



Inflation Targeting in Brazil: Is There An Alternative?

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Inflation Targeting in Brazil: Is There An Alternative?

By Nelson H. Barbosa-Filho*

Abstract:

This paper analyzes Brazil’s experiment with an inflation-targeting monetary policy regime in relation to the countries increasingly fragile financial position and proposes an alternative course. In 1999, Brazil switched from an exchange-rate targeting policy regime, in essence choosing to have an independent monetary policy, free capital flows, and a floating exchange rate in terms of the “trilemma” facing small open economies. However, the exchange rate was and continues to be a key—if not the main—determinant of Brazil’s inflation rate. Despite serious macroeconomic stability problems, including those created by inflation targeting, an alternative monetary policy framework is possible to promote a broad development framework to stabilize the real exchange rate, attract foreign and domestic investment, and reduce the cost of public debt. While an inflation target may help tame inflation expectations, it must be more flexible and address deeper issues in the monetary authorities’ ability to conduct macroeconomic management.

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Inflation Targeting in Brazil: Is There An Alternative?

1 – Introduction

Brazil adopted inflation targeting in 1999, after a long period of exchange-rate targeting that ended up in a major currency crisis. More specifically, in 1994-98 the Brazilian Government used high domestic interest rates and privatization to attract foreign capital and sustain an appreciated exchange rate peg. The main objective of such a strategy was to reduce inflation and its main side effect was a substantial increase in the economy's current account deficit and public debt. The increasingly financially fragile position of Brazil made the appreciated exchange rate unsustainable after the contagion effects of the East Asian crises of 1997 and the Russian crisis of 1998. In fact, by the end of 1998 the Brazilian current-account deficit reached 4.5% of its GDP and the low stock of foreign reserves of the economy did not allow a defense of the Brazilian currency, the *real*, in case another speculative attack hit the country.

The inevitable currency crisis came in the beginning of 1999 and it resulted in a “maxi-devaluation” of the *real*. In terms of the US dollar, the exchange rate rose from 1.21 to 1.90 between December 1998 and February 1999. After that it remained around 1.84 for the rest of 1999. The initial response of the Central Bank of Brazil (*Banco Central do Brasil* or BCB for short) was a substantial increase in its base interest rate to fight devaluation and reduce its pass-through to inflation. Then, after the exchange rate stabilized at a higher level in mid-1999, the Government announced that it would start to target inflation. The basic idea was to substitute a price target for the former exchange-rate target as a way to coordinate market expectations and control inflation in a context of floating exchange rates.

In terms of the policy “trilemma” of small open economies, the option for inflation targeting meant that Brazil chose to have an independent monetary policy, free capital flows, and a floating exchange rate. In practice the situation has been obviously different

because the exchange rate was and it continues to be an important determinant of the Brazilian inflation rates. On the one hand, the change in the domestic price of tradable goods is basically determined by foreign inflation and exchange-rate variations. On the other hand, the prices of some key non-tradable goods in Brazil are also tied to the exchange rate because, during the privatizations of the 1990s, the government allowed the tariffs of some companies (basically in the telecommunication and energy sectors) to follow a price index that is heavily influenced by the exchange rate. The result is that a major part of the Brazilian inflation is linked to the exchange rate.¹

So far the exchange-rate variations induced by the changes in the Brazilian base interest rate seem to be the main transmission mechanism of monetary policy to inflation. For instance, by fixing a high domestic interest rate, the BCB can increase the value of the real through capital inflows and derivative operations. The lower exchange rate then leads to lower inflation and allows the inflation target to be met. The same reasoning applies in the other direction and, all together, the interaction among international conditions, interest rates, and exchange rates explains most of the successes and failures of inflation targeting since 1999. The objective of this paper is to describe and analyze this experience.

2 – The Brazilian Inflation-Targeting Regime

In general terms the Brazilian inflation targeting system can be described as follows:

- The National Monetary Council (*Conselho Monetário Nacional* or CMN for short), formed by the Minister of Finance, the Minister of Planning and the President of the BCB, establishes the inflation targets based on the recommendations of the Finance Minister. All three members are appointed by the President and do not have fixed mandates.
- In the middle of every year, the CMN establishes the inflation targets and their corresponding intervals of tolerance, for the next two years. The target consists of the desired variation of the consumer price index (the IPCA index) estimated by the government's statistical branch (the *Instituto Brasileiro de Geografia e Estatística* or IBGE).

¹ According to the most recent estimates (Belaisch 2003a), 23% of exchange rate variations tend to pass through to consumer prices in the long run, whereas the pass-through to the general price level (the IGPDI index) is 71%.

- The BCB is responsible for achieving the target, but no specific instrument or strategy is specified.²
- Every month, the Monetary Policy Committee (*Comitê de Política Monetária* or *Copom* for short), formed by the President and the Directors of the BCB, decides the level of the Central Bank's base interest rate, the SELIC rate, needed to achieve the inflation target. Occasionally, additional actions such as changes in the banks' reserve requirements are taken.³
- The target is considered met whenever the observed accumulated inflation during each calendar year falls within the tolerance interval specified by the CMN.
- If the targets are not met, the President of the BCB has to issue an open letter to the Finance Minister explaining the causes of the failure, the measures to be adopted to ensure that inflation returns to the target level, and the period of time needed for this to happen.

Since the BCB is not independent and its penalty for not meeting the inflation target is just to explain why that happened, we can conclude that the Brazilian inflation-targeting regime is basically a loose way for the Federal Government to assure society, especially financial markets, that it will not let inflation run out of control.

Moving to the response of the economy, the macroeconomic performance since the adoption of inflation targeting has been mixed. First, considering inflation itself, the Government targets have been met when the international financial conditions allow it. As shown in figures 1 and 2, the target was met in 1999 and 2000, when the exchange rate stabilized at a higher level. Then, as the economy was hit by a speculative attack in 2001, because of the Argentine crisis, and another one in 2002, because of the Brazilian presidential elections, the exchange rate shot up and pulled inflation with it. Only when the exchange rate started to fall, in 2003, did the inflation rate start to decelerate. Despite this, inflation was still above its target interval in 2003, and only in 2004 it returned to the interval specified by the Government.

FIGURES 1 AND 2 HERE

² According to the Presidential Decree 3088, of 21 June 1999, it is up for the BCB "to execute the necessary policies to meet the specified targets."

³ Starting in 2006, the *Copom* will meet only eight times per year, that is, approximately every six weeks.

Second, the evolution of inflation and exchange rates in Brazil seems to follow a well-defined pattern: devaluation tends to determine the change in wholesale prices (measured by the IPADI index) with some lags, and the change in wholesale prices tends to determine the change in consumer prices (measured the IPCA index) also with some lags. Figures 3 and 4 present this point and, even though the pass-through is not always the same because other factors also influence prices, we can say that the exchange rate has been the main determinant of inflation in Brazil since 1999.

FIGURES 3 AND 4 HERE

Given the strong link between devaluation and inflation, it is no surprise that the Brazilian monetary policy has been managed mostly to appreciate the *real* in whatever degree is necessary to meet the inflation targets. So far the main side effect of this strategy has been a very high base real interest rate, as shown in figure 5. In words, the inflation-targeting period started with very high real interest rates, but monetary policy quickly converged to an annual real interest rate of 10%. Then, because of the devaluation of the *real* in 2002 and the subsequent increase in inflation, the annual real interest became negative for some months at the end of 2002. “Normality” was quickly restored in the beginning of 2003, when the real interest rate was raised to fight devaluation and decelerate inflation. This effort was successful and the real base rate fell to an annual average of 9% by the end of 2004, when the BCB decided to initiate yet another interest-rate hike to reduce inflation further.

FIGURE 5 HERE

Altogether, even though the real interest rate has been lower during the inflation-targeting regime than during the exchange-rate-targeting regime, it has been still too high compared to the growth rate of the economy. To illustrate this, figure 6 presents the GDP growth rate of Brazil since the early 1990s. The numbers show that the average annual GDP growth rate fell from 3.2% during the exchange-rate targeting period, in 1994-98, to 2.3% since the adoption of inflation targeting, in 1999.

FIGURE 6 HERE

The huge discrepancy between GDP growth and the real interest rate has been putting a great financial pressure on the Government because the interest payments on public debt tend to follow the variations in the exchange rate and in the SELIC interest rate.

In fact, as shown in figure 7, the government budget deficit has fluctuated substantially in the wake of the devaluations and revaluations of the *real*. Most importantly, if we consider the trend, the very high real interest rates have been keeping the budget deficit between 6% and 9% of GDP despite the substantial increase in the Government's primary surplus since the beginning of inflation targeting in 1999.

FIGURE 7 HERE

In the absence of adverse shocks, the recent combination of high interest rates, high primary surpluses, slow growth and currency appreciation have been promoting a reduction in foreign debt and an increase in domestic debt in terms of GDP, as shown in figure 8. The net impact on the total debt-GDP ratio has been null or slightly negative, but since currency appreciation cannot go on indefinitely, sooner or later the high real interest rates necessary to control inflation may backfire.

FIGURE 8 HERE

3 - The Debate on the Causes of High Real Interest Rates

The BCB has taken an asymmetric position regarding the exchange rate since the adoption of inflation targeting, that is: it tends to fight devaluations but to tolerate revaluations. So far the result of this behavior has been the maintenance of high real interest rates in Brazil and, when financial conditions allow it, exchange-rate appreciation.

The high real interest rate of recent years generated an intense theoretical and empirical debate in Brazil. To some authors the problem comes from the institutional flaws of the Brazilian economy and the uncertainty associated with it. To others the problem is the macroeconomic structure of the country, which greatly reduces the efficiency of monetary policy in controlling inflation through variations in aggregate demand. A third important approach attributes the high real interest rates to the foreign and fiscal financial fragility of the economy. Each view emphasizes different issues and, to facilitate the analysis, the next subsections will present and discuss each argument separately.

3.1 – Jurisdictional Uncertainty

Starting with the pro-market arguments, the high real interest rates have been interpreted as a consequence of the “jurisdictional uncertainty” (JU for short) in Brazil.⁴ The basic and intuitive idea is that lenders demand a high real interest rate in short and long-term operations because of the high probability that the government may change the rules of the game or that the debtors may contest their obligations in courts, which often decide against lenders, especially against banks. In the specific case of monetary policy, the high real interest rates are interpreted as a result of the Brazilian recent history of policy shocks, especially the heterodox stabilization plans adopted in the late 1980s and early 1990s. The also intuitive idea is that markets neither forgive nor forget, and the country will have to go through a long period of “good” behavior before investors reduce their risk perception of it.

The main logical argument behind the JU hypothesis is that there exists a long-term credit market for Brazilians agents when the jurisdiction is foreign (off-shore), but not when the jurisdiction is Brazilian (on-shore). According to this view, the Brazilian credit risk cannot be explained by the residence of the creditors because the same financial institutions operate domestically and abroad. The problem is not of the contracts’ currency denomination either, because even the Brazilian government is unable to find long-term finance domestically through bonds indexed to foreign currencies. In short, according to the JU hypothesis, there exists a strong anti-creditor bias in the Brazilian institutions that precludes the development of on-shore long-term credit markets. The solution involves not only institutional reforms that limit the government discretion over contracts, but also a cultural pro-market change of the Brazilian authorities and people.

There are some valid points but many problems with the jurisdictional uncertainty hypothesis. First, Brazilian institutions do have a long history of anti-creditor bias, especially when the judicial contest is between households and banks. This surely increases the risk premium of lending long-term domestically, but it is hardly the unique or main reason for the Brazilian high real interest rates. As we shall see in the next subsections, there are many other impediments to reduce interest rates than simply the wrong behavior of Brazilian institutions.

⁴ The jurisdictional-uncertainty hypothesis reflects a common view among financial-market analysts and it has been recently formalized by Arida et al (2004) as a possible explanation for Brazil’s high real interest rates.

Second, the causality is not unidirectional. The high real interest rates also cause jurisdictional uncertainty because they increase the popular and the courts' perception of "unfair" practices, especially if banks are having huge profits when households are struggling to meet their debt obligations. It should be noticed that this cannot be dismissed as an irrational behavior because the recent empirical and theoretical research in behavioral economics does indicate that fairness is an important and efficient guide for human decisions.⁵

Third, in addition to the behavioral explanation above, it should also be noticed that the high real interest rates also generate jurisdictional uncertainty by increasing the problems of adverse selection and moral hazard in a context of asymmetric information. The intuitive idea is that high real interest rates increase the probability of default and we will return to this problem when analyzing the credit effects of monetary policy below.

Fourth, off-shore long-term credit is not available to all private agents. The operations are usually restricted to the Government, banks, and large firms. In the case of non-financial private agents, the borrowers are usually large exporters who are naturally hedged against exchange-rate variations. The issue seems to be more of exchange-rate protection than of jurisdictional uncertainty per se. Moreover, the difference between the real interest rate implicit in public bonds issued domestically and abroad also reflects the volatility of the Brazilian base interest rate, which makes long-term rates in on-shore operations much more uncertain than their foreign alternatives.

3.2 – Central-Bank Independence

Also on the pro-market side, the Brazilian high real interest rates may also reflect the lack of central-bank independence (CBI for sort) in the country, which makes necessary for the monetary authority to "buy" credibility by offering a high rate of return to investors. The basic idea follows the dynamic inconsistency hypothesis, according to which rational private agents can anticipate when Government authorities have an incentive to behave opportunistically, that is, to adjust its monetary policy to the political business cycle. As a result, the BCB has to offer high interest rates to investors because of the possibility that

⁵ In other words, economic agents seem willing to incur in a monetary loss to punish "bad" behavior and this increases welfare (Rabin 1993).

the Government may change its monetary policy abruptly. The natural solution to the problem is to institute fixed, non-coincident, and preferably long mandates for the members of *Copom*.

The CBI hypothesis has one valid logical point: fixed mandates for the members of *Copom* will probably reduce the uncertainty associated with monetary policy and smooth the changes in it between two different administrations. However, who guarantees that this will be sufficient to reduce interest rates? To make their point the advocates of CBI usually resort to a stylized representation of an economy, where a representative rational agent can neutralize any opportunistic behavior of Government authorities.

Despite the internal consistency of the CBI argument, the crucial issue is empirical and not theoretical. According to the CBI hypothesis, the reduction in interest rates comes mostly after the reduction and stabilization of inflation. The natural empirical question is therefore whether or not CBI reduces inflation. The evidence is mixed and the consensus in the empirical literature is that CBI reduced inflation only in advanced economies, but after one controls for country variables and past inflation, CBI does not seem to have had any impact on inflation.⁶ The argument that CBI will reduce inflation and then interest rates is therefore too weak to justify such an important institutional change in Brazil.

The debate on CBI should be framed on political terms. Who guarantees that independency from elected officials entails independence from special interests? *Per se* CBI is not good or bad, as long as monetary policy is correct. Since different groups have different opinions about what is the correct policy, the decisions of the *Copom* are inherently political. Economic “science” does not allow a complete technical or neutral approach to the issue. There are surely limits to what a Central Bank can do, but within those limits the decision depends on a subjective evaluation of the macroeconomic situation of the country and, what is most important, the decision implies different costs for different groups of society.

CBI certainly reduces the room for opportunistic behavior by politicians, but it does not eliminate the power of private lobbies in shaping monetary policy. This issue is particularly important in Brazil because, given the centrality of the exchange rate for

⁶ See Campillo and Miron (1996).

inflation targeting, financial markets have a great influence on the decisions of the *Copom* in a context of liberalized capital markets.

In addition to the above points we should also add that, in the current situation of Brazil, the transition to lower real interest rates will certainly involve a coordination of monetary, fiscal and exchange-rate policies. An independent Central Bank may make such a transition harder and, therefore, it is not wise to completely isolate the *Copom* from the Federal Government at least until real interest rates have been reduced to a level consistent with macroeconomic stability.

3.3 – Fiscal Dominance

The third most common pro-market explanation for Brazil's high real interest rates is the dominance of monetary policy by fiscal policy. The basic idea is that when fiscal policy is not dynamically consistent, an increase in the base interest rate may result in a higher risk of default on public debt, which in its turn leads to capital flows and devaluation. The end result is an increase instead of a reduction in inflation, and the root of the problem is the Government inability or unwillingness to raise its primary surplus to whatever level is required to stabilize public debt. According to this view, the correct way to reduce real interest rates is to increase fiscal austerity and wait for this to pay off as a reduction of the country risk premium.

The fiscal-dominance argument depends on two assumptions that are usually taken for granted despite the mixed theory and evidence on the topic. First, it is assumed that changes in fiscal policy have a significant impact on the country risk premium, so that an increase in the primary surplus will eventually pay off in terms of lower long-term interest rates.⁷ The problem with this assumption is that the Brazilian risk premium is basically driven by international financial conditions rather than by the domestic fiscal stance. In other words, fiscal variables seem to have no impact on either the level or the variation of Brazil's risk premium, provided that one controls for changes in the investors' risk aversion caused by foreign events.⁸ Second, as usual in neoclassically-inspired models, fiscal

⁷ Naturally, the opposite holds for a reduction in the primary surplus.

⁸ It should be noted that the recent studies that find evidence of fiscal dominance should be interpreted with care because they either do not control for exogenous changes in the risk of emerging markets (Loureiro and Barbosa, 2004), or they use a fiscal index that is highly sensitive to changes in international financial

dominance usually means that there is one and only one equilibrium real interest rate determined by the deep parameters of the economy.⁹ The problem with this assumption is that the real interest rate may actually have multiple equilibria, as we will see in the next subsection.

Before we move to multiple equilibria, it should be noted that there is always a primary surplus capable of stabilizing the Government's debt-GDP ratio for any given real interest rate, but such a level may be politically and socially unfeasible. As the recent crisis in Argentina showed, before fiscal austerity pays off, the country may break down first. In the current case of Brazil, there is an increasing popular dissatisfaction with the rising tax-GDP ratio of recent years, which makes an increase in the primary surplus through the revenue side very unlikely. On the expenditure side, public investment has already been cut to a minimum and most Government social expenditures are earmarked by the Brazilian Constitution. All together, there is little political room for more fiscal austerity, especially when *rentiers* and the financial system are sailing on high real interest rates.

3.4 – Multiple Equilibria

In the previous sections I criticized the pro-market arguments as limited and biased interpretations of the Brazilian situation. The underlying assumption was that it is possible for economic policy to move the economy to a more favorable situation. The multiple equilibria hypothesis is a common feature in many fields of economic theory, including monetary theory. One does not need to a heterodox view to admit the possibility of multiple equilibria. A heterodox view surely helps, but even from a neoclassical perspective non-linear behavioral functions may result in more than one stable macroeconomic configuration.¹⁰

Outside mainstream economic theory, one of the major advances of the past 30 years has been the incorporation of Psychology in the study of economic decision

conditions and exchange rates (Favero and Giavazzi 2004, Blanchard 2004). In the first case the conclusion is simply wrong because of the omission of the most important explaining variable. In the second case the changes in the fiscal index are mostly due to forces exogenous to fiscal policy, that is, they measure the international dominance instead of the fiscal dominance of monetary policy.

⁹ In general equilibrium models with representative agents these deep parameters are usually the consumers' intertemporal rate of discount and the marginal productivity of capital.

¹⁰ It should be noted that almost any decision rule consistent with a budget constraint can be rationalized as a result of optimal behavior, provided that one is willing to accept whatever objective function emerges from such a backward integration exercise.

making.¹¹ Many studies have shown that expectations are context-dependent and usually anchored to whatever socially accepted level is specified initially. In the case of monetary policy this “social anchor” is usually specified by the Central Bank, who has a great power to influence market expectations and change market interest rates. To be sustainable, a reduction in the base interest rate should not obviously depart too much from the prevailing expectations, but since there is always heterogeneity and subjectivity in market opinions, monetary policy can move the economy to favorable equilibrium, especially when the market consensus is that monetary policy is too restrictive, as it seems to be the current situation in Brazil.

In honor to Keynes and Simon, it should also be remembered that the amount and type of information involved in long-term decisions may be so complex that such decisions tends to follow adaptive conventional rules. According to the hypothesis of bounded rationality, the complexity and uncertainty associated with long-run decisions does not usually allow a complete specification of the problem at hand. Since information is costly and the decision process cannot go on indefinitely, the result of bounded rationality is that agents “satisfice,” that is, they stop at whatever decision rule meets some minimal requirements.¹² In the case of monetary policy this means, again, that the Central Bank has a great influence on market expectations and decisions.

Finally, economic theory usually “linearizes” problems to facilitate the interpretation and reach definite conclusions. Economic policy does not need to be limited by this methodological procedure. In the specific case of monetary policy in Brazil, one possible explanation for the high real interest rates is that there is a nonlinear relationship between the expected risk of default on domestic debt and the short-term real interest rate. The basic idea is that the expected real rate of return on short-term public bonds depends on the base real interest rate and the expected risk of default, and the risk of default may be itself a nonlinear function of the base real interest rate.

For instance, as pointed by Palley (2002), an increase in the real interest rate may be expected to increase public debt without any impact on fiscal policy up to a point. Given the international financial conditions, the result is a small increase in the probability of

¹¹ The classic reference is Kahneman et al (1983). For a recent summary, see, for instance, Rabin (1998) and Plous (1993).

¹² See, for instance, Colinsk (1996).

default because of domestic reasons. Above such a critical point, an additional increase in the real interest rate may force to Government to adopt a restrictive fiscal policy to avoid an explosive increase in its debt, reducing the probability of default. Since this effect cannot go on indefinitely, a continuous rise in the real interest rate eventually renders any austere fiscal policy useless. The result is that there may be a second critical point, above which an increase in the base rate has again a positive impact on the probability of default. The simplest way to represent this idea is to specify the probability of default as a third-degree polynomial of the real interest rate, as shown in figure 9.¹³

FIGURE 9 HERE

Putting all together, the expected real rate of return of investing in public bonds becomes a fourth-degree polynomial of the real interest rate and, given the opportunity cost of funds, the economy may have four equilibrium points, two stable and two unstable, as shown in figure 10. When the economy starts above the lowest unstable equilibrium point, it will converge to the highest stable equilibrium point. In contrast, if the Government manages to set the real interest rate just below the lowest unstable equilibrium point, the economy will converge to the lowest stable equilibrium point. Based on this, it is theoretically possible for a Central Bank to put the economy in the path toward a good equilibrium, provided that it does not depart too much from market expectations, that is, provided that the default curve shown in figure 9 does not change too much after the initial change in monetary policy.

FIGURE 10 HERE

The main problem with the above argument is that international financial conditions may not remain constant. In other words, both the opportunity-cost line and the expected-rate-of-return curve in figure 10 may shift because of exogenous international shocks, making monetary and fiscal policy irrelevant for the determination of the country risk premium, as we mentioned earlier. The problem may be the vulnerability of the economy to adverse international shocks, to which we turn next.

¹³ Note that since the probability of default is bounded by 0 and 100%, the domain of possible real interest rates is limited. An alternative specification would use a semi-logistic function with a local maximum and a local minimum for intermediary values of the real interest rate, but this would just complicate the mathematics without adding more economic insight

3.5 - Foreign Financial Fragility

The heterodox explanations for Brazil's high real interest rates tend to group around the concept of foreign financial fragility (FFF for short). The basic idea is that inflation stability depends on exchange-rate stability, which does not necessarily imply exchange-rate pegs but does imply a smooth fluctuation of real exchange rates. Since exchange-rate stability implies a steady source of foreign finance, the main determinant of Brazil's high real interest rates comes from balance-of-payment problems according to this view.

The intuition behind the FFF hypothesis is that the high real interest rates in Brazil are the price to maintain exchange-rate stability. In the period of fixed exchange rates the link was clear and direct because of the country's high current-account deficits and currency appreciation. Since the implementation of inflation targeting the link became blurred, but it nevertheless remained important. As we mentioned earlier, the reason is that the BCB tends to resort to exchange-rate appreciation to reduce inflation because the other transmission mechanisms of monetary policy to aggregate demand are slow and inefficient. In the next subsections we will analyze these mechanisms in more detail. For the moment let us restrict our attention to the implications of inflation targeting through currency appreciation.

On the trade side, currency appreciation tends to reduce net exports and make the economy more dependent on foreign finance to maintain exchange rates stable. The result is a vicious cycle where high interest rates lead to an overvalued currency, which leads to a reduction in the trade balance, which *ceteris paribus* increases the foreign financial fragility of the economy, which makes another increase in interest rates necessary to keep foreign capital flowing in. To make things worse, the combination of high interest rates, slow growth and currency appreciation tends to attract short-term speculative capital and reduce greenfield foreign direct investment. As the economy becomes more and more financially fragile, capital inflows eventually dry up and the self-fulfilling expectations of a currency crisis end up in a maxidevaluation of the domestic currency.

Theoretically, the increase in real exchange rates should solve or alleviate the problem after a currency crisis. However, to reduce the pass-through of the exchange rate to domestic prices, the Central Bank may increase real interest rates substantially and persistently after the crisis, which may initiate the process all over again. Since the

economy will start from a high real exchange rate after the crisis, it may take some time for the next round of appreciation to begin to reduce net exports and, when it does, the economy becomes financially fragile again. At the end of the day the final result is a sequence of booms and busts mediated by currency crises and characterized by high real interest rates.

According to the FFF hypothesis, the best way to reduce exchange-rate volatility and real interest rates is to reduce the economy's dependence on foreign capital. In other words, the country should rely more on domestic saving than on foreign saving, even if this implies a slow growth rate of GDP and consumption in the short run.¹⁴ The intuitive idea is that, in the long run, trade surpluses and foreign reserves are better instruments to smooth exchange variations and sustain high growth rates than short-term foreign capital.¹⁵

3.6 – Inertial and Cost-Push Inflation

So far we have focused on the general aspects of monetary policy, in this and the next subsections we will analyze the idiosyncratic features of the Brazilian economy that obstacles its impact on inflation. The first set of issues involves the rigidity of Brazilian inflation to changes in interest rates even when we assume that these changes have a substantial impact on aggregate demand. The intuitive idea is that inflation may be determined by cost factors not strongly related to excess demand, so that a large reduction in aggregate demand may be necessary to bring inflation down.

Starting with inertial inflation, a substantial part of the Brazilian inflation is a result of past inflation because of the indexation of some key prices. In fact, an important part of the Brazilian inflation comes from administered prices, which depend on past costs and are not highly sensitive to current demand fluctuations. If the economy is at a high inflation rate, the inertial component of it imposes high sacrifice ratio on the country. In other words, since monetary policy affects only the “free” component of inflation in the short

¹⁴ See, for instance, Bresser-Pereira and Nakano (2002).

¹⁵ A common by-product of the FFF hypothesis is the defense of capital controls to reduce the country's vulnerability to international financial shocks. The views on this topic are mixed though. On the one hand, the supporters of FFF do not necessarily agree on the form of capital controls. The most common “package” consists of entry restrictions to foreign investors, exit restrictions to domestic investors, and capital requirements that limit the exposure of domestic financial institutions to international shocks. How exactly to implement these ideas is not clear and the evidence on the long-run effectiveness of unilateral capital controls is mixed. In fact, in a situation of crisis, it is very difficult to block capital outflows and, therefore, the best policy seems to be to avoid the beginning of a speculative bubble.

run, the BCB has to adopt a very restrictive monetary policy to compensate the inflation inertia if it wants to reduce inflation too much and too fast.

The second issue is imported inflation. As a small open economy Brazil has a very little weight in the determination of most commodity prices, but its inflation rate is highly sensitive to world inflation. With liberalized trade, the domestic prices of tradable goods tend to follow the exchange rate and international prices. So, given an increase in world inflation, the BCB has to raise its base rate to curb the pass-through of “tradable” inflation to “non-tradable” inflation, as well as to compensate the increase in international prices with exchange-rate appreciation. Theoretically the process functions in both ways, so that imported deflation would aid inflation targeting in periods of slow growth internationally. However, given that a large part of Brazil’s exports consists of commodities, a world recession also worsens its balance-of-payments considerably, which may lead the BCB to raise short-term interest rates to avoid a depreciation of the *real*.

The third and final issue is the possible inflationary impact of an increase in interest rates. According to the Patman effect, the short-term interest rate has a positive influence on the costs of circulating capital and, therefore, a restrictive monetary policy may increase inflation through cost pressures.¹⁶ The possibility of this effect is higher when firms have a high market power, that is, when they are able to pass along cost increases to consumers while keeping their markups intact. To this date there is no study about this effect in Brazil. On a first theoretical approach, the low debt ratios of Brazilian firms tend to reduce the Patman effect. Whether or not such an effect is able to compensate the deflationary impacts of monetary policy on aggregate demand is an open question.

3.7 – Interest-Rate Indexation of Public Debt

So far we have been assuming that an increase in the base interest rate has a negative impact on aggregate demand and, through this channel, it allows monetary policy to control inflation. The change in the wealth of the private sector induced by changes in interest rates is one of the most important transmission mechanisms of monetary policy to economic activity. In theory, an increase in interest rates tends to reduce the market value

¹⁶ The Patman effect is named after the US Congressman Wright Patman, who first proposed the idea in the late 1960s.

of equities and long-term bonds, imposing a capital loss on private agents. The negative balance-sheet effects then lead firms to cut investment, banks to cut loans, and consumers to reduce their expenditures, resulting in a recession or a growth deceleration.

Contrary to the textbook approach outlined above, the wealth effects of monetary policy may be null or even in the wrong direction in Brazil. The basic reasons are two. First, the maturity of public debt is short, so that an increase in the base interest rate has a small impact on the market value of fixed-income domestic bonds and is quickly transmitted to the whole stock of these bonds. Second and more importantly, more than 50% of the net public domestic debt is currently indexed to the SELIC rate, which means that an increase in the country's base interest rate has a positive effect on the wealth of private net creditors. In other words, an increase in the SELIC functions as a reduction in the net tax paid by net creditors. The resulting increase in the disposable private income may lead to a higher consumption, neutralizing the deflationary purpose of the increase in the SELIC rate.

The fact that increases in the SELIC rate benefits the holders of SELIC-indexed bonds is undisputable. The empirical issue is whether or not this effect is strong enough to compensate the other deflationary effects of monetary policy. As with the Patman effect, so far there is no empirical investigation of this topic in Brazil. Nevertheless, we can state for sure that the existence of interest-rate indexed bonds does reduce the impact of monetary policy on aggregate demand in Brazil.

3.8 – Small Credit Effects

Let us now ignore the possible expansionary and inflationary impact of increases in the SELIC rate and return to the textbook case. Can we say for sure that interest-rate hikes are an efficient way to reduce economic activity? The answer depends on the starting level of the real interest rate. If we start at an already high real interest rate, as it seems to be the case of Brazil, the supply of credit is so inelastic that it may make the effects of the changes in interest rates negligible.

The basic reason is that the higher the real interest rate, the worse are the problems of adverse selection and moral hazard, which tend to result in credit rationing by financial institutions. So, even though some private agents are liquidity constrained and willing to

borrow at the high real interest rates in Brazil, an increase in the SELIC rate does not tend to have a major negative impact on the already low volume of credit because of supply reasons.

The relationship between interest rates and credit-GDP ratios poses a “chicken-and-egg” problem for Brazil. An increase in the SELIC rate is more effective when the volume of credit is high, but for the volume of credit to be high, the SELIC rate must be reduced substantially! In fact, recent studies published by the BCB itself show that the high spreads between the banks’ deposit and lending rates are mostly the result of macroeconomic factors.¹⁷ One of these factors is the high SELIC rate since this tends to increase the risk of default and the opportunity cost of banks.

3.9 – Compulsory and Special Credit Operations

The existence of compulsory and special credit operations has also been blamed for the little impact of monetary policy on the credit conditions in Brazil. On the one hand, the basic idea is that banks have to charge a high real interest rate to make up for their losses in compulsory credit operations, which goes basically to microcredit and agriculture. On the other hand, the existence of a large public development bank, the *Banco Nacional de Desenvolvimento Econômico e Social* (BNDES), is also pointed as major obstacle to effectiveness of monetary policy because this institution lends long-term at a lower interest rate than what would be theoretically charged by market institutions.

The problem with these propositions is that they exaggerate the role of financial repression in Brazil. On the one hand, the compulsory credit operations do increase the interest-rate spreads, but there are other factors equally or more important for the high real market interest rates in Brazil as, for instance, the high SELIC rate, taxes, and the market power of Brazilian banks.¹⁸ On the other hand, the compulsory credit operations are not available to all private agents to make a big impact on aggregate demand. It basically goes to agriculture and it is hard to picture an inflationary boom caused by farmers in Brazil.

As for BNDES, it finances investment instead of consumption, which in principle is beneficial for monetary policy in the long run since it expands the economy’s capacity of

¹⁷ See Afanasieff et al (2002).

¹⁸ See Belaisch (2003b) and Kiyoshi and Koyama (2003).

production. More importantly, as any investment decision, the credit operations of the BNDES tend to vary pro-cyclically with the profit expectations, but proportionately less than the private credit operations. As a result, the participation of BNDES in the total credit of the economy changes counter-cyclically, that is, BNDES functions as an automatic stabilizer for the growth rate of the economy.

Finally, as with jurisdictional uncertainty, it should be noted that causality may run both ways. Part of the high real interest rates in Brazil may be the result of compulsory and special credit operations, but these operations may be themselves the result of the high real interest rates. For instance, given the high real interest rates necessary to stabilize inflation and exchange rates, alternative credit channels may be needed to finance crucial activities such as food-production and long-term investment. In fact, the existing compulsory and special credit operations in Brazil were created precisely to attend a demand that was not attended by private institutions, not to “crowd-out” private institutions from markets they were already in or willing to get in.

3.10 – Self-Defeating Inflation Targeting

The last point of the debate is simply that the current inflation-targeting strategy of the BCB may be the wrong way to do it. The basic reason is that an excessively restrictive monetary policy may end up increasing output volatility, which in its turn increase macroeconomic instability and reduce investment. Since the growth of the economy’s potential output depends on investment, an excessively restrictive monetary policy can therefore be self-fulfilling by keeping the economy permanently close to its supply constraints. This happens not because of a demand boom, but because monetary policy does not allow the economy to grow long enough to start a virtuous and sustainable cycle of investment and productivity growth. In other words, an excessively restrictive monetary policy may keep the economy close to its supply constraint by reducing the growth rate of its potential output.¹⁹

¹⁹ It should be noted that most estimates of potential output growth are simply a weighted time average of observed growth. Sometimes the average is explicit, like in the band-pass and the Hodrick-Prescott statistical filters. Sometimes the average is hidden within a production function that mimics an accounting identity. In both cases, provided that a stagnation lasts long enough, it will result in a low estimate of the growth rate of potential output, and in this way it will sanction the restrictive macro policy that caused stagnation in the first place (Barbosa-Filho 2004).

The current inflation-targeting strategy of Brazil seems to be wrong because the targets for the near future are too ambitious in face of the economy's recent history. When the CMN sets a low target, the BCB has to adopt a very restrictive monetary policy to achieve it, which in its turn may create problems in the country's public and foreign finance, as we saw earlier. The obvious solution is to adopt less ambitious targets, which can be done in three non-mutually exclusive ways, that is: (i) an increase in the annual targets; (ii) and increase the tolerance levels around the targets; and (iii) an increase in the time interval necessary for inflation to converge to its target. The current policy of setting low inflation targets for calendar years has been clearly self-defeating and too costly in terms of output and employment in Brazil.

4 – Is there an alternative?

It is always easier to identify a problem than to outline a solution. The monetary challenges facing Brazil are no exception and any strategy to reduce real interest rates will have to be carried through many instruments and actions. The sequence of monetary actions cannot be fully programmed a priori, but its guiding principles should be clear from the start.

The first principle is straightforward: there can be no macroeconomic stability when the real base interest rate is permanently two to three times higher than the growth rate of real GDP. Monetary policy should therefore aim both to control inflation and to reduce real interest rates in the near future, otherwise the destabilizing impact of high real interest rates on the country's public and international finance would end up making inflation targeting itself unfeasible. Just reducing inflation won't do, and since these two objectives may be conflicting under certain conditions, the obvious conclusion is that monetary policy would have to resort to other instruments than the SELIC rate to control inflation.

The second and equally important guiding principle is that there can be no macroeconomic stability with a high exposure to foreign financial shocks. Because of this, monetary policy should also be managed to avoid wide fluctuations of the country's real exchange rate, while maintaining its long-run average above the minimum level consistent with a high export-GDP ratio and a high stock of net foreign reserves.²⁰

²⁰ There is an extensive literature on the balance-of-payments constraint on growth (see, for instance, McCombie and Thirlwall 1994 and 2004). The basic ideas here are that net-exports functions as an

To see how the above principles are related to monetary issues we have to start with the big picture of a long-run development strategy before getting down to the particular role of monetary policy in such a strategy.

4.1 – The Development Strategy

Given Brazil's current situation and the long international history of successful catching-up strategies by other countries based on high net exports, the best development strategy for Brazil in the next 10 years is to promote exports and stimulate investment, both by domestic and foreign agents. The reasons should be clear for anyone who is not ideologically blinded by the mainstream hands-off discourse:

- First, with high net exports the country will be able to import more without compromising its international solvency or depending on foreign financial conditions to close its balance-of-payments.
- Second, if domestic firms are able to face foreign competition abroad, they would certainly be capable of doing it domestically. In other words, export-promotion is the most efficient way to substitute imports.
- Third, depending on the level of economic activity, policies aimed to increase investment may intensify demand pressures in the short run, but they also raise the supply constraints in the long run. From a structural perspective, the key questions are therefore to use macroeconomic policy to stimulate investment while keeping the growth rate of consumption at a non-inflationary level,²¹ and to use industrial policies to alleviate the bottlenecks in inter-industry flows.²²

autonomous source of demand growth for small open economies, as well as that high foreign reserves function as an insurance against adverse fluctuations in international trade and financial conditions.

²¹ It is important to have one thing clear about the investment-consumption relationship: the best strategy to raise the investment-GDP ratio is to stimulate investment itself, not simply to curb consumption. Neoclassically-oriented economists tend to think that both things are the same because they usually assume, from the start, that capitalist economies operate at full-capacity utilization. As Keynes put it brilliantly approximately 70 years ago, cutting consumption on the belief that some natural force will increase investment is too risky and generally unsuccessful.

²² In Brazil, industrial policies have been usually criticized as a return to the autarchic developmental State of the 1970s, when the Government responded for an important share of industrial production. Independently of the debate on whether or not that strategy was successful, it should be clear that industrial policy does not necessarily imply the creation and expansion of Government companies.

- Fourth, the international evidence also indicates that high growth is associated with a high investment-GDP ratio. The basic and intuitive reasons are the positive demand and productivity effects of investment on the economy.²³
- Finally, fast growing exports and income seem to be the best and most efficient way to attract greenfield foreign direct investment to the country, which also increases aggregate demand and supply, as well as accelerate productivity growth.

A stable competitive real exchange rate is the crucial condition for the success of export and investment promotion. The real exchange rate defines the relative price between tradable and non-tradable goods and, through this, it can foster the growth and development of the tradable sector, which in its turn tends to pull the growth rate of the whole economy and promote technological progress.²⁴ More importantly, it should be noted that a competitive real exchange rate can alter the tradable-non tradable relative price without changing the terms of trade of the economy. For instance, a nominal devaluation raises the price of both exports and imports, allowing an open economy to use its real exchange rate to increase the competitiveness of its tradable sector without necessarily distorting its comparative advantage. So, even for those who believe that international trade is determined by static comparative advantages, the real exchange rate is still an important instrument for development.

If we consider that comparative advantages can also be constructed, then the growth potential of a stable competitive real exchange rate becomes even more obvious. The new trade theory offers powerful arguments that international trade is determined by increasing returns and product differentiation. As a result, the level and the composition of net exports can be shaped by a strategic trade policy that temporarily foster the growth of some sectors until they reach an international level of competitiveness.

But how does a country maintain a stable competitive real exchange rate? Here enters the central role of monetary policy in aiding growth and development: the reserve and capital requirements of banks and the base interest rate can be managed to avoid an

²³ In mainstream growth theory, the positive link between the investment-GDP ratio and growth is usually interpreted as a result of the slow convergence of the Solow model, or as evidence in favor of the AK model (Bernanke and Gurkaynak 2001).

²⁴ The crucial role of the tradable-non tradable relative price for development has been recently stressed by Woo (2004), in terms of export and import tariffs, and by Frenkel (2004), in terms of the real exchange rate. Frenkel and Taylor (2005) present a three-good model to illustrate the point.

excessive appreciation of exchange rates. A stable real exchange rate does not mean a constant real exchange rate. What is needed is an asymmetric dirty floating regime that does not let the real exchange rate appreciate too much because of speculative bubbles, but that fights depreciation with the usual restrictive macroeconomic measures. In short, a sliding floor but no ceiling for the exchange rate.

The second necessary condition for a development strategy to work is for the Brazilian Government to be able to stimulate investment without compromising the long-run stability of public finance. In theory, reducing domestic real interest rates can be sufficient to improve fiscal conditions substantially in Brazil. At the current high primary surpluses, a lower real interest rate will lead to a quick reduction in the ratio of public debt to GDP. This improvement will free Government resources to an aggressive investment policy, which should be done directly by public investment and indirectly through public-private partnerships and tax incentives to private investment.

The implementation of the development strategy outlined above is not instantaneous. The economy will certainly go through a transition period before it reaches a situation of fast growth, high exports and low vulnerability to international shocks. The main challenges lay not in the viability of the pro-export pro-investment strategy. Few analysts would disagree with such a strategy. The problem is how to move from the current situation to it. To complete our analysis, the last subsection outlines a possible way to do it.

4.2 – Monetary Policy and Other Macroeconomic Measures in the Transition

The first and most important measure of the transition is for the BCB to start reducing its high base interest rate. Given the current high real interest rates and the general perception, outside the BCB, that the Brazilian inflation rate has been driven mostly by supply factors, the reduction in the SELIC rate will not immediately have strong inflationary pressures. Unemployment rates are still high, capacity utilization is not abnormally high, and the recent wave of investments pulled by net exports will surely improve the supply conditions in the next years.

Theoretically, a reduction in the SELIC rate tends to increase nominal exchange rates. According to the uncovered-interest-parity hypothesis, the expected depreciation of

the domestic currency corresponds to the difference between the domestic interest rate on the one side, and the sum of the foreign interest rate and the country risk premium on the other side.²⁵ So, *ceteris paribus*, a reduction in the SELIC rate tends to be accompanied by an increase in the spot exchange rate, which may create inflationary pressures in the economy. In the current situation of Brazil this might not happen because there are other factors that prevent a large devaluation of the *real*. Let us see each of them separately.

First, Brazil currently has high trade surpluses and this may compensate upward pressures on the exchange rate brought by a reduction in the SELIC rate. If not, the very own positive impact of devaluation on the trade surplus will tend to stabilize exchange rates after the initial realignment brought by the change in the SELIC rate. A higher nominal and real exchange rate tend to strengthen the country's foreign financial position in the medium run, which in its turn reduce inflation.

Second, in connection with the above considerations, it should be noted that a reduction in the SELIC rate tends to increase the spot rate and reduce the expected devaluation of the currency. This usually happens because the forward exchange rate rises proportionately less than the spot rate. The result is therefore a realignment of the exchange rate today and a reduction of devaluation tomorrow. The former may create temporary inflationary pressures, but the latter surely reduces the exchange-rate component of inflation in the long run.

Finally, let us say that a reduction of the SELIC eventually does increase the exchange rate too much, putting an excessive cost pressure on inflation. Even in this case the country would not necessarily slip into an accelerating inflation because the Government has other instruments than the interest rate to curb the pass-through of exchange rates to prices. Let us see how.

On the monetary side, the first thing that comes to mind is an increase in the reserve and capital requirements of banks, which can increase market interest rates while the SELIC goes down. The logic is to reduce the cost of public debt while increasing the cost of private debt, which, for the reasons outlined earlier, should fall mostly on consumer credit.

²⁵ For equal maturities.

The other way to compensate a reduction in the SELIC is to tighten fiscal policy, but in the current situation of Brazil there seems to be little room for such a move. Public investment is already very low. Most of the Government current expenditures are legally tied to specific ends and cannot be reduced without a change in the Constitution. The tax burden has risen substantially in recent years and there is currently a strong popular opposition to additional increases. Despite this, if and when it becomes necessary to change the fiscal stance, a temporary increase in the taxes on the rich and on the financial sector and a temporary reduction in the current non-social public expenditures are probably the best way to go because of Brazil's current needs for social and infra-structure investment.

Also on public finance, as we saw earlier, a high proportion of the Brazilian domestic public debt is indexed to the short-term interest rate and this is a major impediment for the transmission of monetary policy to aggregate demand. It is therefore necessary to change the composition of public debt in favor of fixed-income bonds. Inflation-indexed bonds are also a possibility, but the Brazilian history of indexation should preclude a strong move in this direction.

The increase in the supply of fixed-income bonds would, theoretically, increase the interest rate paid by the Government. However, the improvement in the fiscal solvency brought by the reduction in the SELIC can compensate it, making the change in the composition of public debt neutral in terms of interest expenditures. In addition to this, the expectation of a reduction in the SELIC itself can induce a higher demand for fixed-income securities, keeping the implicit interest rates paid by such bonds stable. Anyway, the move of public finance toward fixed-income should be gradual not to create too much volatility in financial markets in a time of macroeconomic transition.

In parallel to the above measures and independently of the impact of a reduction of the SELIC on inflation, the Brazilian Government should also reduce the indexation of some key public tariffs in the economy as soon as possible. According to the current regulation, this can be done in a negotiated way when the current contracts between the Government and the privatized companies expire.

Finally, because of Brazil's past experience with high inflation, the best policy is to continue to target inflation while the economy moves to a more stable macroeconomic

situation. So far the great gain from inflation targeting has been the increase in the transparency and accountability of monetary policy in Brazil. This should be maintained. The inflation targeting should obviously be less ambitious and consistent with a development strategy based on the maintenance of a stable competitive real exchange rate. The crucial question is not to eliminate inflation targeting, but actually to make it compatible with fast income growth and a stable public and foreign finance. To do this it would be necessary to expand the tools of monetary policy to include changes in reserve and capital requirements, as well as interventions in the foreign exchange market.

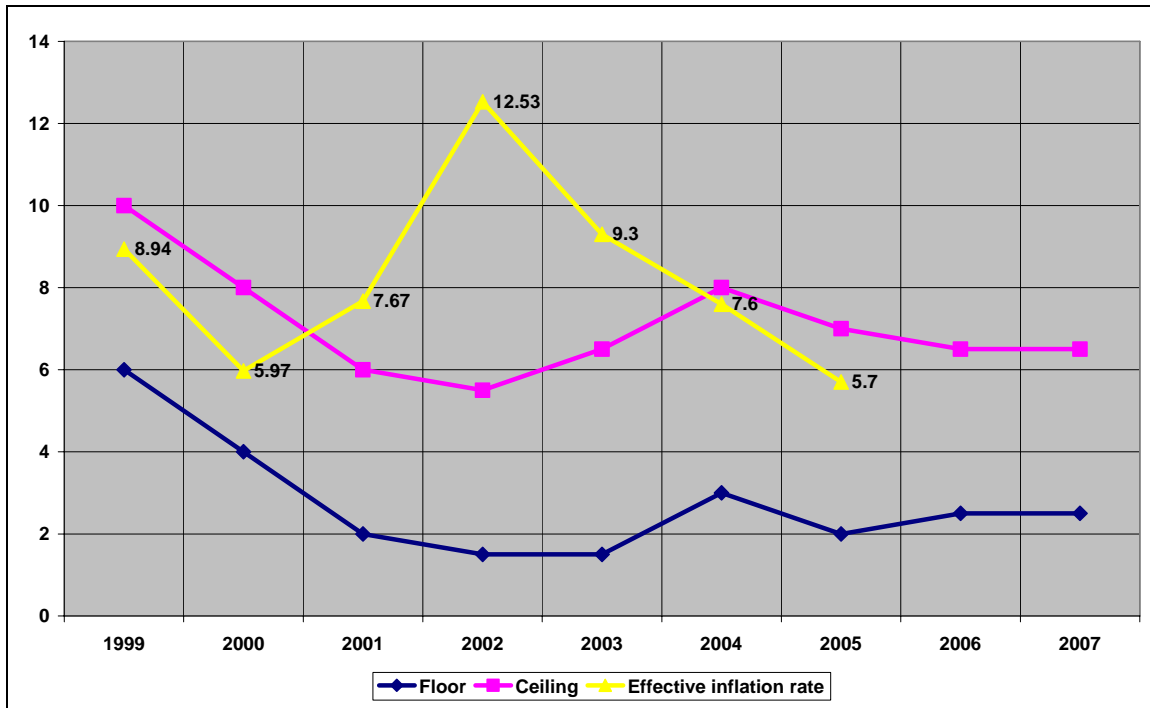
Inflation targeting should be maintained to assure private agents that the Government will not let inflation accelerate above a given number. What exactly this ceiling should be in any given year depends on the supply shocks that eventually create temporary inflationary pressures in the economy. Anyway, a useful pocket rule is not to let inflation rise permanently above one digit because of the negative effect this might have on people's expectations about macroeconomic stability. In fact, the key question to know when inflation is too high is the degree of indexation generated by it. In other words, if the economy starts to move to generalized indexation, inflation is too high, no matter what number that is. Since the current inflation rates in Brazil do not seem to be leading to a generalized indexation, there is enough room for a more active role of the Government in reducing its base interest rate.

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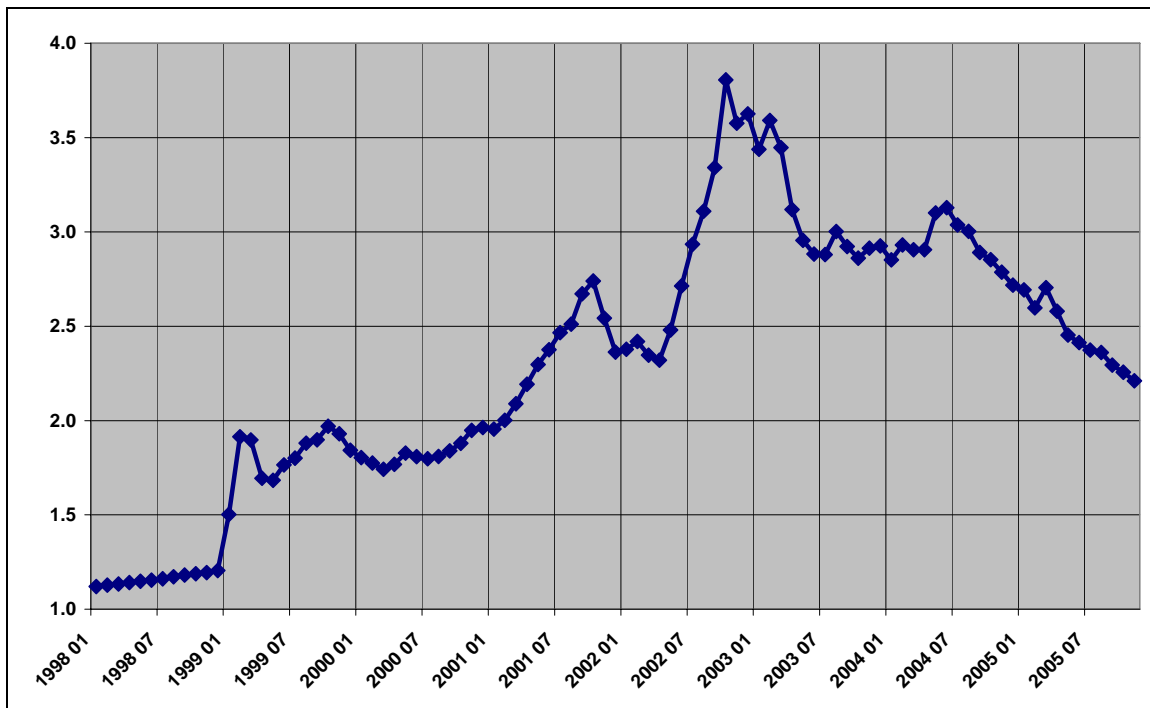
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Figure 1: effective and target inflation rates in Brazil.



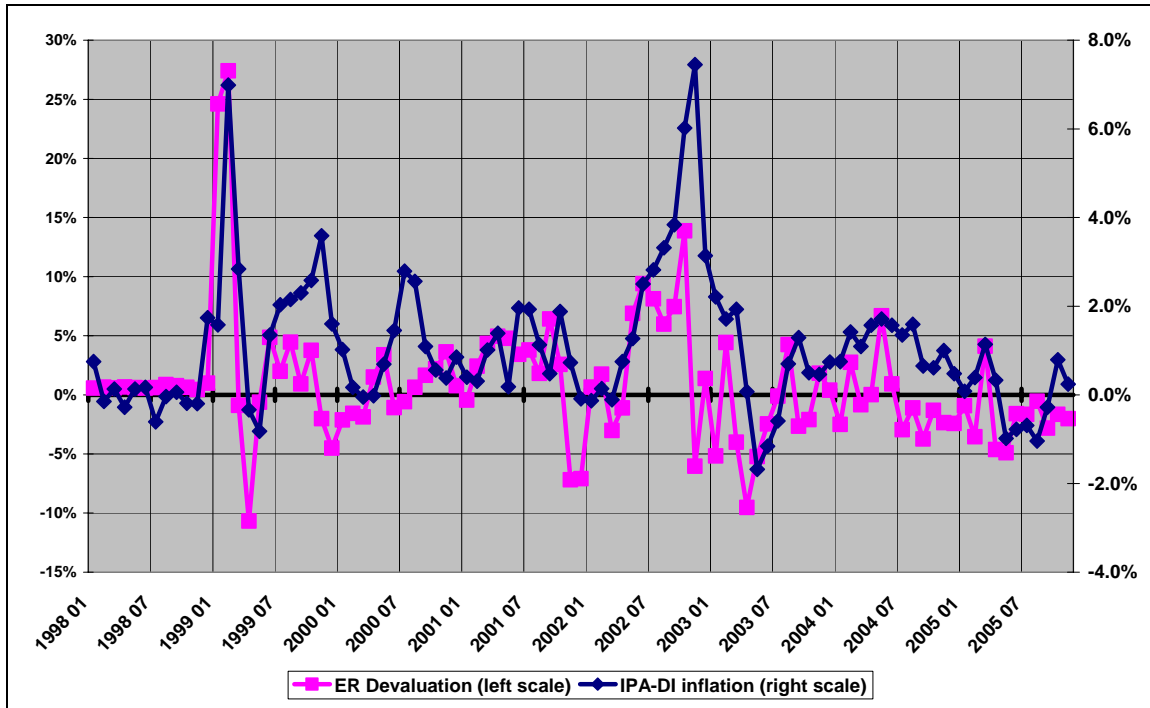
Obs.: the initial target for 2003 was 3.25%, but this was later revised to 4%, and then to 8,5%. Source: Central Bank of Brazil.

Figure 2: real/US dollar exchange rate.



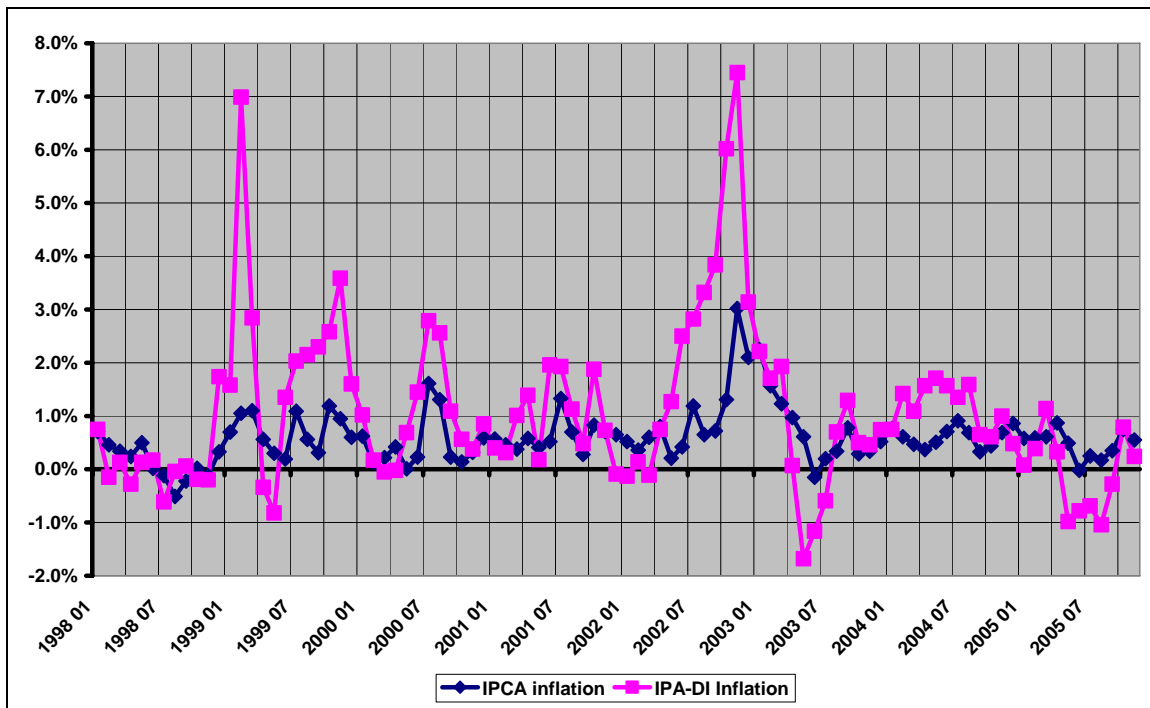
Source: Central Bank of Brazil.

Figure 3: monthly wholesale-price inflation and devaluation (real/US dollar exchange rate) in Brazil.



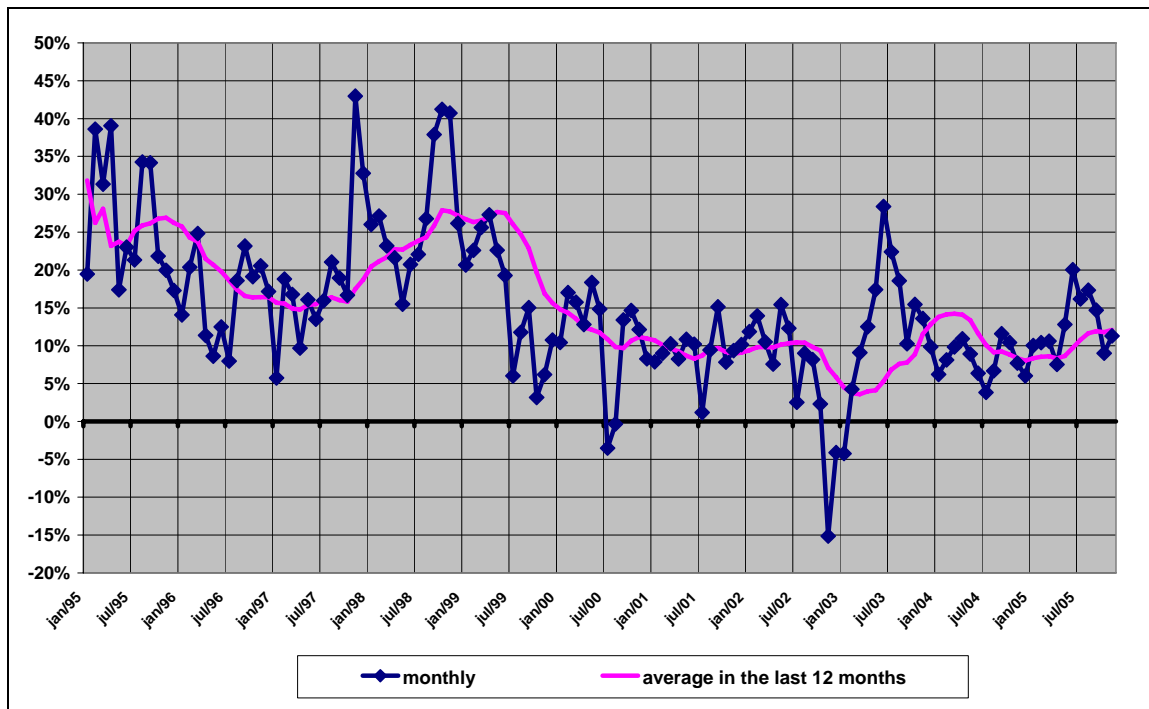
Source: Central Bank of Brazil.

Figure 4: consumer-price and wholesale-price monthly inflation rates in Brazil.



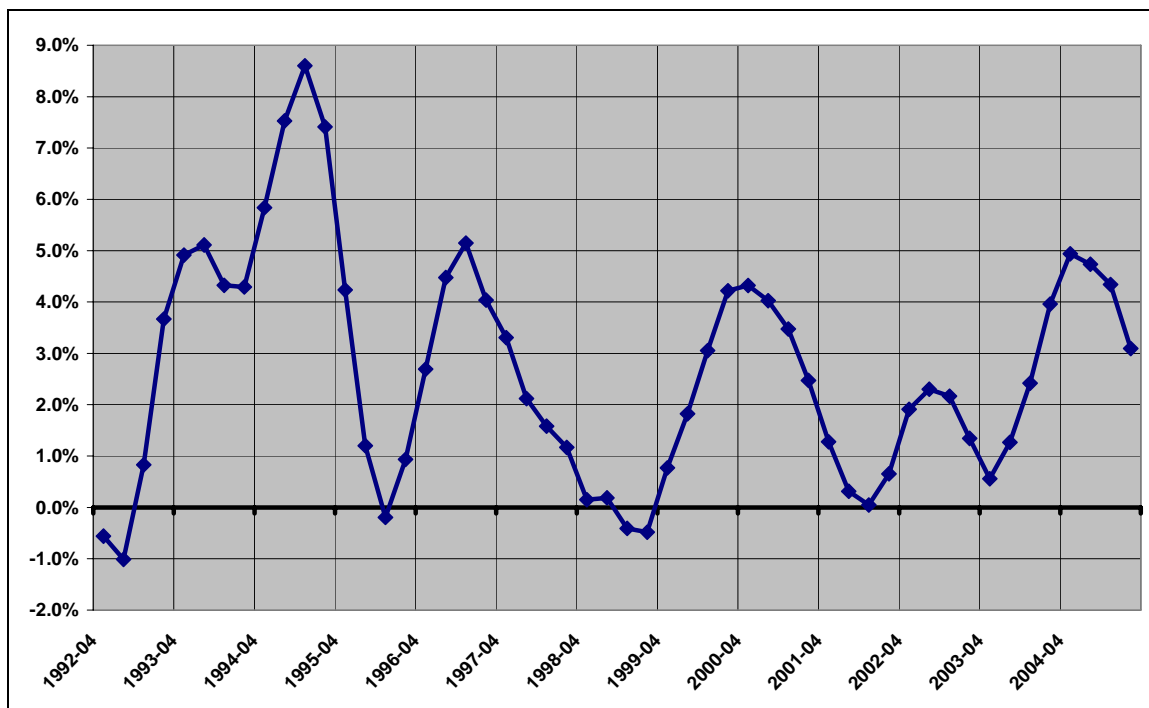
Source: Central Bank of Brazil.

Figure 5: annual base interest rate (SELIC) according to the consumer-price inflation (IPCA) in Brazil.



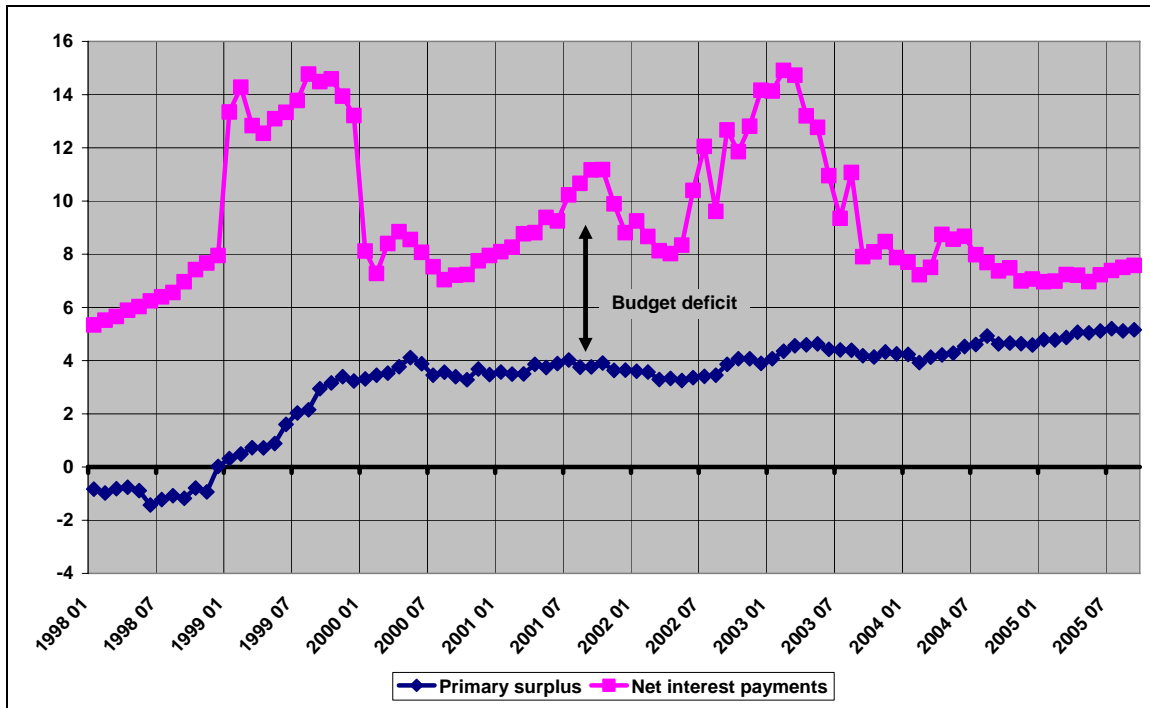
Source: Central Bank of Brazil

Figure 6: annual GDP growth rate in Brazil.



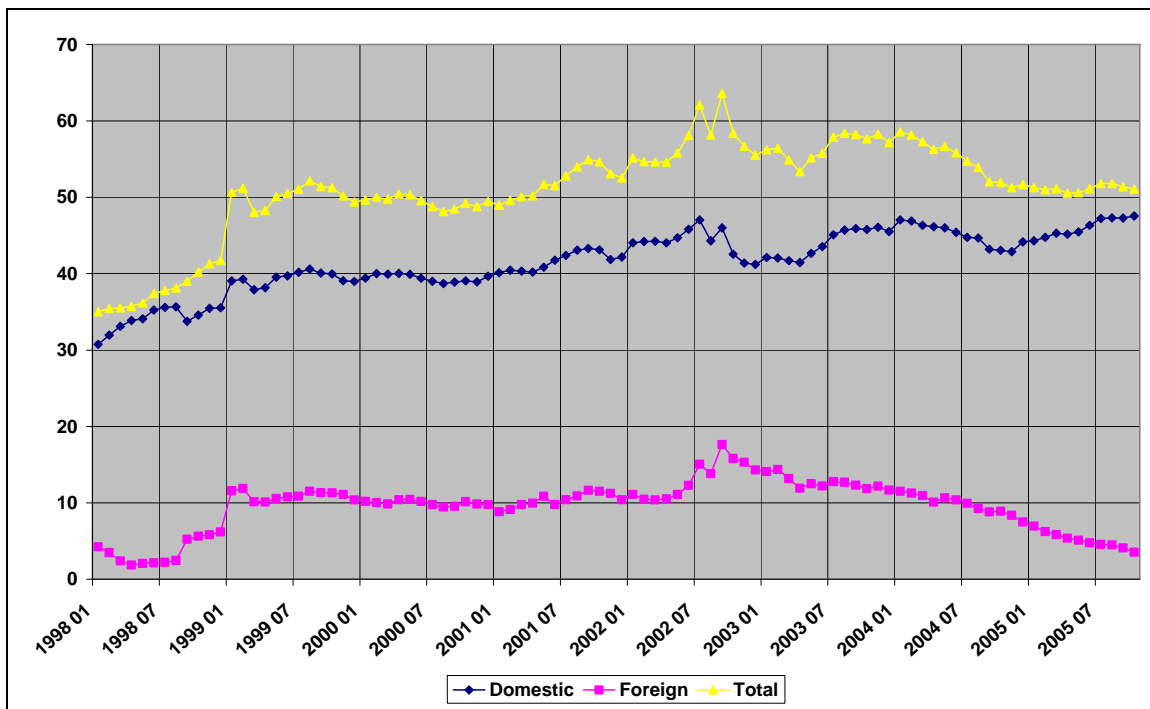
Source: IBGE.

Figure 7: primary surplus and net interest payment by the public sector in % of GDP.



Source: IPEADATA.

Figure 8: net public debt in % of GDP.



Source: IPEADATA.

Figure 9: probability of default as a function of the real interest rate.

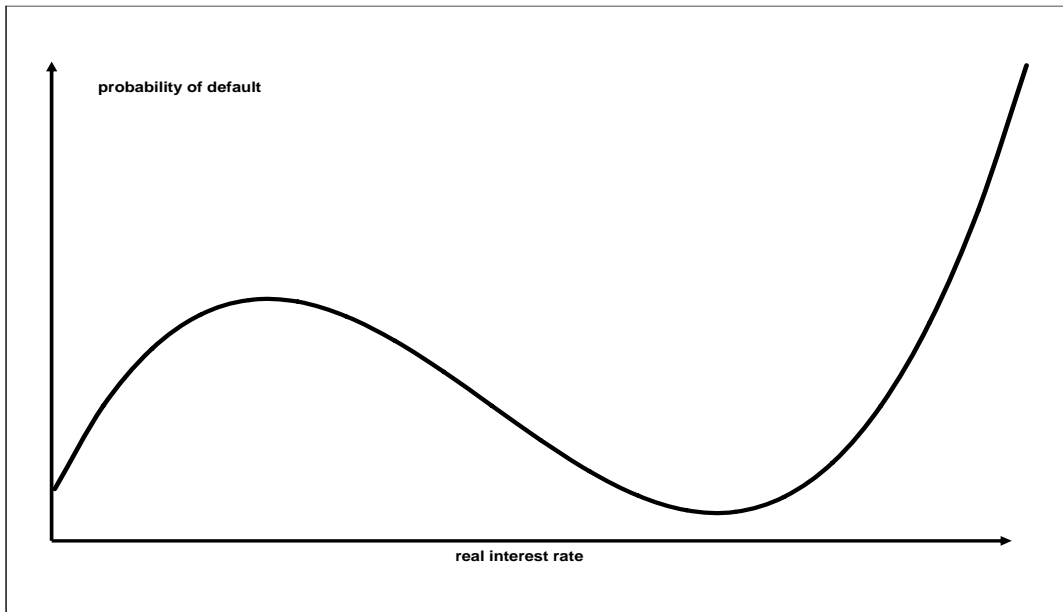


Figure 10: expected rate of return, opportunity cost of funds and multiple equilibria.

