THE INFLUENCE OF MACROECONOMIC FACTORS ON PRIMARY ISSUES IN THE BRAZILIAN MARKET

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1. Introduction

The capital market in Brazil presents restrictions as far as the access of companies to sources of funds is concerned. The only lines of long-term financing available come from the National Bank for Economic and Social Development (BNDES). Despite better rate and term conditions the approval process is very lengthy and companies are subject to restrictions when it comes to where they can use these funds.

Less access to credit and to other long-term fund sources translate into reduced rates of growth for companies. When we analyze the structure of capital in emerging economies we see that Brazilian companies are the least geared and the most dependent on funds that are internally generated, due to credit restrictions and the inefficiency of institutions, such as the legal and financial systems (DEMIRGÜC-KUNT e MAKSIMOVIC 1998; LOVE, 2001).

The issue of stock and principally debentures constitute alternatives for companies when it comes to raising funds. Unlike bank financing they can be offered directly to investors and with economic stabilization there was a surge in the number of primary issues in the first four years of the Real Plan. Within this context the economic situation at the time the public offer is made can have an impact on the success of the placement.

This research analyses the influence of the macroeconomic factors on the primary issue of stocks and debentures in the Brazilian market. Previous studies have agreed on the importance of aspects of the economic situation on a company's capital structure, but have not established a relationship between the macroeconomic variables and the level of aggregate debt; we can mention Procianoy and Caselani (1997) and Terra (2003) as examples of this. According to Leal (2000), the limitations of the Brazilian capital market suggest that management takes advantage of moments of euphoria in the market – whether caused by a reduction in the rate of interest or by the return being offered by the equity market – to raise funds at rates that are more advantageous to the company. This characterizes the first evidence we have of opportunistic behavior influencing a company's financing decisions. Eid Jr. (1996) provides us with the first evidence of this opportunistic behavior in his research in which 47% of those interviewed said that they chose fund sources that are economically more advantageous.

2. The Brazilian capital market

Sanvicente and Nakamura (1993) carried out the first studies relating to what determines whether stocks and debentures will be issued in the Brazilian market. The authors analyze a set of specific characteristics of companies such as their size, profitability and level of indebtedness, along with the registers of their public offers in the primary market. The results point to the fact that the level of prior indebtedness is statistically significant when it comes to explaining the choice between stocks and debentures for raising outside funds. According to the authors this might indicate a realignment of the optimum indebtedness structure from which the company has temporarily escaped.

More recently Sanvicente (2001) noted from 210 debenture issues that occurred between January, 1997 and June, 2001 that these have been used mainly by companies who do not have stock traded on the Stock Exchange and that their issue

has an impact on the wealth of the stock-holder due to the information content of the operation. In the North American market Dann and Mikkelson (1984) also analyzed the impact of the issue of debentures on the value of the company, thereby confirming their hypothesis that these decisions have information content and therefore are relevant as far as the wealth of the stockholder is concerned.

Among the available sources of financing the use of debentures has grown over the last few years, a fact that has been attributed to the improvement in the guarantees offered to creditors, such as the liberation of the monetary correction indexer and the advent of extremely sophisticated contract clauses. These clauses aim to mitigate the risks of the creditor in the absence of a secondary debenture market and in an environment characterized by economic, institutional and political risks (ANDERSON, 1999; KIMURA, 2003). To have some idea of this, at the beginning of the 90s only 20.5% of debentures were secured by real or floating collateral. The majority of issues (78.7%) had a subordinate or fully documented guarantee, a credit position much inferior to that of issues where there is a real guarantee. In the case of bankruptcy creditors with fully documented guarantees receive their rights just before the partners (BORGES e LOPES, 2001). In 2001 the percentage of debentures with a real or floating guarantee increased to 43% of the total volume issued (SAITO *et al.*, 2002).

At the same time the Brazilian stock market appears to be losing importance as a source of fund intermediation. Since the Real Plan the number of companies listed on Bovespa (the Sao Paulo Stock Exchange) has dropped year by year, although the total number of publicly-traded companies has increased. One hypothesis for this increase is precisely the growth in the debentures market. According to data from the local Securities and Exchange Commission, CVM, at the end of 1994 there were 846 publicly-owned companies, of which 64% of them were listed on Bovespa. After reaching a peak of 1047 publicly-owned companies in 1998, this number fell to 944 in June, 2003 and of this total only 41% have stock quoted on the stock exchange.

There is still a possibility of raising funds in larger and more liquid capital markets abroad by issuing bonds or depositary receipts (DR). However only a small number of companies have access to these markets. From 1992 to 2003 76 ADR issues were recorded by the CVM; this corresponds to nearly 20% of the companies listed on Bovespa. Among the benefits, the issue of ADRs causes a reduction in volatility and an increase in liquidity in the domestic market (TABAK and LIMA, 2002), and a reduction in the cost of own capital (GARCIA and RIDOLFO NETO, 2002; SILVEIRA and BARROS, 2003; BRUNI and FAMÁ, 2003).

2.1. Little use of indebtedness

There is agreement that a developed financial system gears economic growth. Matos (2001) obtained evidence of the positive, unidirectional and statistically significant causality between financial development and economic growth in Brazil in the period 1947-2000. Furthermore a number of studies published in English deal with the issue of the structure of capital in emerging countries, by analyzing the 80s and 90s and using as a sample the 100 largest publicly-owned companies in each country.

According to Love (2001), who analyzed the data of more than 7000 companies in 40 countries, the importance of the funds generated internally by companies is greater in economies where the financial system is less developed, and in those in which the quality of the legal system, as measured by the risks of corruption, expropriation and legal efficiency, is more precarious. In short, the development of the financial market

is important for economic growth because it allows companies to develop more rapidly than if they were to use only internal funding.

Demirgüc-Kunt and Maksimovic (1998) had already obtained similar results to those of Matos (2001) when they related the efficiency of the financial and legal system to access to sources of financing, using a sample including the largest companies from 30 countries. During the period 1980 to 1991 Brazil was one of the countries that presented the most severe restrictions to credit, just ahead of South Africa and behind countries such as Japan, South Korea and Thailand. The Brazilian judicial system received 4, on a scale of 0 to 6. Although government subsidies correspond to a volume of credit that is the equivalent of 10.7% of GDP, the highest in the sample, only 38% of the Brazilian companies looked at exceeded the growth allowed by self-financing; this was behind countries such as Mexico and South Korea. Two conclusions can be drawn from this: firstly, that there is a positive and significant correlation between the development of the capital market and the level of indebtedness of companies and secondly that government subsidies do not seem to promote economic development.

In addition Carvalho and Barcelos (2002) noted that in Brazil in 1996 the issue of stock corresponded to around 1% of the gross fixed capital formation (FBCF). By way of comparison in Chile stock issues represented 14% (the seventh highest capitalization). The authors also noted that listed and publicly-owned companies have greater access to credit, probably due to their greater transparency. Size and tangibility also determine greater access. In those Brazilian states where the judicial system allows guarantees to be enforced more effectively access to credit is also easier, thereby confirming the conclusions of Demirgüc-Kunt and Maksimovic (1998).

Tables 1 and 2 summarize the size of the Brazilian capital market. In the period of economic stabilization the value of the publicly-owned company market was the equivalent, on average, of 33.6% of GDP, while banking loans to the private sector represented 29.7%. For purposes of comparison the G7 countries in the study of Rajan and Zingales (1995) had average market capitalization to GDP of 48%, varying between 21.2% in Italy and 85.3% in Japan. Bank loans, on average, were 67.6% of GDP, ranging from 44.2% in Canada to 104.2% in Japan.

Because of a lack of more complete information about the secondary market in private securities, we considered the stock of debentures recorded in the National Debenture System (SND) as a proxy for the market in private securities. In G7 countries the size of this market varied from 0% in Germany to 23.3% in the United States. On average it was 6.3% of GDP. Finally the depositary receipt program that allows for the issues of stock in more liquid and developed markets presents a growing importance as a source of funds and a catalyzing agent for improvements in the domestic market.

A factor that increases the limitation of credit experienced by Brazilian companies is the fact that Federal, state and municipal governments are large fund takers. After reaching 50% of GDP in 1985, net public sector debt fell to 30.7% in 1997, as did the volume of credit in the market (PINHEIRO and CABRAL, 1998). In Graph 1 we can see the pronounced growth in public debt as from 1995, reaching 66.7% of GDP in 2002, according to data from the Central Bank.

As far as funds invested in the stock exchange are concerned, Leal and Rêgo (1997) analyzed the impact of the flow of foreign investments on the stock exchange, when they took the period 1992 to 1995 as an example, as shown in Appendix IV. They

noted the increase in liquidity of some securities, which were already the most traded, thereby adding to the increase in the concentration of business. There was an increase in the volume of stock issues, which must be related to the Real Plan. On the other hand there was no increase in the issue of debentures. Neither was an increase noted in the return in reais and dollars, nor evidence of a reduction in volatility due to the inflow of foreign funds.

3. Methodology

The main aim of this study is to check if there is any influence from macro-economic factors on the primary issue of stocks and debentures. This observation rises from the assumption that situational aspects can have an impact on the raising of external funds, given that a good part this external funding is concentrated in moments of market euphoria and economic expansion.

These favorable moments allow companies with more structured access to the market to look for funds at more competitive costs. Furthermore there is evidence that companies raise external funds from third parties when they consider the rate of interest to be attractive, thus extending their debt maturity structure (KORAJCZYK and LEVY, 2002; BAKER, GREENWOOD and WURGLER, 2002 and LEAL, 2000). This being the case the main hypothesis of this study is that primary issues of stocks and debentures are influenced by macroeconomic variables, thus indicating that the insertion environment of companies can interfere in decisions regarding financing.

3.1. Collecting data

The registers of primary stock issues between October 1994 and June 2003 were obtained from the local Securities and Exchange Commission (CVM). The period comprises 35 quarters, in which 126 public stock offers were registered with Bovespa, totaling R$ 25.77 billion at present values. The Bank of Brazil issue for R$ 7.99 billion was excluded from the sample because it was an exceptionally high value and the only one of this size during the whole of the period.

The registers of debenture issues were obtained from the National Debenture System website. The period analyzed is the same, totaling 448 registered public offers and R$ 80.94 billion in funds raised in present values. Of this total we ignored 130 registers belonging to commercial leasing companies and debt administrators. Although the CVM also has public offer registers the level of detail of the information made available on the SND data base is greater allowing for greater flexibility in dealing with the data.

In our calculations we only considered one of the issues in those cases where the company issued more than once using the same security in the same quarter. For example, if the debenture issuer had, in the same quarter, offered more than one asset we considered just one issue in that period. All current values in reais were converted by the IGP-DI (General Price Index – Domestic Availability) to present values as of December, 2002.

Graphs 2 and 3 show the evolution of the primary market as from the 4^{th} quarter, 1994. The share of debentures is greater both in volume as well as in the number of issues. Although the quantity of primary issues has shown a declining trend during the period under analysis, the same cannot be said as far as the volume of funds raised is concerned. Graph 4 shows a slightly increasing tendency in average volumes, which suggests that companies are raising more funds per operation.

3.2. Macroeconomic factors

The temporal series of macroeconomic factors were obtained from the Ipeadata and Bank of Brazil data bases, both available on websites. The macroeconomic variables that go to make up this study are divided into four categories:

a) *Indicators of the cost of capital.* These factors are directly related to the cost of capital of companies, when they issue stock and debentures. In this study they are represented by the variables described below:
   - *Bovespa index:* this variable measures the real return of the Bovespa index every quarter and in this study it is a proxy for the return on the stock market. The nominal return from one quarter to another is deflated by the IGP-DI for the same period.
   - *Real interest:* this study uses the quarterly Selic rate, divided by the IGP-DI in the same period, to calculate the real rate of interest for each quarter. The quarterly values are dealt with in bands, in the form of quarterly returns.
   - *Stock Exchange liquidity:* this index is the quotient of the volume traded in the quarter, divided by the average market capitalization for the period, the latter being the sum of the average market values of the companies listed on Bovespa. We have assumed that the greater the stock market liquidity the better will be the chances of success of a public stock offer, especially for those companies with less traded stock.

b) *Aspects that have an influence on the structure of capital.* This class of factors includes other sources of funding that increase or reduce the availability of funds in the capital market and consequently interfere in the demand via the primary issues by companies.

- *Direct foreign investment (IED – inflow)*: a variable dummy that becomes 1 if the value in the quarter is greater than the median for the period analyzed, and zero if not. This index calculates the inflow of direct foreign investment each quarter and considers those inflow funds related to the share in the capital, and loans and inter-company transactions between the parent company abroad and the subsidiary in Brazil. The share in capital also includes the funds for the privatizations that occurred during the period. The values in dollars have been converted to reais using the average quarterly selling-price quotation of the commercial dollar. Subsequently the values are divided by the quarterly GDP in present reais in order to transform the series into a percentage of GDP. Finally the variable dummy is generated.
- *Foreign investment in mutual funds (IEC - inflow)*: a variable dummy that becomes 1 if the value in the quarter is greater than the median for the period analyzed, and zero if not. This index calculates the inflow of funds for the purpose of investing in stock, fixed interest, derivative and other funds. The values in dollars have been converted to reais using the average quarterly selling-price quotation of the commercial dollar. Subsequently the values are divided by the quarterly GDP in present reais in order to transform the series into a percentage of GDP. Finally the variable dummy is generated.

c) *Factors that represent the level of activity*: This class of factors represents the economic expansion and retraction cycles. Preliminary studies, using FIESP's economic activity index, were not successful and we reverted to GDP.

- *Gross domestic product*: the quarterly series of the GDP in index numbers allows us to calculate the true variation in this indicator from one quarter to another. The

values are dealt with in bands and 1990 was used as the base 100. A second series with different data was created to be used in regressions. In this variable the aim is to check the expansion and retraction cycles that the Brazilian economy went through during the period we analyzed.

d) *Factors representing the economic environment.* To measure in a general way the perception of economic, political and institutional risks we chose the following variables:

- *C-Bond spread*: this variable measures the risk premium that sovereign securities pay in relation to American Treasury bonds. It serves as an indicator of the perception of the so-called "Brazil risk". When there is a rise in the risk premium paid by the country this suggests an unfavorable environment for Brazilian companies to become involved in any business. This study considers the temporal series of the C-bond in bands, dividing the base points by 100.
- *Total public debt:* this variable measures the net public sector debt as a percentage of GDP. We considered the net public debts of the Central Bank, Federal, state and municipal governments and state-owned companies, and in terms of a percentage of GDP. The temporal series is the public debt/GDP ratio, consolidated with all the above items and dealt with in bands.

3.3. The econometric model

The uni and multivariate regression model estimated by the ordinary least-squares is structured in the following way:

$emissões_t = a_t + b_t X_t + \varepsilon_t$, in which (3.1)

- a_t is the constant;
- b_t is the coefficient;
- X_t is the vector of macroeconomic variables in the period t;
- ε_t is the error term.

The dependent variable will be tested under four specifications although we shall only present the most relevant results:

- the number of issues registered in the quarter;
- the volume of issues registered in the quarter;
- the percentage variation in the number of issues in relation to the previous period;
- the percentage variation in the volume of issues in relation to the previous period.

Due to the problem of multicollinearity that is observed in temporal series the combinations between explanatory variables were selected in such a way as to minimize the serial correlation. As a consequence some macroeconomic factors could not be tested in combination with others, which is the reason why some univariate regressions were generated. Appendix 1 shows the correlation matrix between the macroeconomic variables we studied. In addition to this the temporal series used in this test were constructed in bands and in variation. The explanatory notes for each table provide the specifications of the series used.

4. Empirical results

4.1. Primary stock issues

Table 3 shows the results of the regressions using the number of quarterly stock issues as a dependent variable. The results of regression 1 show that the public debt over GDP ratio, lagged by 1 quarter, is statistically significant at the 1% level and relates negatively to the number of primary issues. Furthermore it shows the best degree of adjustment, with adjusted R2 of 0.58. The negative coefficient suggests

that public debt competes with companies when it comes to raising funds in the capital markets, thereby reducing the availability of funds.
We can see in regression 2 that the inflow of direct foreign investment (IED - inflow), lagged by 2 quarters, presents a negative correlation with the dependent variable. This evidence suggests that these inflows supply the need for funds of companies, or even that foreign-controlled companies listed on the stock exchange are major takers of funds in the domestic market.
The real rate of interest and the liquidity in the stock exchange also prove to be significant when it comes to determining the number of stock issues at the 5% level. The first has to do with the cost of capital per se, while the second is related to the greater probability of success in the issue, since it shows when the market is at its "hottest". Liquidity is measured by the volume of business over market capitalization and proved to be a more significant variable than the return of the Bovespa index, as can be seen in regression 4. As the Bovespa index does not necessarily reflect the return of stocks with low liquidity the quantity of business will be more important than the market return. Finally the inflow of foreign investments into mutual funds (IEC-inflow) is positively related to primary issues. This may occur due to the impact in the increase of business and the liquidity of stocks on the stock exchange.
When we analyze the issue of stocks by means of the volume of funds, the results of which are shown in Table 4, the stock exchange liquidity and real interest variables also prove to be significant when it comes to explaining the variation in the number of issues and the volume issued over time. Therefore the proposed regression presents a low degree of adjustment, measured by the adjusted R2 of 0.27, although there is statistical significance at the 10% level for the independent variables. This result leads us to suppose that other variables not considered in these models explain other aspects in the variation in the volume of issues or even that the specification of the model is not the most suitable.

4.2. Primary debenture issues

According to data from the SND, 448 primary debenture issues, carried out by 303 issuers, were registered between October, 1994 and June, 2003. Of this total 130 belong to financial companies, especially those involved in commercial leasing. This leaves, therefore, 318 registers from 230 debenture-issuing companies. The second largest group of debenture issuers is made up of administration and investment companies. This the means by which parent companies raise funds for their associated companies With regard to the destination of these funds, after separating out the financial companies the remaining companies declared that 56% of the volume of funds is for restructuring liabilities, 35% will be used for financing investments and 9% is to be used for other purposes. The most curious fact is that 75% of the issuers raised funds only once during the 9 year period analyzed. Among the reasons for this behavior we might put forward the hypothesis of the lack of a secondary market. There are indications that companies go public in order to issue private securities, but there is no association of this phenomenon with the distribution of frequencies.
In Table 5 that follows we present the regressions by least-ordinary squares using the number of quarterly issues of debentures as the dependent variable. The GDP variable presents a positive relationship with the number of issues, significant to the 1% level, suggesting that cycles of economic growth are accompanied by an increase in the issue of debentures. The results of regression 2 reaffirm the

importance of the total public debt/GDP variable, thus confirming the negative coefficient we see in the results with stock. This factor is significant to 1% and in association with GDP results in a regression with adjusted R2 of 0.59.

Regression 2 also presents a 0.61 degree of adjustment with a combination of the GDP, Bovespa Index and C-bond variables. The negative relationship between the Bovespa Index return and the issue of debentures suggests opportunism when it comes to raising funds. However the same variable does not have the same statistical significance with the issue of stock. C-bond is also statistically significant at the 1% level. The negative relationship with issues suggests that the number of issues tends to be greater when the economic climate is favorable to investors and companies. Finally the inflows of IED, lagged by 2 quarters, are negatively related to the issue of debentures, confirming the results we see with the issue of stock.

Table 6 analyses the quarterly variation in the number of primary issues as a function of macroeconomic factors. The GDP, Bovespa Index and total public debt variables confirm the sign of the coefficient we see in the results in Table 5. The real rate of interest is statistically significant at the 10% level, suggesting that the increase in the number of issues is negatively related to a reduction in real interest rates. However, the adjusted R2 of 0.45 suggests that other variables not considered in these models explain other aspects of the variation in the volume of issues, or even that the specification of the model is not the most suitable.

In the regressions using the volume of issues as a dependent variable, the results of which can be seen in Table 7, only the combination of the Bovespa Index, lagged by 1 quarter, and GDP were seen to be statistically significant. Similar to the results obtained with stock, the regression showed a low level of adjustment suggesting that other aspects not considered interfere in the volume of funds issued.

5. Conclusions

We analyzed the impact of macroeconomic factors on the issue of stocks and debentures in the Brazilian market between 1994 and 2003. Economic stabilization allowed companies to plan for the long term and consequently to raise funds to finance their investments. In the period we analyzed the primary debenture market is larger than the equity market in volume and the number of issues. However, there is no secondary market to provide due liquidity to private securities and allow investors to correctly evaluate the assets being negotiated.

The influence of macroeconomic variables suggests that many decisions in the corporate area are affected by factors that are outside the company and that are measurable and observable by the market. In the case of Brazil this fact might be magnified due to the imperfections in the capital market, as well as the political and institutional uncertainties that are intrinsic to the country. The maximum productivity of a resource is limited by the raw material that is most scarce in the production process. By analogy, company growth is limited by the scarcity of financing sources in the market, meaning that management has to consider the economic situation in its list of priorities.

Empirical evidence suggests that primary issues are influenced by macroeconomic factors and that the variables we tested are statistically significant when it comes to determining the issue of stocks and debentures. The results show that three variables – the total public debt/GDP ratio, inflow of direct foreign investment (IED – inflow) and the real rate of interest – are statistically significant in determining both

issues. The first is related negatively to primary issues, reinforcing the hypothesis that there is a crowding-out effect in the Brazilian capital market.
Government competes with companies when it comes to raising funds and as these funds are limited this has a negative impact on companies that operate in the country. The second variable is also negatively related to primary issues, suggesting that the inflow of direct foreign investment supplies the companies' need for funds or even that the foreign-controlled companies listed on the stock exchange are major takers of funds in the domestic market. Finally the real rate of interest relates positively with the issue of stocks and negatively with the issue of debentures, although the variable has shown less statistical significance than the total public debt and the inflow of direct foreign investment variables.
The Bovespa Index did not prove to be sufficiently statistically significant to determine the number of stock issues, while with regard to the issue of debentures the results give a negative relationship between the number and volume of issues with the independent variable. On the other hand the stock exchange liquidity variable was positively related to the number of stock issues and the reason could be the fact that companies are possibly more concerned with the success of the placing than with the discount caused by the issue. Another possibility arises from the fact of companies that do not form part of the Bovespa Index issuing stock during the period we analyzed.
GDP gives a positive relationship with the issue of debentures, which is consistent with the idea that economic growth cycles are accompanied by new investments and consequently by new fund raising. There is no evidence of a significant positive relationship between GDP and the issue of stocks.
Generally speaking the regressions applied to debentures produced better results than regressions with stocks. The reason for this better adjustment is probably the greater volume in the market of private securities. While the quarterly average public offer of stocks is around 3.6, public offers of debentures happen around 9.1 times per quarter.
The results that relate interest rates and returns in the primary issues market are consistent with the opportunistic approach, in which management decides to go for fund sources that are economically more advantageous. The evidence points to opportunistic behavior of the market-timing type, in which companies choose the most suitable moment for raising funds from external sources. However the statistical significance observed in the tests suggest that these results are less robust than those observed with other macroeconomic variables such as public debt and the inflow of direct foreign investment.

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Table 1. Size of the Brazilian capital market

Year	**GDP**	**Market value of publicly-quoted companies** [(b)]		**Loans from the financial system to the private sector**[(c)]		**Depositary Receipt Program** [(d)]		**Stock of debentures**[(e)]	
	R$ b	R$ b	%GDP[(a)]	R$ b	% GDP	R$ b	% GDP	R$ b	% GDP
1994	349.2	160.3	45.9%	157.8	45.2%	14.8	4.2%	10.0	2.9%
1995	646.2	143.5	22.2%	202.0	31.3%	15.6	2.4%	13.8	2.1%
1996	778.9	225.5	28.9%	206.2	26.5%	42.6	5.5%	16.6	2.1%
1997	870.7	285.1	32.7%	233.5	26.8%	46.8	5.4%	21.2	2.4%
1998	914.2	194.4	21.3%	253.9	27.8%	66.4	7.3%	20.8	2.3%
1999	973.8	408.9	42.0%	268.3	27.6%	66.6	6.8%	21.1	2.2%
2000	1101.3	441.0	40.0%	307.5	27.9%	66.6	6.0%	26.3	2.4%
2001	1200.1	430.3	35.9%	322.5	26.9%	66.9	5.6%	37.9	3.2%
2002	1.321,5	438.3	33.2%	364.8	27.6%	68.2	5.2%	46.1	3.5%
% GDP – average		33.6%		29.7%		5.4%		2.6%	

Sources: Brazilian Central Bank, CVM, Bovespa, IBGE and the National Debentures System (SND)
Notes: a) all values in present value R$ billion and percentage of GDP; b) includes only companies listed on Bovespa; c) credit operations carried out during the year; d) values converted from the dollar to reais using the month-end selling quotation; e) the sum of securities in the market and in treasury.

Table 2. External fund raising by Brazilian companies

Year	Register of publicly-quoted companies			Primary stock issues	Primary debenture issues	Depositary receipt program[c]	BNDES disbursements[d]	Direct foreign investment – IED (net) [e]	Variation in loans from the financial system to the private sector[f]
	Granted	Cancelled	Total	R$ million[a]					
1994	43	37	846	n/a	3171	11,669	4989	1347	n/a
1995	60	32	874	1935	6883	802	7098	4098	44,246
1996	71	20	925	9172	8395	27,069	9673	10,886	4249
1997	74	31	968	3909	7518	4146	17,894	20,571	27,290
1998	137	58	1.047	4112	9657	19,639	18,991	33,688	20,342
1999	38	56	1.029	2749	6676	165	18,052	51,989	14,446
2000	34	65	998	1410	8748	15	23,046	60,293	39,137
2001	36	52	982	1353	15,162	339	25,217	53,370	15,079
2002	20	52	950	1050	14,636	1229	37,419	47,362	42,287
% FBCF – average for the period[b]				1.6%	5.1%	4.1%	10.2%	17.9%	13.1%

Sources: Brazilian Central Bank, CVM, Bovespa, IBGE and the National Debentures System (SND)
Notes: a) all values in present value R$ million; b) percentage of gross fixed capital formation; c) values of the Depositary Receipt program converted into reais using the month-end selling quotation; d) disbursements by the BNDES do not include export financing or BNDESPAR disbursements in the secondary market; e) values of direct foreign investment converted into reais using the average quarterly quotation (selling price) of the dollar; f) difference in the volume of credit operations from one year to another.

Table 3. Determinants of the number of primary stock issues

Dependent variable: number of stock issues							
Regression	Variable	Lag	Coefficient	Stat-t	Adjusted R2	DW	Stat-F
1	Total public debt	-1	-0.23	(-6.82)*	0.58	2.88	46.47*
2	IED – inflow	-2	-4.16	(-5.51)*	0.48	2.46	30.32*
3	Stock market liquidity		0.15	(2.09)**	0.53	2.50	13.64*
	Real interest rates		0.30	(2.51)**			
	IEC – inflow		2.39	(3.05)*			
4	Bovespa index		0.03	(1.37)	0.28	1.86	7.66*
	Real interest		0.5	(3.75)*			

Sources: Brazilian Central Bank, Ipeadata, CVM, IBGE. Author's aggregation.
Notes: a) ***, ** and * indicate statistical significance at the 10%, 5% and 1% level respectively; b) stat-t, DW and stat-F respectively represent the Durbin-Watson test, statistic t and statistic F; c) total public debt expressed as a percentage of GDP and in bands; d) IED-inflow and IEC-inflow are dummy variables; e) stock exchange liquidity expressed as a percentage of Bovespa market capitalization and in bands; f) real interest expressed in bands and as a percentage of quarterly return; g) Bovespa index expressed as a real quarterly return.

Table 4. Determinants of the volume of primary stock issues

Dependent variable: Log (volume of issues)							
Regression	Variable	Lag	Coefficient	Stat-t	Adjusted R2	DW	Stat-F
1	Stock market liquidity		0.04	(1.72)***	0.27	2.27	6.78*
	Real interest		0.07	(1.89)***			

Sources: Brazilian Central Bank, Ipeadata, CVM, IBGE. Author's aggregation.
Notes: a) ***, ** and * indicate statistical significance at the 10%, 5% and 1% level respectively; b) stat-t, DW and stat-F respectively represent the Durbin-Watson test, statistic t and statistic F; c) stock market liquidity expressed as a percentage of Bovespa market capitalization and in bands; d) real interest expressed in bands and as a percentage of quarterly return.

Table 5. Determinants of the number of primary debenture issues

Dependent variable: number of debenture issues							
Regression	Variable	Lag	Coefficient	Stat-t	Adjusted R2	DW	Stat-F
1	GDP		0.30	(4.18)*	0.61	1.76	18.84*
	Bovespa index		-0.70	(-5.32)*			
	C-bond		-0.68	(-4.60)*			
2	Total public debt		-0.30	(-5.88)*	0.59	1.92	25.12*
	GDP		0.27	(3.72)*			
3	GDP		0.24	(2.70)*	0.50	1.41	22.74*
	IED – inflow	-2	-4.36	(-3.36)*			
	C-bond		-0.35	(-2.03)*			

Source: Brazilian Central Bank, Ipeadata, CVM, IBGE, National Debenture System. Author's aggregation.
Notes: a) ***, ** and * indicate statistical significance at the 10%, 5% and 1% level respectively; b) stat-t, DW and stat-F respectively represent the Durbin-Watson test, statistic t and statistic F; c) GDP is expressed as an index number at present values; d) total public debt expressed as a percentage of GDP and in bands; e) Bovespa index expressed as a real quarterly return; f) C-bond expressed in bands as base points over American Treasury securities; g) IED – inflow is a dummy variable.

Table 6. Determinants of quarterly variations in primary debenture issues

Dependent variable: quarterly variation in the number of debenture issues							
Econometric model	Variable	Lag	Coefficient	Stat-t	Adjusted R2	DW	Stat-F
1	GDP	-1	6.44	(3.00)*	0.45	2.49	7.78*
	Bovespa index		-1.44	(-1.97)***			
	Real interest		-8.66	(-1.88)***			
	Total public debt		-10.58	(-2.87)*			

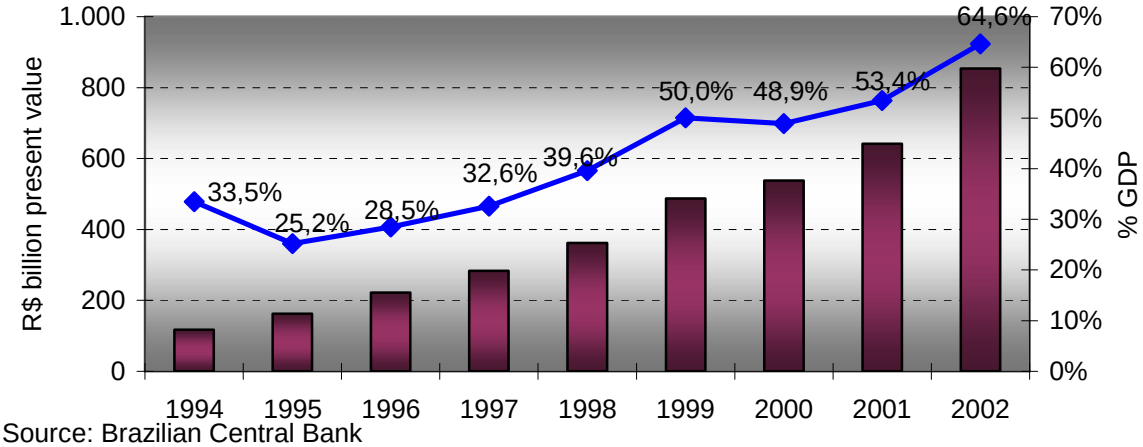
Source: Brazilian Central Bank, Ipeadata, CVM, IBGE, National Debenture System. Author's aggregation.
Notes: a) ***, ** and * indicate statistical significance at the 10%, 5% and 1% level respectively; b) stat-t, DW and stat-F respectively represent the Durbin-Watson test, statistic t and statistic F; c) GDP is expressed as an index number at present values and as a return; d) Bovespa index expressed as difference, with returns adjusted by the IGP-DI; e) real interest is represented in bands; f) total public debt expressed as a variation in the percentage of GDP.

Table 7. Determinants of the volume primary debenture issues

Dependent variable: Log (volume of issues)							
Regression	Variable	Lag	Coefficient	Stat-t	Adjusted R2	DW	Stat-F
1	Bovespa index	-1	-6.73	(-2.99)*	0.34	2.14	9.47*
	GDP		18.58	(2.91)*			

Source: Brazilian Central Bank, Ipeadata, CVM, IBGE, National Debenture System. Author's aggregation.

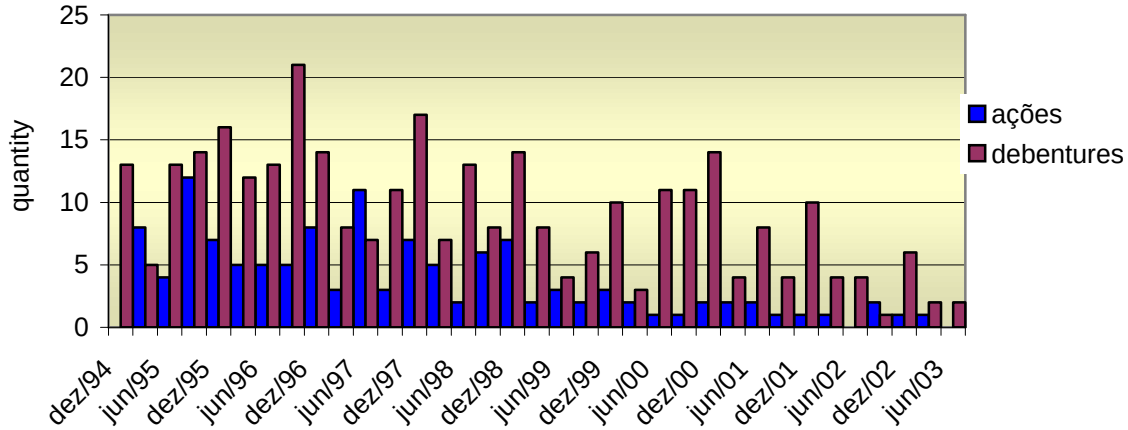
Notes: a) ***, ** and * indicate statistical significance at the 10%, 5% and 1% level respectively; b) stat-t, DW and stat-F respectively represent the Durbin-Watson test, statistic t and statistic F; c) GDP expressed as a variation of an index number of present values; d) Bovespa index expressed as real quarterly return.



Source: Brazilian Central Bank

Graph 1. Evolution of net public sector debt

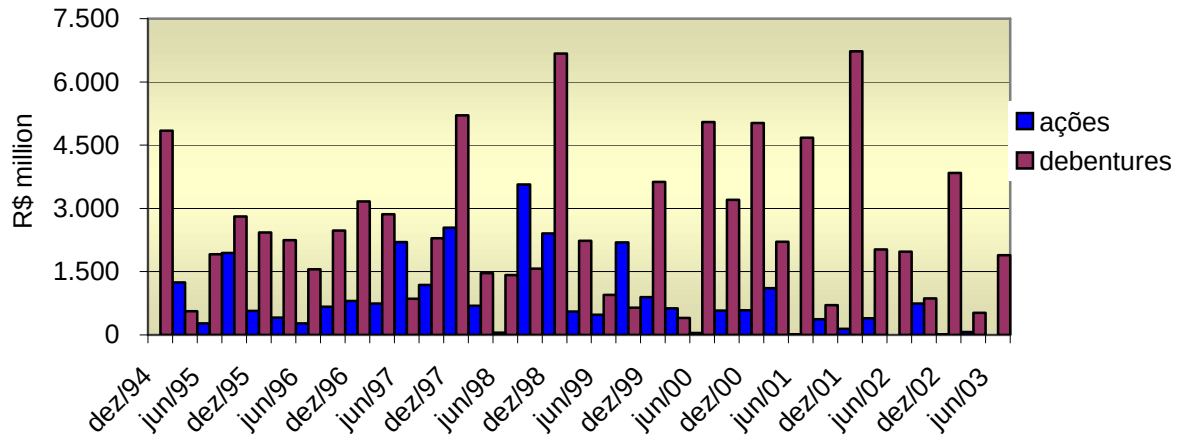
Notes: a) We considered net public debt of the Central Bank, Federal, state and municipal governments and publicly-owned companies.



Graph 2. Quantity of primary issues of stocks and debentures

Sources: CMV and SND

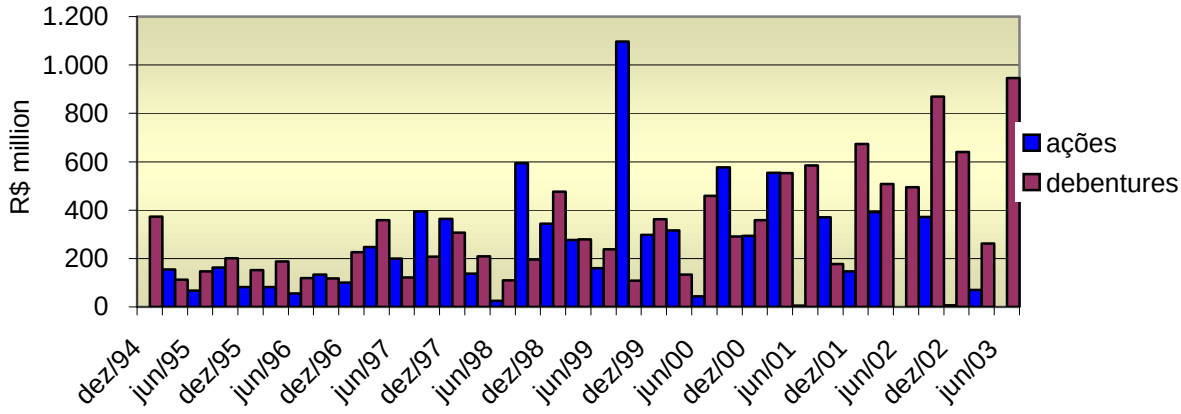
Notes: a) issue of stock by the Bank of Brazil in 1996 excluded because it is was exceptional; b) we considered only 1 issue if the company had by chance raised funds more than once in the quarter using the same security, either stocks or debentures; c) we excluded the issue of debentures by financial companies.



Graph 3. Volume of primary issues of stocks and debentures.

Sources: CMV e SND

Notes: a) values in reais corrected by the IGP-DI at values as at Dec/2002; b) issue of stock by the Bank of Brazil in 1996 excluded because it is was exceptional; c) we excluded the issue of debentures by financial companies.



Graph 4. Average quarterly volume of primary issues of stocks and debentures.

Sources: CMV and SND

Notes: a) values in reais corrected by the IGP-DI at values as at Dec/2002; b) issue of stock by the Bank of Brazil in 1996 excluded because it is was exceptional; c) we considered only 1 issue if the company had by chance raised funds more than once in the quarter using the same security, either stocks or debentures; d) we excluded the issue of debentures by financial companies.

Appendix I – Matrix of the correlation between the variables studied

Variables	Lag	Series	Total public debt	Total public debt	GDP	GDP	Bovespa index	Bovespa index	Stock Exchange liquidity	Real interest	IED - inflow	IEC - inflow	C-bond
Total public debt		Level	1	0.00	-0.20	-0.18	-0.25	-0.16	-0.61	-0.63	0.85	-072	-036
Total public debt		Difference	0.00	1	0.11	-0.01	-0.24	0.13	0.15	0.30	009	019	-018
GDP		Level	-0.20	0.11	1	0.60	-0.20	-0.09	0.48	-0.04	-025	016	019
GDP		Difference	-0.18	-0.01	0.0	1	-0.13	-0.04	0.24	0.11	-019	016	-005
Bovespa index		Return	-0.25	-0.24	-0.20	-0.13	1	0.01	-0.01	-0.01	-012	037	011
Bovespa index	-1	Return	-0.16	0.13	-0.09	-0.04	0.01	1	0.15	0.19	004	011	029
Stock exchange liquidity		Level	-0.61	0.15	0.48	0.24	-0.01	0.15	1	0.50	-060	038	020
Real interest		Return	-0.63	0.30	-0.04	0.11	-0.01	0.19	0.50	1	-044	026	004
IED – inflow	-2	Dummy	0.85	0.09	-0.25	-0.19	-0.12	0.04	-0.60	-0.44	1	-064	-021
IEC – inflow		Dummy	-0.72	0.19	0.16	0.16	0.37	0.11	0.38	0.26	-064	1	033
C-bond		Level	-0.36	-0.18	0.19	-0.05	0.11	0.29	0.20	0.04	-021	033	1