverage & tobacco            | 10.03  | 16.94  | 16.11  | 18.79  | 21.89  | 25.76  | 21.59   |
| Sugar / alcohol               | 9.20   | 14.36  | 8.09   | 13.33  | 14.55  | 18.72  | 19.35   |
| Agriculture                   | 7.01   | 6.16   | 7.66   | 13.19  | 11.16  | 6.95   | 7.85    |
| Livestock                     | 6.19   | 9.20   | 7.98   | 8.57   | 9.83   | 5.49   | 6.70    |
| Banks                         | 401.20 | 575.92 | 679.92 | 771.01 | 842.67 | 970.56 | 1107.16 |
| Holding                       | 140.92 | 210.83 | 188.27 | 249.77 | 307.68 | 369.47 | 404.43  |

(Source) Gazeta Mercantil, *Balanço Anual*, various years.

Table 5 Ranking of investment

| Total Asset                   | Increments |           |                  | (A)/(Position<br>in 1994)<br>Ave=1.574 |
|-------------------------------|------------|-----------|------------------|--|
|                               | 1994-1998  | 1998-2001 | 1994-2001<br>(A) |  |
| Home electric appliances      | 4.49       | 4.09      | 8.58             | 4.09                                   |
| Telecommunication             | 37.53      | 55.14     | 92.67            | 3.44                                   |
| Food                          | 10.65      | 17.12     | 27.78            | 3.01                                   |
| Retail                        | 11.64      | 5.1       | 16.73            | 2.39                                   |
| Petroleum & Gas               | 20.38      | 47.9      | 68.28            | 2.25                                   |
| Construction                  | 43.17      | 9.16      | 52.33            | 2.02                                   |
| Holding                       | 108.85     | 154.66    | 263.5            | 1.87                                   |
| Banks                         | 369.81     | 336.16    | 705.97           | 1.76                                   |
| Pharmaceutics                 | 1.8        | 2.07      | 3.87             | 1.67                                   |
| Leather and shoes             | 1.05       | 1.37      | 2.42             | 1.66                                   |
| Paper & Cellulose             | 7.58       | 11.63     | 19.2             | 1.43                                   |
| Electric equipment            | 4.13       | -0.54     | 3.58             | 1.37                                   |
| Chemical & Petrochemical      | 10.06      | 17.5      | 27.56            | 1.25                                   |
| Electric power                | 68.03      | 47.21     | 115.25           | 1.21                                   |
| Beverage & tobacco            | 8.75       | 2.8       | 11.55            | 1.15                                   |
| Sanitary & cleaning product   | 2.26       | 0.58      | 2.84             | 1.15                                   |
| Machinery                     | 2.11       | 4         | 6.11             | 1.12                                   |
| Metal                         | 14.15      | 31.59     | 45.73            | 1.10                                   |
| Sugar / alcohol               | 4.13       | 6.03      | 10.15            | 1.10                                   |
| Mining                        | 7.82       | 10.84     | 18.66            | 1.10                                   |
| Plastic & rubber              | 0.74       | 2.54      | 3.28             | 0.88                                   |
| Informatics & IT              | 0.42       | 3.48      | 3.9              | 0.73                                   |
| Electronics                   | 9.77       | -6.59     | 3.18             | 0.71                                   |
| Wood products & furniture     | 2.91       | -0.04     | 2.87             | 0.68                                   |
| Automobile & parts            | 8.29       | -0.91     | 7.38             | 0.65                                   |
| Textile                       | 2.35       | 4.13      | 6.48             | 0.64                                   |
| Non-metallic mineral products | 4.77       | 3.58      | 8.35             | 0.62                                   |
| Wholesale                     | 3.72       | -1.02     | 2.7              | 0.55                                   |
| Transportation & logistics    | 23.22      | 0.38      | 23.6             | 0.47                                   |
| Agriculture                   | 6.18       | -5.34     | 0.84             | 0.12                                   |
| Livestock                     | 2.38       | -1.87     | 0.51             | 0.08                                   |

Table 6. Profitability (Net profit / shareholder's equity)

| Profitability                 | 1994  | 1996  | 1997  | 1998  | 1999  | 2000  | 2001  |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Petroleum & Gas               | 0,12  | 0,05  | 0,08  | 0,08  | 0,08  | 0,31  | 0,28  |
| Automobile & parts            | 0,20  | -0,02 | -0,01 | -0,01 | 0,12  | 0,06  | 0,15  |
| Metal                         | 0,05  | 0,00  | 0,02  | -0,02 | -0,04 | 0,13  | 0,06  |
| Chemical & Petrochemical      | 0,08  | 0,00  | 0,01  | 0,05  | 0,02  | 0,07  | 0,04  |
| Home electric appliances      | 0,13  | 0,17  | 0,04  | 0,01  | -0,13 | -0,06 | -0,08 |
| Informatics & IT              | 0,16  | 0,01  | 0,09  | 0,04  | 0,04  | -0,03 | -0,33 |
| Paper & Cellulose             | 0,05  | -0,05 | -0,04 | -0,07 | 0,03  | 0,13  | 0,07  |
| Mining                        | 0,07  | 0,05  | 0,07  | 0,08  | 0,08  | 0,16  | 0,18  |
| Textile                       | 0,11  | -0,04 | -0,04 | -0,05 | -0,05 | 0,03  | -0,01 |
| Non-metallic mineral products | 0,08  | 0,08  | 0,04  | 0,04  | 0,06  | 0,12  | 0,17  |
| Machinery                     | 0,07  | -0,02 | 0,06  | 0,02  | -0,03 | 0,04  | 0,06  |
| Sanitary & cleaning product   | 0,25  | 0,15  | 0,13  | 0,07  | 0,15  | 0,11  | 0,10  |
| Electric equipment            | 0,07  | -0,02 | 0,11  | 0,07  | -0,09 | 0,08  | 0,20  |
| Pharmaceutics                 | 0,30  | 0,29  | 0,19  | 0,19  | 0,17  | 0,07  | 0,06  |
| Plastic & rubber              | 0,08  | -0,04 | -0,02 | -0,07 | -0,05 | 0,00  | -0,06 |
| Electronics                   | 0,17  | 0,10  | 0,09  | -0,01 | -0,16 | 0,08  | -0,65 |
| Leather and shoes             | 0,16  | 0,08  | 0,08  | 0,08  | 0,04  | 0,10  | 0,09  |
| Wooden products & furniture   | 0,02  | 0,02  | 0,00  | 0,00  | -0,08 | 0,03  | -0,01 |
| Electric power                | 0,01  | -0,01 | 0,03  | 0,02  | -0,03 | 0,00  | 0,02  |
| Telecommunication             | 0,04  | 0,09  | 0,10  | 0,06  | -0,03 | 0,01  | -0,05 |
| Transportation & logistics    | -0,05 | -0,03 | -0,07 | 0,06  | -0,07 | -0,09 | -0,10 |
| Construction                  | 0,04  | 0,05  | 0,03  | 0,04  | 0,04  | 0,04  | 0,04  |
| Retail                        | 0,10  | 0,13  | 0,06  | 0,08  | 0,03  | 0,03  | 0,04  |
| Wholesale                     | 0,15  | 0,09  | 0,03  | 0,08  | 0,02  | 0,12  | 0,06  |
| Food                          | 0,11  | 0,02  | -0,03 | 0,05  | 0,01  | -0,01 | 0,03  |
| Beverage & tobacco            | 0,11  | 0,15  | 0,11  | 0,13  | 0,03  | 0,15  | 0,15  |
| Sugar / alcohol               | 0,07  | -0,04 | -0,02 | -0,03 | -0,07 | -0,01 | 0,07  |
| Agriculture                   | 0,01  | -0,04 | 0,00  | 0,09  | -0,11 | -0,01 | -0,01 |
| Livestock                     | 0,04  | -0,01 | 0,03  | 0,01  | -0,04 | 0,02  | -0,03 |
| Banks                         | 0,09  | -0,03 | 0,11  | 0,08  | 0,04  | 0,10  | 0,09  |
| Holding                       | 0,05  | 0,05  | 0,08  | 0,03  | 0,01  | 0,05  | 0,03  |

(Source) Gazeta Mercantil, *Balanço Anual*, various years.