THE TRANSITION FROM FIXED TO FLOATING EXCHANGE RATE REGIMES: THE CASE OF BRAZIL

TESE SUBMETIDA À CONGREGAÇÃO DA ESCOLA DE PÓS-GRADUAÇÃO EM ECONOMIA (EPGE) PARA OBTENÇÃO DO GRAU DE

MESTRE EM ECONOMIA

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MAY 2002

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ABSTRACT

This dissertation evaluates macroeconomic management in Brazil from 1994 to the present, with a particular focus on exchange rate policy. It points out that while Brazil’s Real Plan succeeded in halting the hyperinflation that had reached more than 2000 percent in 1993, it also caused a significant real appreciation of the exchange rate – a situation that was only made worse by the extremely high interest rates and ensuing bout of severe financial crises in the international arena. By the end of 1998, the accumulation of internal and external imbalances led the authorities to drop foreign exchange controls and allow the currency to float. In spite of some initial scepticism, the flexible rate regime cum inflation target proved to work well. Inflation was kept under control; the current account position improved significantly, real interest rates fell and GDP growth resumed.

Thus, while great challenges still lie ahead, the recent successes bestow some optimism on the well functioning of this exchange rate regime. The Brazilian case suggests that a successful transition from one foreign exchange system to another, particularly during financial crisis, does not depend only on one variable – be it fiscal or monetary. In reality, it depends on a whole set of co-ordinated policies aimed at resuming price stability with as little exchange rate and output volatility as possible.
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This dissertation evaluates macroeconomic management in Brazil from 1994 to the present, with a particular focus on exchange rate policy. It points out that while Brazil's Real Plan succeeded in halting the hyperinflation that had reached more than 2000 percent in 1993, it also caused a significant real appreciation of the exchange rate—a situation that was only made worse by the extremely high interest rates and ensuing bout of severe financial crises in the international arena. By the end of 1998, the accumulation of internal and external imbalances led the authorities to drop foreign exchange controls and allow the currency to float. In spite of some initial scepticism, the flexible rate regime cum inflation target proved to work well. Inflation was kept under control; the current account position improved significantly, real interest rates fell and GDP growth resumed.

Thus, while great challenges still lie ahead, the recent successes bestow some optimism on the well functioning of this exchange rate regime. The Brazilian case suggests that a successful transition from one foreign exchange system to another, particularly during financial crisis, does not depend only on one variable—be it fiscal or monetary. In reality, it depends on a whole set of co-ordinated policies aimed at resuming price stability with as little exchange rate and output volatility as possible.
I. INTRODUCTION

Aiming to stop the hyperinflation that had reached more than 2000 percent in 1993, Brazil’s Real Plan de-indexed the economy, issued a new currency and put a ceiling on the exchange rate. While the Plan was successful in achieving this goal, it caused a significant real appreciation of the exchange rate that was further aggravated by the lack of fiscal discipline in Brazil’s environment of huge and volatile capital flows.

Faced with this gravely adverse effect, the country tried several different approaches to stabilise the exchange rate in the following years. After the Mexican crisis in 1995, the Central Bank attempted to prevent major exchange rate realignments by establishing an odd system of daily devaluation within a mini band. It was hoped that this would accumulate around 7.4 percent per year. However, as pointed out by many observers, this system was ill suited to eliminate past disequilibrium and avoid future problems. By the end of 1998 after both the Southeast Asian and Russian crises had taken place, internal (public) and external indebtedness had increased as fiscal and current account deficits mounted, real interest rates were extremely high and the economy was sluggish. In the same year, inflation tumbled to a mere 2 percent due to the weakness of aggregate demand and the ceiling on prices imposed by the crawling peg regime. Thus in January of 1999, the government – empowered by a successful re-election – tried to restore internal and external equilibrium with a second major move in the exchange rate policy. Since the previous attempt to increase the width of the exchange rate band had been unsuccessful, it was forced by markets to give up foreign exchange interventions and adopt a floating exchange rate regime up until now.
This paper discusses Brazil's transition experience from start to finish, covering the macroeconomic problems prior to the decision of exiting from the rigid exchange rate system, the challenges posed during the shift to the new flexible system, and the sustainability of the new regime. In particular, the study seeks to give insight on how Brazil dealt with the unique challenges posed during each of the three phases of transition, such as:

• Handling the macroeconomic imbalances that occurred between the launching of the Real Plan in July 1994 and the shift toward the flexible exchange rate regime in January 1999;

• Taking critical steps like finding means to attract foreign assistance from multilateral organizations and the private sector, and assigning the roles of fiscal and monetary policies during the transition;

• Designing an inflation targeting scheme that would effectively serve as a fundamental tool to stabilise prices and exchange rate expectations;

• Evaluating the sustainability of the new regime and its contribution to new and deeper developments in fiscal, monetary and trade policies.

II. MOUNTING PRESSURES

Previous experiences with episodes of instability made it clear that the fall of inflation alone was enough to trigger a large expansion of private demand. This was due to two reasons. First, consumers tended to increase their purchases in order to profit from what they feared may be just a temporary price squeeze. Second, because of money illusion, most investors shifted away from interest-bearing assets to consumption of durable goods as the nominal rate of interest fell with inflation. The Brazilian government worried that if this surge went uncontrolled, stabilization may
fail. Thus, in order to offset it, authorities implemented a tight monetary policy, coupled with an exchange rate scheme in which the new currency – the *real* – was allowed to float freely below the threshold of one dollar.

After the launching of the Real Plan (July 1994), the financial authorities put forth several restrictive measures on monetary policy. First, it was decided that the monetary base should increase by no more that R$ 9.5 billion between July 1994 and March 1995. Second, compulsory reserve requirements on demand deposits were increased to 100 percent, while those for time deposits and savings accounts were increased to 20 percent each – a rate that rose to 30 percent when inflation escalated unexpectedly from October to November of 1994. During this period of increasing inflation it was also decided that all loans extended by financial institutions would be subjected to a reserve requirement of 15 percent and their maturity periods restricted to three months. Third, the Central Bank’s interest rates were set at levels that assured high real returns for money market participants. Thus by the second semester of 1994, the average SELIC real interest rate (on repurchase agreements of public bonds) was 1.3 percent per month or 16.2 percent per year.

By taking these measures, the government was asserting that stabilization was there for good and that *no remedy*, even if unpleasant, would be avoided if deemed necessary for the success of the plan. Indeed, inflation fell rapidly from 44.6 percent per month in the second quarter of 1994 to 2.5 percent in the fourth; and the acceptance of the new currency was evident from the high rate of remonetization of the economy (M1 money supply grew by 250 percent in real terms during this period). As expected, aggregate demand soared after the launching of the Plan fuelled by private expenditures. Real GDP increased by 4.6 percent quarterly in the third quarter of 1994 and 3.1 percent in the fourth quarter but slowed afterwards. Monetary restrictions effectively avoided an economic overheating that could have driven
inflation up again and were of key importance to the process of exchange rate appreciation. Inflows of foreign capital in search of fat dollar returns reached US$ 9.4 billion in the second quarter of 1994, but were reversed in the third quarter and reduced to barely US$ 0.8 billion in the fourth as the dollar plunged to nearly R$ 0.8, thus fuelling expectations of a currency depreciation. Together with the downfall of trade barriers, high real interest rates and real appreciation moderated price increases in both the traded and non-traded goods sectors and assured the immediate success of the Real Plan in terms of its anti-inflationary goal (Table 1).

<table>
<thead>
<tr>
<th>Table 1. Real Plan Phase I: Selected Macroeconomic Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflation* (INPC)</td>
</tr>
<tr>
<td>1994 II</td>
</tr>
<tr>
<td>III</td>
</tr>
<tr>
<td>IV</td>
</tr>
<tr>
<td>1995 I</td>
</tr>
<tr>
<td>II</td>
</tr>
<tr>
<td>III</td>
</tr>
</tbody>
</table>

Sources: FGV and Andima.
(*) averages per period.

It is no wonder that this combination of strong monetary restrictions, an autonomous shift in private expenditures and currency appreciation would have worsened the external sector. Trade surpluses and current accounts balances vanished in the turn of the year and the situation became worse in 1995 as the Mexican crisis – the first of a succession of financial crises stemming from the international economy – devastated the not-yet-stable and partial flexible exchange rate scheme.

III. THE TRAP

The Mexican crisis of late 1994 immediately halted the progress made on
lowering the interest rates and inflation. Had the authorities allowed the full working of the announced exchange rate regime, the real could have depreciated substantially in December 1994 following the loss of US$ 3.1 billion in international reserves. Instead, it became apparent that the Central Bank was targeting an informal exchange rate band of R$ 0.84-0.86 per dollar, and had no plans for any major adjustment of this variable. This was mainly due to fears of inflationary consequences and political losses, as the government realized the big electoral dividends stemming from the newly acquired monetary stability.

Nevertheless, stern measures were inevitable. The outflow of capital regained momentum in the first quarter of 1995 due to a new round of Mexican peso depreciation, financial problems in Argentina and the increase of the federal funds rate in the U.S. In March 1995, the Brazilian government announced a new package of fiscal and monetary restrictions and a new exchange rate policy under which the Central Bank would operate by means of a pre-announced exchange rate band ("larger-band") that was initially set at R$ 0.88-0.93 per dollar, implying a devaluation of 8 percent against pre-crisis level. Under this system, the monetary authorities would be allowed to intervene in the interior of the band if judged necessary. The new policy also augmented the overnight interest rate (SELIC) from 3.2 percent to 4.2 percent per month; reduced the transactions tax on external borrowings to 5 percent; and lowered the minimum maturity of external bond issues and short-term bank credit from external sources to 3 years. Finally, it declared that the federal government would delay wage payments, renegotiate all contracts in the public sector, request Congress to speed up specific legislation to help its control of expenditures and also start the privatization of major state enterprises, including Vale do Rio Doce.

Soon afterwards, the new exchange rate regime became a simple crawling peg system with rates set daily by the Central Bank. As can be seen in Graph 1, from July 1995 to December 1999, the government forgot the "larger-band" and compelled
the market to operate within a mini-band to the fourth decimal. Thereafter, the exchange rate depreciated by around 0.6 percent per month, accumulating 7.4 percent per year. By doing so, it froze the real effective exchange rate at the levels of March 1995, or aggravated the process of real appreciation started in 1994 (Graph 2).
After turning to such a rigid scheme, the monetary authorities then had the easy, albeit often unpleasant, task of setting the interest rates. Whenever the country experienced a dangerous loss of international reserves, they would push up interest rates until it became attractive again to financial investors. That meant paying them a risk premium in excess of
risk-free interest rates (US Treasury Bonds or Bills) plus the 7.4 percent expected
depreciation, and vice-versa in the case of monetary easing (Graph 3). The rule was simple,
but most of the time bitter for the economy. The authorities essentially established a floor to
the nominal interest rate around 19 percent per year by compounding 7.4 percent of
expected depreciation with (in “normal” conditions) 5 percent of fed funds rate and 5.5
percent of risk plus transactions costs and taxes.

Obviously, the smaller the inflation rate, the higher the real rate of interest.
In 1995 and 1996, nominal and real short-term interest rates were extremely high,
reflecting the battle for external credibility fought by the government. But, from mid
1996 and 1997, the Brazilian economy enjoyed better conditions. Nevertheless, they
implied an abnormally high real interest rate of 16.9 percent per year in the money
market as expected inflation fell to 5-7 percent. Because of high reserve requirements
on bank liabilities, real interest rates on bank loans were far greater, attaining more
than 100 percent per year. Considering such high rates, it is no wonder that real GDP
showed a stagnation in the turn of 1995 and grew at only 2.7 percent in 1996 and 3.2 in
1997 (Table 2). The unemployment rate, which had long ago stabilised in the range of
4-6 percent of the workforce, reached 7.6 percent in 1998 (Graph 4).
Concerning fiscal policy, the expansion that took place in 1995 and 1996 obviously undermined the economic scene. The reasons that explain such disastrous performance are well known: first, given that real interest rates had skyrocketed, payments of interest on the public debt mounted from 2.5 percent of the GDP in 1993 to 3.8 percent in 1994 and 5.3 percent in 1995. Secondly, many beneficial rules allow automatic expenditure increases in the public sector. During hyperinflation, the government used to control them by simply delaying monetary adjustments intended to preserve their real values. After price stabilization, such expenditures rose irrevocably. Third, the federal government made a contribution of its own in 1995 by augmenting minimum wages, along with other wages of certain categories and pensions by 40 percent. Fourth, the 1995 budget overestimated the rate of inflation, allowing the government to expand outlays ahead of tax receipts. This mix of political laxity, forecasting errors and institutional weaknesses squandered the primary surplus of the consolidated public sector from 5.1 percent of the GDP in 1994 to a deficit of

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1 See Cardoso (1998) for a comprehensive account of such mechanism of expenditures control in Brazil during most of the hyperinflation period. See also Giambiagi and Além (1999) on most important and recent fiscal issues.
0.4 percent in 1995. The operational fiscal deficit (which includes the real interest bill) mounted from -1.3 percent (surplus) of the GDP to 4.9 percent, respectively. The dynamics of the net public debt worsened, as it also had to accommodate Central Bank interventions to sterilise the inflow of foreign capital brought by high interest rates. In spite of increasing privatization receipts, it grew from 30.4 percent of the GDP in 1994 to 34.3 percent in 1997 (Table 3).

<table>
<thead>
<tr>
<th>Period</th>
<th>PSBR**</th>
<th>Operational</th>
<th>Primary</th>
<th>Real Interest Payments</th>
<th>Net Public Debt</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>(0.2)</td>
<td>(2.7)</td>
<td></td>
<td>2.5</td>
<td>31.2</td>
</tr>
<tr>
<td>1994</td>
<td>(1.3)</td>
<td>(5.1)</td>
<td></td>
<td>3.8</td>
<td>30.4</td>
</tr>
<tr>
<td>1995</td>
<td>4.9</td>
<td>(0.4)</td>
<td></td>
<td>5.3</td>
<td>30.8</td>
</tr>
<tr>
<td>1996</td>
<td>3.7</td>
<td>0.1</td>
<td></td>
<td>3.6</td>
<td>33.2</td>
</tr>
<tr>
<td>1997</td>
<td>4.3</td>
<td>0.9</td>
<td></td>
<td>3.4</td>
<td>34.3</td>
</tr>
<tr>
<td>1998</td>
<td>7.5</td>
<td>0.0</td>
<td></td>
<td>7.5</td>
<td>41.9</td>
</tr>
<tr>
<td>1999</td>
<td>3.9</td>
<td>(3.1)</td>
<td></td>
<td>7.2</td>
<td>49.4</td>
</tr>
<tr>
<td>2000</td>
<td>1.1</td>
<td>(3.5)</td>
<td></td>
<td>4.7</td>
<td>49.4</td>
</tr>
</tbody>
</table>

Source: BCB.

(1) in 12 months.

(**) Public Sector Borrowing Requirements.

In theory, fiscal policy could have worked to neutralise the negative effects on economic activity caused by the interest rate hike and exchange rate appreciation. Tight monetary policy could have been geared to external equilibrium while fiscal expansion would preserved the objective of full employment. But the move was frail: real interest rates imposed by the monetary-exchange rate policy mix were inconsistent over time with public debt stability. And real exchange rate was inconsistent with full employment, given the goal of sustained external liability. Thus, as can be observed, the current account deficit reached US$ 30.8 billion in 1997 (or 4.4 percent of GDP) and the ratio of net external liability to exports reached 4.3, putting the country’s external position in a clearly strained situation (Tables 4 and 5).
As markets became aware of these inconsistencies, the room for fiscal expansion became null. By rejecting devaluation, full employment and current account balance had to be postponed until increases in productivity and savings lifted the internal and external scenario. A mild crisis later prompted other miscellaneous countermeasures by the Central Bank such as sales of dollar-denominated bonds, the easing of capital inflow restrictions, the assumption of long positions in futures markets, etc. And while the Asian crisis and Russian default later required even stronger tools, it was, ironically, a domestic (Minas Gerais state) moratorium that brought the final blow to the macroeconomic policy mix.
The trap suggested above can be better understood with the aid of a simple IS-LM model in the Mundell-Fleming tradition. The following equations describe internal equilibria in the goods and money markets and external (balance of payments) equilibrium. Then the IS curve is given by:

\[ y = y (g, r, e; p, \pi) \]  

where \( y \) represents real GDP, \( g \) is a parameter of autonomous expenditures (private and public), \( r \) is the real interest rate and \( e \) is the real exchange rate, defined as the ratio of domestic to foreign prices. Partial derivatives of \( y \) are positives regarding \( g \) and negative with respect to \( r \) and \( e \). We take the price level \( p \) and expected inflation \( \pi \) as given.

Money market equilibrium requires that real income \( y \) is positively related to the real money stock and to the nominal interest rate \( i \) so that we can write the LM schedule as:

\[ m = l (y, i) \]  

Balance of payments equilibrium requires that current account deficits be matched by capital account surpluses of equal amounts thus implying positive relationships between real income and real interest rate and between the latter and the real exchange rate. We assume high capital mobility, albeit less than perfect, which means that a country can raise its domestic interest rate above the external (risk-free) interest rate plus the country's risk premium and the expected exchange rate depreciation (respectively, \( i^*, \rho \) and \( e \) below) and thus attract larger amounts of foreign capital. The former make up for the opportunity cost of investing abroad.
Doing so, it can finance an increase in the current account deficit by matching a correspondent increase in the capital account surplus. Thus, the BP curve is written as:

\[ B (y, e, r; i^*, \rho, \varepsilon) = 0 \]  

(3)

The model has three equations, three unknowns \((y, r \text{ and } e)\) and seven parameters \((g, m, p, \pi, i^*, \rho \text{ and } \varepsilon)\). Provided that interest rate-elasticity of income for the purpose of external balance is greater than its counterpart for money market equilibrium and that exchange rate-elasticity of income for the former is smaller than the same variable for goods market equilibrium, the system conveys conventional results.\(^2\) Expansionary monetary policy increases output and decreases (devalues) the real exchange rate and the (real) interest rate. Expansionary fiscal policy raises the real interest rate, output and real exchange rate. The higher the degree of capital mobility under flexible exchange rate regimes, the weaker the effects of fiscal policy on output and interest rates and the stronger the effect of monetary policy; and vice versa in the case of fixed exchange rates.

Figure 1 illustrates the first phase of the Real Plan with high capital mobility and flexible exchange rates below the limit of one real per dollar.

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\(^2\) "Conventional" respectively to the standard Mundell-Fleming models with perfect capital mobility. Also, with the assumptions that: (i) money market adjusts instantaneously; (ii) output increases with excess demand for goods and the balance of payments is always in equilibrium with flexible rates; and (iii) the system is locally stable.
Point A is the initial equilibrium and point B is to be avoided because it represents the forecasted situation of overheating caused by the surge in private demand due to price stabilization (IS\(_0\) shifting to IS\(_a\)). Tight monetary policy (LM\(_0\) moving upward to LM\(_1\)) eventually set the economy at point C, where it enjoyed full employment (y\(f\)) at a cost of higher real interest and real exchange rate (BP curve shifts upward as currency appreciates). But this wasn’t the end of the story.

In March 1995, three months after the Mexican crisis, as the country’s risk premium soared, together with correspondent measures of risk for the entire region, the government was compelled to raise interest rates again. It also decided to establish a new exchange rate regime, which, as we have seen, was of a crawling peg type, virtually fixing the real exchange rate at past levels. The Brazilian economy moved accordingly to a point like D in Figure 2, where extremely high real interest rates
successfully prevented the loss of central bank reserves and major currency devaluation. However, this came at a cost of recession and of mounting fiscal imbalances (we omit in this figure the LM curve because its is endogenously determined in the case of fixed exchange rates).

Intentionally or not (simply by allowing institutional trends toward it) an expansionary fiscal policy was put in place soon afterwards. In "normal circumstances" it could offset the deflationary effects of the interest rate hike on economic activity and move the economy to a point E. But the initiative was bound to fail: the strength of the monetary-exchange rate mix rapidly boosted public and external indebtedness, thus spreading fears of impending macroeconomic instability. As investors urged the government to regain control over the budget, reducing the fiscal stimulus, and market pressures eased, the economy eventually settled at point F, unfortunately, with less than full employment.

One could say that fiscal expansion should have been greater than it was to avoid such slow growth (quasi) equilibrium. In theory, yes. Nevertheless, if it had been, financial markets wouldn't have accepted it at "normal" levels of risk and expected depreciation. Which is the same to say that BP schedule would have shifted upwards again and the situation regarding output would have remained roughly the same as at point F. Interest rates, however, would have been even higher than at point E.
In theory, the way out of this trap was straightforward. It required a complete reversal of the policy mix. Currency devaluation would have improved the balance of payments either by stimulating net exports or attracting foreign investment. Fiscal tightening was necessary in order to switch domestic expenditures away from the external sector, stabilise the ratio of public debt to GDP and regain investors’ confidence. Fiscal tightening could also have helped regain confidence by reducing the real values of public expenditures and public debt denominated in real while increasing the price level. Both would have allowed a sharp decline in real interest rates. In terms of Figure 2, the IS\(_2\) curve (aggregate demand) would have shifted to the right, because net exports stimulus on demand could have more than offset the deflationary impact of fiscal tightening. Accordingly, BP\(_3\) curve would have shifted downward following the devaluation and full employment equilibrium would have been regained with lower real interest rates.

Nevertheless, two dilemmas remained: how could Brazil accomplish a
major devaluation without fuelling inflation and causing financial distress? And could the fixed exchange rate regime survive under those circumstances and after a major devaluation? Critics were keen to point out the troubles caused by the macroeconomic policy mix of 1995-98, but were in disagreement on the amount of overvaluation and what dynamics would be brought by any departure from the existing arrangements. All they could say was that, yes, a maxi-devaluation would be hard to manage, but troubles could be minimized if certain conditions were met, like a calm international scenario, tight fiscal stance, large output gap, low degree of wage indexation, sound banking system and great availability of international financial support. Fiscal policy apart, some of these conditions were apparently in place between mid 1995 and mid 1997 (Table 2 and Graph 3), but it was not taken for granted.

Critics were also divided over the issue of the exchange rate regime. There were three main groups: the first supported mild changes in the crawling peg regime then at work. They wanted a gradual increase in the width of the "mini band" so that after a period of 2 or 3 years, the foreign exchange market would operate freely within the "larger band" with an average margin of 10-15 percent. This proposal effectively saw no major currency overvaluation and placed greater weight on inflation concerns after any realignment.

The second group supported a middle of the road proposal that simply called for an increase in the rate of crawl for a period of around one-year until a significant real depreciation was accomplished after which the currency could be fixed against the dollar. Such an alternative had the obvious problems of pushing up expected depreciation and hence interest rates, therefore risking the loss of reserves and

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3 Currency board defenders were few at that time, given the evidences of large overvaluation it conveys.
recession. To avoid these shortcomings, this group insisted upon a clear tightening of the fiscal policy.

The third group of critics saw no option other than floating the currency, either within a large band or freely, with the option of transitory interventions from the Central Bank. They thought intermediary exchange rate schemes, like the Brazilian soft peg, were ill suited to promote internal and external balances in the new international financial environment characterised by huge and volatile capital flows and liberalised capital accounts.

V. ARGUMENTS FOR DOING NOTHING

Naturally, government officials and allied economists exploited these disagreements in favour of their policies. They argued that, as fiscal tightening was coming, there would be no need for exchange rate realignment. They also constantly brought up the inflation, recession and financial distress suffered in Mexico as a result of the country’s attempts to manage a controlled devaluation. Hence, for three years, although everybody in Brazil agreed that the budget deficit should have been cut, fewer people accepted the need for monetary easing and only a few supported a major currency realignment. There was four main counter arguments put forward by the financial authorities and allied economists, which are outlined and commented on below:

1. The Neutrality Argument: “Currency devaluation has no lasting effect on output or trade and therefore just fuels inflation”

   The main argument in this case was that nominal changes would affect real variables only in the short run. In the long run, as the latter are determined by the set
of Walras' general equilibrium equations that have just relative prices as arguments, nominal changes affect only monetary prices. Therefore, the real exchange rate is in equilibrium or moving towards equilibrium (in deficit situations, by nominal depreciation and/or a fall in prices).

Of course, this argument was based on a mechanistic model of reality, not reality itself. It's hard to believe that after prompting real economic effects in the short run, nominal changes would become impotent in the long run. Moreover, as nobody knows for sure how long the long run is, one has to consider that proper policy action could speed up an adjustment already set in motion by markets themselves. Finally, empirical evidence shows that when coupled with adequate fiscal and monetary policies, currency devaluation does work, i.e., that it has little effect on prices and long-term positive impacts on output, current account and employment. One needs only remember the cases of England and Italy (1992-93), United States (1994-95), Canada (1991-95) and Brazil itself (1995-98) where core inflation had consistently run below the currency's rate of crawl.

2. The Denial Argument: "There was no currency overvaluation at all. Therefore, there wasn't any need to promote a major exchange rate movement"

Authorities were right in debating the accuracy of several estimates of the real exchange rate overvaluation. Naturally, base periods are a matter of judgement, as well as the price indices, and the weights of different foreign currencies determined for the sake of effective exchange rate calculations. But the question was more of reasonable estimate and analysis than of precise science. At the end of 1997, when

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4 For deeper insights on of some of these issues, see Dornbusch and Werner (1994) and Delfim Netto (1997).
measured by wholesale price indices, the real effective exchange rate showed an appreciation of 25.8 percent with respect to July 1994. However, when measured by the ratio of non-traded to traded goods prices, the appreciation was much higher (Graph 2). In addition, from a situation of equilibrium in 1990-94, current account deficits increased to more than 4 percent of GDP, even during periods of slow economic growth and unemployment. To avoid an external sector disaster, the government had not only needed to impose prohibitive real interest rates, but also to call back a number of import restrictions. Of course, these factors didn't prove scientifically the overvaluation hypothesis but they raised a strong suspicion in its direction.

3. The Productivity Argument: “Currency appreciation was the natural counterpart of a ‘wealth effect’ propelled by price stability and by productivity gains due to structural reforms”

Again, the authorities were right to point out that the processes of monetary stabilization following hyperinflation tend to appreciate the currency. But this is not for good. In most cases, the aftermath was troublesome and hence did not justify accommodation. As for productivity, industrial output per worker increased sharply throughout the 1990s as companies struggled to survive in an environment marked by high real interest rates, slow economic growth, trade liberalisation and exchange rate appreciation. Industrial production was eventually revived, but at the cost of rising unemployment, restructuring, downsizing and transfer of ownership (Graph 4). Therefore, because it was not known how this extra income was redistributed and how prices were affected, industrial labour productivity was a misleading guide to justify the “wealth effect” claims and the process of exchange rate appreciation. A rather different picture could emerge if we include in the figures of industrial workforce the
restructured services that previously operated inside the industrial organization. In fact, total factor productivity was the main variable for the purpose of assessing the role of structural reforms and the absorption of technical progress in economic growth. Estimates of the contribution of total factor productivity to the growth of per capita income in Brazil during the 1990s diverge sharply in size and importance.5

Nevertheless, elsewhere in the economy, there were signals of a different outlook. The growth of real GDP during 1994-98 was slightly above that of the 1980s (3.0 percent and 2.4 percent, respectively). Brazil’s share in world economy exports fell from 1.12 percent in 1983-93 to 0.9 percent in 1994-98. Manufactured exports had a worse performance, increasing only 4.2 percent per year from 1994-98, in comparison to 7.6 percent from 1983-93.6 Therefore, the slow pace of the economy and of exports (particularly of manufactured goods) ran counter to the alleged links between productivity, wealth and the exchange rate.

4. The BOP Equilibrium Argument: “What matters for exchange rate management is balance of payments equilibrium, with Brazil enjoys. Current account deficits were caused by the lack of domestic savings”

Conventional ratios for the assessment of external sector risk were mounting. Current account deficit reached 4.3 percent of GDP in 1998, coming from a situation of equilibrium in 1994. The ratio of net external liability to exports increased from 3.7 in 1994 to 5.1 percent in 1998. The ratio of net capital income sent abroad to

5 Total factor productivity calculations pose many technical problems in Brazil. For further information, see Bonelli (1998).

6 Sometimes, the productivity argument had a lighter version. The exchange rate problem would be solved gradually as productivity growth would bring down costs thus promoting exports and substituting imports.
exports grew from 19.5 percent to 37.5 percent in the same period. Furthermore, the rate of return on foreign capital (yearly average) exceeded the rate of growth of exports by a margin of 2.4 percent per year, implying that external liabilities were being accumulated at a dangerous rate.

It is no wonder that for most of the period of 1994-98, balance of payments equilibrium was based on slow output growth and capital inflows that were dependent upon very high real interest rates. To call this situation “normal” was obviously nonsense. Moreover, the costs and benefits of international capital flows and the difficulties they pose for sound macroeconomic management were long recognised by independent economists.\(^7\) In particular, given their volatility and massive amounts, the room for pegged exchange rate regimes became smaller than in past decades. In developing countries it came to be virtually null. As for domestic savings, it was divided between private and governmental savings. The former depended on political will, but was being badly hurt by the impact of high real interest rate on the public debt. The latter had similar problems in an environment of sluggish output growth and overvalued currency. Savings seem to follow the growth of income rather than precede it.\(^8\) Hence, currency overvaluation, by reducing income growth and net exports, tends to depress them.

**VI. INTERNATIONAL CRISIS AND THE FINAL BLOW**

By mid 1997, in spite of the well-known problems with the fiscal and

\(^7\) Effective capital controls can be a hard task. See Cardoso and Goldfajn (1998).

\(^8\) See Yokota et al. (2000) for Granger causality tests between savings and income growth in Brazil.
external markets, the probability of a speculative attack against the real seemed small. The currency depreciated slightly in real terms as inflation dropped below the rate of crawl. The supply of medium- and long-term external capital was consistent with the downfall of real interest rates, which helped to reduce the operational fiscal deficit to 3.5 percent of the GDP. Industrial output had recovered and was growing at 5.8 percent. In short, gradualism seemed to pay.

This calmer scenario received a blast at the end of the year when Asian currencies and bourses collapsed and capital flight spread throughout the Third World. In two months (October and November), international reserve losses amounted to US$ 9.9 billion (16 percent of the total stock) and the Brazilian government had no other option but to raise interest rates again. Overnight interest rates controlled by the Central Bank were raised to 3 percent per month (42.5 percent per year) in November, imposing a prohibitive real interest rate of more than 35 percent. The Central Bank also announced a restrictive fiscal package comprised of some 51 measures, the most important of which being the freeze of public servant wages and cut of some of their benefits, the dismissal of 33,000 non-stable personnel, deep reductions in current expenditures and investments, a 10 percent increase in the income tax rate, a 50 percent cut in all regional and industrial subsidies and forced restructuring of state and municipal debts with the Union. In total, the “Package 51” was due to produce a fiscal adjustment of R$ 20 billion or around 2.5 percent of GDP to finance the projected increase in the interest bill. Expectations of another year of reasonable economic growth (1998) vanished.

At that time, macroeconomic inconsistencies couldn’t be hidden anymore and criticism began to climb. More people began to realise that although high real interest rates could improve the balance of payments and that the exchange rate anchor eliminated the chance of inflation, they jeopardised fiscal consolidation
efforts, employment and economic growth. Nevertheless, the government decided to
wait for an improvement in the external sector and, in the mean time, campaign to win
the upcoming presidential election to be held in October of 1998. To achieve this
goal, inflation control and exchange rate stability were of paramount importance.

As expected, Package 51 was a failure. Several measures were postponed,
forgotten or refused – notably, the pompous announcement of 30,000 dismissals in the
Executive branch. Reflecting electoral pressures, the annual ratio of public wages and
pensions to GDP grew by 8.8 percent from the 1997 figures, while other current
federal expenditures and investments increased by 9.5 percent, and total federal
expenditures (except interest payments) grew by 8.5 percent in relation to 1997. These
increases in expenditures almost offset the sharp increase in federal tax receipts and
contributions, whose ratio to GDP grew by 10.3 percent. Since the states and
municipalities behaved no better, the primary deficit of the consolidated public sector
decreased by less than 1 percent of GDP in 1998. On the other hand, the real interest
bill more than doubled, jumping from 3.4 percent of GDP in 1997 to 7.5 percent in
1998, leading to an equal increase in the operational fiscal deficit (Table 3). In turn,
this reflected the extremely tight monetary conditions that prevailed throughout the
year.

Unexpectedly, the financial authorities regained some control of the
situation in the first half of 1998. Markets seemed appeased by the government’s
rapid and orthodox response to the Asian crisis. Moreover, in spite of the rise in
unemployment, opinion polls showed good perspectives for President Fernando
Henrique Cardoso’s re-election, and hence for the maintenance of existing financial
and structural policies. On the external front, the international financial community
succeeded in limiting the damage of the Asian crisis so that dominant economies like
those of the United States, European Union and China stayed well despite the turmoil.
As a result, money once again began to pour in, increasing international reserves from US$ 52 billion in December 1997 to US$ 76 billion in April 1998 (Graph 3). The containment of the Asian crisis also led the Central Bank to reduce its overnight rate from 3 percent per month in November 1997 to 1.7 percent (22.4 percent yearly) in April 1998.

Unfortunately, the calm was illusory, and broke suddenly in September 1998 when the Russian moratorium showed everybody the obvious fact that highly indebted governments can be tempted to default. Brazil wasn’t Russia, but public finances were in disarray: real interest rates beat world records; the ratio of net public debt to GDP reached 40 percent in mid 1998, showing an average increase of 13.1 percent per year from 1994-98; its term structure was short run and a significant part (17.2 percent) was denominated in dollars. The government performance in implementing the fiscal package was also poor. In addition, the Central Bank contributed to the crisis by recklessly lowering its overnight rate to 19.5 percent per year in July and August, a level below the threshold implied by the exchange rate consistency rule (interest rate parity) and running counter to market expectations. The fall in the price of Brazilian sovereign bonds floated abroad implied a country risk (given by the margin between the yields of these bonds and those of the US government bonds) of nearly 6 percent, which, if added to the expected depreciation of the real, as well at to taxes on foreign investors and the U.S. federal funds rate of 5.5 percent (the “risk-free” rate), pointed to a threshold of more than 20 percent per year for the domestic interest rate. Any rate below this level would be dangerous, as it would discourage inflows of external investment and propel outflows of domestic capital. However, government officials seemed to believe that the crisis could be cushioned without raising interest rates again by selling indexed bonds and creating
incentives for short-term capital inflows. But they didn’t work, and the result was massive capital flight. In less than two months, international reserves fell rapidly from US$ 69 billion (July) to US$ 45 billion (September). On September 10th, the Central Bank raised its overnight interest rate again to 40 percent per year, and in late September – in a last attempt to avoid a currency collapse and a debt moratorium – the government sought help from the IMF.

As usual, the IMF agreed to bailout Brazil, but required the adoption of a restrictive fiscal policy. It co-ordinated a financial package amounting to US$ 41.5 billion, the bulk of which came from multilateral sources like the IMF itself, the World Bank and the Inter American Development Bank. The package called the “Contingent Credit Lines” was originally designed by the IMF in April 1999 to insulate countries with good records in market reforms from negative shocks originated abroad. It aimed to cushion the loss of reserves until a reversal of confidence allowed money to pour in again. The government accepted the deal and in November announced a Fiscal Program for Stabilization, whose objective was to stabilise the ratio of net public debt to GDP at 44 percent. To do so, it agreed to implement a set of measures to yield a primary fiscal surplus for the consolidated public sector of 2.6 percent of GDP in 1999, and 2.8 percent in 2000 and 2001. The most important measures were increases in the financial transactions tax; increases in mandatory social security contributions from firms, retired and active government employees; sharp cuts in current expenditures (other than wages and pensions) at the federal level; cuts in investments by government owned enterprises; and the increase of federal receipts not legally tied to specific expenditures from 40 percent to 60 percent. Fiscal effort amounted to R$ 28 billion in 1999. As for the exchange rate,

9 Of course, at this time, political concern was at its zenith, as the election was nearing.
amazingly, government officials succeeded to convince the IMF of the feasibility of existing arrangements despite some pressures to speed up the rate of crawl.10

During November, the markets seemed less nervous as President Cardoso was re-elected and publicly assumed responsibility for the stabilization program. Reserve losses were reduced and the Central Bank dropped the overnight interest rate to 33 percent per year. But once again, instability took hold. Not only did Congress resist approving most measures of the fiscal program, but the release of fiscal figures showing an annualised operational fiscal deficit of more than 8 percent of the GDP in October made the facts clear. Industrial production collapsed in October, falling 9 percent in relation to the same month of 1998 and unemployment climbed to 8 percent of the workforce. Central Bank reserves went down again, reaching US$35.7 billion in December (excluding drawings from the IMF and BIS) and the monetary authorities decided to halt the process of interest rate decline.

The final blow to the exchange rate peg came in early January 1999 when Mr. Itamar Franco, governor of the state of Minas Gerais and former President of the Republic, declared a moratorium on his state’s obligation to the federal government. Soon other state governors threatened to do the same and, despite minimal effects such actions would have had on federal government finances, the mere pronunciation of the word was anathema. Within a few days, as the loss of international reserves climbed to US$ 6 billion, the President dismissed the Central Bank governor. On January 13th, the newly appointed governor tried to manage a controlled devaluation of 8 percent and to increase the width of the band,11 but markets continued to short sell


11 The new system was called “endogenous diagonal band”, meaning it would be adjusted each three days.
the real and buy foreign exchange in massive amounts. This arrangement could last but a few days before risking a complete drain of reserves. Indeed, on January 15th, the government decided to freely float the real.

VII. THE AFTERMATH – TOOLS FOR ECONOMIC MANAGEMENT

Because they occurred amid a deep confidence crisis, the maxi-devaluation and the currency free float needed another set of macroeconomic tools for their well functioning.

Stronger fiscal tightening was of major importance, as no exchange rate regime is stable without sustainable budgetary policies, but international assistance was urgently needed.

Capital continued to fly out of the country and the public debt escalated 11 percentage points in few months to over 53 percent of the GDP (because of dollar indexed bonds), triggering fears of a Brazilian sovereign moratorium. More than anything, the situation required changes in the original IMF package. Larger sums of money should have been immediately made available and fiscal targets should have been more restrictive than before.

On the other hand, monetary policy had two main tasks: First, there was the urgent need to raise interest rates in order to fight a dangerous overshooting of the exchange rate. The stress caused by the whole chain of events – starting from the unsuccessful attempt to exit the crawling peg regime up until the final decision to float the currency – led the dollar to climb to R$ 2.2 in February (+83.3 percent over December), a value that seemed to many people clearly beyond any reasonable level given by the fundamentals. Despite this overshooting, the country kept losing reserves, which dropped from US$ 35.2 billion in January to US$ 32.8 billion in
March. This process was further fuelled by speculations of huge financial disturbances and the political vacuum created by the fall of the Central Bank governor in February. The newly appointed governor, Dr. Arminio Fraga, took office in March and immediately called upon the Committee on Monetary Policy (COPOM) to agree to abandon the system of interest rate band (TBC and TBAN); raise the SELIC overnight rate from 36 percent to 45 percent in order to adjust the Central Bank to market expectations and hence to stabilise the currency; use a scheme of bias (similar to the Fed’s) on interest rates and immediately establish a downward bias which grants the Central Bank the power to lower interest rates anytime before the following COPOM meeting; and to set price stability as the primary goal of the Central Bank. He also embarked on a “road show” abroad to calm down investors, governments and multilateral organizations that were worried about the maintenance of the stern policies to be followed by Brazilian financial authorities.

The other task was the reversal of monetary policy goals. Within the crawling peg system, monetary policy was geared to external equilibrium with the exchange rate providing the nominal anchor for the economy. Under the new system, monetary policy would need to be geared to price stability with the exchange rate focused on achieving balance of payments equilibrium. Thus, monetary policy would provide the new nominal anchor for the economy, a task unsuitable to the exchange rate, as fluctuations could be large under the flexible currency regime. Of two routed available to reach this goal – monetary and inflation targeting – the government chose the latter and announced that a complete framework would be delivered in July 1999. This was the right choice, as money demand turned out to be completely unstable due to the multiplicity of shocks that hit the economy and thus unreliable as an instrument of inflation forecasting.

Indeed, the new IMF deal and the announcement of the inflation-targeting
framework were able to calm down the markets and regain some stability over the nominal exchange rate, which fell to R$1.68 per dollar in May 1999, allowing a corresponding decrease in the SELIC rate to 32 percent per year at the same month. Moreover, Brazilian corporate borrowers regained access to foreign capital markets with small issues of notes and commercial paper as confidence rebuilt. The IMF package prescribed limited amounts of sterilised intervention in order to achieve balance of payments goals and more automatic way. Conversely, non-sterilised interventions were only occasionally accepted to avoid the occurrence of disorderly market conditions in foreign exchange. The package also forbade the Central Bank to operate in the foreign exchange futures market and limited the share of the short-term debt in the public external debt.

Meanwhile, the government succeeded in implementing the fiscal package that was at the core of the IMF program. Prior to the approval of the stand-by arrangement, it had enacted the constitutional amendment on social security reform and an increase in the COFINS – an earmarked contribution based on enterprise turnover. Congress approved the raise in social security contribution on active and retired civil servants in January, together with increases in the social contribution on profits (CSLL) and the approval of the financial transactions tax (CPMF) by end-March. Coupled with tight cash management to keep current expenditures and wages below the real levels of 1998, these measures were intended to accomplish primary fiscal surpluses for the consolidated public sector of 3.1 percent of GDP in 1999, 3.25 percent of GDP in 2000, and 3.35 percent of GDP in 2001. The intention was to steadily reduce the ratio of public debt to GDP to around 50 percent by the end of 1999, and to 46 percent by the end of 2001. The pursuit of this objective would also be assisted by the decline of real interest rates expected to result from the strengthened fiscal adjustment and the move to the floating exchange rate regime. To help the
federal government improve the primary balance, the investment program of federal enterprises was set at about 0.9 percent of GDP while the consolidated primary surplus of the states and municipalities was set at 0.4 percent of GDP. Also at this time, a draft of the proposed Fiscal Responsibility Law was sent to Congress establishing responsibilities and penalties for government officials and public sector managers that do not comply with the law.

Fiscal targets were met both in 1999 and 2000, facilitated by the rebound in economic activity that began in mid 1999. The primary fiscal surplus reached 3.1 percent of GDP in 1999 and stayed at 3.5 percent in 2000 and 2001. Furthermore, although the nominal balance was 9.5 percent of GDP in 1999, it was reduced to 4.5 percent of GDP in 2000 and 5.3 percent of GDP in 2001 (Graph 5).

As for monetary policy, the Central Bank established a formal inflation-targeting framework. A Research Department was created to develop the macroeconomic models needed to forecast inflation on the basis of its relationship to key variables such as interest rates, exchange rates and the output gap. The targets were set in terms of the annual growth rates of IPCA (Amplified Consumer Price Index) and calculated by IBGE (a government agency). For 1999, 2000 and 2001, the National Monetary Council set the numbers at 8 percent, 6 percent and 4 percent, respectively, with tolerance intervals of +/-2 percent per a proposal issued by the Minister of Finance. Another change was that the Central Bank was given operational independence to achieve these targets. Under the new system, if the target was not met, the Central Bank governor was required to issue an open letter to the Finance Minister explaining the causes of the breach, the countermeasures to be adopted to curb it and the period of time that will be necessary to achieve such effect. The system also required the Central Bank to issue a quarterly inflation report that explains monetary policy developments and results and the expectations for inflation.
Day to day management of interest rates and the public debt were also important. When the exchange rate was overshot shortly after the exit from the pegged regime, nobody could expect at what level prices would stabilise. It was reported, for instance, that during the Central Bank bills auction of March 3rd, 1999, interest rate bids varied from 30 percent to 247 percent per year. In order to cope with this extreme uncertainty, the Bank devised the successful strategy of selling bonds and bills of different maturities and return clauses in order to suit investors with divergent views, achieve an adequate pricing for interest rates and calm down the markets during major turbulences. For example, in the first three months of 1999, the sales of bills indexed to the overnight interest rates were important to keep investors interested in the domestic financial markets, avoid capital flight and hence reduce the pressure on the exchange rate. Accordingly, the share of these bills in the domestic federal debt rose from 57.2 percent in February 1999 to 67.3 percent in April 1999. From this month on, it has declined to 52.8 percent in December 2001. As uncertainty regarding the inflation and exchange rate receded, the monetary authority increased the share of non-indexed (pre-determined return) bonds and bills in the whole portfolio from just 1.2 percent of the total public debt in March 1999 to 7.8 percent in December 2001.

Finally, non-sterilised foreign exchange interventions executed by selling dollar-indexed bonds were also important, as they provided hedge positions to market participants during the periods of major perceived risks affecting both the inflation and the external sector scenarios. Such periods of perceived risk took place particularly in the third quarter of 1999 and in most of the year 2001. In the first case, there were worries that the US economy was overheating which could lead the FED to increase interest rates and hence decrease the relative yield on Brazilian securities. Besides, oil prices were climbing due to the strength of world demand. Both factors put pressure on the real exchange rate and thus triggered fears regarding the
accomplishment of the inflation target. The Central Bank response at that time was to increase the sales of dollar-indexed bonds to the market so that its outstanding amount in the hands of the public rose from 24 percent of the total federal debt in June 1999 to 26.7 percent (amounting to US$ 3.8 billion) in October of the same year.

In the second case, a number of financial and real sector shocks, internal and external, turned the outlook for the Brazilian economy in 2001 upside down. Difficulties abroad started in January when the US economic downturn became evident, they proceeded in March thanks to the calamitous situation of Argentina and attained unforeseen heights in September, 11th due to the sorry events of New York. Domestically, Brazil had to absorb the stagflation impact of a severe electric energy shortage caused by under-investment in power plants aggravated by an unexpected drought. The response of the monetary authorities was four fold: first, to increase the Selic interest rate from 15% to 19% per year since March 2001; secondly, to allow the exchange rate to depreciate by around 30% as a reaction to market forces; thirdly, to intervene heavily in the foreign exchange market by selling dollar denominated bonds, whose share in the total federal debt was raised from 22.5% in January 2001 to 32.8 in October and, fourthly, to sought help from the IMF by negotiating a package of 15 billion US$ dollars to build a blanket of liquidity from August 2000 until the end of 2002.

These actions proved to be correct: interest rates were brought up but not as much as it would have been required if the government had to defend a fixed exchange rate. The inflation target was missed by little which wasn’t considered a failure at all given the extreme difficulties to the management of the crisis. As for the exchange rate, after overshooting the depreciation by 30% since December 2000, reaching 2.83 reais per dollar in October, it tumbled (appreciated) and closed 2001 at around 2.36 reais per dollar. Foreign exchange interventions were huge throughout the
year but the recently acquired stability in the financial markets allowed the Central Bank to lower them.

VIII. THE AFTERMATH – RESULTS

Despite considerable uncertainty, the new floating exchange rate showed a low pass through to inflation. Since 1999, there have been two overshooting episodes. By March of 1999, the first overshooting of the exchange rate was tamed. In fact, the nominal exchange rate has fluctuated within the range of R$ 1.7 to R$ 2.0 until the end of 2000 after reaching R$ 2.2 per dollar in February of 1999. In December 1999, the price of the dollar was raised by 56 percent as compared to the same month of 1998. However, in the same period, inflation reached only 8.9 percent, thus ending the year within the targeted interval of 6-10 percent (Table 6). Monetary policy reforms – along with the inflation targeting framework put in place, successful day to day management of interest rates, and strengthened fiscal adjustment – were instrumental in preventing the recurrence of an inflationary spiral and ensuring a rapid deceleration of the rate of inflation, following the initial impact on the prices of tradable goods. Other contributors to disinflation were the weak domestic demand, the absence of automatic indexation rules, the unexpected positive supply shock stemming from agricultural prices and the relatively low degree of external openness of the Brazilian economy (exports plus imports amounted to only 18 percent of the GDP). The relatively calm external scenario in 1999 and 2000, with high economic growth in industrial countries and clear recovery in developing ones, was also of noticed

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12 Carneiro (2000) discusses some of the difficulties of inflation forecasting and the risks ahead.
The second overshooting episode happened in 2001 due to the compounding effects on the foreign exchange market of a number of negative financial and real sector shocks that hit the Brazilian (basically, the US downturn, the Argentine collapse of the currency board scheme and the internal energy crisis). The price of the dollar increased from R$ 1.96 in December of 2000 to R$ 2.83 in the beginning of October of 2001, closing the year 2001 at R$ 2.36 and thus showing a nominal depreciation of the national currency of 16.9%. Nevertheless, the passthrough from devaluation to inflation remained low as workers income stayed roughly the same and IPCA inflation in 2001 was only 7.7%. That meant the inflation target was missed by little but nobody cared too much for that, given the extreme difficulties faced by the government in the management of the crisis.

As for the economic activity, it weakened during the second half of 1998 and showed a further decrease in the first half of 1999 as domestic demand fell, only partly offset by a recovery of net exports. Since the second quarter of 1999, however, it became apparent that the strong recession forecasted by many economists wouldn’t materialise. Furthermore, with few swings, inflationary expectations and real interest rates declined steadily as confidence rebounded and external financing was eased, thus fulfilling the hopes of devaluation supporters. As can be seen in Graph 6, the Central Bank rate (SELIC) averaged 17.1 percent in real terms between March and December 1999 and fell to 11.5 percent in 2000, against more than 20 percent in the previous three years. Accordingly, the economic path reversed with a gradual recovery beginning in the second half of 1999 and gathering momentum in 2000. Unexpectedly, instead of a recession, real GDP increased by 0.9 percent in 1999 and 4.4 percent in 2000. Unfortunately, GDP growth weakened again in 2001 (being just 1.5 percent) due to the problems quoted above but it is worth mentioning that the
country did not enter a recession. The unemployment rate declined from 7.6 percent of the workforce in 1999 to 7.1 percent in 2000 and 6.2 percent in 2001, but this result was due to an increase in the supply of labour rather than to a decrease in the rate of employment.

### Table 6. Exchange Rate Depreciation, Inflation and Output

<table>
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<tr>
<th></th>
<th>Exchange Rate</th>
<th>Inflation</th>
<th>Annual Real GDP Growth</th>
<th>Annual Industrial Output Growth</th>
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<tr>
<td></td>
<td>BR$ per US$</td>
<td>(% per quarter)</td>
<td>(% per quarter)</td>
<td>(%)</td>
</tr>
<tr>
<td>1998</td>
<td>IV</td>
<td>2.1</td>
<td>0.2</td>
<td>(2.0)</td>
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<tr>
<td>1999</td>
<td>I</td>
<td>57.4</td>
<td>2.9</td>
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</tr>
<tr>
<td></td>
<td>II</td>
<td>(6.9)</td>
<td>1.1</td>
<td>(0.4)</td>
</tr>
<tr>
<td></td>
<td>III</td>
<td>7.5</td>
<td>2.0</td>
<td>(0.4)</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>(2.9)</td>
<td>2.8</td>
<td>3.5</td>
</tr>
<tr>
<td>2000</td>
<td>I</td>
<td>(5.5)</td>
<td>1.0</td>
<td>5.3</td>
</tr>
<tr>
<td></td>
<td>II</td>
<td>3.8</td>
<td>0.7</td>
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<td>6.7</td>
<td>1.1</td>
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</tr>
<tr>
<td>2001</td>
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<td>1.4</td>
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<tr>
<td></td>
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<td>IV</td>
<td>(11.6)</td>
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<td>6.6</td>
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</table>

Sources: FGV and IBGE.
Graph 5: Nominal and Primary Public Sector Balances (% of GDP)

Source: BCB.

Graph 6: Real Interest Rate and Real Effective Exchange Rate Index (deflator: INPC)

Source: FGV and IPEA.
Although the depreciation of the real provided a boost in Brazil's competitiveness (Graph 7), the trade balance improved less than expected due to the deterioration in the terms of trade that started some months before. Oil prices rose and export prices, especially agricultural commodities, weakened. Export volumes strengthened progressively over the year, rising by 7.7 percent during 1999, by 11.1 percent in 2000 and by 9.5 percent in 2001. Import volumes fell by 15.2 percent in 1999, hurt by the steep devaluation of the real and despite a positive growth of output and of the oil shock. In 2000, import values rose by 13.2 percent, but were offset by export volumes that increased by 14.8 percent. In 2001, export values grew again, by 5.6 percent over 2000, while import values remain almost the same. On the whole, the trade deficit declined from US$6.6 billion in 1998 to US$1.2 billion in 1999 and US$0.6 billion in 2000 and reverted to a surplus of US$ 2.6 billion in 2001 (Graph 7). The improvement in the external trade account was accompanied by a declining deficit in the services account, so that the current account narrowed from US$33.6 billion in 1998 to US$24.4 billion (4.4 percent of GDP) in 1999, to US$ 24.7 billion in 2000.
and to US$ 23.2 billion in 2001. These deficits were more than fully financed by net foreign direct investment (FDI), which rose to record levels of US$28.6 billion in 1999, US$ 32.8 billion in 2000 and to US$ 22.6 billion in 2001, as Brazilian capital assets became cheaper after the devaluation (Graph 8). Following a sizeable deficit (over US$10 billion) in the first quarter of 1999, the balance of payments showed little change during the rest of 1999, 2000 and 2001.

IX. LOOKING FORWARD

In sum, exchange rate depreciation and flexibility worked well despite the extremely poor management shortly after the exit from the crawling peg system. Inflation was little affected, interest rates and the exchange rate declined sharply after the overshooting episodes, output recovered after a few months and the balance of payments improved as well. Nevertheless, four issues are crucial for the future of the
flexible exchange rate regime in Brazil.

First, fiscal adjustment has gone well in Brazil, but given the remaining areas of potential budgetary imbalances (social security expenditures, hidden entitlements on public funds, etc) in a volatile political environment, inter-temporal consistency requires a more independent Central Bank, which is not the case yet. Central Bank reform must give this institution the operational freedom for the pursuit of the inflation target. That target is to be proposed by the Executive branch of the Government and approved by the Congress. In order to insulate the Central Bank from the political struggle, which can be harmful to the achievement of the target, the reform must provide fixed mandates for the Board of Governors (now they can be dismissed *ad nutum* by the President of the Republic). It should also revise the role of the National Monetary Council (CMN) in the process of inflation targeting (particularly in terms of the dominance of the Finance Minister within the CMN); deepen the details of correspondent rules and regulations; and provide a proper structure of incentives and penalties for the achievement of these targets.

Secondly, the authorities must reduce the stock of dollar-indexed and dollar denominated bonds in order to allow a higher degree of exchange rate flexibility. The present regime, by its own nature, is more volatile than the former, which can be harmful to trade and to the generation of income. In other countries, this fact has led central banks to intervene occasionally in foreign exchange markets by trading foreign currencies and bonds in order to prevent the occurrence of unexpected fluctuations. However, in Brazil, such interventions have happened frequently. One reason is foreign exchange market imperfections, particularly, the market's restrained liquidity in stress situations. The other reason for not allowing full exchange rate flexibility is the impact on the fiscal budget stemming from the large stock of government debt indexed to the dollar, currently around US$ 100 billion, net of international reserves.
Of course, by doing so, authorities lower the effectiveness of the exchange rate as a means of accomplishing an adequate balance between demand and supply of foreign exchange. Until now, the present “dirtiness” of the exchange rate regime has been successful in the sense that it has worked in favour of the stability of prices and not against the economic growth. However, for the future, it is advisable to pursue policies such that the foreign exchange market can gradually run on its own feet.

Third, increasing the focus of the Central Bank on inflation targets requires appropriate flexibility in the management of interest rates too. To this end, some steps have already been taken, such as the elimination of the existing band for rediscount rates (TBC and TBAN); the linking of the latter to the SELIC overnight market rate; the increase in bank liquidity by eliminating the compulsory reserve requirements on time deposits and lowering those on sight deposits to 45 percent; the drop in the stock of Central Bank securities in the market (they represented just 17.2 percent of total federal debt outstanding in late September) and the offering of fixed rate securities with medium and long term maturities. Nevertheless, in an economy whose public sector has a net debt of around 53% of GDP and half of the internal debt in bonds and bills is indexed to the policy-related overnight interest rate, interest rate flexibility is naturally impaired and central bank autonomy in the process of setting the policy related interest rate is more theoretical than real. A sharp increase in the key overnight rate to fight an undesirable inflationary trend or a process of exchange rate overshooting may be counterproductive. A substantial part of the public debt is immediately raised which can spread alarm on investors about the government’s capacity to fulfil its financial obligations. Moreover, the net impact of interest rate hikes on aggregate demand in an environment where the bulk of bonds and bills has very small duration is uncertain. The demand for investment is reduced but bondholders enjoy a wealth effect, presumably with positive impact on consumption.
In other words, a tight monetary policy may result in an expansionary fiscal policy. Thus, maintenance of the fiscal consolidation process is crucial to reduce the size of the public debt, improve its composition and lengthen its maturity. And by doing so, it will give the Central Bank the adequate degrees of freedom in setting the interest rate and, hence, add to the proper functioning of the inflation targeting framework.

Fourth, external sector vulnerabilities, albeit diminished, have continued. We have now a modest trade surplus but the sizeable surpluses forecasted by many people have stayed beyond reach. Net capital income sent abroad has reached 33.9% of exports in 2000, current account deficit was at 4.5% of GDP and the ratio of net external liabilities to exports has reached 5.6. Exports have grown by an average of only 4.5% per year since 1998 which compares unfavourably to the effective rate of return on net external liabilities of 6.8% per year. In short, dependency of the Brazilian economy on external capital inflows remains large and is bound to create excess exchange rate volatility in a number of situations.

True, there are some reasons for optimism, considering the improvement of the fiscal stance, the flexible exchange rate regime and the inflow of foreign direct investments. Yet, it should be noted that although they are necessary conditions for exchange rate stability, neither of them has prevented major currency and financial crises elsewhere, as we saw in Mexico, Southeast Asia and Argentina. Therefore, it's not enough that monetary and fiscal policies are geared to price stability and the exchange rate to overall balance of payments equilibrium. Sustainability of the current account position is also important and may require additional policies such as commercial policies for export promotion and import substitution in order to bring the current account to more manageable figures. Sometimes, it is argued that commercial policies can not work in a flexible exchange rate system. This is true for the model of small open economies with perfect capital mobility but the story is completely
different in the Brazilian case. On the contrary, particularly in periods of stress, one can assume that the low capital mobility model is more appropriate to the think of our economy. Therefore, in this case, commercial policy can retain its effectiveness.

X. CONCLUDING REMARKS

The recent Brazilian experience with exchange rate policy shows with clarity some well-known stylised facts.

First, an exchange rate system is sustainable in the medium and long run only if it sets reasonable levels of real interest rates, real exchange rates and economic growth perspectives. In other words, if it provides internal and external equilibrium. Brazil's crawling peg regime established in March 1995 didn't provide them. When interest rates hit world record levels, the financial position of the public sector was impaired, currency overvaluation brought in current account deficits and deepened the accumulation of external liabilities, unemployment rose and output growth slowed. After the Asian and Russian crises it became an easy target for exchange rate speculators on the downward side.

Secondly, the Brazilian experience supported the argument that, nowadays, because of huge and volatile capital flows, middle of the road exchange rate schemes are less sustainable than believed before. Indeed, it's difficult to fix the external value of national monies in an environment where an increasing number of countries are either freely floating their currencies, adhering to monetary unions, or undergoing currency board schemes based on stronger currencies. Nevertheless, one has to weigh carefully the pros and cons of any particular regime. For instance, neither the recent Ecuadorian dollarization scheme nor the Argentinean convertibility scheme would serve the Brazilian economy well. Brazil has never had the type of inflation problem,
or financial and trade structures that could justify such options.

Third, dynamics is important. Currency bubbles are slow to develop but rapid to burst. Having envisaged problems in the exchange rate regime, the sooner the correction the better the results. Brazil enjoyed reasonable conditions to exit the pegged system on behalf of more flexible exchange rates between mid 1996 and mid 1997 when capital inflows regained momentum, inflation was under control, budget deficit started to decline and the economy was recovering from recession. Unfortunately, the government stuck to its prevailing policy, postponed long needed adjustments and the opportunity was lost. The exit occurred amid a huge balance of payments crisis and devaluation was followed by a dangerous overshooting that required stronger efforts on macroeconomics fundamentals to prevent a complete disaster. Conversely, to our favour, the exit occurred well after the restructuring of the Brazilian banking system and concomitant with an IMF bailing out package. So, the lesson seems clear: the longer a country goes with a rigid exchange rate scheme the more difficult it will be to exit from it successfully.

Fourth, in the Brazilian case, the move to floating exchange rates required sustainable fiscal policies (without which no exchange rate policy regime can be successful) and a new nominal anchor achievable either through inflation or monetary targeting. Brazil chose the former. Given the complexity of setting such targets and communicating them to society, they need new institutional arrangements and procedures as far as monetary policy is concerned. In many countries, and Brazil was no different, this new framework often simply does not exist at the moment of turnaround because it happens during emergencies dictated by financial or balance of payments crises.

13 Regarding the exit, Brazil did the opposite as proposed by Eichengreen, Masson and others (1998).
payments crisis. However, once changes have been made, the task of building these new institutions is of utmost importance to the sustainability of the new currency regime.

Fifth, the Brazilian case suggests that a successful transition from one foreign exchange system to another, particularly in a crisis circumstance, is not a one variable work – for either fiscal or monetary variables. In reality, it depends on a whole set of consistent events and co-ordinated policies, all of them directed to the objectives of re-achieving price stability with as little exchange rate and output volatility as possible.

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