

SÉRIE SEMINÁRIOS Nº 13/99

DIRETORIA DE ESTUDOS SOCIAIS

SEMINÁRIOS SOBRE ESTUDOS DO TRABALHO

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BRAZIL**

**Eliana Cardoso and Ann Helweg
(Tufts University)**

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CURRENCY CRISES IN THE 1990s: THE CASE OF BRAZIL

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The collapse of the Brazilian *Real* in February 1999 fits a familiar pattern of crisis in countries that target the exchange rate to stabilize inflation. In each instance, overvaluation led to unsustainable current account deficits and eventual currency collapse. The pattern is hardly new: in the 1970s, the Southern Cone countries attempted similar stabilization schemes, with similar results. Why, then, did the Brazilians pursue this strategy, particularly after Mexico exposed its limitations again in 1994? Was the case of Brazil different enough to warrant optimism about the outcome?

This is a story whose basic plot was foretold long before the *Real* collapsed. A few investors misgauged the timing or extent of the devaluation, but not its inevitability. Most anticipated the outcome and profited handsomely. Policymakers themselves were neither naïve nor cynical: a graceful exit strategy was simply elusive. And, ironically, many would choose an exchange rate based stabilization plan again if confronted with the same initial conditions.

This chapter looks for lessons in the Brazilian experience. In the first section, we discuss why an exchange rate anchor was adopted in 1994. The historical and political conditions that led to inflation at more than 50 percent per month at the beginning of the decade precluded further experimentation with alternative stabilization options. Because the exchange rate can be used to synchronize expectations and stop mechanisms that perpetuate inflation, the exchange rate anchor rightly played a central role in the first stage of inflation stabilization. But because fiscal adjustment was politically difficult, the *Real Plan* used the exchange rate as an anchor for too long.

Section two describes how this strategy led to its own demise. Although overvaluation and current account deficits have been common threads throughout currency crises in the 1990s, the emergence of these problems in Brazil is strikingly different from those in Mexico and Thailand. In Mexico, trade imbalances were seminal elements of disequilibria; in Thailand, banking crises entered early. Both problems eventually emerged in Brazil. But Brazil's root disequilibria lay in fiscal deficits and contingent liabilities. These imbalances posed policy dilemmas in the management of interest rates, exchange rates and capital controls. Massive capital inflows financed current account deficits, while fiscal deficits were financed by increases in public debt initially denominated mainly in local currency. The high interest rates that attracted capital also fueled debt: the ratio of net public debt to GDP nearly doubled between December 1995 and January 1999 despite economic growth of about 3 percent per year. Capital flows in turn supported the overvalued currency and large current account deficits.

Growing trade imbalances caused by overvaluation and rising debt service fueled speculative attacks against the *real*. In the year leading up to January 1999, financial investors positioned themselves to take advantage of an expected devaluation: this betting game cost the Central Bank more than six billion dollars in January 1999.² Policymakers were finally forced to take

² According to a central bank director, Luis Alvarez, the central bank had sold more than US \$10 billion in the futures market and thus suffered a capital loss of R\$ 7.6 billion in mid-January following the collapse of the exchange rate. (*Folha de São Paulo*, May 11, 1999).

action. In section three, we discuss the dynamics of Central Bank reserve losses, the decision to devalue, and efforts to prevent the exchange rate from overshooting.

Having stumbled away from its currency anchor, Brazil faces the challenge of defining a credible economic strategy for the future. By delicately negotiating the relationship between interest rates, inflation and exchange rates, policymakers have temporarily contained speculative attacks on the *real*. A return to sustained growth is less certain. This is complicated by lack of progress in resolving the distributional issues behind Brazil's fiscal deficits. The illusion that macroeconomic growth under the *Real Plan* can satisfy all competing demands is gone. At the same time, the international investment community is increasingly agile in the face of currency risk and potential default. Brazil's next steps must look less like a quick fix and more like steady progress toward resolution of its fundamental problems.

I. WHY THE *REAL PLAN*? RECENT AND NOT-SO-RECENT ECONOMIC DEVELOPMENTS

Sustained long-run growth – enough to warrant the use of the term “Brazilian miracle” — is a receding memory. Brazil's rapid growth after World War II ended in a crisis and triple digit inflation in 1964, but a period of sustained stabilization then followed. Despite the OPEC oil shock, the economy kept growing at fast rates: between 1968 and 1980, the gross domestic product (GDP) per capita rose by over 6 percent per year. In the same period, exports became more diversified and grew by an average of 22 percent per year. High public savings and expanding public enterprises also characterize the early half of this period. However, reliance on commercial loans to finance both public investment and expensive oil imports led to the debt crisis of early 1980s. Since then, growth has faltered. Between 1980 and 1998, the annual real GDP growth rate was 2 percent, a very mediocre performance for an economy that, since 1949, had grown on average 7.3 percent annually for 32 years.

The end of rapid growth compounded distributional challenges posed by greater democracy. As military regimes ceded power to voters and the literacy requirement for voting was lifted in the 1980s, Brazil's extreme income inequality subtly contributed to fiscal paralysis. With a Gini coefficient of .59, Brazil has been among the most unequal countries in the world. Neither revolution nor guerrilla insurgency has threatened stability. Instead, the constitution of 1988 imbedded privileges for a host of special interests and undermined the capacity of democratic regimes to mediate economic demands. Inflation served to resolve economic imbalances that politicians could not or would not close.

Between 1981 and 1994, the annual rate of inflation exceeded 100 percent in all years except in 1986. The containment of chronic inflation became the focus of economic policy. Yet despite a spectacular series of failed stabilization plans -- involving six monetary reforms in the

ten years' -- megainflation did not destroy the Brazilian economy. Indexation, the adaptive policy response, became pervasive throughout the economy. Taxation revenue did not fall significantly and remained high relative to other Latin American countries. Brazil's financial sectors and industrial businesses kept functioning well. Except during short periods, policymakers kept the exchange rate competitive and the country was able to generate substantial trade surpluses until mid-1994. ⁴ This capacity to accommodate inflation may partially explain Brazil's failure to engage in serious structural change.

A ratchet pattern characterized the behavior of inflation in the late 1980s, as a series of heterodox policy interventions resulted in lower inflation rates for a few months, after which inflation would climb up again. The *Cruzado* Plan, started in February 1986, lasted sixteen months. This plan froze prices, prohibited indexation in financial markets, and after a wage increase, froze both wages and the nominal exchange rate. Lacking fiscal and monetary discipline, and unable to arrest growing trade deficits, the government was forced to dismantle price controls and change to an exchange rate regime using daily devaluations. Inflation returned and a new stabilization attempt was imposed, the *Bresser* Plan of June 1987, which also relied on price freezes and a new wage indexation scheme. In 1988, a stand-by agreement with the IMF was approved but failed because of inadequate fiscal performance in Brazil. In January 1989, the Summer Plan introduced yet another price and wage freeze, which was relaxed in April with a return to formal indexation. By early 1990, inflation was close to 3,000 percent per year.

In the face of inflation that could not be easily accommodated through indexation, the *Collor* Plan of March 1990 drastically cut liquidity. An arbitrary freeze was imposed for 17 months on nearly two-thirds of the money supply (M4), broadly defined to include demand deposits, mutual funds, federal bonds, state and municipal bonds, saving deposits, and private bonds. Although Brazilians eventually managed to circumvent some of these controls, the financial freeze took over personal assets and was wildly unpopular. Fiscal policy was tightened, price controls were set in place, and indexation rules modified. Public debt was also cut because the official inflation correction of indexed debt (the monetary correction) was set below the actual inflation rate in March and April. The plan contained important components of structural reform, including trade liberalization and privatization of public enterprises, that were later sustained throughout the decade. By 1992, however, President Fernando Collor was ousted from power in a corruption scandal, and inflation touched 1,000 percent per year.

By the time Collor left power, resilience in the economy had been sapped. ⁵ A stand-by

³ During this century, Brazil had eight monetary reforms that removed zeros from the previous currency and changed the name of the currency, as follows: *Mil-Réis* (1900-42), *Cruzeiro* (1942-66), *Cruzeiro Novo* (1967-69), *Cruzeiro* (1970-86), *Cruzado* (1986-89), *Cruzado Novo* (1989-90), *Cruzeiro* (1990-93), *Cruzeiro Real* (1993-94), and *Real* (1994-2000).

⁴ The exceptions occurred in 1986, when the exchange rate was fixed, and in 1989 and early 1990, when inflation accelerated and the minidevaluations lagged behind as an overt policy effort to slow down inflation.

⁵ Gross Domestic Product declined by 4 percent in 1990 and again by 0.5 percent in 1992.

agreement with the IMF in January 1992 temporarily shifted the regime from heterodoxy to orthodoxy, with an emphasis on high real interest rates. This was short lived, however, as nominal interest rates fell in 1993, gross domestic product (GDP) increased and inflation accelerated again. The IMF stand-by agreement expired in August 1993 and was not renewed. Inflation exceeded 2000 percent, and the *Real Plan* was launched in December 1993.⁶

Under the *Real Plan*, stabilization went through three stages: a brief fiscal adjustment, monetary reform, and the use of the exchange rate as a nominal anchor. In January 1994, Brazil's Congress approved a fiscal adjustment plan that included cuts in current spending and creation of the Emergency Social Fund. The fund—financed by redirecting federal revenues, limiting the ability of states and municipalities to access credit, and recovering mandatory social security contributions—allowed the government to break some of its mandated links between revenues and expenditures. Twenty percent of revenues, which had been earmarked for other purposes, were freed. This increased flexibility led to an operational surplus in 1994.

The second component of the *Real Plan*, a temporary monetary reform measure, linked contracts, prices, wages, and the exchange rate to a single daily escalator and unit of account, the *unidade real de valor* (URV). The adjustment, which started on March 1, 1994, lasted four months. The central bank determined a daily parity between the *cruzeiro real* and the URV based on the current rate of inflation, as reflected in the three most closely-watched price indices.

Finally, since the *cruzeiro real* and the URV depreciated relative to the U.S. dollar at roughly the same rate, most prices and contracts were implicitly in U.S. dollars. On July 1, 1994, a new currency, the real, was introduced by converting contracts denominated in URVs into *reais* at a rate of one to one. The *cruzeiro real* ceased to exist, and was converted at CR\$2,750 per R\$1.

II. Policy Quagmires under the *Real Plan*

The *Real Plan* brought inflation under control with remarkable speed: it fell from four digits in 1994 to two digits in 1995 and to less than two percent in 1998. Indeed, Cardoso's success in securing the right to run for re-election in 1998 drew on popularity derived from sustained price stability. Economic growth was also strong: GDP growth averaged 4 percent per year between 1994 and 1997, compared to flat or declining output in the prior five years. The economic boom that began in 1994 did not originate from a decline in real interest rates, as happened in the first phases of other exchange rate-based disinflation programs. In fact, real interest rates remained high throughout the period. Between June 1995 and December 1998, the passive real interest rate averaged 22 percent per year. Instead, the Brazilian boom appears to have originated with an increase in real wages. Between 1993 and 1995 several

⁶ At the same time, the fall of international interest rates eased the external debt burden and led to an agreement with creditor banks, which was concluded in April 1994 with an exchange of instruments that covered over \$50 billion in debt stocks and arrears.

wage adjustments (including increases in minimum wages and in government's wages and salaries) took place. These gains in income were reflected in booming imports and durable goods consumption.⁷ High real interest rates drew in capital to finance growing imbalances. The following section describes the complex, often contradictory policy choices that policymakers faced as they attempted to deal with fiscal and trade deficits, and volatile capital flows.

A. Fiscal Deficits: Primary, Operational, Quasi-, and Invisible

The new Plan started with an apparent commitment to control fiscal deficits, but any fiscal adjustment achieved in 1994 was lost in subsequent years. (See table 1). The operational deficit, which includes real interest payments, moved from a surplus in 1994 to a deficit equal to 5 percent of GDP in 1995; it remained around 4 percent of GDP in 1996 and 1997, and deteriorated further in 1998. The primary surplus, which excludes interest payments, declined in 1995, reflecting the significant increase in payroll outlays, and turned into a deficit in 1996. Factors that contributed to the primary imbalance included a 43 percent increase in pensions following the increase in the minimum wage in May 1995 and the significant growth of "other expenditures," particularly once the 1998 elections were approaching. ⁸ In 1998, the budget deficit reached 8 percent of GDP.

Fiscal problems were compounded by the emergence of substantial quasi-fiscal deficits in federal and state banks.⁹ For example, the federally-owned *Banco do Brasil* (a traditional source of subsidized credit to agriculture) and the National Bank of Development (BNDES) introduced programs of subsidized credit to exporters in 1996. Partly to finance these programs, the treasury recapitalized *Banco do Brasil* by R\$7.9 billion (over one percent of GDP). Such inter-government transfers contributed to an increase of total net public debt from 30 percent of GDP in 1995 to 35 percent in 1996.¹⁰

Furthermore, with the end of inflation, bad loans from state banks to state governments

⁷ See De Gregorio, Guidotti, and Vegh, 1994.

⁸ "Other Expenditures" is an item of the central government budget that includes investment and other current expenditures ("*Outras despesas de custeio e capital*", known as OCC) to which the treasury allocates resources in proportion to congressional appropriations. It creates an arena for bargaining between the national administration and politicians.

⁹The fiscal balance summarized in table 1 adds revenues and expenditures of the nonfinancial public sector (including nonfinancial state enterprises) but does not attempt to calculate the implicit subsidies in loans made by state and federal public banks.

¹⁰ In the future, pressures for further increase of total net debt in the medium term will come from the recognition of liabilities such as R\$25 billion of liabilities of the *Fundo de Compensação Variação Salarial* (FCVS, a mortgage guarantee fund that ensured lenders will be paid fully if mortgages suffered a loss in real income), R\$21 billion of liabilities from the *Fundo de Garantia de Tempo de Serviço* (FGTS, an income assistance fund to workers in case of unemployment and disability), and other liabilities from write-offs of bad assets in public banks.

became a serious problem. In the case of BANESPA (one of the banks of the state of Sao Paulo), the federal government agreed to swap bonds of its own for the obligations of Sao Paulo to BANESPA (about R\$33 billion). Although this did not directly increase the net federal debt (for its bonds were offset by state obligations), such measures to stabilize weak state banks further increased the federal government's vulnerability to capital shocks.

Although the economy was growing on average above 3 percent per year between 1994 and 1998, the ratio of net public debt to GDP increased from 28 percent in 1995 to 44 percent in 1998, and jumped to more than 50 percent after the devaluation in January 1999.

B. Adjusting to the Loss of Inflation as a Tool to Balance Budgets:

The end of inflation made fiscal problems more transparent. Economists think of extreme inflation as an unstable process, the instability reinforced by the Tanzi effect—a decline in real tax revenues as inflation rises. But empirical evidence suggests that a powerful effect runs in the other direction through declining real spending levels—the Patinkin effect.¹¹

Observed aggregate budget data on nominal, operational, and primary deficits contain very little information about the true fiscal position of the public sector when inflation exceeds 500 percent a year. The Tanzi effect predicts that real tax revenues decline as inflation rises because collection lags inflation, and thus the budget deficit is higher at higher inflation rates. But there is also a reverse Tanzi effect—the Patinkin effect. If the Patinkin effect dominates at high inflation rates, real expenditures are lower than they would be if there were no inflation, and real expenditures tend to increase when inflation disappears. Thus, the fiscal adjustment needed once inflation disappears is usually underestimated. Several factors explain this phenomenon:

- Real interest rates decline with increasing inflation rates and usually rise following stabilization. This rise in real interest rates contributes to the increase in real government expenditures once inflation disappears.
- During periods of high inflation, local governments' payments of salaries and wages lag inflation. When inflation exceeds 1,000 percent a year, this delay produces a substantial decline in real expenditures. When inflation disappears, delaying payments no longer reduces real expenditures.
- Although governments have learned to lessen gaps in tax collection and index delayed tax payments to inflation, they still program expenditures with a forecast for inflation that is usually lower than observed inflation. As a consequence, realized real expenditures are much lower than programmed expenditures. When inflation disappears, actual expenditures will be closer to their programmed levels.

¹¹ See Cardoso, 1998.

- **The inflationary revenue of state banks can finance credit subsidies that are not recorded. This revenue disappears when inflation disappears. Furthermore, if inflation has been concealing banks' weaknesses, and these weaknesses are accentuated by the rise in real interest rates that follows stabilization, the government will have to use fiscal revenues to rescue banks, and recorded real expenditures will increase with stabilization.**
- **Because inflation reduces real expenditures but not real taxes when governments fully index taxes, inflation can be used to accommodate conflicting spending demands from different government levels. Thus inflation produces operational budget deficits consistent with the amount of real seigniorage that the government needs to finance the deficit.**

The Patinkin effect is only a partial explanation for the resurgence of large fiscal deficits after inflation disappeared with the *Real Plan*. Of course, high real interest rates – a factor in the Patinkin effect – did undermine fiscal efforts. But problems inherent in the Constitution of 1988, the failure to rein in excessive pension payments, and increased expenditures during the 1998 election year lay at the core of the fiscal fragility in the second half of the 1990s. Prior to the *Real Plan*, unresolved distributional issues had been masked in policy deliberations by passing unfeasible budgets, while inflation served as an equilibrating mechanism. With the end of inflation, policy makers were forced to undertake structural reforms to contain fiscal deficits.

C. The Temptation to Use Monetary Policy as a Substitute for Fiscal Reform

Stabilization under the *Real Plan* was supported by tight monetary policy, including an increase in reserve requirements. The required reserves-to-deposit ratio rose from an average of 26 percent during January-June 1994 to 64 percent during November 1994-April 1995.¹² This increase in required reserves and the decline of inflation led to a substantial decline in the inflationary revenues of deposit banks.

With the rise in lending restrictions under the *Real Plan*, the share in total seigniorage seized by the Central Bank increased from an average of 60 percent in the first half of 1994 to 84 percent a year later. As a consequence, the share in GDP of seigniorage seized by deposit banks fell from 2 percent to close to zero.¹³

The increase in required reserves and the decline in seigniorage of the banking sector in part explains rising interest rate spreads, the high active real interest rates, and the increase in nonperforming loans after stabilization. The spread between active and passive rates (that is between rates on government bonds and lending rates) increased from 4 percent per year in

¹² In the second half of 1994 the required reserves-to-loans ratio increased from 0 to 15 percent, the required reserves-to-savings deposits rose from 20 to 30 percent, and in May 1995 required reserves to time deposits increased from 20 to 30 percent (source: Brazil's central bank).

¹³ See Cardoso (1998).

early 1994 to 86 percent in early 1995. " Required reserves were gradually reduced, but other factors contributed to keeping the spreads high—such as taxes on financial transactions and the increase in non-performing loans caused by higher real interest rates.

Stabilization was not achieved through a tightening of fiscal policy, which would have in turn reduced financing of the deficit through seigniorage collected by the central bank. Instead, seigniorage collected by the central bank rose from 1.8 percent of GDP in 1993, the peak inflation year, to 3 percent in 1994, the year of the *Real Plan*, and was 2 percent in 1995—the level of average seigniorage during the high inflation years."

This appropriation of seigniorage from the banking sector to the Central Bank helped to finance government spending as inflation ebbed, but it also put the banking sector at risk. A more balanced policy would not have transferred the revenues from money creation so drastically from deposits banks to the central bank, and thus would have avoided the increase in interest rate spreads and nonperforming loans. The elements exposed banks' weaknesses, particularly those of public banks, further straining fiscal resources needed for restructuring. Since July 1994, the central bank has intervened in 51 banks and 140 other financial institutions. The failure of two big banks (*Banco Economico* and *Banco Nacional*) prompted the creation of a program of assistance to private banks known as PROER.

D. Trade Policies: Balancing Liberalization and Stability

During the early 1990s, Brazil followed the lead of other Latin American countries and opened trade by reducing tariffs, eliminating nontariff barriers, and abolishing subsidies and incentives to exports. In January 1995, the Mercosur¹⁴ common external tariff became effective. The common external tariffs, which now range from zero to 20 percent and are applied on about 85 percent of Mercosur's trade with the rest of the world, impose discipline by making it more difficult to reverse liberalization measures. The direct implications of Mercosur are small for Brazil: only 16 percent of Brazil's exports trade within the bloc, and trade itself only amounts to 7 percent of Brazil's GDP. Nonetheless, engagement in the Mercosur process signaled a broader embrace of neoliberal openness.

Partly as a result of liberalization, imports increased substantially. The average tariff rate fell from more than 30 percent in 1991 to 14 percent by the end of 1994. Both nominal and effective protection declined and became more uniform between 1991 and 1994, but part of this progress was lost in 1995 when tariffs were increased on imports of motor vehicles. Again

¹⁴ Campelo, 1997.

¹⁵ Because a decline in total seigniorage collection was matched by a decline in seigniorage collection by the commercial banks, leaving seigniorage collected by the central bank unchanged, there was not a wealth effect from the decline in inflation, but only a transfer between the banking sector and the nonbanking sector. In 1996 though, the central bank's seigniorage did decline to 1 percent of GDP.

¹⁶ *Mercado Común del Sur* (Common Market of the South).

in 1996, a new round of tariff revisions reduced tariffs on a number of goods and increased tariffs on textiles and toys.

The combination of liberalization and exchange rate appreciation was perilous. The trade balance, which for ten years had been in surplus, showed a deficit during the last two months of 1994 that persisted throughout 1995 and contributed to a rising current account deficit. When Mexico's crisis hit in December 1994, Brazil's high foreign reserves gave the economic authorities some latitude in choosing how to respond to the crisis. Still, Mexico's crisis hit Brazil at a delicate moment. To counteract the spillover effects of the collapsed Mexican peso, the Brazilian authorities enacted measures affecting both the internal and external sides of the economy.

The Mexican shock forced Brazilian policy makers to pay attention to the country's rising trade deficit. The trade deficit had increased with the expansion in demand brought about by the *Real Plan* and continued in the early months of 1995. Financial instability in early 1995 forced policy makers to reorder priorities. Devaluation – which would have efficiently realigned prices – was ruled out as a risky invitation to full blown contagion of the peso crisis. Instead, the economic authorities adopted fiscal and monetary measures in March 1995 to control aggregate demand and to improve the balance of payments. Fiscal measures included spending cuts for federal and state enterprises, restrictions on federal payroll outlays, and changes in legislation to increase tax revenues (for example, income taxes were levied on dividends from financial investments).

Measures were also taken to control credit growth, including: a mandatory 60 percent deposit with the central bank on bank assets used for collateral guarantees and select loans; an increase in the tax rate on financial operations involving bank loans (including negative balances on credit card debts and promissory notes) from 6 percent to 18 percent; a prohibition on financial intermediation involving commercial paper by banks; and an increase in the reserve requirement for time deposits.

On the external side, the Ministry of Finance abolished the taxes imposed in October 1994 on the purchase of Brazilian equities by foreigners and on foreign credit transactions, and the tax on foreign investments in Brazilian fixed-income funds was reduced to 5 percent. The Central Bank adopted a new exchange float band and devalued the currency by 5.2 percent against the dollar. But since this devaluation was much too small to significantly affect trade, other tools – perceived as less likely to set off inflation – were brought in. Exporters received additional incentives through tax reductions on domestic inputs, and tariffs on certain durable consumer goods and vehicles were temporarily increased from 20 percent to 70 percent.

The policy measures had the desired outcome. Economic growth slowed, and by August 1995 the monthly trade balance was positive, contributing to a reduction of the accumulated trade deficit in twelve months. The trade balance improvement was a result of the recession, however, and would be lost during the following months, with the recovery in the second half of 1996.

E. *Exchange Rate Management: The Missing Exit Strategy*

Brazil's success in bringing down inflation was associated with real exchange rate appreciation. Figure 1 shows one measure of Brazil's real exchange rate, the ratio between domestic prices and foreign prices in domestic currency.¹⁷ Between 1994 and 1998, the average real exchange rate was 31 percent above the average of the prior fourteen years: the only comparable peaks occurred prior to the debt crisis and in the wake of failed heterodox plans.

The rapid appreciation under the *Real Plan* occurred at the end of 1994. Despite minor devaluations between 1995 and 1998, the real exchange rate at the end of 1998 was still as high as it was at the beginning of 1996. This overvaluation is even more dramatic if we compare industrial wages. During the second quarter of 1996, the ratio of Brazil's industrial wages to industrial wages in *reais* of its major trade partners was at least 40 percent above the average ratio for the entire period of 1988-96.¹⁸

There were no structural changes or anticipated growth to justify such a large real appreciation. On the contrary, sustained long run growth would have been inconsistent with the large current account deficits that were bound to prevail at the going real exchange rate. The behavior of the trade balance reinforces this observation. During 1995 Brazil's trade deficit increased during the first semester and started to decline during the second semester as the economy contracted. But a small recovery after June 1996 was enough to produce further deterioration of the trade deficit. The trade balance continued to deteriorate, producing a deficit of \$8.4 billion in 1997 and \$6.5 billion in 1998. Evidence of overvaluation was also apparent in the slow growth of exports. Between 1995 and 1998, the growth rate of exports in dollar terms was 4.2 percent per year compared to an average of 11.3 percent per year between 1991 and 1994.

The strong currency harmed the industrial sector and increased unemployment. The government reacted by creating subsidized credit to exporters through the National Development Bank (BNDES) and by approving legislation to exempt primary and semi-manufactured exports from indirect taxes (manufactured goods were already exempt from indirect taxes). Neither was sufficient to offset the effects of overvaluation.

This phenomenon of accumulated real appreciation has been evident in other Latin American stabilization programs using the exchange rate as a nominal anchor: Chile during the period 1975-81, Mexico during 1987-93, and Argentina during 1990-95. Among the early experimenters with neoconservatism, Chile used the exchange rate to reduce inflation. It experienced real appreciation, sizable capital inflows, large external deficits—and in 1982, a

¹⁷ The index, published by Morgan Guaranty, is the ratio between Brazil's industrial prices and the weighted average of the industrial prices in Brazilian currency of Brazil's 14 major trade partners.

¹⁸ See Fundação Getúlio Vargas, *Conjuntura Economica*, August 1996 and Faria (1997).

sharp devaluation and recession. Mexico and Argentina recently followed a similar stabilization path, reducing inflation by using an exchange rate anchor, building up fiscal surpluses, pursuing trade liberalization, and supporting privatization. Both countries enhanced productivity by reforming goods and labor markets, but productivity growth is rarely enough to counterbalance an overvalued exchange rate.

The problem with exchange rate overvaluation is that it is often associated with a boom in consumption involving a large increase in imports and a decline in private savings. An overvalued exchange rate encourages agents to bring forward imports which they fear may become more expensive later. When this takes place at the same time as trade liberalization, its effects are multiplied, leading to a jump in imports as controls are dismantled. If reforms face a credibility problem, firms and households doubt that trade liberalization will be maintained and go on a precautionary import binge. For these reasons, a boom in imports is often characteristic of periods of economic reform. Even where exports have grown fast, as they did in Mexico during the early 1990s, exchange rate anchors foster trade deficits.

A second, less obvious problem with overvaluation is that it encourages a decline in private savings as residents substitute present for future consumption. Mexico's exports were growing strongly in 1994, but national savings had declined to very low levels (13.7 percent of GDP).¹⁹ Between 1978 and 1981, overvaluation in Chile was also characterized by a low level of savings, averaging just 10 percent of GDP.²⁰ By undermining savings, overvaluation hinders economic activity because high interest rates are needed to maintain the capital inflows to support the exchange rate. As growth dwindles, savings decline further, leading to a vicious circle of low savings and low growth.

Both of these problems - growing trade deficits and declining savings - emerged in Brazil. Imports nearly doubled between 1994 and 1997, climbing from \$33 billion to \$61 billion. Combined with the slower growth of exports noted above, the trade balance turned from a healthy surplus of \$10 billion to a deficit of \$8.4 billion. At the same time, gross national savings declined from 19.7 percent of GNP in 1994 to 16.8 percent in 1997.

These problems point to the need for an exit strategy in exchange rate based stabilization plans. Sustained stabilization depends on fiscal equilibrium and modest current account deficits. But fiscal austerity is difficult to achieve and requires time-consuming reforms. Thus it is essential to develop a short-term strategy to make the transition from high inflation (with periods marked by large fiscal and quasi-fiscal deficits, capital flight, and mechanisms that perpetuate inflation) to low inflation (consistent with small and sustainable deficits). The exchange rate can be used during the first stage of easing four-digit inflation because it synchronizes expectations and stops mechanisms (such as formal indexation) that tend to perpetuate inflation. After inflation has been brought down to double digits, however, continued use of the exchange rate produces serious distortions.

¹⁹ For an overview of the Mexican crisis see Naim (1995).

²⁰ Milesi-Ferretti and Razin (1996).

To sustain external equilibrium and reduce trade deficits as the real exchange rate appreciates, policy makers often use monetary policy to reduce aggregate demand. Unfortunately, high real interest rates make fiscal adjustment even more difficult because they increase public debt servicing. They also contribute to the deterioration of bank portfolios and increase the need for subsidies to recapitalize banks. The difference between domestic and foreign interest rates increases external borrowing and sustains real appreciation, providing apparent stability. But Sargent and Wallace's (1986) unpleasant arithmetic has shown that tight monetary policy cannot kill inflation where persistent budget deficits are present. Nor are current account deficits tolerated indefinitely by international capital markets. The problems created by overvaluation will not disappear without devaluation. The longer the correction is postponed, the worse the delayed adjustment will be.

The Mexican experience, re-confirmed by Brazil in 1999, showed that the costs of real appreciation compound slowly and explode suddenly." The run on the Mexican peso highlighted the risks that arise when foreign capital sustains exchange rate overvaluation and current account deficits. In Brazil, as in Mexico, the crisis took years to develop because interest rate policies allowed overvaluation to persist. As long as reserves and capital flows are available, the temptation to continue to use the exchange rate to keep inflation under control seems irresistible.

F. Capital Flows: Maintaining Credibility as the Fundamentals Deteriorate

The *Real Plan's* strategy to contain inflation by using monetary and exchange rate policies reduced domestic savings and created unsustainable current account deficits. These policies, in turn, led to a boom in capital flows that initially helped stabilization. Capital flows that averaged \$39 million per month between 1988 and 1991 mushroomed into a monthly net flow of \$970 million between 1992 and 1995. In 1996 and 1997, total net annual capital flows reached US \$33 billion and US \$ 26 billion respectively. In the end, by supporting the exchange rate overvaluation, these flows brought about the collapse of the economy. Accumulating reserves, fed by capital flows, masked the severity of the current account deficits and the decline in private savings. As capital continued to enter Brazil, it sustained currency overvaluation and clouded policy makers' perception of the maturing crisis.

The pace of accumulating net foreign liabilities – a reflection of deficits and surpluses in the current account – is shown in figure 2. Four periods can be clearly distinguished:

- Between 1953 and 1970, a period of severe foreign capital constraints, Brazil generated a current account surplus of almost 1 percent of GDP.
- With the recycling of petrodollars between 1971 and 1984, foreign capital flows flooded into Brazil and financed current account deficits of 3.2 percent of GDP.
- In the aftermath of the debt crisis (1985 to 1992) current account balances moved

²¹ See also Goldfajn and Valdes (1996).

between surpluses and deficits, resulting in a balanced current account for the period as a whole.

- Between 1993 and 1997 current account deficits returned to Brazil with renewed strength, financed by unprecedented capital inflows. ²²

The obvious two periods of capital inundation, between 1975 and 1982 and between 1993 and 1998, both ended in a balance of payments crisis and an IMF program. ²³

In the two years prior to the inception of the *Real Plan*, Brazil's interest differentials vis-à-vis the United States far exceeded expected currency depreciation in the short run and attracted foreign capital. A desire to counteract the pressure of exchange rate appreciation in the face of large, potentially volatile capital inflows led to central bank intervention. Capital controls were used to discriminate between investment believed to make the economy more productive and competitive (such as foreign direct investment) and potentially volatile investment motivated by considerations of short-term gains. Authorities turned restrictions on and off during the 1990s, applying selective taxes to limit such capital inflows. ²⁴ For example, once capital inflows returned after the Mexican peso crisis, the tax on foreign investment in fixed-income instruments was raised from 5 percent to 7 percent, and on bond placements from zero to 5 percent. New foreign investment in stock options and futures markets was prohibited. Despite such efforts, capital inflows consisted primarily of short-term resources tied to portfolio investments and other short-term investments. In 1995, net capital flows amounted to more than \$29 billion, of which \$20 billion were short run capital: \$2.3 billion were equity and special investment funds and approximately \$18 billion were short run capital not classified under a specific category. As some of the restrictive measures were eased, foreign direct investment increased significantly, amounting to US \$ 9 billion in 1996 and US \$ 16 billion in 1997. The increase in foreign direct investment was partly due to privatization of public enterprises and to increased mergers and acquisitions in the private sector.

The Brazilian evidence is consistent with evidence from other countries, showing that controls can generate interest rate differentials for extended periods of time (Obstfeld, 1995). Controls have also changed the composition of flows, at least temporarily. They have been less effective in affecting the quantity of flows or in avoiding the final collapse of the Real.

To avoid a monetary expansion induced by capital flows, inflows were partly sterilized. Sterilization created significant fiscal costs in financing high levels of reserve holdings, both because of the scale of the operations and the size of the interest differential vis-à-vis U.S. dollar rates (and rates in other reserve centers). The rise in monetary authorities' gross foreign assets in relation to the increase in the monetary base suggests that sterilization operations

²² By the end of 1997 the accumulated current account deficit (the stock of net foreign liabilities) exceeded \$178 billion. Total external debt was \$220 billion in 1997 and estimated at \$258 billion in 1998.

²³ See Cardoso and Leiderman (1999).

²⁴ A detailed description is found in Cardoso and Goldfajn (1998).

were large and costly in Brazil in the 1990s.”

The sustainability of such a situation should not have been in doubt. Yet few governments will resist the temptation to let the real exchange rate appreciate as long as money is flowing in to finance current account deficits. The common argument is that productivity growth in the tradable goods sector is enough to justify real appreciation, and that the current account deficit reflects capital good imports that will generate future exports to pay for the accumulated liabilities. The hard truth is that productivity growth in the tradable goods sector would have to be well above what is credible to justify the real appreciation that occurs at the beginning of exchange rate-based stabilization programs. Under a freely floating exchange rate regime, the risk of such optimism is borne by private portfolios. Under an exchange rate based stabilization scheme, this self-deception by the government entails an increasingly expensive commitment to guarantee an untenable outcome.

When the Mexican peso crisis erupted in late 1994, the initial reaction of investors suggested that the Mexican financial crisis would compromise all emerging markets, as stock prices plunged, particularly in Argentina and Brazil. During the fourth quarter of 1994 and the first quarter of 1995, the net flow of capital into Brazil was insufficient to finance the current account deficit, and the central bank lost reserves of about \$9.8 billion. The rescue operation led by the US and the IMF to support Mexican reform successfully insulated financial markets from the crisis and capital returned to Brazil. By the end of 1995 net capital flows were up to \$29 billion and in 1996 they reached \$33 billion.

Although stability under the *Real Plan* survived the Mexican shock, by mid-1995 policy makers faced the same fundamental challenges as before the shock. In broad terms, insufficient fiscal adjustment continued to impose a burden on monetary, credit, and exchange rate policies. In particular, covered interest differentials increased sharply and remained high. These unusually high real interest rates partly reflect the difficulty of establishing the credibility of macroeconomic policy in a country with a history of hyperinflation and lacking fiscal balance.

High interest rates accompanied a sharp increase in the debt of the public sector. In 1995, the stock of central bank securities and treasury securities outside the central bank grew 53 percent in real terms.²⁵ Between 1994 and 1996, the ratio of the net debt of the public sector to GDP increased from 28.5 percent to 35 percent, as high real interest rates allowed a weakening of the fiscal stance for two years in a row. Net debt continue to grow in the following years, reaching 44 percent of GDP in 1998.

²⁵ It is noteworthy that after 1992, the ratio of foreign assets to the monetary base moved significantly while the ratio of foreign assets to M2, which includes the securities of the federal government in the denominator, remained stable. In addition, foreign assets were high relative to the monetary base but small relative to M2.

²⁶ Associação Nacional das Instituições do Mercado Aberto, *Retrospectiva 1995*, Table 3.6.

Lack of confidence in the ability of the regime to sustain the exchange rate anchor and to meet its obligations was reflected in the increasing use of dollar-denominated and floating rate debt. Prior to the problems of 1998, most domestically denominated debt was at fixed rates, and about 15 percent was dollar-indexed. By early 1999, 21 percent was dollar-denominated and 70 percent was indexed to the overnight interest rate. Moreover, maturities fell: the interest due on domestic debt in January 1999 alone exceeded 6 percent of GDP.

III. CONTROLLED SPIN: MANAGING THE COLLAPSE OF 1999

As noted earlier, the Mexican crisis led to a significant loss of investor confidence, which gradually returned over the course of 1995. The 1997 Asian crisis caused a brief panic. The real jolt came with the Russian crisis in August 1998. Brazil's foreign currency reserves fell by \$30 billion as the government struggled to defend the *real*.

The IMF moved quickly to set up a loan package, but domestic politics (including the timing of presidential and gubernatorial elections and the relationships between the central and state governments) delayed negotiations. Finally, in December 1998 Brazil signed a \$41.5 billion financial assistance package. Contributions were to come from the IMF (\$18 billion), the World Bank and the Inter-American Development Bank (\$4.5 billion each), and bilateral creditors (\$5 billion of which would be provided by the United States and \$9.5 billion by European governments).

About \$9.2 billion was disbursed in mid-December. Further disbursements from the assistance package (to be made through the Bank for International Settlements) were conditional on compliance with a three-year IMF stand-by program, which focused on fiscal adjustment. The initial program aimed at reducing the public sector borrowing requirement from 8 percent of GDP in 1998 to 4.7 percent in 1999.

This IMF program gave the financial sector time to reduce its exposure in Brazil. It was soon overtaken by events, however, as monetary policy failed to prevent a collapse of the exchange rate. Capital outflows, lack of fiscal progress, strong resistance by the domestic business community to the record high interest rates, and growing demands for correction of the overvalued exchange rate forced the government to adopt a new exchange rate regime. The *real* was let free to float on January 15, and by the end of February it had depreciated by more than 35 percent. In the three week period between January 13 through February 2, 24 banks had a profit of \$10 billion with sale and buy operations in the Futures Exchange (BM&F) due to a combination of the weaker *real* and high interest rates. Citibank and Morgan Guaranty Trust had the largest stakes in operations in the Future Exchange. The big loser was Banco do Brasil, operating on behalf of the central bank.”

” According to Deputy Aloizio Mercadante in a testimony to the Parliamentary Inquiry Committee investigating irregularities in Brazil's financial system.

A. Interest Rate Policy: Preventing a Free-fall of the Real

Although most economists would agree that the *real* was overvalued throughout the Plan, there was no consensus on the size of the overvaluation. (Part of the reason for this is a controversy over the choice of price indices and the relevant period for comparison.) After its collapse, the average real exchange rate in the first quarter of 1999 was close to that which prevailed prior to the *Real Plan*.²⁸ But it was not stable: between mid-January and the end of March, its value against the dollar fluctuated to as high as 2.2:1 before settling at a rate of 1.68 to one in early May.

The new exchange rate regime allowed the government to adopt a more balanced policy mix, but it imposed the need for a new monetary framework and a new nominal anchor. The most difficult problem was in setting monetary policy during the first few weeks following the collapse of the exchange rate, when financial market conditions and expectations were unsettled. Inflation can increase sharply after a speculative attack on the currency, as substantial depreciation causes a one-time adjustments in many prices. This temporary increase in inflation would then reduce real interest rates on debt denominated in domestic currency, and thus fuel capital flight. To offset, at least partially, this near-term effect, it is appropriate for policymakers to raise nominal interest rates to avoid further depreciation and the danger of igniting a spiral of depreciation and inflation.

On the other hand, policy makers also have to pay attention to the debt denominated in foreign currency. The larger this debt is, the greater the impact of the devaluation on the debt/GDP ratio. In the case of Brazil, that ratio had reached 53 percent by January 1999.

The relationship between interest rates, devaluation and inflation is a matter of considerable debate. Proponents of tight monetary policies argue that domestic interest rates must be maintained above the expected rate of devaluation in order to relieve pressure on the exchange rate. If the gap between domestic interest rates and the expected rate of devaluation is not sufficiently high, people will borrow in the domestic currency in order to buy foreign currency, thereby creating pressure for devaluation.

Even opponents of tight monetary policies concede that higher interest rates serve as an obstacle to currency speculation. Their objection to high interest rates is that, sustained over a long period of time, they can become counterproductive. According to this view, high interest rates increase the chance of default, raise debt service requirements, and may signal more inflation for the future. In countries in which short-term domestic debt or domestic debt based on floating interest rates is sizeable, high interest rate can severely increase debt service requirements. Such an effect is relevant in countries (such as Mexico in 1994-95, and in Brazil, and Ecuador more recently) where a large stock of very short-term debt has been at the center of policy discussions. Indeed, many analyses of the sustainability of the Brazilian program focus on whether interest rates can fall quickly enough to ensure a swift convergence

²⁸ The index of the real exchange rate, published by Morgan Guaranty (figure 1) is: 1990 = 100.; averages between: January 1980-June 1994 = 78; July 1994-December 1998 = 102; January 1999- March 1999 = 73.

of the debt-to-GDP ratio but still avoid the risk of an inflation-devaluation death spiral.

B. Devaluation, Inflation, Interest Rates and the Budget

The Brazil-IMF agreement announced on March 8, 1999 set two clear objectives and instruments: to limit the inflationary impact of the devaluation by raising interest rates and to prevent the ratio of debt to gross domestic product from exploding by producing substantial primary surpluses in the fiscal accounts.

The agreement recognized that the likely cost of these policies would be a recession and estimated a decline in GDP of 3.5-4 percent. Discussion, however, centered around a strategy that critics call contradictory: the use of high interest rates can subdue inflation but it aggravates the fiscal deficit by increasing the debt burden and reducing tax revenues. Following the float of the *real* on January 15, short-term rates were raised steadily, from 29 percent in mid-January to around 39 percent by the beginning of February and to 45 percent on March 4. It declined to 29 percent by early May. Does the apparent success of this strategy in Brazil validate the use of high interest rates in such crises?

Using a model of deficit finance, it is possible to examine situations in which higher interest rates lead to more monetization of government debt, higher inflation and still higher interest rates. The challenge is to avoid this self-reinforcing explosion of inflation and interest rates after an inflationary shock, and to move the economy toward a stable low inflation, low interest rate equilibrium.

Suppose that bond holders develop doubts about the government's capacity to service and roll-over its debt. As investors begin to refuse to hold government bonds, the government can do two things. It can increase interest rates further, creating an incentive for investors to increase their holdings of government debt, or it can monetize part of the budget deficit. Increasing interest rates have costs, including recession and its political costs. Higher interest rates also raise the cost of servicing the debt, and exacerbate the need to raise taxes. Thus, the higher interest rates are, the greater the temptation to monetize the debt. We can assume that the part of the budget deficit that is monetized, G , is an increasing function of the interest rate, i :

$$(1) \quad G(i) = \Delta M,$$

where ΔM is seigniorage or the increase in the monetary base. The remainder of the budget deficit is covered by increases in public debt.

Dividing both sides of equation (1) by the monetary base, M , we can re-write (1) as:

$$(2) \quad g(i) \quad v(i) = \Delta M/M,$$

where $g(i) = G(i)/Y$ the budget deficit financed by money creation as a share of national

income, and v is velocity, $v = Y/M(i)$. Velocity is a positive function of the nominal interest rate. In the model, the opportunity cost of holding money is the interest forgone by not holding public bonds. Empirical evidence shows that money demand $M(i)$ is inversely related to the nominal interest rate. We could also enter the inflation rate independently as an argument in the money demand function without affecting the results discussed here.

In a steady state, the inflation rate, π , is equal to monetary growth rate, $\Delta M/M$, and thus

$$(3) \quad \pi = gv$$

This upward sloping relationship between monetization of the budget deficit, interest rates and inflation is plotted in Figure 3. Its increasing slope reflects an assumption that as interest rates rise and debt service increases, the political costs of conventional finance (e.g. debt) become increasingly less tenable. It is easier to print money than to convince investors that extremely high interest rates do not carry a default risk. At the same time, as interest rates increase reflecting higher inflation, holding money becomes more costly and people economize on their real cash balances, further increasing inflation and money growth.

Next we look at the dynamics of interest rates. Points below the schedule $\pi = gv$ correspond to combinations of inflation and money growth that are inconsistent with the equilibrium condition of constant real cash balances. Money growth exceeds inflation. Thus, the interest rate is declining at any point below the schedule $\pi = gv$. Declining interest rates provide the incentive for people to hold higher real cash balances, reducing velocity, and moving the economy to a new combination of lower interest and inflation rates on the schedule $\pi = g.v$.

Points above the schedule $\pi = gv$ correspond to combinations of inflation and money growth rates such that the inflation rate exceeds money growth and the interest rate is increasing. Real cash balances and nominal interest rates are low relative to real cash balances and interest rates on the schedule $\pi = gv$ for the same inflation rate. Increasing interest rates reduce desired real cash balances and increase both velocity and the budget deficit, moving the economy to a new combination of both higher interest and inflation rates on the schedule $\pi = g.v$.

The next question concerns the dynamics of inflation. We assume that inflation depends on the level of economic activity and inflation increases whenever the actual real interest rate, $i - \pi$, is below the long run equilibrium real interest rate, r :

$$(4) \quad \Delta\pi / \pi = F(r - (i - \pi))$$

Note that equation (4) implies both inflation inertia and a scope for monetary policy to affect inflation.

In steady state, the inflation rate is constant, i.e., $\Delta\pi = 0$. Thus, in steady state:

(5)
$$\pi = i - r$$

The schedule $\pi = i - r$, in figure 3 shows all the combinations between the inflation rate and the nominal interest rate for which the actual real interest rate is equal to the steady state real interest rate. Points to the right of the schedule $\pi = i - r$ correspond to points where the observed real interest rate exceeds the steady state interest rate, that is, points of unemployment and falling inflation rates. Points to the left of the schedule $\pi = i - r$ correspond to real interest rates that are lower than in steady state, fueling economic booms and rising inflation.

There are two steady state equilibria, labeled E_1 and E_2 .²⁹ The phase diagram (figure 3) shows that for stability the schedule $\pi = g.v$ must cut the schedule $\pi = i - r$ from above. E_1 can be a stable, low inflation equilibrium. The nature of the time path around the low-inflation equilibrium is one of oscillation as in a cobweb model. The cobweb would be converging depending on the relative slopes of the two schedules.

On the other hand, E_2 is a saddle point. This high inflation equilibrium can be easily disrupted. Even a small increase in the nominal interest rate at this level can sharply increase the share of the deficit that is monetized. This in turn fuels inflation and drives the economy away from E_2 . A saddle path exists, represented by the line B to B' in Figure 3. The position of the saddle path is driven by the relative slopes of the two schedules, or by the inflection point in the schedule $\pi = g.v$.

Assume an inflationary shock, such as a sudden devaluation. This shock would immediately push the inflation rate up to a point such as A or C in figure 3. The inflation path following the initial jump will depend on the size of the initial shock and on the policy response. If the shock is small, and the inflation initially jumps to point A in figure 3, the economy will go through a period of rising inflation and rising interest rates and then oscillate around the initial equilibrium to which it will eventually return.

Suppose the shock is very big and moves the inflation rate to a point such as C, above the saddle path defined by the points B and B'. To bring such a situation under control, monetary policy will have to increase the interest rate by enough to move the economy toward a point such as B' on the saddle path. The real interest rate shock, coming on the heels of a devaluation and accelerating inflation, will cause a significant increase in unemployment. If inflationary expectations can be stopped, both inflation and interest rates will start to come down. In the new equilibrium, E_2 , the inflation rate is higher than at the initial equilibrium. To further reduce inflation and move to E_1 , action on the fiscal front would require the creation of primary surpluses to finance part of the interest payments that were initially monetized.

²⁹ If the budget deficit was also a function of the inflation rate, as in Cardoso (1998), there would be further high inflation equilibria.

Things might easily go the other way if inflationary expectations are not stopped. Higher real interest rates can lead investors to fear that the government will not be able to service its debt, and will thus resort to the printing press, or as bad, that the government will not be willing to risk the political fallout of a severe recession. Inflationary expectations can then drive nominal interest rates up even further. To succeed in its strategy, the regime must survive what amounts to a test of willpower, enduring high real interest rates until investor confidence is secured.

Once an exchange rate anchor is abandoned, inflationary expectations affect the exchange rate. Thus the dynamics of the model presented above have implications for the exchange rate. After a collapse of the currency, the central bank must tighten monetary policy to avoid the deadly devaluation-inflation-devaluation spiral. If monetary policy is too loose, people will use cash to buy dollars, bringing about more devaluation and more inflation. Interest rates have to increase.

By how much? That is THE question. If the central bank increases the interest rate too little too late, inflation picks up and the economy returns to its history of persistent inflation. Inflation might once again hide some structural imbalances, but it would certainly destroy external confidence. If the central bank increases the interest rate too much, the resulting recession might be too severe, and inflation could decline ahead of interest rates, leading to higher real interest rates. The combination of recession and high real interest rates would increase the budget deficit and reduce confidence in the government capacity to service its debt without resorting to monetization again." Moreover, the prospect of a severe recession can undermine confidence in the government's resolve to sustain tight monetary policy, and thus set off a new round of inflationary expectations.

Since fundamentals are never as dark or bright as painted, the recovery of credibility is everything. As the government raises interest rates, inflationary expectations must be declining for markets to bring nominal interest rates back down. But if there is a large public debt that is both short term and carries floating interest rates, as in Brazil, investors may worry that higher interest rates will force the regime into debt monetization.

The short run task, then, is to negotiate a path of declining inflation and interest rates to avert a collapse of the exchange rate that overshoots its new equilibrium level. Failure to stay

³⁰ Herrera (1999) uses a Vector Autoregression (VAR), and monthly data from January 1975 to January 1999 to model the relationship among the three variables: inflation, devaluation and interest rates. Four dummy variables were included to capture the effect of different stabilization plans: *Verão*, *Cruzado*, *Collor* and *Real*. The lag-length was 12 months. The impulse-response coefficients indicate that a 10 percent devaluation would add to the inflation rate between 3.4 to 4.8 percentage points. If the average exchange rate in 1999 were 1.90 Reais per Dollar, the inflation rate could be as high as 20-28 percent in 1999, but it could be as low as 10 percent in 1999 if the average exchange rate were 1.70 Reais per Dollar. Interest rates respond positively to a devaluation in a magnitude roughly equal to the response of the inflation rate. If interest rates were around 30 percent in December 1998, after a 60 percent devaluation Herrera's model predicts a temporary rise to around 46 percent, and a decline from then on. These figures are remarkably close to the actual outcome in Brazil.

within this path has implications for the budget, and vice versa: the smaller the primary deficit the greater latitude policymakers have in setting monetary policy. However, it is difficult to achieve dramatic changes in the primary budget, especially where constitutional changes are required, and operational deficits—which reflect interest payments on outstanding debt — may be outside the regime’s control. For this reason, support from multilateral institutions can be essential to restoring credibility and stability.

C. Brazil: Dancing Away from the Precipice

By any standard, Brazil has negotiated its way through the Real Crisis with extraordinary ease and speed. By May 1999, the *real* had risen to 1 US\$:1.67, compared to a low of 1 US\$:2.21 in March.¹¹ Short term interest rates had fallen from 45 percent in March to just 23 by May 25, and inflation, measured by the national consumer index, had declined from an annualized rate of 16 percent in March to 6 percent in April (Table 2). Far from slipping into a deep recession, the Brazilian economy actually grew by 1 percent in the first quarter of 1999, and forecasts of a serious decline in output were being revised.

What explains the rapid turnaround? Certainly a dose of good luck has to be acknowledged. Interest rates in the United States had remained low. Agricultural output grew by 18% in the first quarter of 1999, thanks to a record harvest following good weather conditions. But central to the restoration of investor confidence was fiscal action and shrewd monetary policy. Awareness of the risk of a grave collapse among even intransigent legislators and governors helped: in February, the collapse of the *real* galvanized Congress into passing pension reform legislation that it had rejected in 1998. Congress also approved an increase in a temporary tax on financial transactions. Measures were introduced to rein in expenditures by state and local authorities.¹² By the end of the first quarter of 1999, a primary fiscal surplus at the central government of \$5.6 billion was achieved.

Monetary policy, as suggested in the model described above, played the critical role. Following the inflationary shock of the mid-January devaluation, inflation immediately increased, pushing real interest rates down. (Table 2). The central bank reacted by increasing interest rates that turned into extraordinarily high real interest rates in March. As inflationary expectations fell, nominal interest rates were allowed to decline. Yet real interest rates in April and May still remained among the highest in the world. This strategy successfully shifted the economy from a potentially explosive situation to a path of steadily declining inflation,

¹¹ But on May 24, it was down again at 1 US \$:1.72 indicating that stability still is an elusive goal.

¹² To deal with state government debt, the federal government entered into a new type of restructuring agreement. These agreements imposed conditionality on governments, requiring an increase in primary surpluses by reducing payrolls and privatizing local concerns. New legislation foresees liquidation and privatization of state banks but also allows for their recapitalization. It also imposes a ceiling on debts of state governments, forbidding state banks to buy new securities issued by local governments. The debt rescheduling agreements with the states target a decline in the ratio of the stock of net domestic debt to state revenue (net of transfers to municipalities) from an average of 200 percent to 100 percent by 2006.

allowing real interest rates to decline gradually.

The Central Bank demonstrated its commitment to restraining inflation through tight monetary policy, even as official forecasts pointed to a 4 percent contraction in GDP and unemployment was rising.²⁹ This resolve restored confidence partially and by April short-term capital was flooding back attracted by the high yields in Brazil's financial markets.

External endorsement of these measures by multilateral institutions lent credibility. In March, the government of Brazil and IMF announced that they had agreed on a revised economic program. The IMF strongly endorsed the government's commitment to keeping inflationary expectations low, protecting expenditure on social programs, and maintaining the programs of structural fiscal reform (at the national and subnational levels) on which credibility and the recovery of growth would be based. Once the fiscal measures that had been rejected in the Fall were ratified, the Central Bank could confidently count on access to the remainder of its \$41.5 billion in IMF credit. The World Bank also provided a package of \$4.5 billion in loans to support social spending and state level reforms.

Brazil's banking sector was also a factor in this recovery: many banks had anticipated the devaluation and had both positioned themselves to profit from it through currency-futures contracts and hedged by holding dollar linked government bonds. As a result, the risk of a banking sector collapse did not threaten fiscal balance, as it had in Asia and Mexico. The agility of the financial sector in assessing and acting on changes in inflation also facilitated the steady reduction in interest rates: renewed capital inflows allowed the central bank to reduce nominal interest rates six times in seven weeks without creating the impression that it was abandoning tight monetary policies.

IV. THE TRANSITION FROM CRISIS MANAGEMENT TO SUSTAINED GROWTH

By the end of May, markets were once again shaken by contagion, despite efforts by Argentina's government to slay rumors that it would be forced to abandon its eight-year old fixed exchange rate pegging the peso one-for-one against the dollar. If volatility subsides, Brazil's success in stopping a spiral of rising inflation and depreciation of the exchange rate will mean more than the recovery of a profitable stock market. Provided there is no return of financial market turbulence and excessive delays on the fiscal front, the economy should continue to expand modestly through the rest of 1999. Averting recession will have profound implications for Brazilian workers, and would make the lot of Brazil's 70 million people who live on less than \$2 a day at least no worse as a result of the central bank's gamble that pitted their livelihood against the fickle opinion of world financial markets.

Nonetheless, the program's success does not fully address the substantial reforms that have

²⁹ The official unemployment rate has risen sharply over the past two years to 8 percent. This figure excludes many people who would regard themselves as out of work, such as those who were not actively looking for a job in the one week in the month when the survey was taken. A survey by DIEESE (a union-backed research group) uses a broader measure and puts the unemployment rate at 20 percent of the workforce in greater São Paulo.

eluded Brazil for more than a decade. The operational deficit is still large due to accumulated interest obligations, and external finance remains vital to service external liabilities accumulated during the past five years. (See table 3). Should exports fail to pick up during the rest of 1999, confidence could evaporate. Thus the regime remains vulnerable to external shocks. Until now, Brazil has been inclined to take risks and build asset and liabilities positions that are sensitive to exchange rate changes. Economic recovery can provide an opportunity to reverse this by converting debt denominated in foreign currency to locally denominated debt. The regime must also avoid the temptation to target the exchange rate as a way of securing stability: one of the advantages of floating rates is that it minimizes the accumulation of foreign exchange assets and limits the government's lender of last resort commitment to maintain the domestic value of bank assets. (See Dooley, 1999).

At a deeper level, corruption scandals threaten the credibility of government at all levels. They also undermine confidence in the ability of Congress to move beyond solutions to the budget deficit that include distortionary measures such as the financial transaction tax. The overall tax burden is not small by Latin American standards, but revenues are not progressively collected and spent. The result is that productivity growth is restrained by an average level of education that is close to that in much poorer countries.

Realization of the Brazilian miracle – a resumption of sustained rapid growth – requires an investment in human capital, institution building, and the restraint of special interests that undermine economic progress. When will Brazil return to the challenge of these more enduring reforms? Without the successful containment of the *Real Crisis*, one could not even pose this question, but nor does it seem likely that new crises will be averted unless fundamental reforms are brought forward.

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Table 1: Brazil: Public Sector Deficits, 1994-1998
 As Percent of GDP
 (a - sign denotes a surplus)

	1994	1995	1996	1997	1998*
Primary Balance (A)	-5.2	-0.3	0.1	1.0	0.0
Real Interest(B)	4.1	5.3	3.7	3.4	NA
Operational Balance (A+B)	1.1	5.0	3.8	4.4	NA
Interest(D)	32.2	7.5	5.8	5.1	8.0
Public Sector Borrowing Requirements (A+D)	27.0	7.2	5.9	6.1	8.0

Note: The Public Sector Borrowing Requirements (PSBR) is equal to total revenues less total expenditures of the public sector which includes all government levels, the central bank, and public enterprises but excludes state and federal banks.

*For 1998, information on real interest payments and the operational deficit are not available. Because inflation was close to zero, real interest payments are approximately the same as nominal interest payments and the operational deficit is similar to the PSBR in 1998.

Source: Banco Central do Brasil/SEST.

Table 2: Brazil: Inflation, Nominal and Real Interest Rates
 November 1998-May 1999
 Percent per Month

	Dec-98	Jan-99	Feb-99	Mar-99	Apr-99	May-99*
Nominal Interest Rate (Overnight-Selic) (A)	2.40	2.10	2.38	3.31	2.44	1.85
Inflation Rate (IGP-DI) (B)	0.98	1.15	4.44	1.98	0.03	0
Inflation Rate (INPC) (C)	0.42	0.65	1.29	1.28	0.47	0
Real Interest Rate $((1+A)/(1+B))-1$	1.41	0.94	-1.97	1.30	2.41	1.85
Real Interest Rate $((1+A)/(1+C))-1$	1.97	1.44	1.08	2.00	1.96	1.85

* projected

Source: Fundação Getúlio Vargas.

Table 3: Brazil: External Balance
1996-1999
Billion of Dollars

	1996	1997	1998 ^E	1999 ^P
Exports (A)	48	53	51	
Imports (B)	53	61	58	
Trade Balance (A-B)	-5	-8	-7	
Current Account Balance (C)	-24	-33	-35	-
Net Capital Flows (D)	33	25	27	
Balance of Payments Surplus (C + D) (gain in reserves)	9	-8	-8	
Memo Items:				
Net Interest Payments	-9	-10	-12	-15
Foreign Direct Investment	9	16	15	18
Amortization	-14	-29	-34	-43

E- estimate

P- projection

Source: Fundação Getúlio Vargas.

FIGURE 1

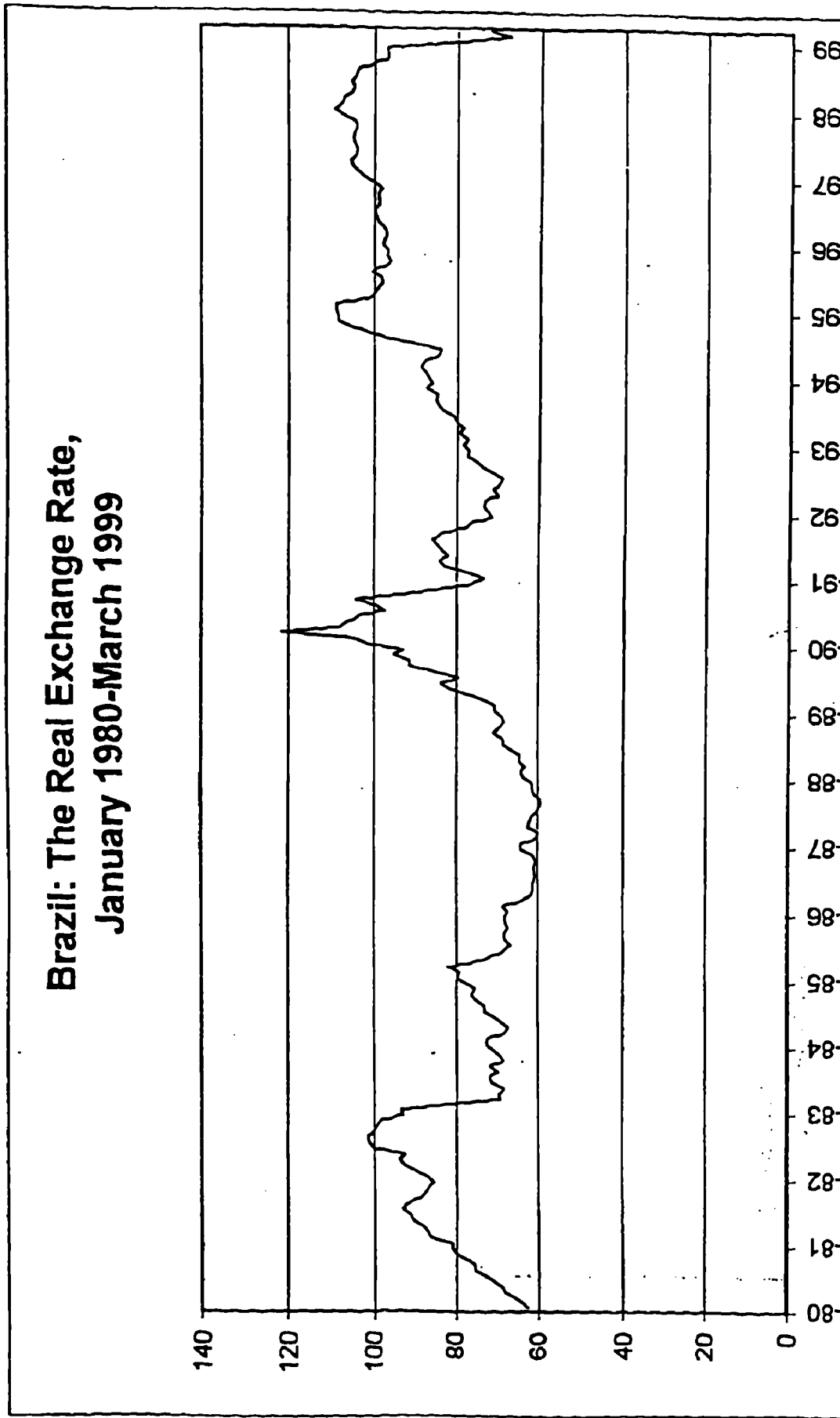


Figure 2. Brazil: Stock of Net Foreign Liabilities
 (assuming it was 0 in 1952, current US\$)

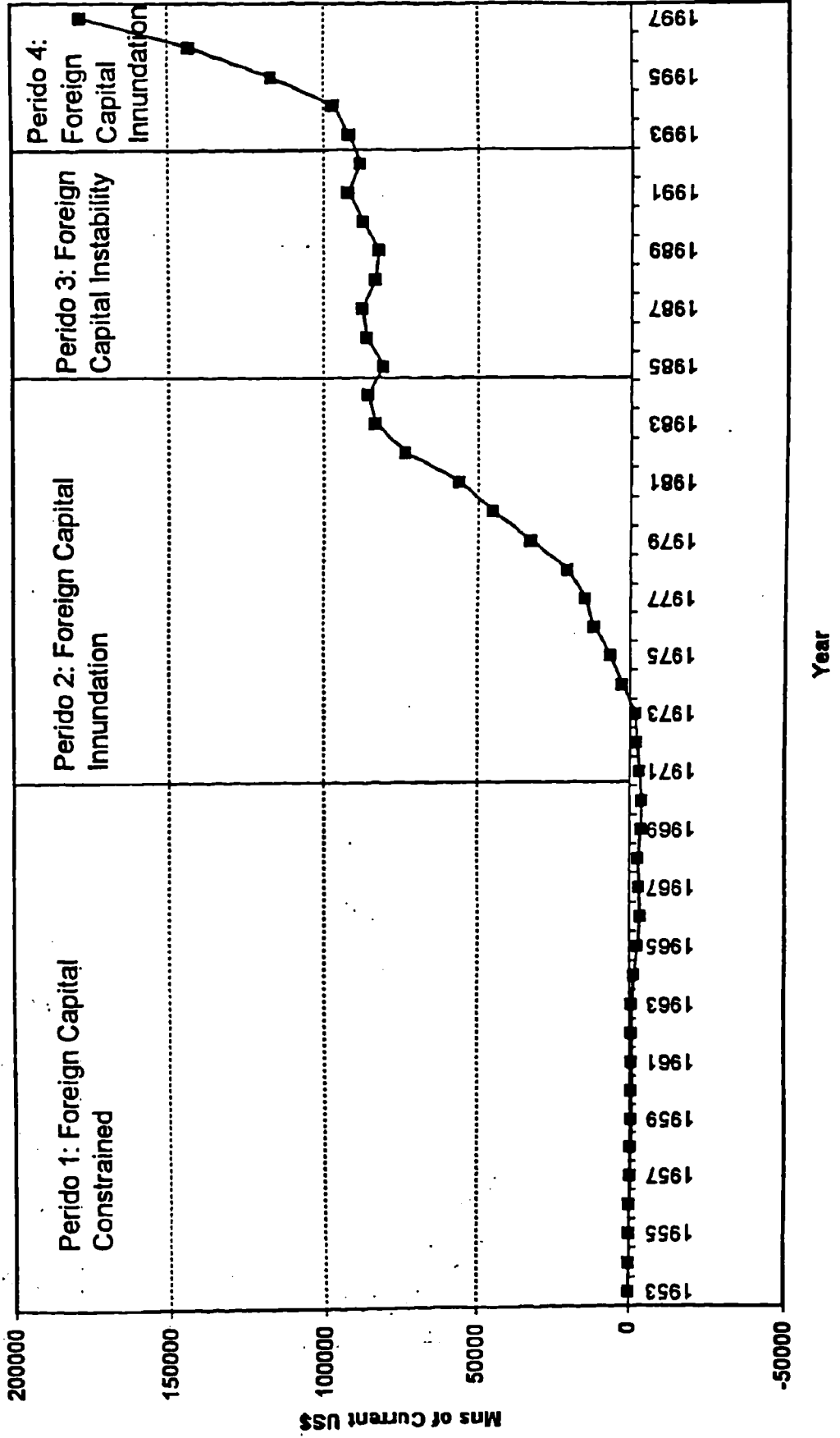
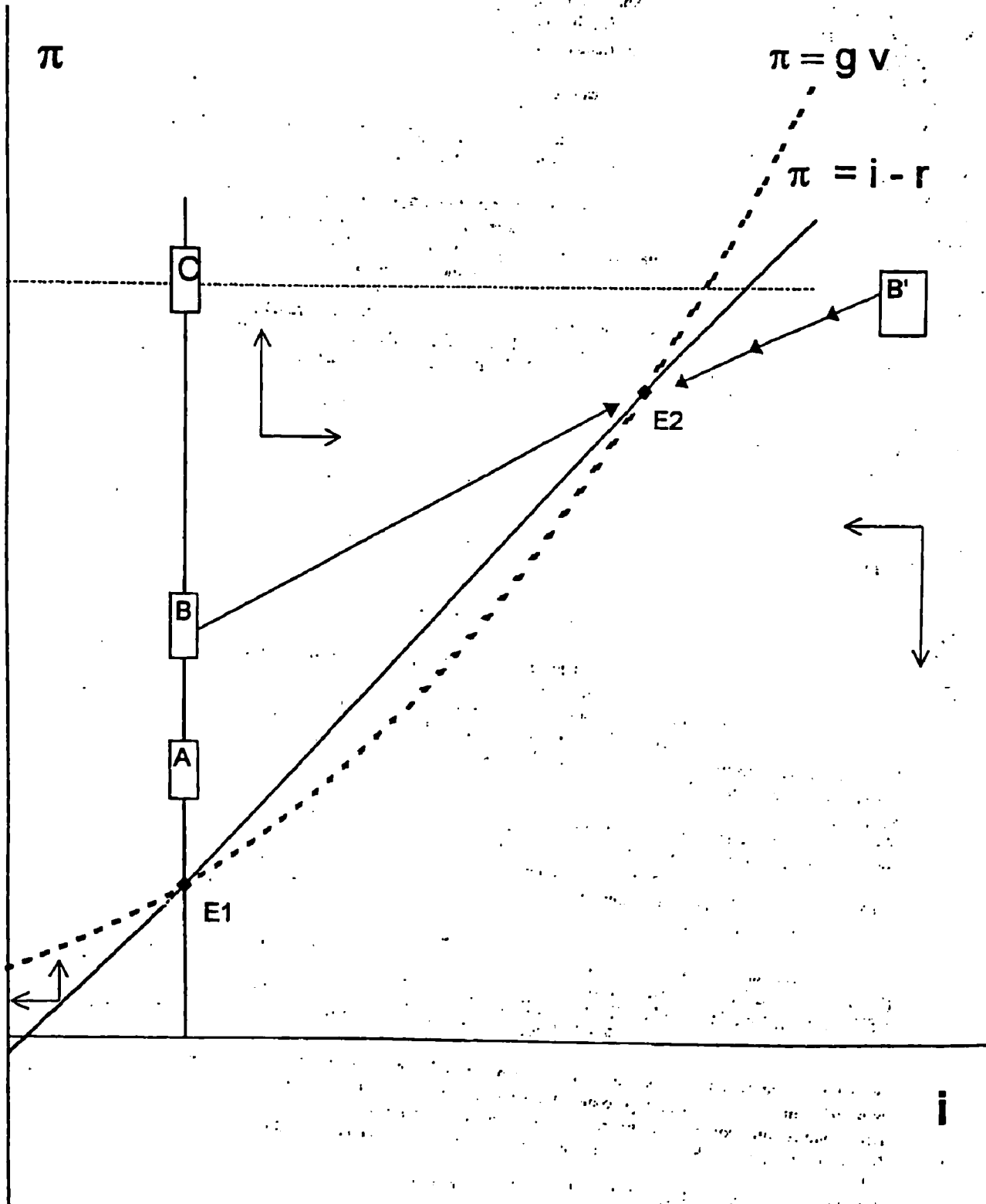


Figure 3



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