

# Provision of FX hedge by the public sector: the Brazilian experience

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## Introduction

A singular experience with forex intervention in Brazil over the past ten years has been the use of foreign exchange linked debt instruments denominated in domestic currency. The country started to use them with the goal of safeguarding the administered FX regime in 1994-98. Later, those instruments were useful to smooth the transition to the floating rate regime in 1999, and to mitigate the impact on the economy of two further major devaluation waves in 2001 and 2002. While such a strategy was successful in avoiding generalised financial distress or a credit crunch in the private sector during that period, the accumulation of a large stock of such instruments increased the vulnerability of the public sector balance sheet to adverse external shocks. As a result, the main impact of the three large devaluations was felt in the public sector's debt.

In 2003-04, the rapid improvement in fundamentals enabled the Central Bank to pursue a strategy of actively reducing the public sector's foreign currency exposure. In this period, the reduction in FX hedge provision by the public sector reached US\$ 35.1 billion, or 53.8%. The share of US\$-linked instruments in the domestic public debt was reduced from a peak of 40.7% in September 2002 to 9.9% in December 2004. As a result, there was also a significant reduction in the sensitivity of the total public debt to any 1% permanent devaluation, from 0.34 percentage points of GDP in September 2002 to 0.11 percentage points in December 2004. The programme has been successful in enhancing the resilience of the public debt to shocks that affect the exchange rate, thus being one of the key factors behind the recent enhancement of Brazil's creditworthiness. The programme is still in place, and further progress continues to be made in retiring the outstanding stock of such instruments.

## Background

Despite chronically high inflation observed between the 1980s and 1994, the Brazilian economy has never dollarised. In order to mitigate inflationary losses, Brazil did not use the dollar as unit of account or means of payment, as many other economies have done in similar circumstances, developing instead broad, sophisticated and credible indexation mechanisms. These instruments enabled the preservation of the demand for domestic debt.

## 1994-98: building up external liabilities

As a complement to the monetary reform implemented in 1994 (the so called Real Plan), Brazil adopted an exchange-rate anchor which was successful in stopping high inflation and stabilising it at low levels. The lack of long-term sources of financing in domestic currency, the high real interest rates needed to stabilise inflation and the low FX volatility provided the appropriate incentive for the private sector to resort to external financing. As a result the external debt of the private sector increased by 211% between 1994 and 1998, reaching US\$ 129.1 billion or 16.4% of GDP by end 1998.

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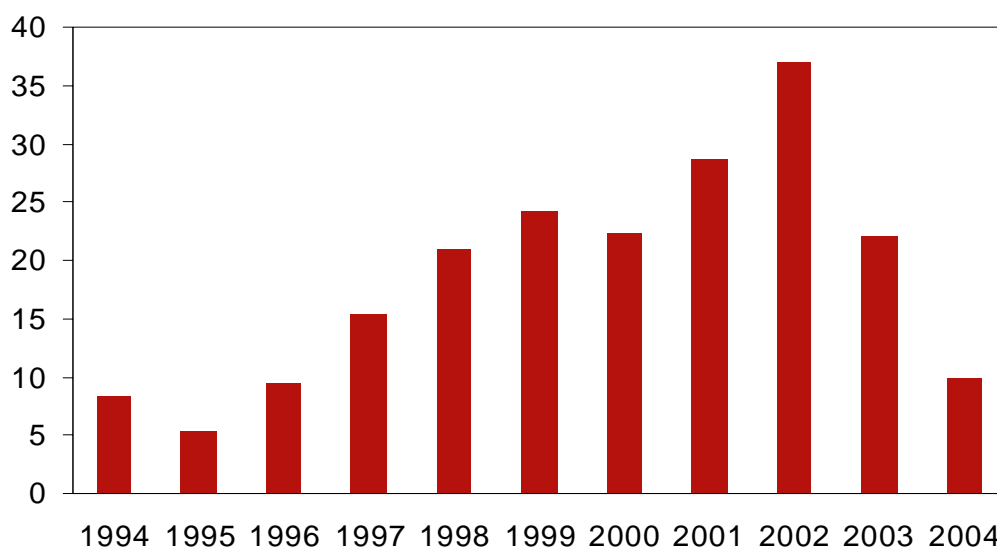
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With large current account imbalances, and any surplus in the balance of payments being used to shore up international reserves, there was no natural supplier of foreign exchange in the economy. Thus, the government had to step in and provide a foreign currency hedge to the local agents as a way to reduce potential balance sheet currency mismatches in the private sector and at the same time safeguard the administered FX regime. The instruments of choice were US\$-linked Treasury notes (NTN-D), denominated and payable in domestic currency, which were then perceived as offering relatively cheap financing to the Treasury. At later stages in that period, the Central Bank also resorted to the issue of notes (NBC-E) and the use of derivative instruments at the local futures exchange BM&F.

In 1997 and 1998, external crises in Southeast Asia and Russia increased the vulnerability of the Brazilian economy, leading to significant losses of international reserves and undermining the sustainability of the currency peg. The Central Bank intensified the sale of foreign exchange linked securities and by December 1998, the outstanding stock of those instruments had reached 20.9% of the domestic public debt, vs 15.4% in December 1997 and 9.4% in December 1996 (Figure 1).

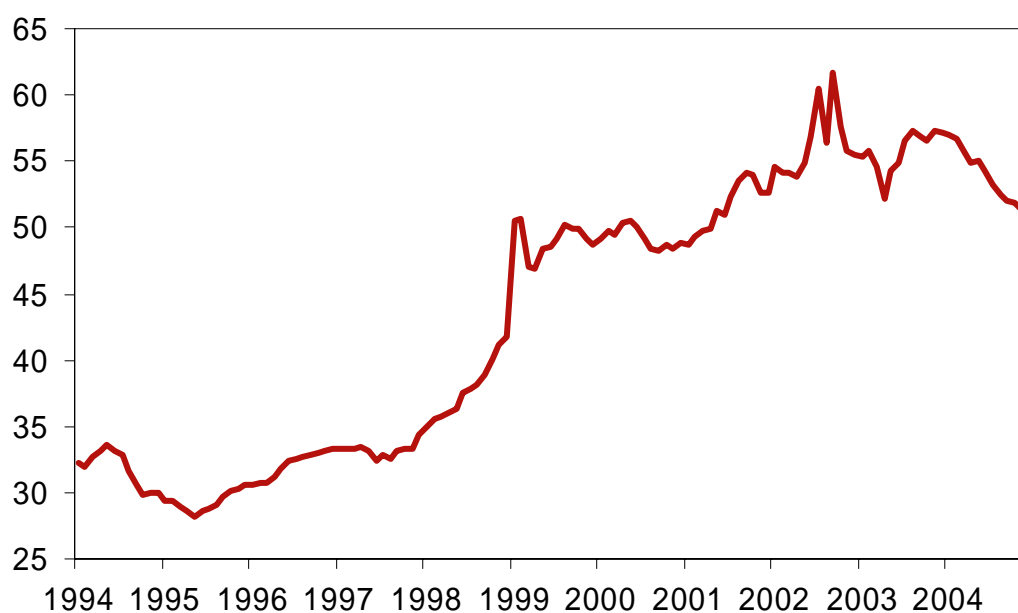
Figure 1  
**US\$-linked domestic debt/  
total domestic debt (1994-2004)**  
%



Source: Banco Central do Brasil.

In spite of such a build up in foreign currency liabilities, currency movements explain only a minor part (2.1 percentage points) of the 11.7 percentage point increase in the net public debt/GDP ratio between 1995 and 1998 (Figure 2 and Table 1). On the one hand, the country was still following an administered FX regime; on the other, typical debt dynamics was negatively affected by a policy mix that combined lax fiscal policy and high real interest rates.

Figure 2  
**Debt/GDP ratio (1994-2004)**  
 % of GDP



Source: Banco Central do Brasil.

Table 1  
**Net public sector debt increase (1995-98)**

Decomposition as % of GDP

	1995	1996	1997	1998	1995-98
<b>Net debt increase</b>	<b>0.5</b>	<b>2.7</b>	<b>1.1</b>	<b>7.4</b>	<b>11.7</b>
1. Primary surplus	-0.3	0.1	0.8	0.0	0.7
2. Interest on the debt	5.9	5.4	4.8	7.4	21.2
3. Depreciation on domestic debt	0.1	0.1	0.2	0.5	0.8
4. Depreciation on foreign debt	0.8	0.1	0.3	0.3	1.2
5. Skeletons	1.5	2.0	0.1	1.6	4.5
6. Privatisation proceeds	0.0	-0.2	-1.8	-1.4	-3.3
7. Effect of GDP growth	-7.6	-4.8	-3.3	-1.0	-13.5
<b>Debt dynamics (1+2+7)</b>	<b>-2.0</b>	<b>0.7</b>	<b>2.4</b>	<b>6.4</b>	
<b>Currency (3+4)</b>	<b>1.0</b>	<b>0.2</b>	<b>0.5</b>	<b>0.7</b>	
<b>Net "skeletons" (5-6)</b>	<b>1.5</b>	<b>1.8</b>	<b>-1.7</b>	<b>0.2</b>	

Source: Banco Central do Brasil.

## 1999-2002: after floating, coping with three waves of devaluation

The FX regime changed into floating in January 1999, with a major devaluation wave in the first quarter of 1999. The Brazilian Real depreciated by 30.3% between December 1998 and March 1999 (Figure 3). While the prior provision of US\$-linked securities was not enough to prevent the collapse of the peg, the outstanding stock of those instruments helped to prevent significant balance sheet mismatches in the private sector. As a result, the instruments served as a mechanism to smooth the transition from the administered to the floating FX regime, without creating any generalised financial distress or a credit crunch.

Figure 3  
Exchange rate R\$/US\$ (1994-2004)  
R\$/US\$



Source: Banco Central do Brasil.

To a large degree, this explains why, contrary to the experience of most emerging economies whose currency peg collapsed in the late 1990s, the Brazilian economy actually posted a 0.8% *positive* GDP growth in 1999. The cost, however, was felt in the debt/GDP ratio, which increased by 7.0 percentage points to 48.7% of GDP in 1999. The currency depreciation was responsible for 6.6 percentage points of that total, as the fiscal stance had been tightened, mitigating the pressure coming from “pure debt dynamics” factors (Table 2).

After 1999, Brazil underwent two further major devaluation waves. In 2001, the country faced external shocks from two main different sources: financial contagion associated with the run up to the Argentine debt crisis in December and the risk aversion that ensued following the events of 11 September 2001 in the US. These shocks led to an increased demand for hedging by the private sector. Given a large current account imbalance (–4.6% of GDP in 2001) and an environment of increased risk aversion in global financial markets, there continued to be no natural provider of foreign currency hedging in the economy.

In this context, the demand for foreign currency led to substantial pressures against the Brazilian Real, which depreciated 27.8% between January 2001 and October (peak devaluation) that year. One of the Central Bank’s responses was to provide a hedge through net placements of US\$-linked securities so as to mitigate the impact of the increased demand for hedging on the foreign exchange market. As the cause of the shocks was perceived as being “purely external” to the country, the rollover rate for US\$-linked securities increased, reaching 167.2% that year (Figure 4), or 133.7% when considering the rollover of accrued intermediate and final interest paid to debt holders.

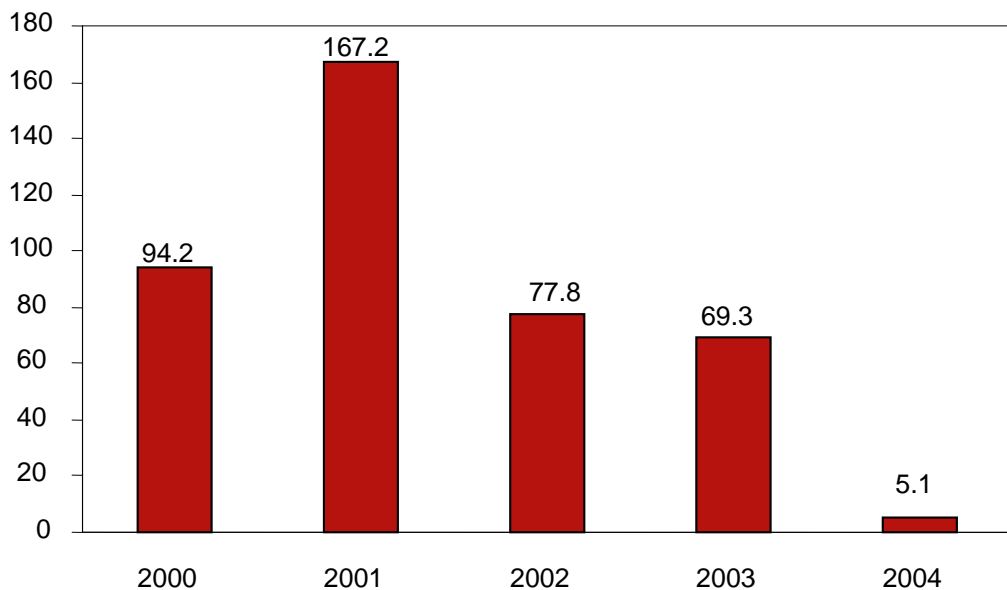
Table 2  
**Net public sector debt increase (1999-2004)**  
 Decomposition as % of GDP

	1999	2000	2001	2002	2003	2004	1999-2004
<b>Net debt increase</b>	7.0	0.1	3.9	2.9	1.7	-5.4	10.1
1. Primary surplus	-2.9	-3.3	-3.5	-3.3	-4.1	-4.4	-16.9
2. Interest on the debt	8.2	6.8	6.9	7.2	9.1	6.9	34.6
3. Depreciation on domestic debt	3.8	0.8	1.5	4.8	-1.4	-0.2	6.5
4. Depreciation on foreign debt	2.8	0.8	1.5	4.4	-1.6	-0.3	5.3
5. Skeletons	1.3	0.8	1.5	0.9	0.0	0.4	3.4
6. Privatisation proceeds	-0.8	-1.8	-0.1	-0.2	0.0	0.0	-1.9
7. Effect of GDP growth	-5.3	-3.9	-3.9	-11.0	-0.3	-7.8	-20.8
<b>Debt dynamics (1+2+7)</b>	<b>-0.0</b>	<b>-0.4</b>	<b>-0.5</b>	<b>-7.1</b>	<b>4.7</b>	<b>-5.3</b>	
<b>Currency (3+4)</b>	<b>6.6</b>	<b>1.6</b>	<b>3.0</b>	<b>9.3</b>	<b>-3.0</b>	<b>-0.5</b>	
<b>Net "skeletons" (5-6)</b>	<b>0.5</b>	<b>-1.0</b>	<b>1.4</b>	<b>0.7</b>	<b>0.0</b>	<b>0.4</b>	

Source: Banco Central do Brasil.

The stock of those instruments increased that year by 32.3%, or US\$ 18.8 billion, to US\$ 77.0 billion. Again, the provision of a hedge mitigated the impact of the large currency volatility on the private sector balance sheet and the economy still managed to grow 1.3% that year. But the share of US\$-linked instruments in the domestic public sector debt increased from 22.7% in 2000 to 28.6% in 2001, and net debt increased by 3.9 percentage points to 52.6% of GDP. The impact of currency movements was responsible for 3.0 percentage points of that total.

Figure 4  
**FX instruments rollover rate<sup>1</sup> (2000-04)**  
 %



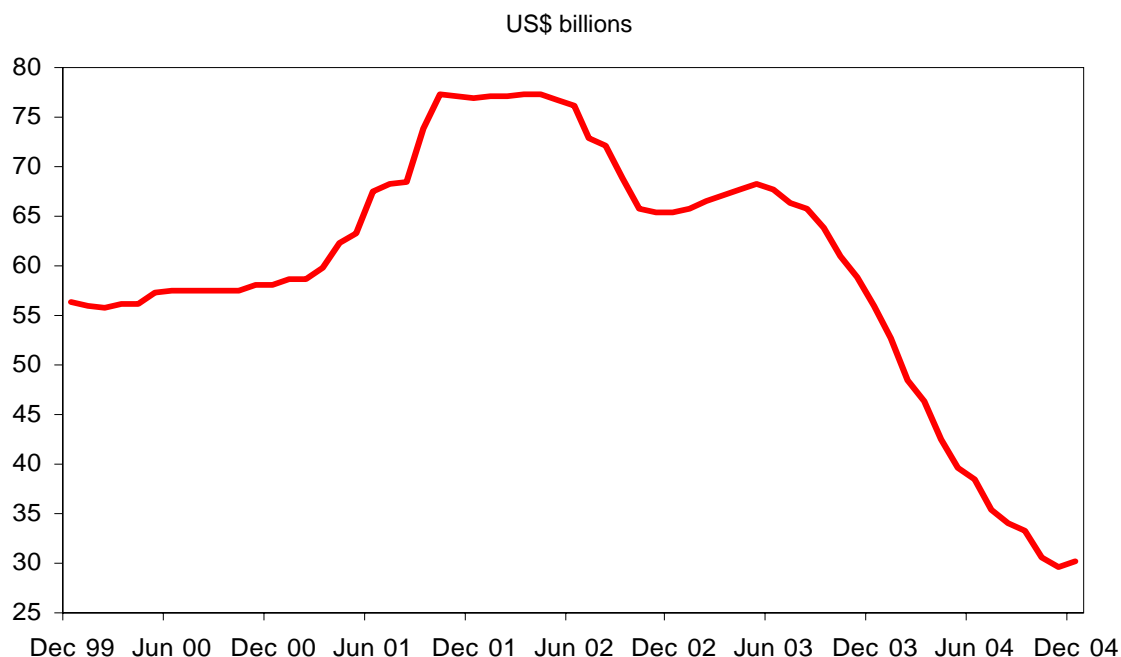
<sup>1</sup> Only considers rollover of principal, ie excludes rollover of intermediary and final interests.  
 Source: Banco Central do Brasil.

In 2002, before a new wave of large devaluation, the Central Bank re-introduced the use of FX derivatives, which had not been used since the pre-floating period, and started to replace Treasury US\$-linked notes (NTN-D) with FX swaps. At this point, the Central Bank had already interrupted the issuance of NBC-E (US\$-linked notes issued by the Central Bank), following the determination of the Fiscal Responsibility Law approved in May 2000 - the law prevented the Central Bank from issuing securities of any kind. The new FX swaps contracts were perceived as having lower credit risk than the NTN-Ds, as they were traded and settled at the BM&F (the local futures exchange) and offered daily margin adjustments. In those FX swaps, the Central Bank pays US\$ variation plus local onshore US\$ interest rates, and receives in exchange the cumulative one day interest rate on interbank certificates of deposit (the so called CDI rate) over the period of the contract. It effectively works as a FX hedge for takers of the swap.

Later that year, the country had to cope with another round of large currency devaluation. This time around, the nature of the adverse shocks led to an important confidence crisis, based on two main elements: (1) an external factor, amid an environment of increased risk aversion on global capital markets in the aftermath of the Enron scandal, and, in Latin America, with the Argentine debt default in late 2001; and (2) a domestic factor: the concerns over public debt solvency, in light of uncertainties caused by the presidential elections in the second half of 2002.

The combined effect was a sudden stop in external financing (FDI, long-term loans and short-term capital inflows), which totalled US\$ 28 billion (roughly 6% of GDP) in the year. The result was once again large depreciation pressures and the Brazilian Real lost 40.3% of its value against the US dollar between May and 22 October, the peak devaluation that year. This time around, though, the "lack of confidence" element caused a different response by economic agents and the period was marked by a reduction in the demand for onshore hedging and a reduction in external FX liabilities of the private sector. The increased perception of credit risk carried by public debt in general and by US\$-linked securities in particular caused their rollover rate to fall to 50.1% of the maturing principal during August-October, averaging only 77.8% for the year (or 67.1%, if intermediary and final interest accrued are considered). As a result, the total outstanding stock of US\$-linked securities was reduced by US\$ 11.7 billion that year (Figure 5). Even so, given the previous large exposure of the public sector to FX risk, the net public sector debt/GDP ratio increased by 2.9 percentage points that year, of which currency movements pressured up 9.3 percentage points, being partially offset by a 7.1 percentage points negative pressure exerted by "pure debt dynamics" elements (nominal GDP growth, primary fiscal surplus and pure interest on debt).

Figure 5  
Total outstanding FX domestic debt (1999-2004)



Source: Banco Central do Brasil.

## 2003-04: rolling back FX hedge and reducing public sector FX exposure

After a volatile period since 1997, the year 2003 was marked by a rapid improvement in fundamentals. The new administration elected in October 2002 signalled very early on its commitment to a consistent policy mix, thus allaying public debt solvency fears. On the fiscal side, the multi-year targets for primary surpluses were increased and structural reforms of the social security and tax systems were announced, thus signalling the commitment to a long-term fiscal adjustment that should lead to a falling path for the public debt/GDP ratio. On the monetary side, interest rates were increased and the de facto autonomy of the Central Bank was reaffirmed, paving the way to the resumption of a downward trend for inflation. In the external sector, a weak currency and increasing global demand triggered a large response of the trade account, and the country saw the first current account surplus since 1992. In addition to the strong policy signals, easing global financing conditions helped to restore and normalise the country's access to international capital markets. The result was a substantial reduction in the country risk premium and a substantial appreciation of the Brazilian Real after March 2003.

This favourable environment enabled the Central Bank to actively seek to reduce the public sector's FX exposure. From late 2001 to December 2002, the Central Bank approach had been to roll over 100% of the principal coming due for all NTN-Ds and swaps maturing. In January 2003, the policy of not rolling over coupons and final interest payments on maturing US\$-linked securities was extended to maturing FX swap contracts. As a consequence, the BCB started to discount 6% (equivalent to the six-month coupon of the NTN-D) from the swaps maturing notional value per semester. In May 2003, the Central Bank announced a new rollover procedure for US\$-linked securities by which it would no longer offer necessarily 100% of those securities at each maturity, opening up the possibility of net amortisation of securities at each maturity. The stated goal was to gradually reduce the outstanding amount of US\$-linked securities over the medium term, and thus to reduce the public sector debt sensitivity to FX movements.

While the measure had positive feedback, the debate among local FX market players was centred on the potential noise and pressure to the exchange rate caused by the lack of an explicit ratio for rollovers. The first set of auctions were marked by intense speculation on what the new rollover rate would be, with market agents believing in figures between 80 and 95%. The actual discretion in not fixing an explicit rollover rate was important as a more positive than expected global environment led to lower currency volatility and to a reduction in FX liabilities of the private sector. This environment enabled a much faster than expected reduction in the rollover rate over the following months, and an acceleration of the retirement of those securities. The rollover rate of FX instruments was reduced to 41.6% of the principal maturing in the June/December period, without any major effect on the FX market, and the average rollover rate in 2003 totalled only 69.3% (61.3% considering intermediary and final coupons). In the year, the programme managed to retire the equivalent of US\$ 9.4 billion in US\$-linked domestic debt.

Also, on the operational side, the Central Bank had disciplined auction procedures in July, establishing a maximum of two auctions to be carried out for each rollover. Before that, the Central Bank had never established any specific rollover procedure. Several auctions could occur in the same day and there was no routine regarding when to start a certain rollover. In September, the number of auctions was cut to one, to be preceded by a survey among FX dealers and large corporations on their demand for FX hedging.

In 2004, despite an increase in FX volatility and global risk aversion associated with the perspective of an early start for the tightening cycle in the US, the programme of retirement of US\$-linked securities continued and the Central Bank did not offer any securities between January and May (zero rollover rate). The rapid FX depreciation in April-May was interpreted by local FX market players as an increase in the demand for FX hedging, leading to speculation on whether the Central Bank would go back into a policy of net placements of US\$-linked securities. Instead, the Central Bank reaffirmed its goal of retiring FX linked securities over time. The rollover rate was in fact increased, but only to 33.2% in June, to 18.6% in July and to 18.4% in August, only to resume a zero rollover rate from September onwards. As a result, the average rollover rate in 2004 was reduced to only 5.1%, and the FX component of domestic debt was nearly halved, cut by the equivalent of US\$ 26.2 billion.

## Consolidated results

Since 2003, the Central Bank strategy of actively reducing the public sector's foreign currency exposure has importantly strengthened Brazil's public debt resilience against shocks that affect the exchange rate, thus being one of the key factors behind the enhancement of Brazil's creditworthiness. Over the past two years, the reduction in FX hedge provision by the public sector reached US\$ 35.1 billion, or 53.8%. The share of US\$-linked instruments in the domestic public debt was reduced from a peak of 40.7% in September 2002 to 9.9% in December 2004. As a result, there was also a significant reduction in the sensitivity of the total public debt (domestic plus external) to any 1% permanent devaluation, from 0.34 percentage points of GDP in September 2002 to 0.11 percentage points at the end of 2004 (Figure 6). The programme is still in place, and further progress continues to be made in retiring the outstanding stock of such instruments.

Figure 6  
Impact of 1% devaluation of exchange rate  
variation in the net debt/GDP ratio (1999-2004)

