

The Political Economy of Public Debt in Brazil¹

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Executive Summary

- We study the public debt management in Brazil since the early eighties, focusing on the political economy aspects and the conflict of interest among the players directly or indirectly engaged in public debt policy in this country. We first present the relevant stylized facts of debt evolution and composition, of public finance in Brazil and some exercises on debt dynamic. In a second block the main topics regarding the political economy of public debt in Brazil are discussed.
- In the first block maybe the most relevant fact is that (net) international public debt is now irrelevant as a fraction of GDP. At the same time domestic bonds indexed to the dollar were zeroed. This is a striking change from the not so distant past, when international debt was dominant. This, and the floating regime of exchange rate, reduced drastically the vulnerability of the Brazilian economy to external shocks, which in many episodes had very strong and negative impacts on the balance of payments and economic activity.
- As for the second block, a general conclusion is that in many stances public debt was used strategically according to political objectives that in general do not coincide with its optimal management. For instance, it was instrumental to keep inflation low and exchange rate stable in certain moments, improving the electoral changes of incumbent candidates. In other moments it was used by the Central Bank as an auxiliary component of inflation target policy.
- The renegotiation of States debt during President Cardoso tenure, and the approval of the Fiscal Responsibility Law - which in the

case of Brazil is really binding – implied in a change of regime in the fiscal relationship between regional and central governments. Now debt renegotiation, primary deficit and bail out by the central government, which used to be the rule, are no longer possible and states now lost most of their ability to threat macroeconomic stability. Among other things, they can no longer issue bonds and indirectly issue money through their commercial banks, which were privatized.

- The next topic deals with the use of domestic debt composition for political purposes. In the first term of President Cardoso, debt was used to avoid fiscal adjustment and dollar indexed bonds were instrumental in postponing devaluation, helping his re-election. Three months after this, the fixed/pegged regime was abandoned, the Real was depreciated and, because of the large volume of dollar-bonds, debt to GDP ratio jumped by more than 10 percentage points.
- There is a clear difference between the external debt renegotiation of 1982 and the default of 1987. The latter had a strong political motivation while the former was unavoidable, given the current account deterioration, low reserves and the interruption of capital flow after Mexico`s default. The default of 1987 was used by the Sarney Government to recover its lost popularity after the collapse of the Cruzado Plan and inflation return. The external accounts were not nearly as bad as in 1982 and there was room for renegotiation with debtors. Moratorium of external debt was a political option in which the blame for the difficult situation the country was facing was transferred to foreign bankers.
- A key topic is why Brazil continued servicing its debt after the depreciation of the Real in 1999 and 2002. The first reason is that external debt was a much smaller fraction of total public debt in

these two years than in 1982 to 1987, when it fluctuated around 50%. Moreover, international reserves were relatively high. Finally, the attack on currency in 2002 was motivated by fears of leftist government.

- Once elected President Lula took several steps to calm down markets – announcing that he would keep most of the monetary and fiscal policies of President Cardoso and did not plan any default or renegotiation of public debt. Consequently, capital flow returned and exchange rate appreciated again. The gains by not declaring default, and convincing agents of the soundness of the policies and purposes, were much larger than those of declaring it. In 1999 the introduction of the floating regime and the appointment of market oriented central banker and ministers solved the crises.
- These two episodes contrast with Argentina's 2001 crises. Main reasons are: 1) The magnitude of exchange rate devaluation in Argentina was much more significant than that of Brazil in 1999 or 2002; 2) Almost all public debt of Argentina was external by the time of depreciation, and indexed to the dollar; 3) After the devaluation the debt/GDP ratio in Argentina was more than three times that of Brazil; 4) The "Provincias" in Argentina had a lot of power to spend (and could even issue their own money), but the Brazilian states, after the debt renegotiation and the "Fiscal Responsibility Law" were living within very strict bounds; 5) The fixed exchange rate regime in Brazil was much more flexible, so that the disequilibrium was partly corrected before depreciation.
- The final topic deals with the question of fiscal space for public investment. Brazilian budget procedures contemplate now debt-finance of infrastructure investment – public investments in "productive sectors" may not be accounted in the primary surplus

target. We show that the potential impact on solvency depends on the interest rate response to the debt. If interest rate increases in the short run as a response to the initial augment of debt, debt ratio may take many years to converge or not converge at all. If interest rate response is small the net worth of a debt-financed infrastructure project is positive as the present value of revenues is more than enough to pay for the debt service. In this case, public infrastructure does pay for itself and solvency is guaranteed.

I Introduction

This paper studies the behavior of public debt management in Brazil since the early eighties. Our focus is on the political economy aspects and the conflict of interest among the players directly or indirectly engaged in public debt policy in this country.

Apart from introduction and concluding remarks, this paper can be divided in two blocks. In the first one (sections II to V) we study the main stylized facts of fiscal policy and public debt in this country from 1980 to the present. We discuss, among many topics, the evolution of the debt to GDP ratio in the recent past, its structure and the share of different types of debt (external, domestic and the various types of domestic bonds), the role of state owned enterprises (SOEs) and that of sub national governments.

In the first block, we also indicate and briefly study the main topics concerning the political economy of public debt management. For instance, in order to understand the motivation of the 1983 external-debt renegotiation, and the 1987 default, one has to understand the evolution of public expenditures in the seventies and eighties, why so much (and what type of) external debt was used and the impact of the increase of the Federal Funds rate and the oil shocks. We also discuss fiscal policy at the regional level, which is one of the main issues concerning overall macroeconomic stability in the period and public indebtedness. In Section V we discuss public debt dynamics in which we decompose its variation among the variation of its main components and causes, such as primary deficit, real GDP growth, interest rate, etc.

After presenting the relevant background in the first block of the paper, we discuss in the second block (Sections VI to IX) what we consider the main topics regarding the political economy of public debt in Brazil. The first theme concerns the recurrent renegotiations of state debt with the federal government. From 1987 to 1993, for instance, there were three renegotiations in which, in one way or another, part of the debt was forgiven and deficits financed. There is clearly a

moral hazard problem, in which state governors, via a soft fiscal constraint and debt, put themselves into insolvency while a weak central government (always) bailed them out. We discuss what made this opportunistic behavior possible for some time and what was done to finally solve the problem in President Cardoso's tenure.

The second theme relates to the use of debt structure (and its level) for electoral purposes. The case we have in mind is the re-election of President Cardoso. During his first term, not only debt was used to avoid a tough fiscal adjustment, but its composition (i.e., the large use of bonds indexed to the dollar) was a decisive factor in postponing the exchange rate depreciation, which was thought to have potential to bring inflation back. Fixed exchange rate regimes (before they collapse, of course), as we will see later, tend to favor workers (hence, the majority of voters) as opposed to tradable producers and, on top of this, low inflation was the focus of the political campaign. Three months after re-election this regime was abandoned – the country was losing one billion of dollars of reserves every day – and the exchange rate was devalued. As a sub-topic we discuss also the use of debt structure as an instrument of monetary and inflation target policies.

The third topic discusses the episodes of external debt renegotiation and defaults. We show that in 1983 there were few options available³ and the only reason that Brazil did not stop servicing its debt were the recurrent adjustment loans from multilateral institutions. We compare this episode with the external debt default of 1987, when the trade balance situation had improved and we also discuss why Brazil continued servicing its debt after the depreciation of the Real in 1999 and 2002. The latter is a key topic, as Brazil avoided, in these two episodes, a distressing rupture with the international financial community and could, at the same time, set the economy back on track in a very short time without any major loss of output. This contrasts markedly with Argentina.

³ Of course “few options” at that particular time, but the problem could have been avoided had the country adjusted its policy after the two oil and the interest rate shocks.

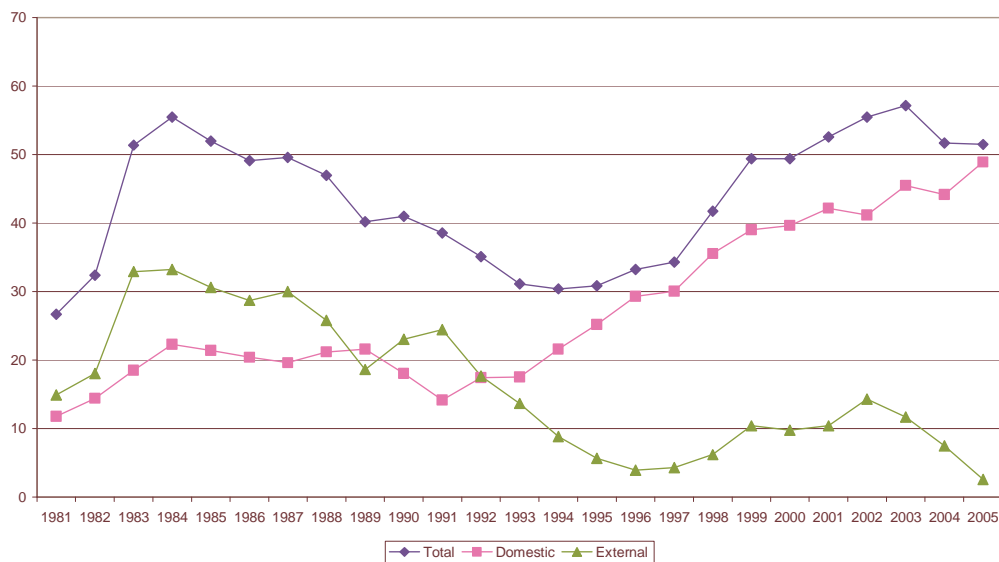
The final topic deals with the question of fiscal space for public investment. Public capital expenditures in Brazil, especially in infrastructure, were drastically reduced in recent years, mostly due to fiscal adjustment. However, there are plenty of evidence that infra-structure has strong impact over productivity and growth in Brazil (Ferreira and Araújo, 2005) so that the question of finding fiscal space to finance capital investment is very important today. Some of the solutions we present entail increasing debt temporarily to finance investment. Under some conditions, we show that net worth is positive as the present value of revenues is more than enough to pay for the debt service. However, if short-run interest response is not small this may not be true and debt-ratio may explode, so that debt finance is not sustainable. For this to be the case Brazil will first have to increase creditworthiness, achieving debt tolerance, by mostly reducing debt-ratio well below the current level.

II Debt to GDP Trends

From 1980 to the present we may divide in four periods the observed behavior of the public debt and its ratio to GDP in Brazil⁴.

II.1 1980 to 1984: in this period debt to GDP ratio jumped from 27% in 1980 to 55% in 1984 (see figure I below), with most of the rise being observed in 1982. The main reason for this sharp increase were the problems associated with Mexico's default in 1982 and the consequent devaluation of the Cruzeiro, which only in March lost 30% of its value with respect to the dollar. From 1981 to 1983 external debt jumped to 33% of GDP from 15%, reaching 60% of total debt. Until 1987 total debt remained close or above 50% of GDP, external debt around 30% of GDP and between 58 to 60% of total debt.

Figure 1 - Public Debt: 1980-2005



⁴ In this paper “debt to GDP ratio”, “external debt”, “debt”, and similar terms always denote *public* debt. When we refer to private debt we will explicitly say so.

II.2: 1985 to 1994: This is a period of continuous decline in indebtedness during which the debt ratio dropped to just 30% of GDP in 1994. This reduction in the debt ratio is due in a large extent to the impact of inflation on the nominal value of debt. Also important are the freezing of assets during the Collor Plan in 1990, with only partial payment when assets were “unfrozen”, and the low or zero overall deficit in part of this periods especially in the earlier 90’s. Moreover, the renegotiation of the debt from 1990 to 1992 included a sizable reduction of the total external debt. As a consequence, it loses relative importance in the period, representing less than 30% of the total by 1995.

II.4: 1995-2002: Although quite stable in 1995 – due to the monetization of debt after the price stabilization and maybe also due to partial default in the conversion to Reais of public bonds expressed in the old money – public debt increases markedly in this period. By December 2002, the end of Cardoso tenure, it stood at 55% of GDP, after reaching 63% of GDP in September of the same year.

There are several reasons for this performance:

- 1) Fiscal policy from 1995 to 1998 was very lax, with primary expenditures always above or equal to tax collection⁵;
- 2) Hidden liabilities were explicitly incorporated to the debt;
- 3) The devaluations of 1999 and 2002 – the former after the Russia crisis and the latter due to the instability and the attack on the Real before the election of President Lula da Silva - represented a sharp increase of total debt as external plus domestic debt in dollars were relatively high.
- 4) High interest rates associated with the fixed exchange rate regime implied in large interest payments that require additional financing.

⁵ Goldfajn (2005) shows that if primary result was positive in the period, corresponding to 3.5% of GDP, public debt would be only 30% of GDP and not 55% by the end of 2002.

- 5) A considerable part of the debt had floating interest rates. Thus, when interest rates jumped as a response to the Asian and Russian crisis, the interest burden augmented substantially.

Note that there is a large difference between the two terms of President Cardoso. In the first term (and January and February of 2002) one observes lax fiscal policy, fixed or pegged exchange rate and extremely high interest rates. In the second term fiscal policy became tighter, interest rate lower (but still high by international terms), and exchange rate was flexible. The debt ratio increased in this term mostly because of devaluation.

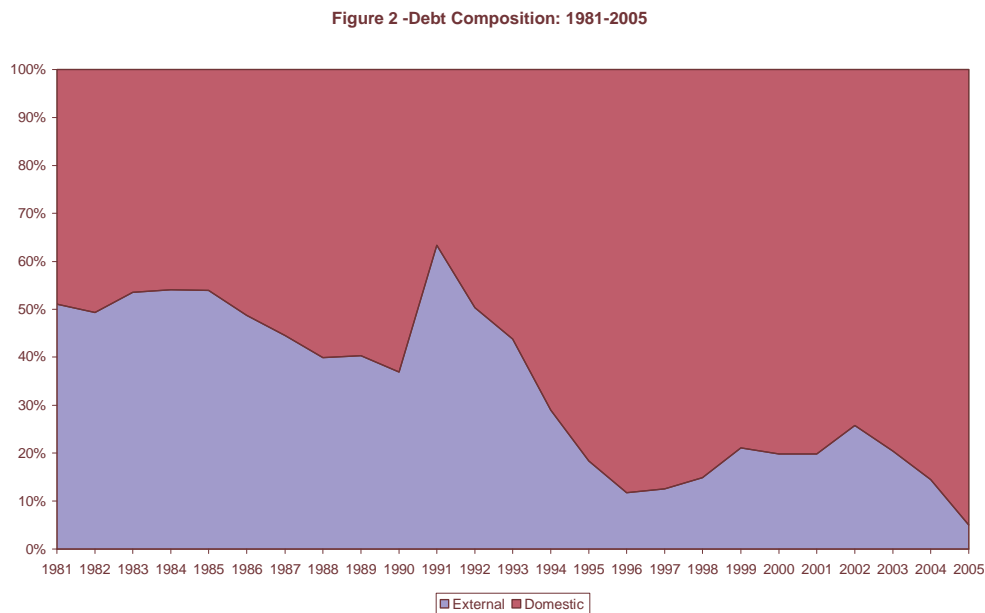
II.4: 2003-2006: debt as a proportion of GDP still increases in 2003 but decreases (very) slowly afterwards. It increases due to high interest payments⁶ and to the delayed impact of the 2002 devaluation. This is a period of continuation of tight fiscal policy (4.9% primary surplus in 2005), high interest rates and appreciation of the Real. There was also a sharp change in the composition of debt: external debt and domestic debt in dollar-denominated bonds went to less than 2% of GDP by 2006, reducing the vulnerability of the economy to external shocks (but increasing the cost of debt services).

⁶ There was also, as pointed out by Giambiagi (2006), a technical problem related to the accounting of the debt-ratio by the Central Bank that tended to overestimated this ratio.

III Debt Composition

III.1: External versus Domestic Debt

As one can see from Figure 2 below, external debt (that is, debt held by non-residents) was dominant from 1980 to 1992, representing almost 60% of total debt in the eighties, on average. From this date on it progressively loses importance and stands today at only 1% of GDP.



Note, however, that part of the domestic public debt was composed by bonds indexed to the dollar. Hence, although in 9/2002 external debt was 27% of total, when one adds dollar indexed domestic bonds, the number goes to 46%, close to the figures of relative external debt in the eighties. This type of bond was widely used to reduce the pressure on the exchange rate. Of course, under the risk of speculative attack, bonds in Reals are less attractive (or very expensive for the government) so that demand goes to dollar-bonds (and “selic-bonds”, which pays floating interest rates). As a consequence, after the devaluation of January of 1999

public debt jumps from 41.7% of GDP in 12/1998 to 51.2% in 02/1999, as exchange rate goes from 1.2 Reals per dollar to 1.9 in the same two months. In January 1999, dollar indexed bonds represented 30% of the value of domestic debt⁷.

Note that there were three main instances when devaluation directly hurt national debt:

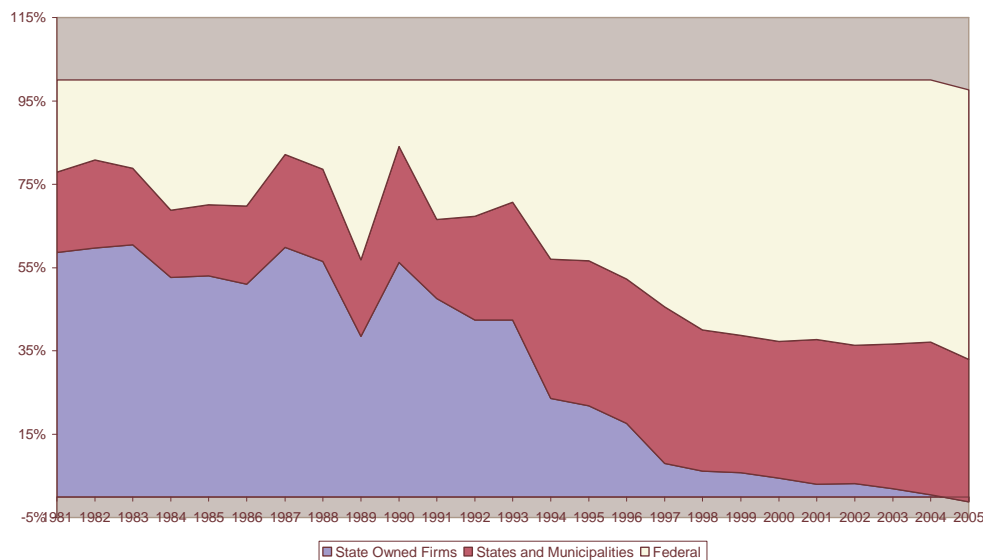
- 1) Devaluation of 30% in 1983 in the aftermath of Mexico's default. At this time most of debt was external;
- 2) 1998–99: speculative attack on the Real and the end of the fixed exchange rate regime. In this case, the real lost 60% of its value with respect to the dollars in two months and the “total dollar-debt” increased by 10 % points of GDP;
- 3) Instability related to the election of President Lula da Silva. From January to December 2002 exchange rate goes from 2.3 to 3.6, after reaching 4 Reals in September. In this particular episode government response was (mostly) to place bonds with floating interest rate rather than dollar bonds.

III.2: Central Government, Regional Governments and State Owned Firms

Throughout the seventies and eighties, state owned enterprises held most of public debt. In 1981-3 they were responsible for 60% of total debt, the rest being evenly divided by the central government, on the one side, and states and municipalities on the other. After 1990 the share of debt in the hands of the state owned enterprises decreased continuously, until it was zeroed in 2004 and they are now net creditors. By the same period the share of central government increases almost monotonically, reaching 66% of the total debt in 2005, the remaining being held by States and Municipalities, which hold around one third of the debt since 1994.

⁷ In the Lula da Silva government there was an aggressive policy of reduction of domestic bonds

Figure 3 - Public debt Composition by Sectors: 1981 - 2005



The share of external debt held by state owned enterprises was even higher by the seventies and beginning of the eighties. It was mostly debt in the form of bank loans (and not bonds) and it was initially used to finance investment projects. Later, by the end of the seventies, they were used to finance the current account deficit that reached 12 billions dollars in 1982. This is so because the public oil, steel, electric and mining companies had easier and cheaper access – because of collaterals - to international credit markets than federal government (not to say States and Municipalities, clearly a very high risk). This is a kind of Ponzi scheme in which more loans were taken to pay old loans, without cost-benefit analysis or solvency consideration.

States’ debt (and to a lesser extent, municipalities) were in constant renegotiation in the period. There was clearly a moral hazard problem given that fiscal misbehavior and insolvency were always bailed out by weak central governments. As we will see in Section V, this problem was (hopefully) solved during president Cardoso tenure.

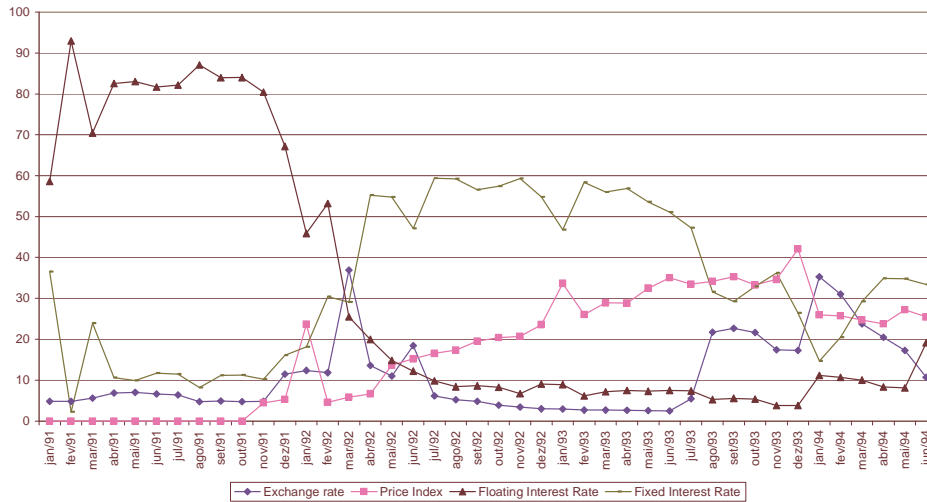
denominated in dollars. By March 2006 they were virtually extinguished.

III.3 Domestic Debt Composition

In the recent past Brazilian Domestic debt was composed by four types of bonds: 1) Bonds with fixed interest rates; 2) bonds with floating interest rates; 3) bonds indexed to U.S. dollars and 4) bonds indexed to domestic price indexes.

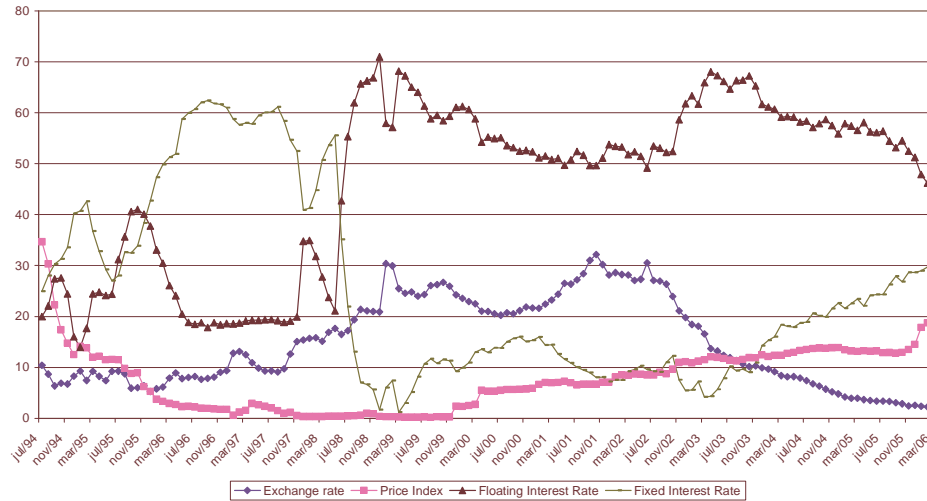
The composition of domestic debt varied considerably in the last years. The figures below⁸ show the proportional share of each type of bond from 1991 to the present.

Figure 4 - Domestic Debt Composition by Type of Bond: 01/91 to 06/94



⁸ For reasons of visualization we divided the graphs in two, one before the Real Plan, the other after.

Figure 5 - Domestic Debt Composition by Type of Bond: 7/94 to 03/06



Note first that bonds that pay floating interest rate (“over/selic bonds”) were the majority in 1991, losing importance in the following years, but resuming a dominant role from mid 1998 (in the aftermath of the Russian crisis) to the present. As they reduce the interest risk of the buyers, these bonds were widely used in moments of uncertainty when the return asked for fixed interest rate bonds was too high. They raise the risk to the Treasury, however, because movements of the interest rate affect debt in the medium term. They also make monetary policy less effective, since interest rate variations do not affect bond value.

Fixed interest rates bonds, on the other hand, are more expensive from the government standpoint, but they better isolate debt from shocks. Moreover, monetary policy is more effective in this case. Inflation indexed bonds are cheaper and could possibly be sold at long maturities than fixed interest bonds, bearing lower risk to the Treasury, but there were some resistance from the government to any indexation mechanism after so many years of high inflation and indexation. Note that in 1998, in the aftermath of the Asian and Russian crises their use goes almost to zero after being dominant the year before. They were also

widely used in 1992-1993, a period of high inflation, reducing in consequence debt value in real terms. Finally, bonds indexed to the dollar are also a cheaper way to finance debt services and public expenses, given the smaller risk to the bond holders. However, they carry a higher risk to the government as debt may increase sharply after devaluations.

Note that in Cardoso's second term most of the debt was expressed in selic and dollar bonds. In the Lula presidency, the former is losing progressively importance, while dollar bond are nonexistent today. In contrast, inflation-indexed bonds and fixed interest rate bonds represent nowadays 50% of the total debt.

IV Public Finance trends⁹:

IV.1 1980-1984 (and before)

Until reformed after 1985, Brazilian government had not one but three “official” budgets. One is the usual federal budget, which was approved by congress (elected but controlled by the military regime). The second was the “monetary budget” which referred to monetary authorities and to a large part of expenditures and development programs controlled by it. The third was the budget of the state owned enterprises. The “monetary budget”, was not in fact a budget, since expenses were automatically financed by bonds and monetary expansion. Banco do Brasil constituted with the Central Bank the monetary authorities, but it was at the same time a commercial bank. It could expand credit almost freely as there was an automatic discount window with the central bank (the “conta movimento”) with no formal limit. Of course, the central bank also financed part of the expenses in the other two budgets.

Needless to say, inflation tax, which at that time ranged from 1 to 3% of GDP, was actively used to finance public expenditures. Brazil was growing at Chinese rates in the beginning of seventies (“the Brazilian miracle”), when the first oil shock hit in 1973. Inflation measured by the IGP-M index was already in two digits showing signs of acceleration (15% in the official index). The government showed no strong political will to curb the increasing inflation through fiscal or monetary restraint up to 1980. Inflation reached 110% in 1980, leading to a more orthodox adjustment policy in the early eighties, causing recession. Fiscal deficit reduced from 6.89% of GDP in 1982 to 3.15% in 1983 and 2.88% in 1984. Despite these measures, due to generalized indexation of

⁹ This is extremely brief presentation of public finances in the period, based mostly on Giambiasi and Alem(2000) and Giambiasi (2005). Our objective is only to highlight the points that were relevant to the study of public debt and the political economy of public debt.

wages and prices and a maxi-devaluation caused by balance of payment constraints, inflation continued to accelerate, reaching 235% in 1984.

One important feature of the period was the intense use of external public debt. At the time of the first oil shock, the Brazilian economy was highly dependent on oil imports. However, the government insisted in a high growth path, which led to a significant deterioration of the trade balance. In order to finance the increasing current account deficit, the government took several measures to stimulate foreign borrowing from the private sector, and also from state owned companies. External public debt, that was only US\$ 4 billions in 1970, reached US\$ 47 billions ten years later (Carneiro (1982)). The increase of world interest rates in the late seventies was very damaging for Brazil - as most of our external debt was taken at floating interest rate - and so was the second oil shock. Given that government did not reduce expenditures, and that trade balance was badly hurt by the oil shocks, the service of the external debt became increasingly burdensome by late seventies and the beginning of the eighties. As we will see in details below, in 1983 Brazil started a process of external debt renegotiation and was bailed out by multilateral organizations.

IV.2: 1985-1989

In the president Sarney term (1985-1989) there is a progressive deterioration of the fiscal situation. Government went from a primary surplus of 2.6% of GDP in 1985 (see Table 1 below) to a deficit of 1% of GDP in 1989. In this same year overall deficit¹⁰ was 7% and, on average, it was close to 6% in the whole period. The main culprit was the central government, whose primary result went from a 1.63% surplus in 1985 to a 1.41% deficit four years later. In this period current consumption of the government went from 9.8% of GDP to 14.5%, while tax collection decreased from 25.6% to 23.6% of GDP (Além e Giambiasi, 2000).

¹⁰ We are using the “Operational deficit” concept. It takes into account real interest payments, in order to avoid distortions caused by the effect of inflation in the nominal deficit. It was also the concept used in the IMF programs in Brazil.

Part of the problem was the weak coalition supporting President Sarney, who was not elected but established in office after the death of indirectly elected president Tancredo Neves. There was no support in congress for tough fiscal measures. Much the opposite, after the end of dictatorship demands for social (and pork barrel) expenditures were high and the willingness of political forces to accommodate them too. Moreover, as pointed out by Além and Giambiasi (2000), the fiscal adjustment of 1983 was fragile.

Table 1: Public Deficit

	Overall Deficit (% GDP)	Interest Payment (% GDP)	Primary Deficit (% PIB)
1981	6.31	N.A.	N.A.
1982	6.89	N.A.	N.A.
1983	3.15	N.A.	N.A.
1984	2.88	N.A.	N.A.
1985	4.42	7.03	-2.61
1986	3.58	5.17	-1.59
1987	5.63	4.64	0.99
1988	4.87	5.78	-0.91
1989	7.09	6.07	1.03
1990	-1.32	3.36	-4.69
1991	0.19	2.9	-2.71
1992	1.74	3.32	-1.58
1993	0.8	2.98	-2.18
1994	-1.57	4.07	-5.64

Source: BCB, NA: not available

IV.3 1990-1994: President Collor and President Itamar years

In the President Fernando Collor de Mello government (1990-1992) one observes a drastic reduction of public deficit. This is partly due to intentional tight fiscal policy but also due to partial default of public deficit. All liquid assets, including government bonds were frozen and paid back after 18 months in 12 monthly installments. The frozen resources were indexed by inflation and paid interest rates of 6% a year. Those interest rates were well below the market rates,

implying in a substantial reduction of interest expenses for the government. In 1990 the country experienced the first public surplus in many years.

Among the measures of fiscal adjustment there was an increase in tax collection by 4% GDP points in the period and also a reduction of the wage bill of all levels of government by 1.5% of GDP. The privatization program started during Collor tenure and one of its objectives (perhaps the main objective) was to finance expenditures. This feature of the privatization auctions, and its precedence over efficiency and welfare (Oliveira and Ferreira, 2003), was dominant until the program was interrupted in the Lula da Silva presidency.

Note also that output grew faster, especially after 1993, than in the previous period. This reduced even further the interest bill as a proportion of GDP, as well as the debt as a proportion of GDP. Finally, note that part of the adjustment was met by inflation tax, that some estimated to be around 2 to 3% of GDP in the period (Ferreira and Rosal, 1998 and Cysne, 1998).

From Table 1 above, it looks as if the problem was mostly interest payment. However, part of the primary surplus was obtained by postponing expenses, which were not indexed to inflation. Hence, government would delay by some months the execution of a large variety of items in its budget, reducing as a consequence its real value as inflation was very high in the period. Tax collection, in contrast, was partially indexed¹¹. If the budget was executed correctly, or if expenses were indexed to inflation, primary surplus would be considerably smaller, or even non-existent.

¹¹ Technically, taxes were indexed to inflation. But at 40% or 50% inflation a month there is no way to keep their real value unaffected.

IV.4 President Cardoso years (1995-2002)

The Table below presents the behavior of overall and primary deficit as well as the interest payment, all of them as a proportion of GDP.

Table 2: Public Deficit

	Overall Deficit (% PIB)	Real Interest Payment - (% PIB)	Primary Deficit (% PIB)
1995	5	5,26	-0,26
1996	3,4	3,3	0,10
1997	4,31	3,35	0,96
1998	7,4	7,42	-0,02
1999	3,41	6,64	-3,23
2000	1,17	4,64	-3,47
2001	1,4	5,04	-3,64
2002	-0,01	3,88	-3,89
2003	0,88	5,14	-4,25
2004	-2,02	2,58	-4,59
2005	2,47	7,29	-4,84

Source: BCB

In the first term of President Cardoso (1995-1998), government experienced either primary deficit or an irrelevant primary surplus, indicating soft finance. In 1998, overall deficit increased to 7,4% of GDP mainly because of the high debt service to GDP. The latter became important due to very high real interest rates in 1998, to prevent speculative attack against the real after the Russian crisis. This is so even with windfall revenues from privatization, that were treated as current revenues. On the other hand, without inflation there was no longer seignorage nor could expenses be artificially reduced by delays. It did not help matters that the most governors approved large increases of public workers wages in 1995. As inflation was much lower than expected, this nominal adjustment became a large real raise.

Note that while in 1992 and 1993 interest payments were 3.1% of GDP on average, in the first term of president Cardoso the mean payment was 4.8% of

GDP. The debt service became this high due to very high real interest rates, which averaged 22% in real terms in this period. This is one of the main causes of the observed debt increase (see Garcia (2002)). The high real interest rates seemed necessary to keep exchange rate pegged during turbulent periods (Asian and Russian crises) in a world of very volatile capital flows¹². As a large part of the debt was issued at floating interest rate, interest payment (and debt in the medium term) increased immediately after the Central Bank moved interest rate on federal bonds up. Despite the effort to accumulate reserves through the whole first mandate, each crisis seemed to prove the effort vain. In a few months of 1998, more than US\$33 billions were lost, despite the interest rates. In January of 1999 the Real was devaluated and the fixed exchange rate regime was abandoned in favor of flexible exchange rates and inflation targets.

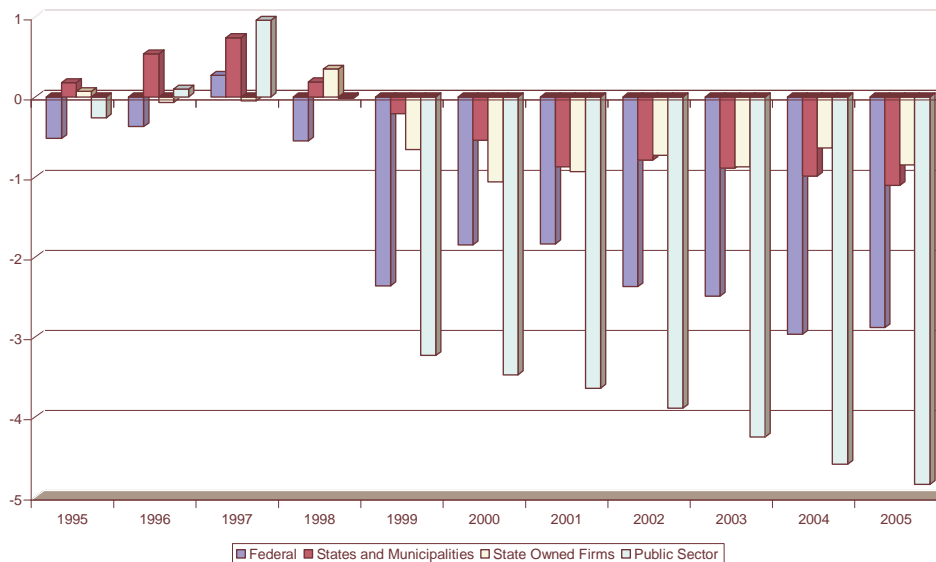
From 1999 on, primary surplus was significant and slightly increasing. However, because the 1999 devaluation, debt service was still very high and so overall deficit fell gradually to 3.4% in 1999, 1.2% in 2000, to finally a balance budget in 2002. In this last year of Cardoso government, interest expenses were lower than in preceding years due to negative real interest rates practiced during the election crisis at the end of the year. In a sense the unexpected increase of inflation, by reducing real interest bill, contributed to balance the budget.

During the entire second mandate, primary surplus was around 3.5%, obtained owing to a strong adjustment in all levels of government (see Figure 6), which was enough to stop the ascending path of the debt /GDP ratio that stabilized around 53%. This ratio was a bit higher in 2002, because of the exchange rate devaluation associated with President Lula election. Since an important part of the debt was dollar indexed (30% of domestic debt plus external debt, totaling around 25% of total debt), the debt to GDP ratio moved immediately in tandem with the exchange rate. In the peak of the election crisis in October 2002, it reached 63%. However, it fell again to around 55% when the

¹² In the aftermath of both Asian and Russian crisis real interest rates surpassed 40% a year.

exchange rate appreciated back due to Lula's reiterated commitment with stability and an overall responsible policy.

Figure 6 - Primary Deficit: 1995 - 2005



The fiscal adjustment was made mainly through a sharp tax rise. The tax revenues increased 4% on average in the second mandate, from 28,4% to 32,4%. However, current expenditures of the Federal Government increased steadily from 16.5% of GDP in 1994 to 21.6% in 2002, more than 6% GDP points in just eight years.

IV.5: President Lula Term (2003-06)

Policies in this period scaled those implemented in the second term of President Cardoso: still higher primary surpluses (around 4.5% of GDP), generated by higher and increasing taxes (reaching almost 38% of GDP in 2005), despite also higher and increasing expenditures. The main items responsible for those record levels of public expenditures were social security, social expenditures, such as *Bolsa Familia*, and interest payments. The later remained

elevated because debt to GDP was always above 50% for the period, and interest rate was never below 9% in real terms. This policy generated a 2% overall surplus in 2004, but it was counteracted by a 2.5% overall deficit in 2005. The main reason for this oscillation was interest payments. By 2004, the Central Bank was reducing interest payments, which were around 7% in real terms. As there were signs of excess demand in the economy, the interest rates were pushed up again, reaching levels close to 15%. However, if the primary surplus is maintained and real interest rates go down to reasonable levels as it is occurring recently, the debt/GDP ratio will definitely enter a solid descending trend.

Table 3: Tax Collection

year	Tax Collection (% GDP)
1994	27,90
1995	28,44
1996	28,63
1997	28,58
1998	29,33
1999	31,07
2000	31,61
2001	33,40
2002	34,88
2003	34,90
2004	35,91
2005	37,82

Source: Receita Federal

Note that, as if it was possible, public investment as a proportion of GDP felt even further at the federal level. The fiscal problem today is more related to the expansion of public expenditures (and taxation) and the bad quality of adjustment (reduction of investment, increase in pensions and current expenditures, etc.), than to the debt, which seems to be under control.

V. Explaining Public Debt Dynamics

The debt/GDP ratio increased substantially in the period of analysis, stabilizing just in the last few years. In order to understand the main forces driving debt dynamics we used the following equation (see appendix for derivation):

$$\Delta d_t = (pd_t - ndfs_t) + \frac{\hat{r} - g}{1 + g} d_{t-1}$$

where d is the debt/GDP ratio, r is the average real interest paid, pd is the primary deficit over GDP, g the real GDP growth and $ndfs$ is non-debt financing sources over gdp. This equation is general and does not depend on the debt composition. In table 4, we used this framework to account for debt/GDP dynamics in the period 1992-2005.

Table 4: Debt dynamics

Public sector debt	92-05	92-94	95-98	99-02	03-05
Change in public sector debt	0.9	-2.7	2.8	3.4	-1.3
Primary Deficit (- Surplus)	-2.6	-3.1	0.2	-3.6	-4.6
Recognition of Contingent liabilities (net of privatization)	0.2	0.0	0.1	0.5	0.2
Privatization revenue (negative)	-0.4	0.0	-0.8	-0.7	0.0
Recognition of implicit or contingent liabilities	0.6	0.0	0.9	1.2	0.2
Contribution from real GDP growth	-2.5	-3.2	-2.5	-2.0	-2.5
Contribution from real interest rate	4.9	3.9	4.3	6.4	4.6
Other Factors	1.0	-0.3	0.8	2.1	1.0

Obs: the numbers are contribution per year.

There has been an increasing trend of debt/GDP of almost 1% a year, despite an average primary surplus of 2.6% of GDP, and an average GDP growth of 2.5%. The main culprit for this trend is the high average real interest rates paid on public debt. The real debt service has been almost 5% of GDP during this period. The privatization revenues were more than compensated by the new

acknowledgement of liabilities (called “skeletons” in Brazil). The residual is called “other factors”, with a positive contribution of 1% of the GDP. We tend to attribute most of this item to the increase in debt value due to real exchange rate devaluation in several instances in the period, as explained below.

We divided the period into four sub-periods, corresponding to different mandates. The first sub-period corresponds mostly to Itamar Franco presidency, which assumed the government in September 1992 after the resignation of Collor de Mello. The 1995-1998 period corresponds to the first term of Fernando Henrique Cardoso while the third to Cardoso’s second term, and also to the first period of floating exchange rate and inflation targeting (as opposed to the fixed exchange rate regime of Cardoso’s first term). Finally the last sub-period corresponds to the first three years of Lula’s presidency, also under the inflation targeting and floating exchange rate regime.

From Table 4 above it is clear that the increase of debt over GDP occurred entirely in the two terms of President Cardoso. In the preceding years debt declined, but during Cardoso’s first mandate it increased by 2.8% per year, while in the second this rate accelerated to 3.4%. In the Lula government the debt/GDP started to decrease again, at an average of 1.3% per year.

Real interest rates were high in all years, implying heavy debt service for the whole period. This means that it had to be offset by a significant primary surplus, otherwise public debt would increase more than GDP. Although debt ratio increased in both Cardoso’s terms, the macroeconomic regime was very different, as was the cause for debt deterioration. The first Cardoso mandate was the only sub period without a substantial primary surplus. In fact, between 1995-1998, the government ran on average a 0.2 of GDP deficit. Moreover, without privatization revenues, debt increase would be even higher than the observed.

In the second sub period there was an important deterioration of the debt to GDP ratio, despite an average primary surplus of 3.6% of GDP. What are the reasons for this?

The contribution of interest rates was substantially higher in the second term of President Cardoso than in any other period, being on average 6.4% a year. This significant debt service was due to a conjunction of high debt/GDP – above that of the two preceding sub periods – with high real interest rate – higher than in Itamar and Lula years.

The 1999 devaluation contributed both to higher debt service – included in the contribution from interest rate term – as to an increase in debt/GDP due to the increase of the real value of dollar debt. This last effect does not appear in the interest rate term, and is probably the cause of the large “other factors” term in 2000. There is also an important “other factor” term in 2002, but it cannot be explained by the exchange rate devaluation during the year, since the latter should be reflected in the “other factors” term in the following year.

VI. State level finances: solving a moral hazard problem?

As one can see from Figure 6 above, from 1995 to 1998 states and municipalities experienced primary deficits on the aggregate. With exception of very few (albeit important) cities such as São Paulo, most of the problem was due to the states. This is not a recent phenomenon, in the eighties fiscal deficit of states and municipalities were on average 1% of GDP and primary deficit 0.1% of GDP. During the military dictatorship the space for discretionary expenditures at the state level was smaller – although far from zero – but after that subnational governments gained considerable flexibility to spend (and to finance these expenditures). As a consequence, there were recurrent fiscal disequilibria.

From 1987 to 1993 there were three renegotiations of state debt with the federal government (Vale, 2001). Although details vary from case to case, in essence the final result is the same, with the federal government taking over part of the debts of the states, forgiving some of their obligations and financing part of the interest and principal that were on default. For instance, the Law number 7614 of July 1987, authorized the federal government (the Treasury, to be specific) to

provide funds to the states in order to refinance the principal, interests and fines of overdue debt and also to finance the gap between primary expenditures and revenues in that and previous years. All these renegotiations included conditional ties and restrictions to future (irresponsible) actions of state governments. Which were, most of the time, not respected.

The recurrent renegotiations of state debt indicate clearly a moral hazard problem. It is similar to the problem of the recurrent agreements - and adjustment loans – between several countries with chronic balance of payment problems and multilateral organizations such as the IMF. In the case of Brazilian states, their governors and officials would take actions that increased indebtedness and the likelihood of future default. They did this because they believed that the central government would bail them out with high probability. As that was often the case, this course of action was rational, and so they would keep repeating it. Of course, there is an additional political economy question related to the relative bargaining power of the regional and central government: why the latter would not let some states go bankrupt?

At that time every state in the country had its own commercial bank. Some of them, such as Banespa, the bank of the state of São Paulo, were quite large and among the top financial institutions in the country. Although forbidden by law, they operated continuously with their respective state treasure. They would also finance investment or even current expenditures of state owned companies and they bought in many instances state bonds. As stressed by many (e.g., Mora and Giambiagi (2005) and Werlang and Fraga (1995)) these banks were in essence printing money when they financed the states. This is so because they would not find in the market funds to back their loans or acquisitions of state bonds, so the Central Bank would lend them money via rediscount or through liquidity loans, almost at a daily base. Hence, as opposed to private banks, money created by the state banks was not backed by credit from the private sector but by resources from the Central Bank. It was as if the country had 23 central banks, the official and the state's commercial banks.

Likewise, state owned companies (especially in the energy sector) were used as a financing device to the state government. The use of these companies and of the state banks allowed governors to increase with little bound expenditures. Part of the problem was that these banks and companies were, also recurrently, on the verge of bankruptcy.

From the point of view of the state governor these strategies made a lot of sense. Either he would leave the problem to a new incumbent (there was no re-election at that time) or he would renegotiate directly with the federal government that would, most of the time, bail him out. In present value the trajectory of state deficits and debts were not sustainable before renegotiation. However, debt never exploded as once in a while there was in fact renegotiation and pardon/transfer of part of it. Hence, the best strategy to the state government was to spend as much as it could, put himself in a critical fiscal situation and wait for a solution from the central government.

Why would the central government help the states in the end? In the case of the renegotiations that occurred between 1985 and 1994, because they were weak governments with fragile and very fractionized majorities in congress. Both Sarney and Itamar Franco were vice-presidents that were sworn in after the death, in the first case, or the impeachment, in the second case, of the president. They need badly the support of state governors, each of them controlling a group of congressmen. They were in no position to impose austerity to the governors, who had all the bargain power in their hand. It is no surprise that most of the problem was concentrated in the four states with larger population and consequently with a larger number of congressmen: São Paulo, Rio de Janeiro, Minas Gerais and Rio Grande do Sul. Together, they represented at that time 48% of the Brazilian population (and 66% of the Brazilian GDP¹³).

In order to change this situation there would be needed a strong president to bargain with (preferably weaker) state governors. This is the scenario under Fernando Henrique Cardoso, who was elected in 1993, after being responsible as

¹³ Both figures are from IBGE, obtained in the IPEADATA database.

finance minister for the Real Plan, and re-elected four years later. For the whole of his two terms he had a secure majority (even though still relatively fractionized) and command over it. Political indications to public and bureaucratic positions – something not new in this country – and budget transfers to projects of local interest were widely used to guarantee the loyalty of the government political base in the congress¹⁴.

In addition, the financial distress of the states by this time were worst than ever. Debt to GDP, especially in the large states, reached record levels. With price stability, inflation could no longer be used to reduce real expenditures so that the large and widespread wage raise in 1995 turn out to be a permanent increase in expenditures, at the same time that social security expenditures became extremely rigid.

Finally, after some years of low inflation, price stability became highly valued by the population and hence a political objective per se of the central government. Everything else being the same, the willingness to accommodate pressures that could bring inflation back was much smaller now. But things were quite different as we have just seen: the central government was now stronger and the state governors weaker. It also helped matters that Banespa was under federal intervention since the day before Fernando Henrique Cardoso presidency started. This was convenient (and probably arranged with his predecessor) because it reduced the freedom of the newly elected governor of São Paulo – the strongest state in the country - to expend, putting him in a vulnerable position.

The details of the whole renegotiation process are beyond the scope of the paper¹⁵. What matters for us are the reasons that made state debt negotiation during Fernando Henrique Cardoso presidency different from the previous negotiations, and what makes the current situation more stable than before. The relevant question is if we have now a final and sustainable solution or this is only one among many renegotiations.

¹⁴ At the same time, transfers to projects of the opposition were meager.

¹⁵ The interested reader (with command over Portuguese) may check Giambiasi (2005) and Vale(2001).

The main points of this program were the following:

- 1) State banks and energy companies were privatized;
- 2) All state debt was transferred to the federal government. This was not for free. States had to pay an upfront fee (hence the privatizations) and pay up to 13 to 15 percent of their net revenues to the federal government, every year, as service of the debt transferred to it.
- 3) The “Fiscal Responsibility Law” approved in the second term of President Cardoso, among many things, limited drastically the state and municipal ability to expend beyond revenues- as a matter of fact, it is a crime now – and imposed limits to the debt as a proportion of annual revenues.
- 4) States and Municipalities could no long issue bonds.

How credible and sustainable are those measures? By the end of Fernando Henrique Cardoso presidency there were no (relevant) state banks and all energy companies were transferred to private hands. Hence, with respect to the first item above, there was a definitive solution and extinction of a mechanism that financed expenditures without the corresponding revenues and implied in macroeconomic instability. Note that the privatization (or liquidation) of State banks was one of the requirements for the debt renegotiation.

With respect to the second item, debt transfer, there were various attempts to challenge it, all without success. The most well-known was the default of the debt service by Itamar Franco - then governor of Minas Gerais - in 1999. Although causing concerns in the market and making a lot of noise, this default was absolutely neutral in terms of net resources to Minas Gerais and, in all aspects, useless. Following the new law, federal government withheld immediately constitutional transfers equivalent, in value, to the debt service not being paid. This is an automatic mechanism that, by reducing the discretionary power of all the players, allowed for a better equilibrium in which all states and municipalities end up paying the service of the debt. Among other things, because now there is no gain by defaulting but only costs such as reputation loss.

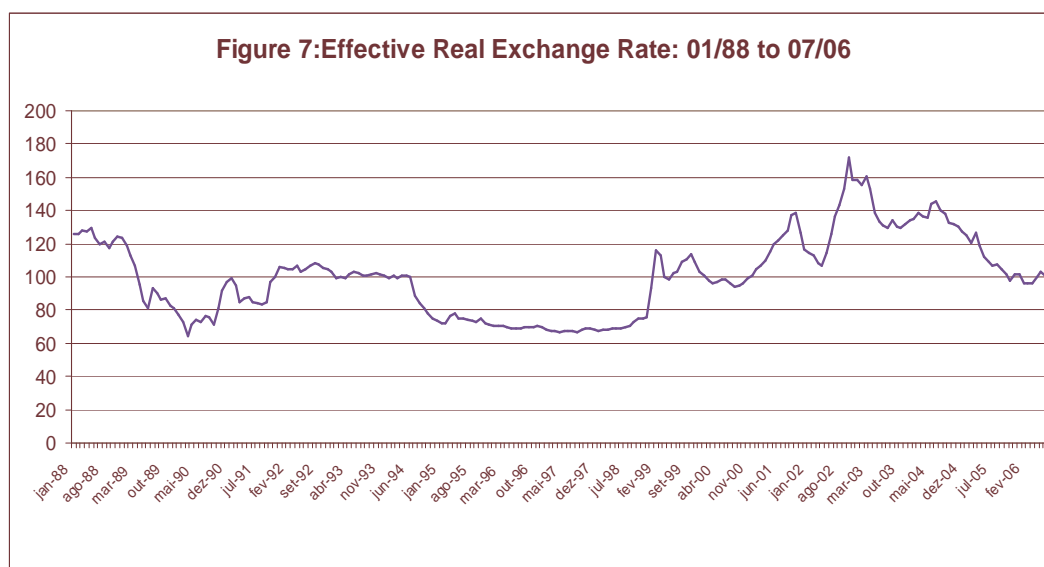
The third mechanism, the Fiscal Responsibility Law, has been working fairly well. Although very long and detailed, its main accomplishment has been the imposition of balanced budget at all levels of government, limits to

indebtedness and the prohibition of loans between members of the federation. Debt was only allowed to be at most twice as large as annual net revenue, with a transition period of few years allowed for some critical cases.

It seems to us that fiscal reform at regional level is, at least for the moment, very successful. Primary result went from systematic deficit in the 1994-1998 period, to surplus after 1999. Debt to net revenue ratio in all but two states (Rio Grande do Sul and Alagoas) are now below two, the contracted threshold. In contrast, in 2000 there were twelve states above this level. Moreover, states now lost most of their ability to threaten macroeconomic stability. They can no longer (indirectly) issue money and their debt, after renegotiation, is now in a non-explosive path. This indicates a structural adjustment that left less room for opportunistic behavior.

VII Exchange rate policy, debt, debt structure, and Cardoso's reelection

As seen in Section IV, in terms of economic policy we can divide President Cardoso term in two periods. The first one corresponds to the period when the exchange rate was pegged, from 1995 to 1998. The second one corresponds to the floating exchange rate regime, from 1999 to 2002. In the first sub period interest rates were higher and more volatile, and in the second sub period exchange rates were naturally more volatile. The figure below presents real exchange rate from 1990 to 1999. It is expressed in Reals per dollar.



In both periods there is a close connection between public debt and exchange rate, which we analyze in more detail below. As we can see in Table 4 the pegged exchange rate regime is characterized by a more appreciated and less volatile exchange rate and higher interest rates. The volatility of interest rates is high in both periods.

Table 5- Real Interest and Exchange Rates: 1995-2000

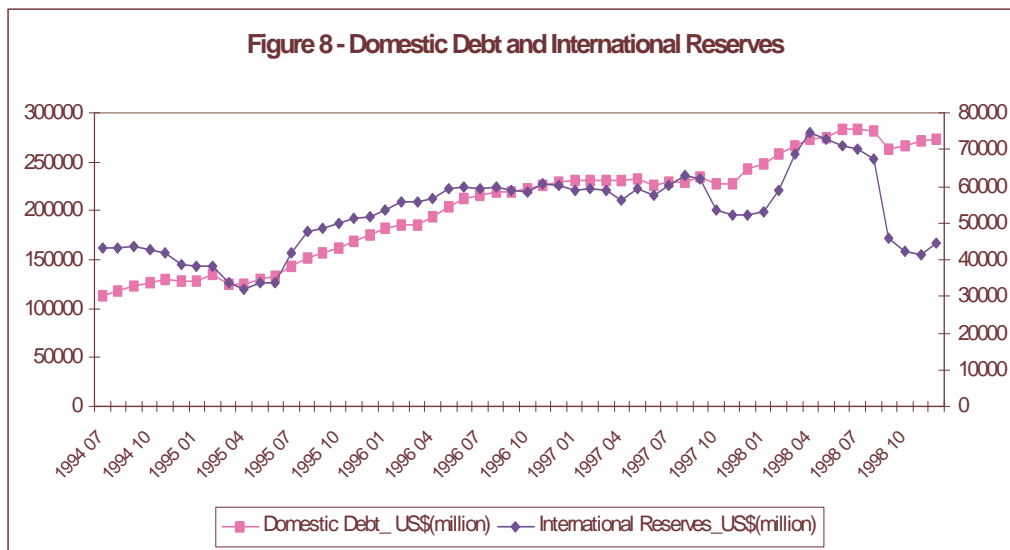
	Real Interest Rate		Real Exchange Rate	
	Average	Volatility (%)	Average	Volatility (%)
95-98	21.89	7.12	70.54	4.05
99-02	10.46	7.04	114.50	15.40

VII.1 Pegged exchange rate regime: 1995-1998

One of the main policy instruments of the Real stabilization plan was the exchange rate regime of fixed exchange rate. Although not fixed by law as in Argentina, exchange rate was set at one dollar in the first of July of 1994, the day one of price stabilization. However, it fell to 0.9 by the end of this month and by December of 1994 the exchange rate was 0.85 Reals per dollar.

Despite a substantial current account deficit, high real interest rates helped to keep the real exchange rate at roughly the same appreciated level for four years, as the inflow of capitals more than compensated the current account deficit, causing an increase in reserves. The central bank sterilized the currency inflow by selling bonds. Thus, both domestic debt and foreign reserves would accumulate, but the debt would accumulate at higher rates because of the overall deficit of 5% on average and real interest rates above 20% (see Figure 8).

The currency was kept overvalued in order to consolidate stabilization. Its consequence was a large increase in public debt, from roughly 30% to 41.7% of GDP in the period. The expansion of the central government debt alone was even more dramatic, as it went from 12.7% to 25% of GDP. The abandonment of the fix exchange rate regime, and the consequent currency devaluation, gave an extra push to the debt, which reached 50% of GDP in the end of 1999, as one third of the debt was indexed to the dollar.



There is no question that the Real Plan worked very well in what concerns its main objective. There was a stunning reduction of inflation, from 2477% in 1993, to 5.2% in 1997 and 1.7% in 1998. Cardoso popularity was, in a large sense, anchored in the success of the stabilization program. He was elected mostly because he was the finance minister responsible for it. He could not risk his main achievement by devaluing the exchange rate before the October 1998 election. In fact, the exchange rate was only devalued a few months *after* Cardoso's reelection.

This type of exchange rate cycle around major elections - in which the exchange rate tends to be overvalued before election and undervalued after election - is a pattern in Brazil. Bonomo and Terra (2001) found statistically significant evidence of this type of cycle using a data base which stops before the 1998 election. However, this is not exclusively a Brazilian phenomenon, since several studies found this same pattern in other Latin American countries (see Frieden and Stein, 2001).

There are two mechanisms that could generate this type of cycle. One is based on the well known opportunistic mechanism for political business cycles

(Rogoff and Silbert, 1988). An unsustainable appreciated level of the exchange rate is maintained until election, since voters prefer the appreciated level, but do not know if this level is sustainable or not. After election the exchange rate is devalued (see, among many, Stein, Streb and Ghezzi, 2005).

The other story is based on the distributive character of the exchange rate (see Bonomo and Terra, 2005). Domestic currency appreciation tends to distribute income from tradable producers to non-tradable producers. Non-tradable producers are the majority of the population, but tradable producers are able to lobby. Depending on the objectives of the policy maker he can use exchange rate to cater to these different groups. However, before elections politicians tend to favor appreciation in order to improve their reelection probability. In 1998 it was common to find reports in the press about the pressure from entrepreneurs' organizations against the president of the central bank, who was ultimately the stronghold of the currency regime¹⁶

There is one additional political twist here that involves the public debt management. The table below presents in detail the composition of domestic debt between 1997 and 1998.

¹⁶ In the Brazilian case, one has to add the popularity of low inflation per se, after 20 or more years of prices out of control, since there was a general fear that the floating regime could bring inflation back.

Table 6

Composition of Domestic Public Debt (type of bond/total debt)			
	Exchange rate	Floating int. rate	Fixed int. rate
Jan/97	12.78	18.57	58.77
Feb/97	13.11	18.74	57.63
Mar/97	12.47	19.13	57.98
Apr/97	10.94	19.25	57.84
mai/97	9.86	19.25	59.43
jun/97	9.28	19.39	60.05
jul/97	9.31	19.41	60.18
aug/97	9.11	19.19	61.14
sept/97	9.72	18.82	58.38
oct/97	12.61	19.09	54.68
nov/97	15.08	19.9	52.46
dec/97	15.36	34.78	40.91
jan/98	15.71	34.93	41.29
feb/98	15.82	31.83	44.76
mar/98	15.13	27.78	50.68
apr/98	16.88	23.76	53.62
mai/98	17.66	21.11	55.55
jun/98	16.49	42.73	35.13
jul/98	17.19	55.34	21.94
aug/98	19.38	61.95	13.05
sept/98	21.38	65.7	7.05
oct/98	21.12	66.27	6.66
nov/98	20.98	66.86	5.65
dec/98	20.91	70.98	1.68
jan/99	30.37	57.92	6.03
feb/99	29.94	57.16	7.42
mar/99	25.48	68.19	1.22
apr/99	24.58	67.28	2.99
may/99	24.81	65.05	5.13
jun/99	23.98	64.01	8.14

Source: BCB

In the beginning of 1997, before the Asian crises, most of domestic debt was composed of fixed-interest rate bonds and less than 30% were either bonds indexed to the dollar or floating interest bonds. The return to the former is in general higher, because of the risks to the bond holder due to inflation and real interest rate risk. The floating-interest rate bonds, in contrast, pay less on average because they have no nominal interest rate risk. The bonds indexed to the dollar would pay less if there is no change in the announced exchange rate policy, but would have high return in case there is abandonment of exchange rate policy and

a substantial devaluation. For this reason, holding this type of bond would be a hedge against devaluation risk, or a bet against the government policy.

From the standpoint of the government, having a significant portion of the domestic debt indexed to dollars, would make the debt sensitive to exchange rate level. This could also signal its commitment with the fixed exchange rate regime before its abandonment. The floating interest-rate bonds would increase the fiscal effects of monetary policy.

As the maturity of these bonds was relatively short, the composition of domestic debt could change very fast. This is exactly what occurred in this period. Just after the Asian crisis, the proportion of fixed interest rate bonds falls to 40% of the total, while the share of dollar and floating-interest bonds jumped. The increase of dollar-bonds was instrumental to reduce the demand for international currency and so the pressure for depreciation of the Real. It also was instrumental to reduce the loss of reserves during the attack against our currency, as part of the agents substitutes their demand for dollar by bonds indexed to the dollar.

The response of the Brazilian government worked well for that moment – exchange rate was kept fixed and the loss of reserves was interrupted by the beginning of the year - and from March 1998 until May of the same year there was a relative increase of the share of fixed interest rate bonds. The structure of the debt, in May, was almost the same as before the Asian crisis. Interest rate, however, was extremely high, reaching 3% a month in December 1997.¹⁷

After a temporary reduction of the pressure in mid 1998, the situation deteriorated again after the Russian crisis. By the end of September, two weeks before presidential elections, the proportion of dollar bonds were up to 21% of the total domestic bonds, and the proportion of floating interest bonds reached 65%. The proportion of fixed interest rate bonds had become merely 7% of the total. In

¹⁷ Note that this policy worked in as much as the risks associated with exchange rate devaluation or with a large increase in the interest rate was believed to be much more important than the risk of default.

October, Cardoso was re-elected and in January of the next year the fixed exchange regime was over, when the Real jumped to 1.9 per dollar from 1.2.

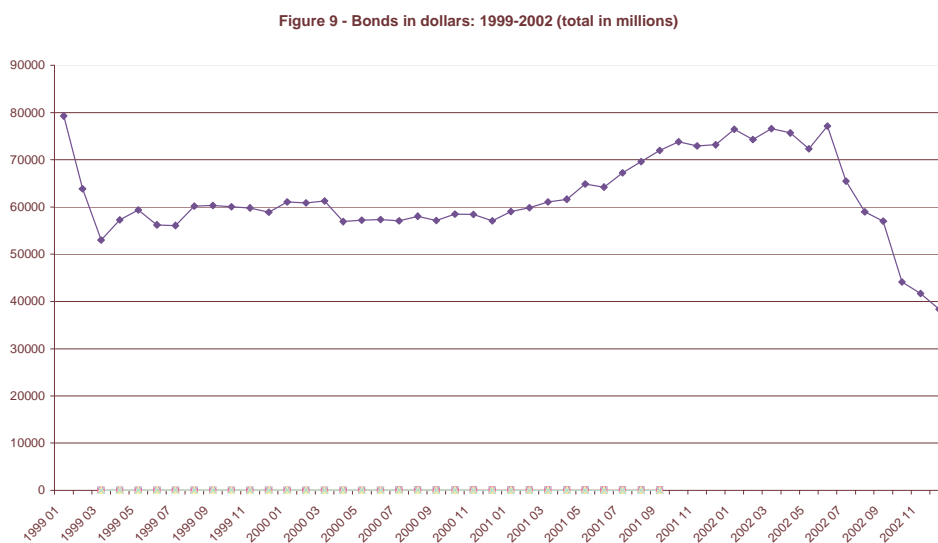
The use of different types of bonds to avoid devaluation of the Real (especially bonds indexed to the dollar), and its potential inflationary impact on domestic prices, was a temporary success. Given the level of reserves and the speed it was diminishing – they went from US\$ 70 billions to US\$ 42 billions, from July to October 1998 - it is clear, at least at hindsight, that the fixed/pegged regime would not resist for long. The use of national debt and the issue of bonds indexed to the dollar may have given this regime the necessary air for its survival for some extra months, and the necessary time to re-elect president Cardoso.

What were the costs of this policy? In the first place, between November 1997 and February 1999, debt over GDP went from 33% to 56%. Half this increase occurred in the two months after depreciation of the Real, resulting from its impact on external public debt and on the 21% of domestic debt indexed to the dollar.

The cost reduction obtained by issuing domestic dollar debt when the exchange rate was fixed was more than compensated by the instantaneous increase in debt when the peg was abandoned. Moreover, not only during the speculative attack, but for the whole fixed exchange rate regime interest rate was kept at extremely high levels. Average monthly interest rate (over/selic) in the first Cardoso's term – 2.4% - was 1% higher than the rates in his second term, when exchange rates were floating. This, of course, increased the cost of public debt and also its size, as said before. As a matter of fact, interest payment as a proportion of GDP in 1998 was 7.4%. Finally, international reserves went to just US\$ 33 billions in March of 1999 and inflation, which was only 1.6% in 1998, jumped to 9% in 1999.

VII.2 Debt composition and inflation targeting (1999-2001)

In the second term of President Cardoso, debt management was also used for inflation and exchange rate policy purposes, an indication of the excess of power of the Central Bank vis-à-vis the Treasury, which was supposedly responsible for the debt management. Figure 9 below presents the total value, *in dollars*, of the domestic debt in bonds indexed to the dollar.



Note that from November 2000 to June 2002 total domestic debt in dollars increased considerably, around 35%, jumping from 57 billions of dollars to 77 billions. Once again, the dollarization of domestic debt is used to satisfy the demand for dollars. In the fixed exchange rate regime, it lessened the pressure on foreign reserves, reducing the probability of a speculative attack on the currency. In the floating exchange rate regime, it reduced the pressure on the exchange rate, helping the central bank to comply with the inflation target. It implied, however, a riskier debt structure for the government. As a matter of fact, in the same period, the debt expressed in Reals more than doubled.

In other words, from the standpoint of the monetary authority responsible for monetary policy and price stabilization, the issue of bonds indexed to the dollar made a lot of sense, as it reduced the demand for foreign currency. From the perspective of the Treasury, because this type of bond increases the vulnerability of the debt to external shocks, it should have been used with a lot more caution. The fact that the central bank during that period had much more political muscle than the Treasury was the reason for the exaggerated increase of the debt in dollars.

Exactly the opposite happened since the inauguration of President Lula da Silva, when the management of the domestic and external debts was entirely handled to the Treasury, so that the central bank has virtually no saying in this matter anymore. As we already mentioned, bonds in dollars were zeroed in the last months, revealing clearly the preferences of the Treasury as opposed to those of the monetary authority.

It is important to note that during the second semester of 2002, the Brazil risk, measured as the spread of Brazil external bonds over US Treasuries, moved closely with the exchange rate, both increasing substantially. The former reached 2052 basis points and the latter 3.8 Reals per dollar in October. They were reflecting international market assess that the probability of default on external debt was substantial.

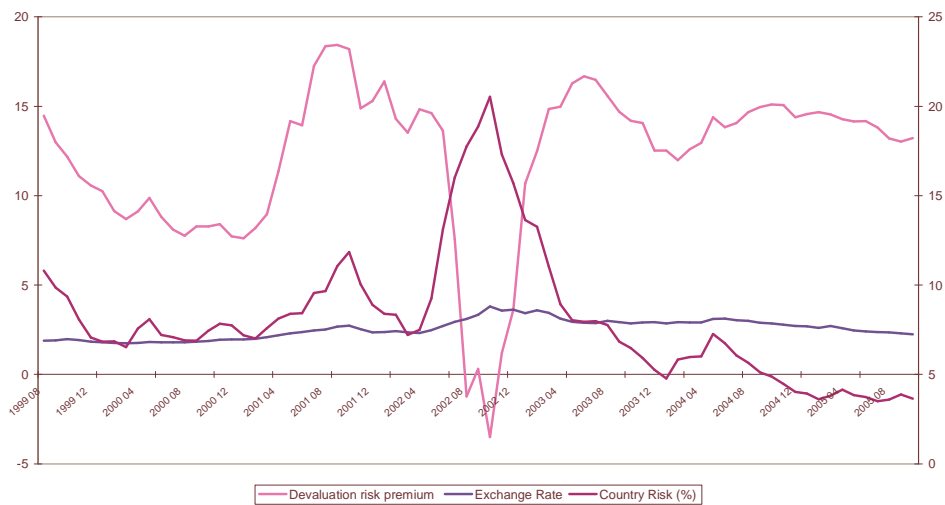
Another question of interest is the market assessment of currency devaluation. However, it is not so easy to disentangle the expected devaluation and currency risk premium. Those are both reflected in the ratio between the fixed domestic interest rate¹⁸ and the dollar coupon¹⁹. From the figure below, one can see that that this measure moved together with the country risk and the exchange rate before the 2002 election crisis. During the crisis this gap fell markedly. One interpretation is that the Brazilian market participants had different views from

¹⁸ Measured as the pre-fixed interest rate in a swap against DI (a floating interest rate with daily variation).

¹⁹ Measured as the dollar interest rate in a swap against DI (a floating interest rate with daily variation).

that of foreign investors, and believed that there was an overshooting of the exchange rate, which should appreciate back in the future. Additionally and alternatively, market participants might believe that there was a risk that the Brazilian monetary authorities would control the exchange rate, since it was already very high. In both cases, investors in dollar coupon would have losses with the future movements of the exchange rate.

Figure 10 - Risk measures



VIII. The renegotiations and defaults of external debt

In the recent past there are two episodes of external debt default in Brazil: one in the aftermath of Mexico's default in 1983 and another in 1987, during Sarney's presidency. They have different reasons and political motivations.

VIII.1 The 1982 external debt default

Given the favorable conditions of the international markets, external debt increased tenfold from 1970 to 1980. In 1982 it reached 85 billions of dollars, more than four times exports. This ratio, just ten years before, was 2.4. External capitals were a key part of the development strategy of the military governments, and an important source for financing public investment. As we already noted, in 1980 most of the public debt were in the hands of state owned companies which were holding more than 70% of external debt, used initially to finance investment projects.

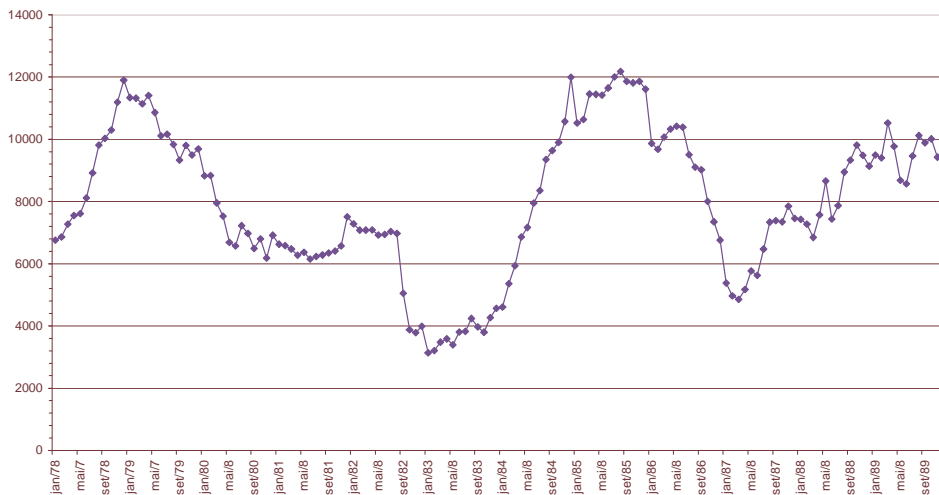
At the moment of the first oil shock, Brazil was highly dependent of oil imports. Instead of adjusting prices, exchange rate and growth, the Brazilian government opted for a strategy of prolonging the Brazilian miracle taking advantage of Brazil's solid reputation at that time, and of the liquidity of financial markets. As a consequence, trade balance deteriorated, becoming negative from 1974 to 1980 (with exception of 1977). The state owned enterprises indebtedness capacity was used to generate the necessary dollars for the oil imports, notwithstanding the social returns of their investment projects.

The second oil shock, in 1979, and Volcker's interest rate shock, aborted this strategy. Additionally, Brazilian external debt in the late seventies and early eighties was mostly taken at floating interest rates (78% of the total in 1983). The problem is that the Federal Fund Rate was only 4.2% on average, during the

sixties, but it jumped to 7.1% in the next decade, reaching 16.4% in 1981. This fact, of course, implied a steep increase of the payments Brazil had to do.

Our balance of payment became increasingly problematic, to say the least. From a positive result of US\$ 2.5 billions, on average, between 1975 and 1977 it went to a negative result of US\$ 4.5 billions in 1982. Current account deterioration was steady and increasingly in the period, going from a negative result of US\$ 1.6 billions in 1972 to US\$ 16 billions ten years latter. At the same time, reserves were quickly been depleted, as shown by the picture below:

Figure 11 - International Reserves: 1978 - 1989



From January 1982 to January 1983 international reserves went down from US\$ 7.2 billions to just US\$ 3.1 billions. By the end of 1982 they were just 19% of annual exports. When international capital markets dried up after Mexico’s default and Brazil could not roll its debt any longer, there was no option than stop payments. Note, however, that there was no “official” or formal default as Brazil negotiated with the IMF (and international markets in general) a large adjustment loan used to pay part of its financial obligations. As a matter of fact, there was one renegotiation in 1983, another in 1984 and still another in 1986.

Additionally, trade balance went from deficits in the late seventies to considerable surpluses after 1983. This was necessary to pay for the interest of external debt, given that capital flow was interrupted. The “maxi-devaluation” of February 1983 was part of this process, and so was the intensification of barriers to trade.

VIII.2 The 1987 external debt default

The scenario of the 1987 default, although far from solid, was much less severe. To start with, the flow of capitals to less-developed countries was already reestablished. The Federal Funds Rate, in 1986 and 1987 was, on average, 6.7% annually as opposed to 19% in June and July of 1981. Trade balance result in 1985 and 1986 was, on average, US\$ 10.4 billions, which contrasts with the mean figure of the two previous years, US\$ 1 billion.

The situation by the end of 1985 was relatively stable, reserves reached US\$ 11 billion dollars and current account was negative but only by US\$ 200 millions. In the next year, however, there was a marked deterioration of international accounts due to the excess demand engendered by the Cruzado Plan, with a loss of reserves of US\$ 4 billions and current account deficit of US\$ 5 billions. It is also true that interest payment in 1986 was 10 billion dollars, but this number is 2 billion below the figures for 1982. Part of the problem here is that, external (public) debt increased by more than US\$ 40 billions between 1982 and 1987, because most of the private external debt was transferred to the government, in the year before.²⁰

Note, however, that the improvements on fiscal policy, during the 1983-84 adjustment were not based on any structural reform. As soon as the trade balance responded to the depreciated exchange rate, with the consequent loosening of the

²⁰ There were mechanisms by which the private sector could transfer its external loan risk to the government (Resolução 63 and 432). It was possible to deposit in a central bank account the payment of the loan before its maturity, and withdraw the resources again if necessary. In this way the corresponding reserves were kept in the country for as long as the original loan maturity, without restricting the borrower choice of repaying it.

external constraint, expansionist fiscal policy was resumed. The political weakness of first civil government, which had the vice-president José Sarney empowered in 1985, certainly did not favor painful adjustments. Fiscal deficit in 1985-86 was, on average, 4% of GDP, while the primary deficit was 2.1% of GDP.

In 1986, the Cruzado Plan - the first of a series of “heterodox” stabilization plans - was implemented. In essence, it froze prices for several months but made no adjustments at the fiscal side. At the same time, significant wage increases were approved²¹, and an expansionist monetary policy, with negative real interest rates, was pursued. Hence, the price stabilization program was implemented under strong pressures from the demand side. The government tried to appeal to the people by transferring to them the responsibility for the success of the plan. The “fiscals do Sarney” - as the supporters of the plan were called – were supposed to guarantee that prices of all goods would remain frozen by monitoring them continuously. The popular mobilization around the plan was tremendous.

As demand pressures mounted, the price control was not sustainable. However, the timing of the plan was good enough for the government coalition to win governor and congress elections. Less than one month after election, in November of 1986, prices were freed and inflation returned. President Sarney popularity was badly hurt.

In the beginning of 1987, the level of reserves was very low. Since the international capital markets were not as illiquid as in 1982, and the deterioration of Brazilian external accounts very recent, there was certainly some room to renegotiate with debtors. However, seeking to recover the popularity it had only months before, the government declared a moratorium of external debt, blaming foreign bankers for the difficult situation the country was facing.

One of the key variables here is that, as said before, President Sarney was elected the vice-president of Tancredo Neves who died before inauguration. He

was in daring need of support from the congress²². On top of that, his team of ministers and advisers held heterodox views of the economy, among them that fiscal deficit was not relevant for inflation. The combination of a weak presidency with populist ministers end up generating expansionary fiscal policy, reduction of tax collection (as a proportion of GDP) and the recurrence to “spectacular” measures with strong popular appeal. Among them price controls and, when it did not work out, the external debt default of February of 1987.

VIII.3 The internal debt default in 1990 (Collor Plan)

After several failed attempts to bring inflation down through heterodox stabilization plans based on price freezes, Fernando Collor de Melo - the first president elected by direct vote in more than 25 year - tried something also drastic, but radically different: an 18-month freeze of 80% of all liquid assets. This entailed a remarkable liquidity reduction, in a desperate measure to bring down inflation.

The freeze included all public bonds holdings, which during those eighteen months would be serviced at a rate of inflation plus 6% per year. Hence, public debt holders were locked for 18 months without their principal, even if the maturity of the financial application was before that. Moreover, the interest rate they received during this period was substantially below the contracted rates. This partial default may have partially caused the higher bonds risk premia observed in the following years.

²¹ A 16% rise in the minimal wage and 8% in all higher wages.

²² In contrast, the renegotiations of 1983 occurred under the military government, which had a firm grip over congress and was not really looking for popular support.

VIII.4 The choice of no default in 1999 and 2002

Why Brazil kept servicing its external debt when it suffered two negative shocks, the depreciation of Real in 1999 and in 2002? Why not default, as in 1987 or as Argentina after the 2001 devaluation?

One first reason is that external debt was a much smaller fraction of total public debt in 1999, 14.8%, than in 1982 to 1987, when it fluctuated around 50%. Hence, the gains were not too big – external debt services as a proportion of total debt service was small – to endure the reputation loss and the costs associated to it. That could be big, among other reasons because the renegotiation of 1990-92 was very favorable to Brazil, so that we would be breaking a contract that was already generous and the chances of the same happening again were small.

A second reason is that, while in December 1986, two months before the default was announced, international reserves were only US\$ 6.7 billions, in December of 1999 and 2002 they were 36 and 37 billions of dollars, respectively. There was no lack of currency to pay for interest and debt principal.

Finally, and especially with respect to 2002, it was clear that the problem was temporary and caused by the fears associated with a leftist government. This panic led to the currency devaluation. Given the structure of debt, with an important part of domestic debt indexed to the dollar, debt over GDP ratio increased immediately, causing more panic and more devaluation, and so on.

However, once elected – in fact, before it - President Lula announced (and followed it later) that he would keep most of the monetary and fiscal policies of President Cardoso, that he would honor contracts and did not plan any default of the debt²³. As a consequence, markets calmed down, capital flow returned and exchange rate appreciated again, reducing debt/GDP ratio. One year after President Lula's inauguration, real exchange rate was 33% below that of October

²³ In fact, President Lula kept inflation target, floating exchange rate, a conservative Central Banker, high primary surplus and many other policies.

2002, the peak of that year. The gains by not declaring default, and convincing agents of the soundness of the policies and purposes, were much larger than those of declaring it.

As a side comment, note that the situation is very different from Argentina. The magnitude of exchange rate devaluation in Argentina was much more important than that of Brazil in 1999 or 2002. Almost all public debt of this country was external by the time of depreciation, and indexed to the dollar. After the devaluation the debt/GDP ratio in Argentina was more than three times this same figure for Brazil. Hence, it became impossible to service the debt, and internal debt default only was not an option. Therefore, there was no other option than defaulting on the external debt.

While the “Provincias” had a lot of power to spend (and could even issue their own money), the Brazilian states, after the debt renegotiation and the “Fiscal Responsibility Law” were living within very strict bounds. In Argentina, the fixed exchange rate regime was a true thing, guaranteed by the law, while in Brazil it was much more flexible. Hence, the disequilibrium was partly corrected before depreciation here – which, by the way, was much smaller than in Argentina when it occurred - and adjusted much faster.

Finally, note that if some debt default was really considered it had to be a domestic debt default²⁴. In the first place because 80% of total public debt was domestic. Hence, the impact on debt service would be much larger. Second, as argued by *Ciro Gomes*²⁵ and *Cardoso*²⁶, the creditors of this type of debt were Brazilians, who cared about the country, and therefore - according to their opinion

²⁴ In January 1999, a few weeks after the abandonment of the exchange rate peg, there were rumors of default in internal debt. In one Friday there were a bank run, and the price of real state, considered one of the few safe forms of wealth, jumped in few weeks. The turmoil in the market prompted Cardoso to change strategy and to invite *Armínio Fraga*, who was respected as a market oriented policymaker, as the president of the Central Bank.

²⁵ *Ciro Gomes*, presidential candidate in 2002, defended before that the default of domestic debt. He argued that since most of its creditors were Brazilians, it would not be difficult to find a negotiated solution to the lengthening of debt maturity.

²⁶ *Cardoso* said in fact that it would be necessary a “debt pedagogy” to prepare the population before restructuring (interview, *Primeira Leitura*, 2003).

- would be interested in solving what they considered the country's most important problem.

IX. Fiscal Space for infrastructure and debt-finance

Although Brazilian budget procedures contemplate now debt-finance of infrastructure investment – by not accounting investments in “productive sectors²⁷” in the primary surplus target – it was never used. In this section we discuss this idea and its possible impacts on solvency, after a presentation of stylized facts and some discussion of the alternative forms of financing public capital expenditures.

After reaching a peak of 5.3% of GDP in 1969, public investment today is less than 2% of GDP, half the mean of the seventies. Moreover, the share of the Central Government – which is responsible for those capital expenditures with larger productive impact – stands today below 0.8% GDP. Afonso, Araújo and Biasoto Jr. (2005), estimate that total public investment in infra-structure (all levels of government, administrations and public owned companies) in the energy, transportation, sanitation and telecommunication sectors went from 2.17% of GDP in 1998 to only 1.2% in 2003. Not by accident in 2001 there was rationing of energy and almost all Brazilian roads are (except those privatized) in extreme poor condition.

Fiscal adjustment is the main explanation. After 1994, as part of the Real Plan, and particularly in the second term of President Cardoso, tighter controls over public finances were introduced in the country. Although initially the adjustment was mainly through tax increases, the numbers show clearly that investment, and particularly infrastructure investment, was badly affected. Public expenditure in Brazil is extremely rigid, with mandatory outlays in education, health, personnel, social security, etc. On the other hand, there are few restrictions - legal or political - on investment, which gives the government a relatively low-

²⁷ Although loosely defined, it means in essence projects with the potential to generate in the future the funds to pay for the debt service and principal.

cost option to reduce public expenditure, or at least compensate for increases in other dimensions²⁸. This trend continued in current administration.

The main problem is the strong evidence of productive effects of public capital and infrastructure in Brazil (e.g., Ferreira and Maliagos(1998) and Ferreira and Araújo (2005)), so that the reduction of investment and stocks may have played a role in the recent slowdown of the Brazilian economy. The question is how to increase investment without compromising fiscal adjustment and with little or no impact on debt ratio.

Although there are many proposals to increase the fiscal space to finance public investment, some of the most popular such as the *Golden Rule* of public sector borrowing and the *Permanent Balance Rule* are not applicable to Brazil. They would require a radical change of the budgeting procedures in the country, which does not seem politically feasible, and may increase debt-ratio in the short run, an additional problem given low debt tolerance in Brazil today. The Cardoso government used privatization to get around liquidity constraints. The telecommunication sector was entirely transferred to the private hands, and so were most energy distribution, all the railroad system and some important roads. For political and ideological reasons, this program was interrupted in the current government.

There were three options left to finance infra-structure investment: Public-private partnerships (PPP), a major reallocation of expenses and debt issue. In December 2004 a PPP law was approved in Brazil. As it is well known, in this type of contract, a private party is responsible for capital expenditures and operations, and the government would in one way or another guarantee him a positive return. The Brazilian law limits the amount of public expenditures in these projects to 1% of tax revenues per year, so that solvency and stability are not affected in the future. At the present moment it is not possible to make a realistic assessment of the PPP potential. However, it does not look like as the

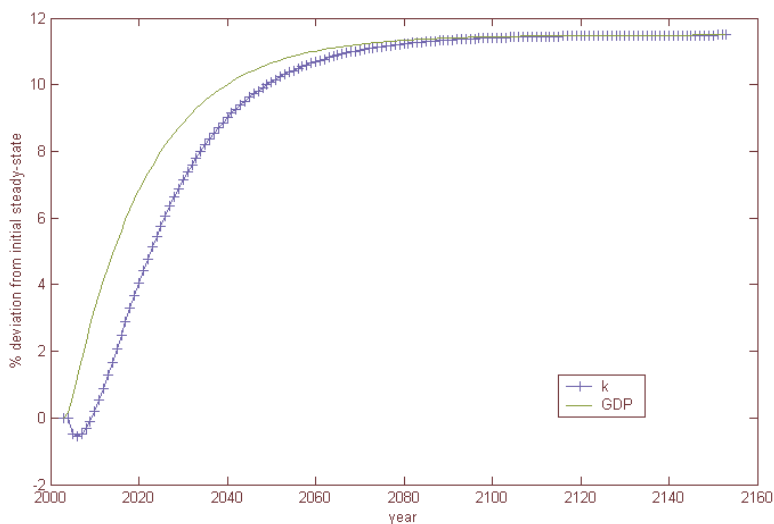
²⁸ Note that only a small part of the reduction in investment by the central government is related to privatization of services (e.g., telecommunications) and industrial enterprises (e.g., steel and chemistry).

final solution for the short supply of infrastructure services in Brazil, and it should operate in small scale²⁹.

Reallocation of public expenses is another option to finance infrastructure without compromising fiscal adjustment and keeping debt ratios in sustainable paths. Ferreira and Nascimento (2006) study this question using a dynamic general equilibrium model in which public investment is a component of the production function and government consumption positively affects individuals' welfare. This article investigates variations of three basic schemes to finance the doubling of public investment. The best alternative, when one takes into account the overall results of the different fiscal regimes simulations is the reduction of public consumption in favor of investments, keeping government size constant. Figure 12 below presents the transition path from one regime to the other:

²⁹ At this date no project, at least at federal level, were approved and only four are being processed. Brazil has a history of disrespecting contracts (and private property), so there is an issue about the guarantees needed to convince the private sector to actively participate in projects in which the return depends on a string of future payments by the government. Of course this is a new type of contract and it is expected that it will take time to solve all legal problems and to have a clear scheme of risk sharing.

Figure 12- Transition Path after increasing public investment



The model predicts that in the long run output and capital expand by almost 11%. One possible interpretation of this results is that if the Brazilian economy returned to the public investment ratios of the sixties and seventies, we would observe growth acceleration in the short to medium run, and a slow convergence so that, after 60 years, the country would be growing at its steady-state growth rate but with output levels 11%. If, for instance, Brazilian long-run growth rate is that observed from 1950 to 1980, 3%, for the first twenty years after this policy change, GDP per capita would grow at 3.5.

Of course, it is easier to say (and model) than to implement. After some obvious cuts on current expenditures, this solution may imply tough political battles on issues such as social security reform or transfers. Moreover, in this article “public consumption” includes everything that is not investment, and so health and education spending, which is not exactly what one wants to cut.

The role of debt in these simulations is somewhat limited, because in the one hand, in this infinitely lived agent model Ricardian Equivalence almost apply except for distortionary taxation. On the other hand, it is imposed a sustainable path for the debt, otherwise simulations would not converge, so that movements in the debt ratio are transitory by construction. Ferreira and Araujo (2005) use a

partial equilibrium framework that avoids these problems (at the cost of smaller robustness and rigor).

The paper simulates the impact of increasing public investment, using debt finance, on tax collection, debt and public solvency. The main objective is to investigate the impact of one single “project” - public investment increases by 1% of GDP in one year - in the government future cash flow and net worth and check whether public investment in infrastructure pays for itself, especially in the form of increased tax collection. The trajectory of debt ratio is also studied.

An impulse-response system is estimated from VAR techniques and used to simulate in the first place the paths of GDP and public capital after a shock to the later at time zero. The initial increase in public infrastructure capital is financed entirely by debt. From the simulated path of output it is calculated the variation of tax revenues, assuming that the tax ratio remains forever at 35% of GDP³⁰. Government net worth is given by:

$$NW = \sum_{t=0}^T \left(\frac{\text{Tax}_t - I_t - C_t}{(1+r)^t} \right) - D_0$$

As it is standard, the net worth is the present value of government primary surplus, $\text{Tax}_t - I_t - C_t$, minus the initial value of debt. Given the large response of GDP to public capital shocks obtained in the cointegration exercises, the net worth of a project which is equivalent to increase by 1% of GDP public capital stock is positive in the very long run (after 20 years) as one could expect. Hence, public investment does pay for itself, in the sense that the increase in tax collection is more than enough to offset the debt increase and the necessary investment implied by the increase in public capital after the initial shock. This contrasts to results in Perotti (2004) which rejects the hypothesis, for 6 OECD countries, that shocks to public investment are self-amortizing.

Note, however, that in all cases the transition involves negative cash flows for a long period. In all models it is negative after five years and in two of them it

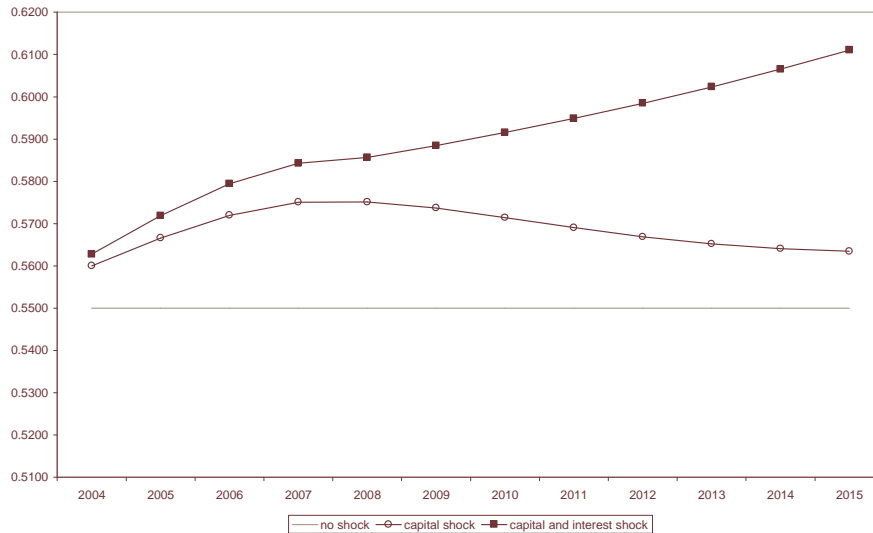
is still negative after ten years. This is so because the response of public capital is initially faster than that of GDP and taxes, which is a fixed proportion of the former. In the benchmark model, cash flow is positive but close to zero ten years later.

This could mean that, if the government decides to implement a sequence of projects in an annual base using debt finance – and not a single project as the simulations - the costs along the transition could be too high and not sustainable, even if in the long run solvency is guaranteed. Moreover, although results do favor debt finance, one has to be cautious in policy recommendations, because there is no efficiency loss – every Real invested turns into public capital - and no “white elephants” in the simulations.

Figure 13 presents the paths of public debt ratio corresponding to two simulation exercises. In both cases debt and GDP series were obtained separately: the former is the old debt plus the initial shock, compounded in each subsequent period by the interest rate while GDP path is obtained from the impulse-response exercise.

³⁰ Note that output increases with an infrastructure shock, so that total tax collection also goes up, although it is kept fixed as a proportion of GDP

Figure 13 – Simulated debt-GDP ratio paths



The horizontal line at 0.55 assumes no shocks, just for the sake of comparison, and that primary surplus would stay at a level high enough to hold constant the debt. The line in the middle corresponds to the previous simulation (a temporary shock of 1% of GDP to public capital, financed by debt emission), and shows that new public investment expenses may lead public finances to short run problems (as debt-ratio overshoots), although in the medium to long run the debt ratio falls. However, after ten years the debt ratio is still marginally above its “before shock level” and it will take some years to fall below it.

If agents respond to the negative fiscal shock by demanding higher interest rates to refinance old public debt and to finance the new project, short run problems should exacerbate - see upper line. In this simulation interest rate increased by 0.5% in 2005 and decreased subsequently by 0.1% a year, until it was back to 8%, its original level. In this case, ten years after the shock debt ratio is still six points above the original level and it stays above it for decades.

The last result is a robustness check that shows that whether debt finance is sustainable or not depends drastically on the interest rate response, which in turn could be influenced by market perceptions of debt tolerance.

The point is that, given the present state of public finances (as well as quality of infrastructure projects), before Brazil can contemplate a debt-financed increase in infrastructure some pre-conditions would have to be met. The country may first have to focus on achieving creditworthiness, which means mostly reducing debt-ratio to numbers well below the current figure. It would also need to change expenditures composition and ensure that the marginal financial return on infrastructure projects exceeds the marginal cost of borrowing (because the short-run interest rate response is likely to be negative). Otherwise interest rate response will presumably remain high, throwing debt into unsustainable paths.

X. Concluding remarks

In this article we observed that in many stances public debt was used strategically according to political objectives that in general do not coincide with its optimal management. For instance, it was instrumental to keep inflation low and exchange rate stable in certain moments, improving the electoral changes of incumbent candidates. In other moments it was used by the Central Bank as an auxiliary component of inflation target policy.

We also saw that regional governments in the not so distant past were successful in forcing weak central governments to bail them out, many times, after purposely throwing themselves into insolvency. And, once the bargaining power changed hands, that the central government imposed a deal to the states that, if positive to the later in the short run (they exchange their bad debt in favorable terms, sort of a partial bail out), limited drastically their capacity to spend and to assume new debts in the future.

Of course, in certain cases, it is very difficult to estimate the costs of those policies, given the absence of a counter-factual. What if, after 1999, instead of using intensively bonds indexed to the dollar, other types of bonds were employed? Certainly the structure of the debt would be less risky and the impact of the depreciation would be smaller. But on the other hand, inflation could have been higher, or interest rate would have to be pushed above the observed. In both cases output and consumption could be hurt.

There are additional topics worth examining in the future. One is the distributive effect of interest rate. On aggregate, poor people in Brazil are net debtors and in most cases have no savings. They buy durable goods financed, in general, at very high interest rates. Rich people and the upper middle class, in contrast, are net creditors. They benefit, through their financial assets, of the soaring interest rates observed in this country in the recent past and today. But the high interest rate level to the public is caused, among other reasons, because government demand for funds is huge, and the rate it pays for it too. Given the low risk and high rate, banks direct a large part of their resources to government bonds, and there is little left to lend to the public. Credit as a percentage of GDP in Brazil is very small, one third of GDP. The reduction of public debt would liberate a vast amount of resources to be lent to private players, and so interest rate would fall. The poor would benefit most.

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Appendix: Derivation of Debt Decomposition Dynamics

Set of variables:

D_t - total public debt, $d_t = D_t / GDP_t$

D_{dt} - domestic public debt, $d_{dt} = D_{dt} / GDP_t$

D_{ft} - foreign public debt, $d_{ft} = e_t D_{ft} / GDP_t$

PD_t - primary deficit, $pd_t = PD_t / GDP_t$

$NDFS_t$ - non-debt financing sources, $ndfs_t = NDFS_t / GDP_t$

e_t - nominal exchange rate (domestic currency per U.S. dollar)

s_t - changes in the nominal exchange rate: $1 + s_t = e_t / e_{t-1}$, with $s_t > 0$ indicating nominal depreciation of the local currency

g - real GDP growth rate

π - domestic inflation (change in the domestic GDP deflator)

π^* - U.S. inflation (change in U.S. GDP deflator)

i_d - nominal interest rate on domestic debt

i_f - nominal interest rate on foreign debt

r_d - real interest rate on domestic debt

r_f - real interest rate on foreign debt

ε - change in effective real exchange rate, with $\varepsilon > 0$ indicating real exchange rate depreciation defined as: $1 + \varepsilon = \frac{(1 + s_t)(1 + \pi^*)}{1 + \pi}$

α - the share of foreign currency denominated debt in total public debt

$(\alpha = \frac{d_{f,t-1}}{d_{t-1}})$

Basic Framework for Decomposition of Debt Dynamics:

We start by deriving a general equation, which does not depend on the debt composition.

The underlying equation for the evolution of public debt is:

$$D_t = (PD_t - NDFS_t) + D_{t-1}(1+i)$$

i

where D_{t-1} is the total stock of debt at time $t-1$, and PD is the primary deficit and i is the average nominal term paid in debt..

Dividing both sides by $GDP_t = GDP_{t-1}(1+g)(1+\pi)$, and defining lower case variables as upper-case variables expressed as a proportion of GDP, we get:

$$d_t = (pd_t - ndfs_t) + \frac{D_{t-1}(1+i)}{GDP_{t-1}(1+g)(1+\pi)}$$

Defining $1 + \hat{r} = \frac{(1+i)}{(1+\pi)}$ and subtracting d_{t-1} from both sides of equation yields:

$$\Delta d_t = (pd_t - ndfs_t) + \frac{\hat{r} - g}{1+g} d_{t-1}$$

Framework for dollar and peso debt:

If the debt stock is composed of debts denominated in both domestic as well as foreign currencies, domestic-currency debt ($D_{d,t-1}$) evolves according to the interest rate in the domestic market (i_d), while the evolution of the foreign-currency debt ($D_{f,t-1}$), expressed in domestic currency, is affected not just by the foreign interest rate (i_f) but also by changes in the exchange rate (e_t).

Defining

$$1 + \hat{r} = (1 - \alpha) \frac{(1 + i_d)}{(1 + \pi)} + \alpha \frac{(1 + i_f)(1 + s_t)}{(1 + \pi)}$$

we get:

$$\Delta d_t = (pd_t - ndfs_t) + \frac{\left[(1 - \alpha) \frac{(i_d - \pi)}{(1 + \pi)} + \alpha \frac{(1 + i_f)(1 + s_t) - (1 + \pi)}{(1 + \pi)} \right] - g}{1 + g} d_{t-1}$$