

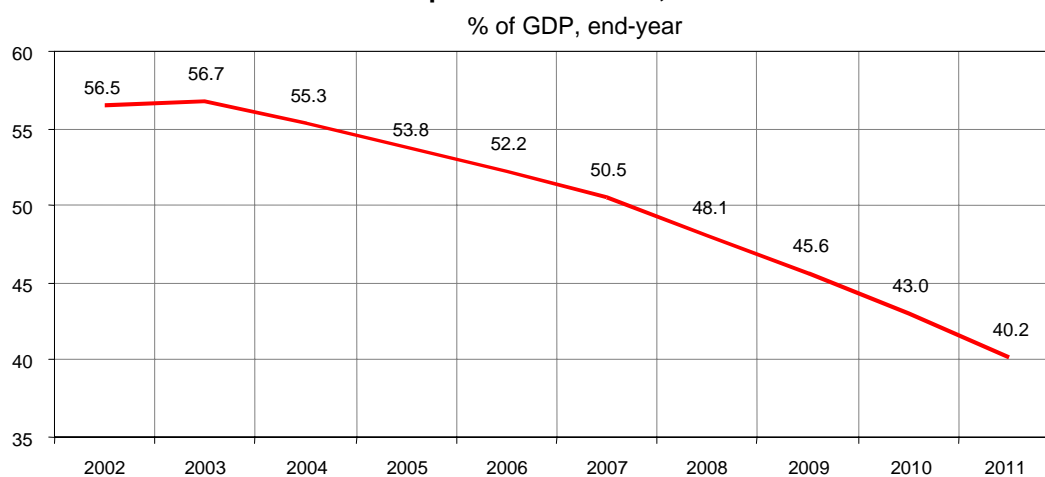
# Are there reasons to doubt fiscal sustainability in Brazil?

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## 1. Introduction

In principle, a simple calculation should provide the answer to the question posed in the title. The current primary surplus of 4.25% of GDP would be more than 1 percentage point higher than the surplus required to stabilise the debt/GDP ratio, assuming a modest 3.5% GDP growth rate and a real interest rate as high as 9%.<sup>2</sup> Projecting these numbers over the next decade leads to a steeply declining debt/GDP ratio over the years (Graph 1).<sup>3</sup>

Graph 1  
Net public sector debt, 2002-11



However, this simple calculation seems to be insufficient to persuade the sceptics. There is a considerable degree of subjectivity when assessing fiscal sustainability in a real economy. One can always choose sufficiently adverse paths for the relevant variables in the future - GDP growth, real interest rates and real exchange rates - that may lead to different assessments. Debt sustainability exercises should focus on medium- and long-run scenarios, but it is not uncommon to see biased assessments resulting from assumptions that are largely influenced by transitory adverse market swings. In general, neutral assessments are more common in tranquil times.

It is important to discuss fiscal sustainability based on the probability of certain assumptions being borne out. What would be the probability of observing further real exchange rate depreciation in Brazil over the next five to 10 years? What would be the chances that equilibrium real interest rates remain as high as the current ones? Both questions are relevant given the sensitivity of the Brazilian public debt to these variables. This note argues that both probabilities are small when a five- to 10-year time

<sup>1</sup> The author thanks Armínio Fraga for suggesting the topic of this note and for valuable comments; Katherine Hennings, Helio Mori and the Economic Department at the Central Bank of Brazil for substantial input in this note; and Amaury Bier, Joaquim Levy and Pedro Malan for important suggestions. All remaining errors are the author's responsibility.

<sup>2</sup> The required surplus is  $s = (r - g)d / (1 + g) = (0.09 - 0.035) * 0.56 / (1.035) = 3.0\%$  of GDP, where  $r$  is the real interest rate,  $g$  is the real GDP growth rate and  $d$  is the debt/GDP ratio at the end of this year.

<sup>3</sup> The faster decline in the debt ratio after 2008 arises because there are no more hidden liabilities to recognise.

frame is considered. The current real exchange rate is probably undervalued, and real interest rates are very high and on a declining trend.

Some analysts tend to extrapolate the past behaviour of Brazil's debt/GDP ratio into the future. This is incorrect since the factors that increased the ratio are non-recurrent. These factors are: (i) recognition of hidden liabilities (the so-called "skeletons") of around 10% of GDP; (ii) weaker public sector primary results until 1998; (iii) significant real depreciation since 1999; and (iv) high real interest rates. All these factors should be excluded in a forward-looking analysis of fiscal sustainability. The fiscal stance improved considerably and there are reasons to expect this policy to continue; real exchange rate adjustment has occurred under the new floating exchange regime; and most of the hidden liabilities have already been identified.

Assessing fiscal sustainability requires also analysing the current institutional framework. This analysis provides the basis to see whether current primary surpluses are sustainable and whether there is scope for further adjustments, if the conditions so require. In this respect, a few important points are worth emphasising. First, although tax reform is desirable for efficiency reasons, there are no structural difficulties in generating revenues in Brazil; on the contrary, overall government tax revenue amounts to around 35% of GDP. Second, fiscal discipline has been achieved at all levels of government due to successful agreements between the federal, state and local governments - all are currently generating structural primary surpluses. Third, the Fiscal Responsibility Law ensures a sound and more permanent fiscal regime. There are borrowing limits so that no government can spend beyond its means. The borrowing capacity of state and local governments was significantly constrained when most state banks were closed. Fourth, there is a constitutional ban on any law that modifies existing financial contracts or that can be interpreted as forced restructuring.<sup>4</sup> Nonetheless, there is recognition that further reforms are still needed to increase flexibility in spending and reduce the social security deficit.

In what follows, this paper analyses fiscal sustainability in Brazil. It looks closely at the likely outcome of different assumptions. Based on alternative exercises, it argues that, in all probable scenarios, the debt/GDP ratio should at least stabilise, with good chances of it declining over the years. It also argues that if an adverse scenario materialises in the future, further corrections in the balance of revenues and expenditures are feasible, given the nature of the fiscal framework.

Section 2 describes the fiscal accounts in Brazil, covering both the recent data and the institutions. Section 3 presents a basic scenario for the debt dynamics exercise in Brazil and a sensitivity analysis. The effect and probability of a sufficiently adverse path occurring are discussed in Section 4. The concluding section summarises the main arguments.

## **2. The fiscal accounts in Brazil - facts and institutions**

### **2.1 Nominal deficit and primary surplus**

The fiscal results in Brazil have improved significantly in the recent past. The nominal deficit, or public sector borrowing requirement (PSBR), which had reached around 7% of GDP in 1995, improved to 4.6% of GDP in December 2002, as can be seen in Graph 2.

Regarding the primary fiscal results, which consider total revenues and expenditures excluding interest payments, the development is also positive, with the surplus increasing from 0.4% in December 1995 to 3.9% in December 2002. The operational fiscal results - defined as the primary surplus minus real interest rate payments - evolved from a deficit of 4.9% in 1995 to a surplus of 2.6% in December 2002.

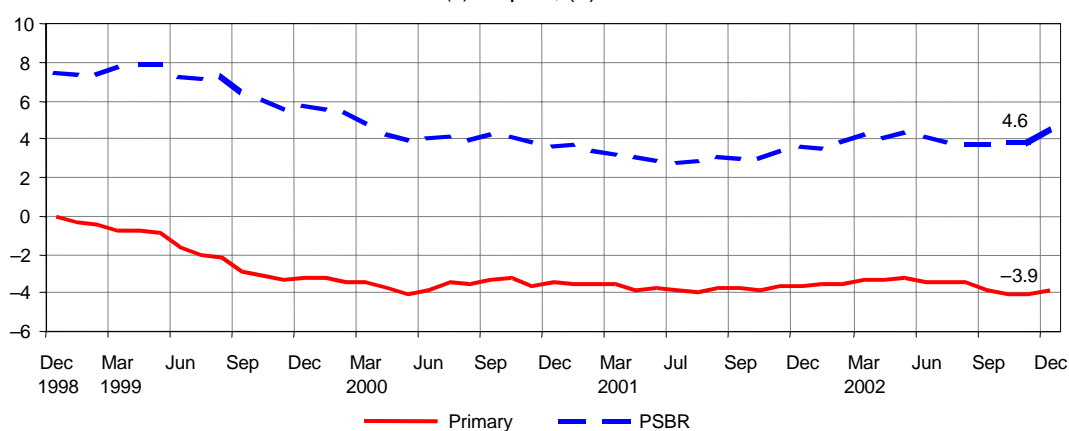
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<sup>4</sup> Article 5, item XXXVI, of Brazil's Constitution states that "the law shall not injure the vested right, the perfect juridical act and the *res judicata*". Additionally, Article 1 of Constitutional Amendment 32 of 11 September 2001, which changes Article 62 of the Constitution, establishes that the issuance of Provisory Measures by the President of the Republic is forbidden when it targets the arrestment of goods, private savings or any other financial assets.

Graph 2

**Public sector - PSBR and primary results**

% of GDP - accumulated 12 months  
(-) surplus; (+) deficit

**2.2 Public debt**

Net federal government debt, which includes the national treasury and the social security system, amounted to BRL 567 billion in December 2002, or 36% of GDP. Including the central bank's net debt lowers the resulting net central government debt slightly, to BRL 561 billion, because the central bank has more assets than liabilities.

If one considers the three levels of government, namely the federal, state and local governments, the net general government debt amounted to BRL 860 billion in December 2002 (55% of GDP). Adding this amount to the net debt of the central bank and the public enterprises brings the net public sector debt to BRL 881 billion, or 57% of GDP, as can be seen in Table 1.

Table 1

**Net public sector debt, December 2002**

In BRL billions

Itemisation	Domestic	External	Total	% of GDP
Net consolidated public debt (A + B + C + D)	654	227	881	56.5
Net general government debt (A + B)	582	278	860	55.2
Federal government (A)	310	257	567	36.4
States and local government debt (B)	272	21	293	18.8
Central bank (C)	53	-59	-6	-0.4
Net public enterprises debt (D)	19	8	27	1.8

Note: Net central government debt = federal government debt + central bank.

Source: Fiscal policy press release, 30 January 2003.

While net general government debt stood at 55% of GDP, gross general government debt reached BRL 1,133 billion, or 73% of GDP, in December 2002. This figure includes the total external debt of BRL 284 billion, and domestic debt of BRL 849 billion, for the federal, state and local governments.

### 2.3 Gross versus net debt

While the concept of federal gross debt is more frequently used for exercises of debt dynamics because the figures on regional government are difficult to collect and the quality of government assets difficult to measure, in the case of Brazil the net debt concept is quite appropriate. The concept of net public sector debt includes the three levels of government, the central bank and the public enterprises. The consolidation of intragovernmental debt has been established on a sound footing and the nature of the government assets is quite clear.

An important consideration is that the net debt concept takes into account that assets can be used to redeem gross debt. One could always finance deficits by running out assets without affecting the gross debt level. In this respect, the net public debt concept is closer to the true measure of a public sector's net worth, which considers total liabilities deducted from all assets. Incidentally, this is the direction taken by the IMF's new Government Financial Statistics, which proposes a set of statistics that attempt to reflect the true net worth of the public sector.<sup>5</sup>

Liquid assets are particularly suitable for redeeming debt at short notice. But, in a medium-term perspective, less liquid assets clearly ought to be taken into consideration (in symmetry with the accounting of less liquid liabilities, ie government debt that does not mature in the short term). In the case of Brazil, the assets owed to the government included in the net government debt are effectively available for payment of fiscal expenses (Table 2). In particular, the deposits of the social security system, the tax collected by all government levels but not yet transferred to the treasuries, the demand deposits of all levels of government - including the treasury deposits at the central bank - total almost 7% of GDP and are very liquid. Of course, the investments of several constitutional public funds, the resources of the Labour Assistance Fund, other government credits and credit to public enterprises are less liquid, but not necessarily of lower quality.

Table 2

#### Gross and net general government debt, December 2002

Itemisation	BRL millions	% of GDP
Net consolidated public debt	881,108	56.5
Net general government debt	859,712	55.2
Gross general government debt	1,132,894	72.7
General government credits (assets)	272,683	17.5
Deposits of the social security system	876	0.1
Tax collected (not transferred - float, all government levels)	1,144	0.1
Deposits (all government levels)	102,493	6.6
Investments of financial funds and programmes	38,847	2.5
Labour Assistance Fund (FAT)	67,133	4.3
Other government credit	23,293	1.5
Credit with public enterprises	32,613	2.1
Federal government external credits (collateral)	6,284	0.4

Source: Fiscal policy press release, 30 January 2003.

### 2.4 Is the recent increase in the debt/GDP ratio a trend?

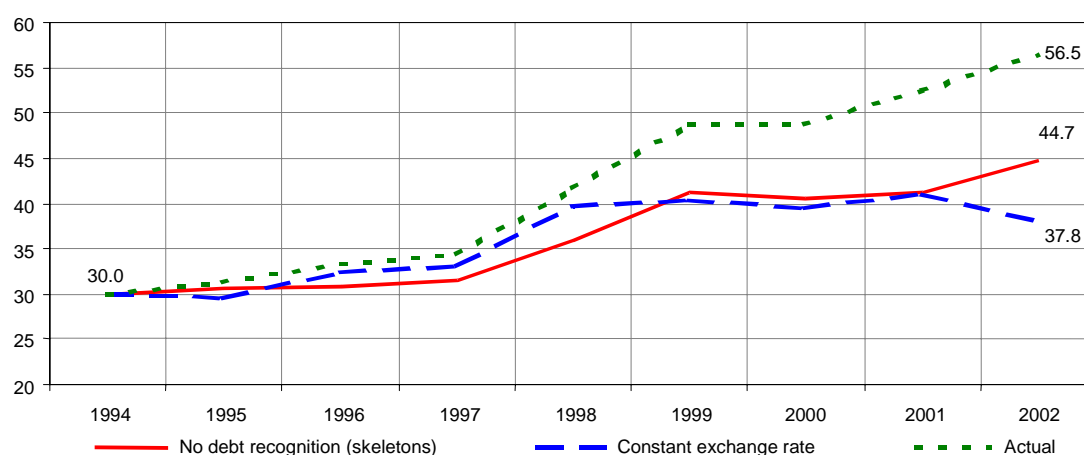
The debt/GDP ratio increased by 26 percentage points from 1994 to 2002. During this period substantial reforms were implemented, leading to inflation stabilisation, increased transparency and debt recognition, and, in the last three years, adjustments in the real exchange rate to improve

<sup>5</sup> Although the concept of net debt is closer to the definition of net worth than gross debt, it by no means obviates the need for the development of a more appropriate net worth concept.

external accounts. These factors influenced significantly the rise in the debt ratio. For example, the exchange rate depreciation was responsible for an increase equivalent to about 19% of GDP and the recognition of hidden liabilities (“skeletons”) for another 12% of GDP rise. The key point is that these factors are non-recurrent since the adjustment in the real exchange rate has occurred (the real exchange rate is now probably undervalued) and a large share of “skeletons” has been recognised (the rest are factored into the base scenario).

Some counterfactual exercises illustrate the impact of these factors on the debt/GDP path. Assuming that the exchange rate has been kept stable since the end of 1994, and maintaining other factors as actually observed, the debt ratio would have reached 38% in 2002, instead of 57% (see Graph 3). Since the effect of the depreciation is calculated on an accrual basis, part of this effect may actually reverse itself if the exchange rate appreciates back. Similarly, Graph 3 shows that, without recognition of the “skeletons”, debt/GDP would have reached 45% of GDP.

Graph 3  
**Actual evolution of net public sector debt and  
 hypothetical constant exchange rate and no-skeletons exercise**  
 % of GDP



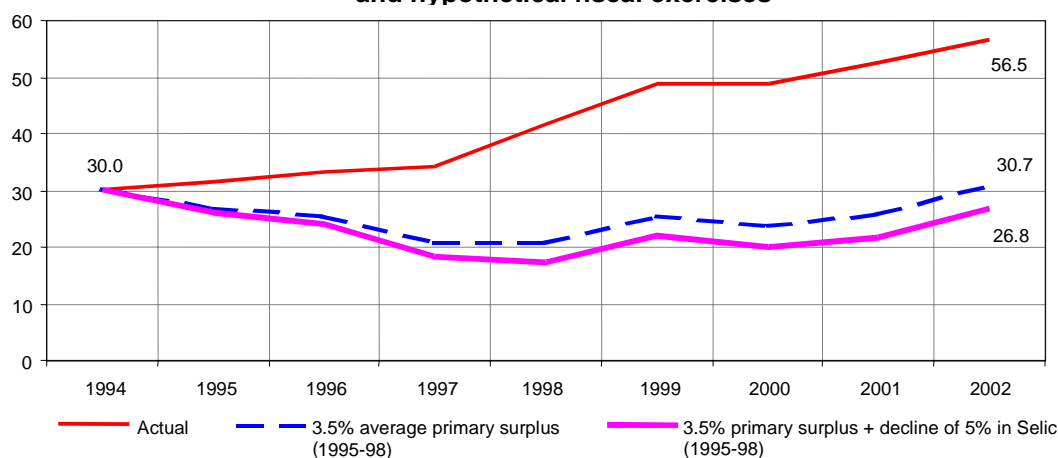
Since 1999, Brazil has produced significant and consistent primary surpluses. One could ask whether the current policy would have been enough to prevent the recent increase in the debt ratio. A positive answer would provide greater comfort that current fiscal policy can stabilise the debt, even under adverse conditions, as the period 1994-2002 was characterised. Under a policy of generating primary surpluses of 3.5% of GDP (significantly lower than today’s 4.25%) since 1995 and maintaining other factors as observed, the debt/GDP ratio would have shown a stabilising path, reaching 31% of GDP in 2002 (see Graph 4). In fact, in such a virtuous context, one would expect lower interest rates. Under the same fiscal policy and a reduction of 5% in the basic interest rates in the period 1995-98, the outcome would be a steeper decline of the debt ratio. The debt/GDP ratio would have reached 27% in December 2002, a reduction of 3% of GDP compared to the 1995 level.

The significant change in the debt/GDP curve is due to the persistence of an appropriate sequence of primary surpluses. The primary surplus produces an initial reduction in the debt amount, and then this reduction becomes steeper with smaller payments of interest and the sequencing of new surpluses. The favourable dynamics allow a considerable decline in the debt ratio over the period.

If the past is a reference for the future, these exercises suggest that, in the absence of major adjustments in the real exchange rate, or the need to recognise hidden liabilities equivalent to almost 10% of GDP, and with the current policy of generating a sizeable fiscal surplus, the debt/GDP ratio is likely to decline in the future.

Graph 4

### Actual evolution of the net public debt and hypothetical fiscal exercises



## 2.5 Institutions

Important institutional reforms have been implemented in the last few years so as to ensure the maintenance of the primary fiscal surplus at an appropriate level and the sustainability of the debt.

First, since 1997 the debt restructuring agreements reached by the federal government with the states and municipalities have contributed to the reorganisation of the finances of these subnational governments. The state governments agreed to commit 13% of their income to servicing their debts, generating surpluses and improving the dynamics of the overall public debt. In this context, the subnational governments improved their average primary deficit from 0.1% of GDP in 1994-98 to a surplus of 0.6% of GDP in 1999-2001.

Second, a significant step forward is the fiscal stabilisation programme implemented since 1998. This programme established targets for primary surpluses for the consolidated public sector of 2.6% of GDP in 1999, 2.8% in 2000 and 3% in 2001. The actual outcome was better than envisaged. The public sector primary surplus reached 3.1%, 3.6% and 3.8% respectively in those years.

Third, and most importantly, Congress enacted the Fiscal Responsibility Law (Complementary Law 101) in 2000. This sets forth an institutional framework that forces the administrators of public resources to follow a set of transparent and precise rules in managing revenues, expenditures, assets and liabilities. The main regulations are focused on establishing: (a) limits for expenditure on personnel and the public debt; (b) annual fiscal targets; (c) rules to compensate the creation of permanent expenses or reduction of tax revenues; and (d) rules to control the public finances in electoral years. The observation of this law imposes a permanent fiscal discipline at all levels of government, ensuring medium-term fiscal sustainability and transparency.

Finally, fiscal statistics have improved significantly, providing greater transparency and accuracy. The efforts made by the Brazilian government were recognised by the IMF's (2001) Report on the Observance of Standards and Codes: "Brazil attained high standards with respect to main indicators of fiscal management and transparency [...] the coverage of fiscal targets and fiscal statistics is commendably broad. Recent reforms in the budget and planning process have substantially improved the realism and transparency of the federal budget, and its consistency with macroeconomic constraints, as well as its effectiveness in resource allocation. Mechanisms of internal and external control are generally well developed, and increasingly aim to access not only formal compliance with legal requirements, but also the quality and cost-effectiveness of public spending. Fiscal statistics at the federal level are of high quality, timeliness, and detail. Brazil is at the forefront of countries at comparable level of development in the use of electronic means for the dissemination of fiscal statistics, legislation, and administrative regulation on tax and budgetary matters, and for delivery of government services, as well as to facilitate civil society's scrutiny of government activities and programmes."

This analysis provides the basis to argue that current primary surpluses are sustainable and that there is scope for further adjustments, if the conditions so require. Not only are these adjustments feasible in terms of flows of revenues and expenses, but also there is room for further privatisations. Compared to other emerging markets, Brazil has a larger proportion of assets and enterprises still in the hands of the government.

### 3. Basic scenario and sensitivity analysis

#### 3.1 Solvency versus sustainability

The government is considered to be **solvent** if the present discounted value (PDV) of its current and future primary expenditure is no greater than the PDV of its current and future path of revenue, net of any initial indebtedness. A government's debt position is considered to be **sustainable** if it satisfies the present value budget constraint (ie it is solvent) without a major correction in the future, one that could be unfeasible or undesirable for economic or political reasons; see IMF (2002).

A solvency condition may be formalised as follows:

$$\sum_{i=0}^{\infty} \frac{E_{t+i}}{\prod_{j=1}^i (1+r_{t+j})} \leq \sum_{i=0}^{\infty} \frac{I_{t+i}}{\prod_{j=1}^i (1+r_{t+j})} - (1+r_t) * D_{t-1}$$

expenditure:  $E_{t+i}$

revenue:  $I_{t+i}$

debt:  $D_t$

If the primary surplus is:

$$S_{t+i} = I_{t+i} - E_{t+i}$$

then:

$$\sum_{i=0}^{\infty} \frac{S_{t+i}}{\prod_{j=1}^i (1+r_{t+j})} \geq (1+r_t) * D_{t-1} \quad (1)$$

If the real interest rate ( $r_{t+j}$ ) and real GDP growth rate ( $g_{t+j}$ ) are kept constant, and the interest rate is higher than the GDP growth rate:

$$r_{t+j} = r_t$$

$$g_{t+j} = g_t$$

$$r_t \geq g_t$$

then equation (1) as a percentage of GDP could be simplified as:

$$(1+r_t) * \frac{D_{t-1}}{Y_t} \leq \sum_{i=0}^{\infty} \frac{S_{t+i}}{Y_t * (1+r)^i} = s_t * \sum_{i=0}^{\infty} \frac{(1+g_t)^i}{(1+r_t)^i} = s_t * \frac{1+r_t}{r_t - g_t} \quad (2)$$

For a given (constant) path of primary surpluses as a percentage of GDP ( $s_i$ ):

$$s_t = s_{t+i} = \frac{S_{t+i}}{Y_t * (1+g_t)^i}$$

Therefore, from equation (2), the primary surplus for solvency would be given by:

$$s \geq (r-g) * d / (1+g)$$

It is important to realise that the solvency condition derived under constant values for growth, interest rates and primary surplus is also a condition for sustainability since, by construction, it does not require a major change in future variables to satisfy the intertemporal public sector budget constraint.

The institutional framework implemented in recent years has reinforced the objective of preserving the solvency of the public sector. Indeed the framework currently in place makes excesses at any level of government more difficult to occur as it contemplates instruments to preserve fiscal discipline. Additionally, the Fiscal Responsibility Law created a set of constraints - borrowing limits and ceilings for expenses with personnel - preventing fiscal irresponsibility.

Another consideration is that, as shown in the analysis of the net public debt, an ample amount of liquid assets can be used in emergency situations. Finally, it is also important to bear in mind that the Brazilian economy has been able to collect a relatively high level of fiscal revenue corresponding to around 35% of GDP.

### 3.2 Hypotheses of the basic scenario

The hypotheses in our basic scenario are conservative:

- Annual growth rate of 3.5%, less than potential output growth for Brazil, estimated at around 4.5% with recent data on productivity and labour force growth.
- High and conservative real interest rate of 9%.
- Nominal (but not real) currency depreciation.
- Stable primary surplus of 4.25% of GDP.
- The recognition of skeletons is estimated at around 0.6% of GDP during 2003-07. This assumption includes the recognition of all FCVS (mortgage insurance) accounts. With these hypotheses, the evolution of the net debt is shown in Table 3.

Table 3

#### Baseline scenario

Discrimination	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Inflation GDP deflator (average)	8.5	18.0	7.4	4.8	4.0	4.0	4.0	4.0	4.0	4.0
GDP real growth	1.5	2.2	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Interest rate <sup>1</sup>	17.5	23.1	15.0	13.4	13.4	13.4	13.4	13.4	13.4	13.4
Real interest rate	6.0	12.7	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Nominal currency depreciation	52.3	-3.8	3.9	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Primary (% of GDP)	-4.0	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3	-4.3
"Skeletons" <sup>2</sup>	0.8	0.6	0.7	0.6	0.6	0.6	0	0	0	0
<b>Net debt (% of GDP)</b>	<b>56.5</b>	<b>56.7</b>	<b>55.3</b>	<b>53.8</b>	<b>52.2</b>	<b>50.5</b>	<b>48.1</b>	<b>45.6</b>	<b>43.0</b>	<b>40.2</b>

<sup>1</sup> Implicit interest rate of internal net debt. <sup>2</sup> Net of privatisation proceeds (as a percentage of GDP).

The nominal and real interest rates are defined for the implicit internal public debt interest rate. This implies that the assumption of a 9% real interest rate implicitly assumes an even higher value - at about 10% - for the real interest rate based on a Selic rate. This is a very conservative assumption since a lower rate is warranted by the current fundamentals - healthy banking system, floating exchange regime, and sound fiscal framework. The assumption regarding the skeletons provides a faster decline in the debt ratio after 2007.

### 3.3 Sensitivity analysis

The graphs below show different paths followed by the net public sector debt under alternative assumptions for the exchange rate, real interest rate, GDP growth and primary surplus. Higher real interest rates generally cause the debt to decline at a slower pace. Higher real GDP growth and larger primary surpluses produce an initial step reduction of debt, and, if maintained, a downward path. The effect of larger primary surpluses on the reduction of the debt is important.



### 3.3.1 Real exchange rate

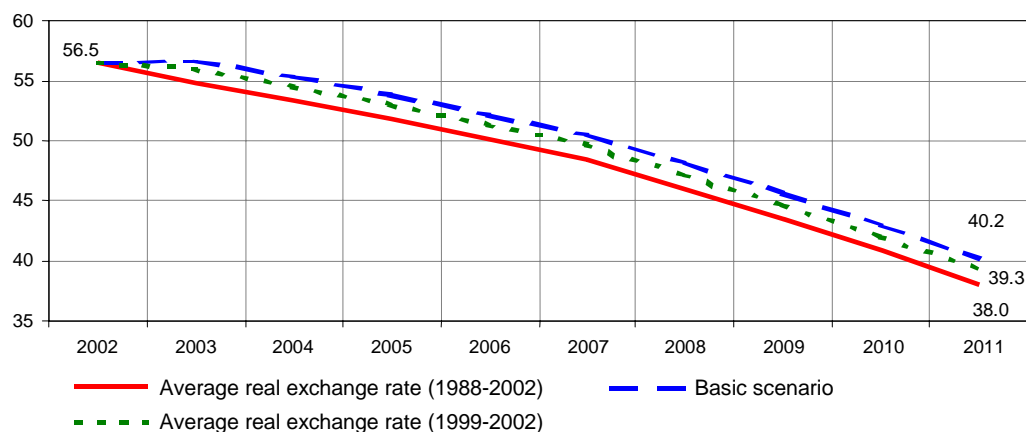
It is important to realise that a nominal exchange rate depreciation only affects the debt/GDP ratio insofar as it exceeds inflation (measured by the GDP deflator), ie it leads to a real exchange rate depreciation. A real exchange rate depreciation initially increases the debt, as its effect is calculated on an accrual basis. Similarly, a reversal of the depreciation would immediately bring the debt down. A permanent impact on the debt stock would occur only if the debt matures *and* is redeemed at an unfavourable exchange rate (the debt is not rolled over or is refinanced with non-dollar-linked debt instruments). Otherwise, the fiscal loss is partially or totally reversed whenever the currency appreciates.

The effect of a gradual return of the effective real exchange rate to its 15-year average, compared to the basic scenario, is shown in Graph 5. The effect is substantial: the debt/GDP ratio falls by more than 20 percentage points in 10 years.

Graph 5

#### Net public sector debt, 2002-2011 - exchange rate exercise

% of GDP



### 3.3.2 Skeletons

Debt recognition (“skeletons”) adds directly to the stock of the debt and thus affects the debt level. The slope of the debt path is also affected, but to a smaller extent, due to the interest accrued on the newly recognised debt. The recognition of debt that had not been recorded as such by previous governments has amounted to about 10% of GDP. As shown in the previous section, without such recognition the debt dynamics would appear differently. Nonetheless, recognising past debt is in line with the policy of improving transparency in the government accounts.

For the sensitivity analysis, a debt ratio path is simulated with higher debt recognition numbers in the future - accumulated 10% of GDP in the period 2002-11. The results show that the dynamics are favourable, even under this assumption.

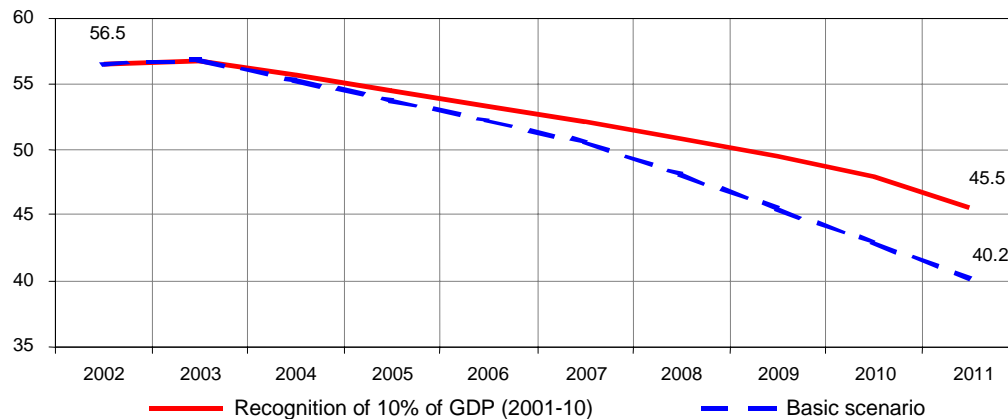
### 3.3.3 Primary surplus

Changing the primary surpluses produces not only different levels of debt but also different slopes for the debt path (Graph 7). Under the basic scenario - GDP growth of 3.5% from 2003 onwards, average real interest rate of 9%, primary surplus of 4.25% of GDP - net public sector debt reaches below 50% of GDP in 2008. Increasing the primary surplus to 5% of GDP would lead to a net debt of 40% of GDP in 2009, a decline of almost 20% of GDP from the current levels. Primary surpluses around 0-2%, however, would not suffice to stabilise the net debt.

Graph 6

**Net public sector debt, 2002-11 - skeletons exercise**

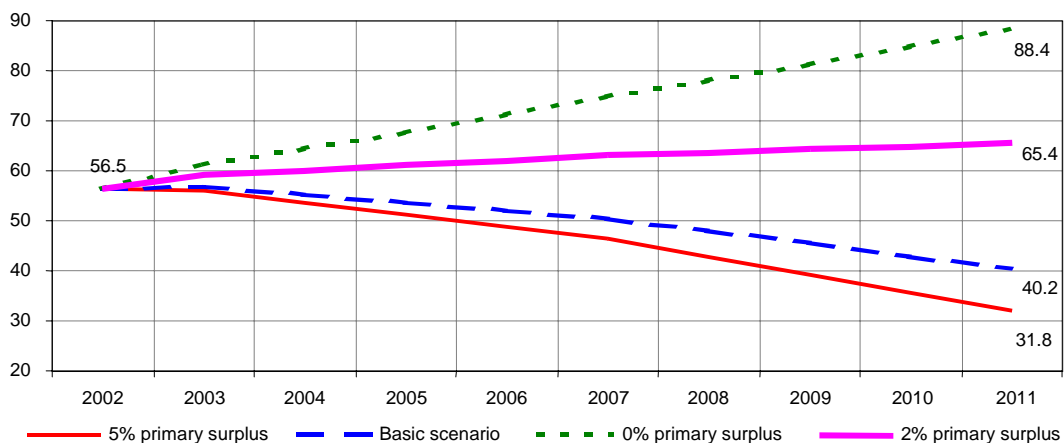
% of GDP



Graph 7

**Net public sector debt, 2002-11 - primary surplus exercise**

% of GDP



Another possible exercise is to assume that different primary surpluses may lead to different paths for the real interest rate. This will be the case if current domestic real interest rates factor a premium on uncertain debt dynamics and if this premium is sensitive to the size of the primary surplus. The compounding of the two effects has powerful consequences for the debt dynamics. Combining primary surpluses (0% or 5%) with real interest rates (10.5% or 7.5%) provides a stark picture (Graph 8).

**3.3.4 GDP growth**

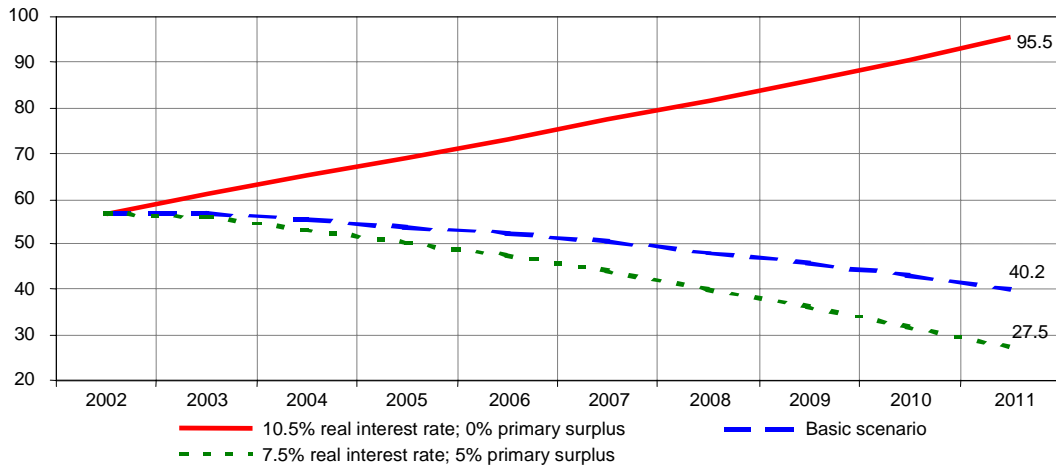
Assuming a lower GDP growth rate of 2.4% in 2003 onwards, the debt would stabilise and decline subsequently. A higher growth of 4.5% would make the debt/GDP ratio fall considerably. Assuming a lower GDP growth rate of 2.4% in 2003 would not cause the debt/GDP ratio to increase over time. Actually, even this low level of growth would be consistent with a declining ratio after a few years (Graph 9).

If higher growth is obtained in a scenario of lower real interest rates, the decline in the debt/GDP ratio is larger (Graph 10). Alternatively, if one assumes a lower growth *and* higher real interest rate, the debt/GDP ratio remains relatively stable (remember that this real interest rate is the implicit rate on the debt - Selic rates would be even higher).

Graph 8

**Net public sector debt, 2002-11 - combining primary surplus with real interest rate exercise**

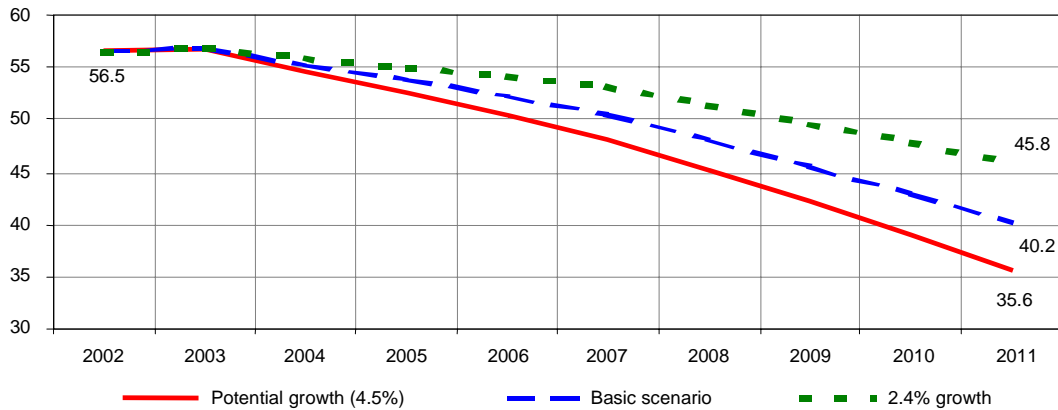
% of GDP



Graph 9

**Net public sector debt, 2002-11 - growth rate exercise**

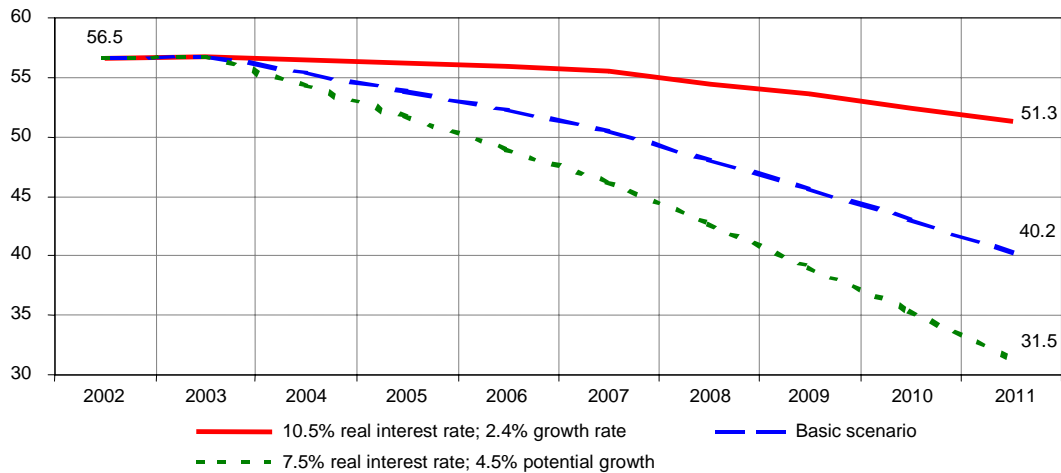
% of GDP



Graph 10

**Net public sector debt, 2002-11 - combining growth rate with real interest rate exercise**

% of GDP

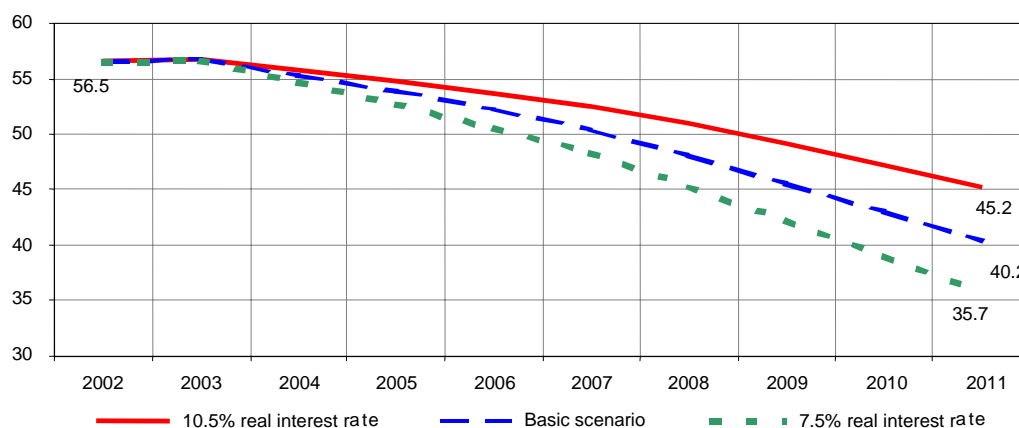


### 3.3.5 Real interest rates

With the current levels of primary surpluses (4.25% of GDP), even if implicit real interest rates are maintained at 10.5% from 2003 onwards, the debt/GDP ratio declines and reaches 45% in 2011. A real interest rate of 7.5% would help accelerate the debt reduction (Graph 11).

Graph 11

#### Net public sector debt, 2002-11 - real interest rate exercise % of GDP



## 4. Negative scenario and the likelihood of the assumptions

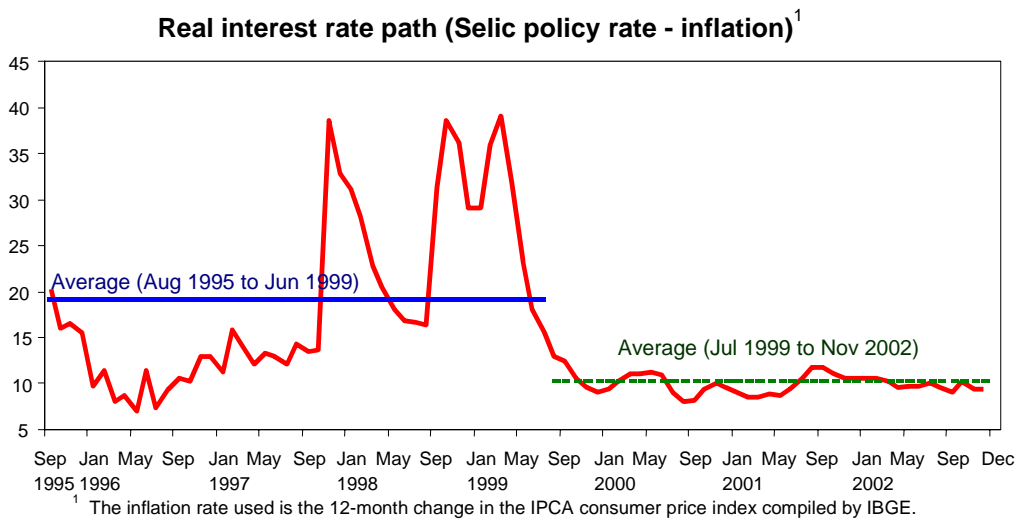
The sensitivity analysis shows that some unfavourable scenarios are not unstable. Even if growth stays around 2-2.5%, the debt shows a declining path. Similarly, a once and for all real devaluation would not trigger an explosive growth of the debt ratio. Fiscal relaxation would have to be quite significant to set the debt into an unstable path, ie only if the surplus is reduced below 2% of GDP would the debt dynamics become unstable. Finally, interest rates would have to remain at quite a high level to bring the public debt to an unsustainable path.

While it would be possible to design a negative scenario by assuming a set of sufficiently unfavourable outcomes for the main variables, for such a scenario to occur would require the persistence of unfavourable numbers over a 10-year period. What is the probability that such a sequence of unfavourable contingencies will persist for a whole decade?

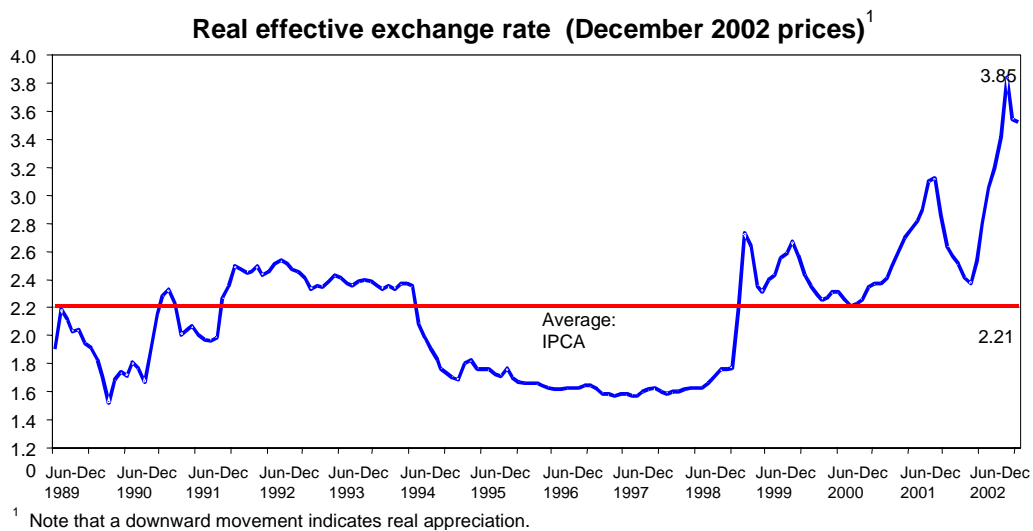
Let us take the possibilities by turn. First, the interest rates. The balance of risks indicates the likelihood of a gradual reduction of interest rates from their current levels. Indeed, Graph 12 shows that the average real interest rate has been declining since the change to a floating exchange rate regime. Even in the recent event of adverse external shocks, the rise in interest rate has been less severe than in the past, as part of the shock has been absorbed by the exchange rate. Of course, one would not expect that the unfavourable domestic and external environment would persist for a decade, thus reducing the reasons for a tighter monetary policy stance. When more normal conditions are re-established, with a lower frequency of negative supply shocks, the real interest rate would continue on its downward trend, converging to the levels (well below 10%) observed in other emerging market economies.

A second question is whether it is likely that the real exchange rate will continue to depreciate. The probability of the real exchange rate appreciating from current levels in the coming years is high. The Brazilian economy has been through a sequence of adverse shocks with a direct impact on the foreign exchange market in the recent past. Currently, domestic uncertainties are overlapping with turbulent international capital markets, and have translated into an overshooting of the exchange rate. Indeed, Graph 13 shows that the real exchange rate is well above the average level recorded over the last 15 years.

Graph 12



Graph 13



Furthermore, it should be borne in mind that it is the real exchange rate that matters in these calculations. The path of the nominal exchange rate depreciation only affects the debt/GDP ratio insofar as it exceeds inflation (measured by the GDP deflator). If the nominal rate path generates a consistent depreciation, it would eventually lead to a higher inflation rate. Under an inflation targeting regime, monetary policy is geared towards avoiding this inflationary outcome, increasing the likelihood of a nominal exchange rate appreciation. This outcome is more likely when the longer-term trend of the real exchange rate is more appreciated than the current levels.

The major industrial countries are currently experiencing a weak growth rate and there have been major adjustments in the international capital markets. This creates a downside pressure not only for the demand for the exports of emerging market countries but also for these countries' access to external financing, with a negative impact on investment. It is expected that as the world economy recovers and international financial markets settle down, these factors will abate.

On balance, the likelihood of any of the worst case scenarios occurring is small. Moreover, if such contingencies occur, reasonable corrections in fiscal settings are feasible.

## 5. Conclusions

### The main arguments raised in this paper are worth emphasising:

- Under reasonable and even conservative hypotheses, the debt/GDP should start declining over the next few years. This result is valid even if there are negative outcomes from any of the relevant determinants - real interest rate, GDP growth, real exchange rate, and contingent liabilities. The key necessary condition is to maintain the primary surplus at around 4% of GDP.
- It is possible to construct sufficiently negative scenarios, where the debt/GDP ratio does not stabilise. However, the likelihood of such scenarios is small. More specifically, further permanent real exchange depreciation is unlikely, given that the currency is substantially weaker than its 15-year average, and real interest rates are on a declining trend but still very high compared to other emerging markets. Further decline seems to be the natural path over the medium run. Finally, a recovery in the world economy will push GDP growth rates closer to the potential output growth - around the 4.4% observed in 2000.
- Nonetheless, if a low likelihood negative scenario does occur, further corrections in the balance of revenues and expenditures are feasible. The comfort arises from the recent institutional progress in the fiscal regime in Brazil, in particular the Fiscal Responsibility Law and the agreements with states and municipalities.
- The recent debt/GDP increase should not be used as an indication of future performance. Non-recurrent events explain almost all of the past behaviour. The recognition of hidden liabilities amounting to almost 10% of GDP explains a good proportion of the increase. In addition, the required adjustment in Brazilian external accounts led to a corrective adjustment in the real exchange rate that has already taken place. Also, the shift to consistent primary surpluses since 1998 has changed the fiscal outlook in Brazil. Finally, one should not expect real interest rates averaging 20% a year to be recurrent. In summary, if the past is to be used as a reference for the future, our analysis suggests that in the absence of major adjustments in the real exchange rate, and with the current policy of generating a sizeable fiscal surplus, Brazil's debt/GDP is likely to decline in the future.

## References

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