INTERNAL DISEQUILIBRIUM VERSUS EXTERNAL SHOCKS: BRAZIL'S EXPOSURE TO SPECULATIVE CURRENCY ATTACKS

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1 Introduction

There is a wide recognition that the globalisation of finance has been growing so strongly over the last two decades that international trade payments have now become only a small part of total international payments. (Krugman, Obstfelo, 1994, Cap. 22 ; Hallwood, Mac Donald, 1995). Since the early 1960s Triffin's (1964) analysis of the gold standard has suggested that the international financial system was, and still is, not neutral and the idea that systemic asymmetries are inherent to the international adjustment mechanism is also not new. (Morgenstern,1959 ; Ford, 1964 ; TRIFFIN, 1968 ; Bordo, Schwartz, 1994)

It has been pointed out by several theorists that the modern global economy has become dominated by huge sums of highly mobile capital, floating around the world (Guttmann, 1994, p.372). This requires changes on how analysts should look at the new economic reality .

Several works have analysed the recent evolution of the international capital markets and can provide an adequate background for an analysis of the main policy issues that have been raised by developing countries in general, and Latin America countries in particular, when dealing with the question of selecting an exchange-rate regime when the prevalent scenario is one of re-entry into private and liberalised international capital markets in the process of implementation of disinflation stabilisation programmes.[1] In Section 2 of this paper we examine some implications of financial globalisation for national policy autonomy and the capital inflow problem.

It is well known that world-wide movements in the capital markets have had significant impacts on the effectiveness of domestic macroeconomic policy.[2] They have been also blamed for speculative attacks and balance-of-payments crises as we will discuss in Section 3.

According to Dow:

> While access to world financial markets allows a greater capacity to finance expansion when expected nominal domestic returns are high on a world scale, it also allows capital, and thereby money, to seek higher returns elsewhere when domestic returns are expected to be low. Within a Keynesian framework, then, international money flows are a potential source not only of instability, but also of divergence between economies. [Dow,1993, p.71]

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[1] There are some valuable contributions in the following: IMF (1991) and Goldstein *et al.* (1992).

[2] See Bacha (1993, p.2-6) for a good description of how these world-wide movements of financial integration and innovation had a major impact on domestic macroeconomic effectiveness, with implications for international policy co-ordination.

The dominance of finance and the spread of financial liberalisation create difficulties for a large number of countries and, especially, for developing countries.

Dow (1993, p.177) suggests further " that there are systemic forces within modern banking systems which aggravate real economic disparities between developed and developing countries". Studart (1996) follows a similar line of reasoning and argues that if banks are the main financial intermediaries in monetary economies, which is the case with the majority of developing economies, growth, and especially rapid growth, could be accompanied by increased financial vulnerability of the banking system.

In Section 3 we also examine, briefly, the new insights provided by recent outbreaks of turbulence in several currency markets to the understanding of currency crises. In Section 4 we search for the role of financial crises and its link to bond-led speculative attacks as a benchmark to analyse the major currency crises affecting the Brazilian economy. Section 5 presents concluding remarks.

2 Implications of Financial Globalisation for National Policy Autonomy and the Capital Inflow Problem

It is interesting to observe that the internationalisation of finance reduces the independence of domestic central banks in a particular way. The debt crisis of the 1980s illustrates this feature. The banking system held liabilities denominated in foreign currency, while their assets were mainly denominated in domestic currency. Central banks then tend to lose their capacity to act as lenders of last resort. As Hallwood and MacDonald put it:

> This feature rendered local central banks almost helpless to provide liquidity of the requisite type (i.e. US dollars) in the face of rising international interest rates and/or falling local currency exchange rates against the US dollar. [Hallwood, MacDonald, 1995, p.5]

It has also become clear that in this situation domestic banking systems can become highly vulnerable to foreign monetary policies.

The European exchange market crisis of 1992-93[3] focused theorists' and policymakers' attention on the fact that the volume of internationally mobile private capital, and the speed at which it moved from currency to currency and between countries had increased dramatically over the past recent decades. In theory, international capital mobility can be beneficial leading to welfare gains for the world as a whole. But, it has been long recognised that a high degree of international capital mobility forces countries that have abolished capital controls and adopted fixed exchange-rate regimes to relinquish national autonomy over their monetary policies.[4]

As a matter of fact, a widely mentioned 'impossibility theorem' states that countries cannot simultaneously have free capital mobility, fixed exchange rates, and independent monetary policy. According to Isard:

> The theorem exaggerates the impossibilities to the extent that claims on different countries are imperfect substitutes, or that nominal price stickiness provides some scope for monetary independence in the presence of fixed exchange rates and perfect capital mobility. It also ignores the fact that fluctuation margins around fixed exchange rate parities provide scope for a limited degree of monetary independence.[Isard, 1995, p.206]

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[3] For a discussion of the factors that led to the 1922-93 episode of strong pressures on european exchange rates see Isard (1995, p.208-212). For discussions of exchange-rate arrangements that followed the crisis see Eichengreen (1993, 1994), and DeGrauwe (1992), for example.

[4] This aspect has long been perceived and it has even been incorporated in the conventional discussion of the Mundell-Fleming framework that emerged during the 1960s.

In the European context, for instance, the solution suggested for the above inconsistency was the creation of a monetary union.

Developing countries, as well, have experienced huge shifts in the volume of capital flows during the past two decades. These inflows put substantial pressures on exchange rates nominal and real. The rapid build-up of external debt by developing countries during the 1970s and early 1980s, and the widespread debt-servicing difficulties encountered after mid-1982, have been widely discussed, historically and analytically. In the early 1990s, almost a decade after the unavailability of capital from abroad, a U-turn restored the flows of capital from industrial countries to developing countries. Capital inflows to Latin American countries quadrupled from an average annual rate below US$ 11 billion during 1985-89 to more than US$ 60 billion in 1992-94. The inflows were not restricted to Latin America. Net capital inflows to Asia, for example, rose from an average of less than US$20 billion per year during 1985-89 to more than US$50 billion per year in 1992-94 (See Isard, 1995, p.223 drawing on data published by IMF, World Economic Outlook data bank).

Such a large volume of international volatile capital inflows posed a problem for economic policy-making in developing countries, as discussed by Calvo *et al.* (1993), and Cardoso (1996), for instance. At the same time, this phenomenon has raised scepticism about the ability of mainstream economists to explain exchange-rate determination and behaviour (Harvey, 1996).

The Mexican crisis of December 1994 and its effects on other countries and currencies is a good illustration of the so-called 'capital inflow problem' .

The section below focuses on the response of foreign capital flows to disinflation stabilisation programmes implemented by a set of emerging economies.

3 Reflections on the Response of Foreign Capital Flows to Disinflation Stabilisation Programmes

3.1 Capital inflows and Domestic Policy Issues

The hyperinflation situation prevailing in several emerging economies and, particularly, in Latin American countries in the late 1970's and in the 1980's has led to a variety of disinflation stabilisation experiments. The successive failures of most of these experiments has led some of these countries to implement alternative types of the so-called exchange-rate-based stabilisation programmes (ERBSP). The most recent experience is Brazil's (July 1994) attempt, the case study that will be examined in this paper. The argument was that stabilisation programmes based on the exchange rate exerting the role of a nominal anchor would act directly on inflationary expectations, which were considered a key determinant of short-run inflation, thus increasing the chances of lowering inflation at no significant real cost.

There are at least three common aspects to all the ERBSP recent experiments[5] :

- The first of these aspects is, of course, the fact of using the exchange rate as an anchor. Regardless of having been used in the past, in most early experiences, in countries adopting an exchange-rate anchor the initial conditions were characterised by: fundamental indexation, an accommodative monetary policy, and a crawling peg exchange-rate policy - with the currency periodically devalued according to, for example, the purchasing power parity principle (PPP). In the new experiments, the adoption of predetermined or preannounced exchange-rate anchors represents a fun-

[5] This summary about ERBSP draws heavily on Silva and Torrance (1998) and Agénor and Montiel (1996).

damental change in the exchange-rate regime. Its success becomes conditional on the credibility of the policy shift.

- The second aspect is related to the fact that by the late 1980s a different strand of analysis stressed the disinflation aspect of the programmes, rather than short-run output stabilisation, as a foundation for the choice between monetary and exchange rate targeting. (As a matter of fact Chile had decided to follow this path since the 1970s.)
- The third aspect is that ERBSP have been implemented in a scenario , the late 1980s or the early 1990s, clearly characterised by enormous transformations in the global economy. The globalisation of finance proceeding more rapidly, and being more extensive, than the globalisation of trade (Kregel, 1996, p.3). This has created additional problems for stabilisation policies and has disrupted stabilisation efforts. As Edwards (1996) suggests: these stabilisation programmes when combined with large capital inflows intermediated by weak banking systems, may generate situations of exchange-rate overvaluation, vulnerable financial sectors. and eventually the collapse of the currency (KREGEL, 1996, p.176).[6]

Indeed, in emerging economies engaged in disinflation exchange-rate-based programmes, macroeconomic problems associated with volatile capital inflows include: loss"of"domestic monetary control, overvaluation of the exchange rate, and increased instability. A serious aspect induced by short-run capital inflows followed by real appreciation of the exchange rate is that this situation, obviously, runs contrary to the long-run goals of social reformers. As long as the commitment to an exchange-rate anchor is held, it will encourage investment in domestic financial assets with high exchange-rate-adjusted profits. Nevertheless, once markets start doubting the anchor, the foreign-capital inflows tend quickly to reverse themselves. Such volatility increases countries' vulnerability to credibility problems and to resident capital flight.

Another source of concern is the implication of evidence showing that heavy inflows of foreign capital into emerging markets in the 1990s was motivated mostly by relatively low interest rates in industrialised nations (especially by the US's falling interest rate, in the case of Latin American countries), rather than by confidence in the stabilisation programmes undertaken by the developing countries and its achievement in the direction of correcting its 'fundamentals'. Calvo *et al.* (1993) showed that in the last two decades the foreign capital flows to developing countries were not restricted to countries with good reform records. It follows that, if capital inflows depend more on external factors than on 'correct 'fundamentals'' they may not be sustainable, and could outflow suddenly, forcing the recipient countries to incur costly adjustment.

This situation is aggravated by the relatively high domestic interest rates, embodied in ERBSP. High domestic interest rates induce banks to incur open foreign-exchange positions by financing local-currency lending with foreign-currency borrowing. Even when rules limit their foreign-currency positions, banks still become indirectly exposed to the risk of devaluation. As Cardoso (1996) states:

> When the use of the exchange rate as a nominal anchor leads to relatively high domestic interest rates, combined with little immediate prospect of devaluation, enterprises are encouraged to take up foreign currency-denominated loans. In cases where the borrowers' revenues are mostly denominated in the domestic currency, the quality of foreign currency loans can also deteriorate in the event of a domestic currency depreciation.[Cardoso, 1996, p.12]

[6] The experience with exchange-rate-based disinflation stabilisation programmes has not been restricted to Latin America and/or developing countries with chronic high inflation. Detragiache and Hamann (1997) review the experiences with ERBSP of Italy, Ireland, Portugal and Greece during the period 1980/96 and suggest that the main results are not similar to the ones obtained by emerging economies fighting chronic high inflation processes.

Capital inflows can be problematic

Concern has been expressed in academic and policy circles about the loss of macroeconomic policy autonomy by financial globalisation and the unrestricted influx of short-term capital inflows. The concern is correct as far as monetary policy is involved, but is not necessarily true with respect to exchange-rate policy: short-term inflows have allowed, in the initial stages of ERBPS, the prolongation of an overvaluation policy designed to bring domestic inflation down. This can give governments extra time to implement 'structural adjustments' that may be necessary to make the disinflation policy succeed. In other words: the argument is that a policy of inflation control through monetary stringency is made more difficult, but one that uses the exchange-rate anchor is made to last longer provided that domestic interest rates are maintained at an attractive level for foreign capital to flow in. However, it has been claimed that the costs in terms of fiscal discipline may be high. Financial openness may fail to impose adequate fiscal discipline on governments , or even on the domestic private sector, given the apparent ease with which fiscal and private sector deficits can be financed in international financial markets. "Hence, from a domestic point of view, perhaps a case could be made that financial openness brings in excessive domestic macroeconomic policy autonomy!" (Bacha, 1993, p.10).[7]

An obvious result of opening an economy is to extend the range of goods, services and assets available to domestic residents, and the range of potential buyers of domestic goods , services and assets. However, openness may increase the destabilising power of financial markets.

According to Dow (1993) the destabilising nature depends on the type of economy under consideration:

> Whether exchange rates are more or less flexible determines primarily the limitation put on the supply to finance during an expansion; the more fixed are exchange rates, the greater the scope for capital inflows to continue to finance an expansion. With fixed rates, the responsiveness of supply to changes in expected returns increases; with floating exchange rates , it is demand which becomes more elastic. Since either of these increase the tendency towards financial ease in an expansion and tightness in a contraction, the general statement may be made that economic openness increases the scope of instability. [Dow, 1993,p.70]

She argues, nevertheless, that "instability in the form of steady expansion is not at all undesirable. Self-sufficient economies, relatively immune from external demand shocks, and particularly those with a history of higher-than-average returns, can enjoy more sustained expansions as a result of external sources of finance" (Ibid.op.cit.p.70.) However, for export-dependent economies, or in economies that are trying to stabilise, unstable international financial markets can be problematic.

When export-led expansions are associated with capital inflows, for instance, exchange-rate overvaluation leads imports to grow relative to exports and the final result may well be the failure of the programme.

In economies that are experiencing ERBSP, such as some Latin American countries (Argentina, Brazil, Mexico and Chile, for instance) the desire to counteract the pressures of exchange-rate overvaluation in situations of large capital inflows, and attempts to limit inflows that are likely to be reversed, have induced the monetary authorities to engage in interventionist policies. These intervention activities have taken the form of direct intervention, through controls and taxes, and restrictive monetary policy in the form of sterilisation activities.

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[7] Calvo, Leiderman and Reinhart (1993) provide an excellent summary on this issue, adding to the discussion other domestic policy concerns raised by short-term capital inflows. Cardoso (1996) deals specifically with the Brazilian case.

Strong cases for policy intervention

Several aspects related to capital inflows may lead to particular circumstances where intervention is needed or is unavoidable:

- Since capital inflows are typically associated with real exchange-rate appreciation and increased exchange-rate volatility, the export sector of the domestic economies have a tendency to be adversely affected. Changes in exports may have economy-wide effects generally not internalised by the private sector, providing therefore a case for policy intervention.
- Massive capital inflows are generally improperly intermediated and may lead to a misallocation of resources. Inappropriate intermediation could be the result of speculative bubbles, improperly-priced explicit or implicit government insurance, lack of policy credibility, and market failures (externalities, economies of scale, nominal wage/price rigidity). In practice, governments may be unable to make a credible commitment not to intervene.
- 'Hot money' inflows could be reversed on short notice, leading to domestic financial crises.

Space limits do not permit a broader discussion of the whole range of policy intervention measures that governments should, could or might use in order to meet the problems created by short-term capital inflows. But we intend to focus on two aspects, both related to central bank intervention policies much in use in Latin America countries facing adjustment programmes: central bank's sterilised and nonsterilised interventions.

Central bank sterilised intervention has been one of the most widely used policy response to capital inflows in Latin America. Calvo *et al.*(1992 a ,b) point out the main difficulties with this policy when they argue that sterilisation leads to an increase in the differential between the interest rate on domestic government debt and international reserves, thus creating a quasi-fiscal deficit. Second, by preventing a sharp fall in the domestic relative to the foreign interest rate, sterilisation tends to perpetuate the capital inflows exacerbating any problem caused by the inflow itself. Consequently, serious doubts can be cast on the desirability of sterilised intervention in the present episodes in Latin America, when countries are still attempting to solve their domestic and international debt difficulties, and where their public sectors budgets require substantial reforms. The Mexican stabilisation experiment (not examined here) can be used as an illustration of how unrestrained sterilisation can very well lead to a disaster.

Central bank nonsterilised intervention in contrast to the previous one, is a case in which the government's monetary authority purchases the foreign currency brought in by the capital inflows in exchange for the domestic currency (or sell foreign exchange in the opposite situation). The policy of purchasing foreign currency implies an expansion in the money supply. On one hand, this avoids the nominal exchange-rate appreciation, and is likely to reduce the interest rate narrowing the differential between the domestic and foreign rates . On the other hand, it contributes to additional inflationary pressures and thus tends to appreciate the real exchange rate.

Re-evaluating the choice of exchange-rate regimes

It is quite acceptable that when an economy is subject to substantial and stable capital flows these considerations would give support to a floating exchange-rate regime. It is important to point out, however, that regardless of the conventional wisdom of thinking that the period that followed 1973 was one of floating-exchange rates, what has really happened was that the majority of currencies have remained subject to some sort of direct control. But, with the vast increase in the international mobility of capital since the early 1970s, it has become more difficult everywhere to maintain a managed regime.

Nevertheless, when dealing with the case of countries subject to disinflation stabilisation programmes the reversible and unpredictable character of capital flows may result in processes of undesirable volatility of nominal (or even real) exchange rates leading to the failure of the programmes itself.

Dornbusch, in his comments to Bordo's (1993) paper states:

> a central determination of the direction of capital flows is the interest differential adjusted for exchange rate expectations. Unfortunately, those expectations have no tight link to reality.... Of course , if expectations that are out of touch with market 'fundamentals' come to dominate the level of rates, economists and policy makers alike face a conundrum. We can no longer say that markets know best.[Dornbusch comments in: Bordo, 1993, p.103]

Therefore, the question about choosing between fixed *versus* flexible exchange rates largely becomes deciding which system avoids problems with the implementation of the structural changes that developing countries' economies have to go through .[8] Exchange-rate overvaluation cannot be sustained as a long-run target.

Despite the erratic fluctuations that have characterised floating rates, it has until recently been the ruling orthodoxy that markets could determine exchange rates better than governments.

It is also true that pegged-exchange-rate systems face important problems that have led many economists to doubt the long-run sustainability of these systems. One of these problems has to do exactly with the credibility of the fixed exchange rates. A second one concerns the way the system-wide monetary policy is determined.[9]

In the face of these problems Latin American policymakers, in major countries, have been considering as a more attractive alternative the adoption of ERBSP, some of these taking the form of target- band systems. When wide, they argue, you can take advantage of both: short-term flexibility and long-term predictability of exchange-rate fluctuations.

The European Monetary System is an example of a system of bands or target zones, and has seen several periodic adjustment of rates. These adjustment, while often regarded as a failure of the system, may be also seen as providing a necessary degree of flexibility.

The role of foreign reserves

Crockett (1994) deals with a very interesting issue in his analysis about what happened between 1965 and 1992 to bring about a fundamental change of view concerning the role of reserves in the international financial system. As he puts it:

> With the advent of flexible exchange rates, however, an alternative adjustment mechanism became available (at least potentially) which did not require the holding of reserves. At the same time the growth of international markets meant that shifts in the current account no longer had such a direct impact on official reserves. Relatively minor changes in interest differentials could induce short-term capital flows that would protect the reserves against the consequences of movements in the current account position. [Crockett, 1994, p.88]

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[8] We are not arguing that the theoretical problems involved when choosing among exchange-rate regimes should be avoided. We are aware that the models dealing with exchange-rate regimes embody assumptions about short and long-run equilibrium of variables, money neutrality , purchasing power parity and other extremely controversial issues that divide economists and have been subject to so much academic dispute.

[9] This is the theme of De Grauwe (1992, Chapter 5).

Crockett (1994) and Dow (1993) seem to agree upon the idea that the important change comes in the side of the reserve supply arrangements. The growth of international capital markets has meant that reserve holding countries face a very elastic supply schedule with the growth and growing size of the Eurocurrency banking market. Monetary authorities can operate in these markets as any other market participant. It should be added to this analysis the fact that several currencies that were largely local or regional in the last decade have now become fully international assets (yens, marks, etc.). Another feature of the system is that most currency trading now has as principal players in the market the private sector and not central banks.

However the question of liquidity and reserves, as a macroeconomic instrument is particularly relevant when the situation of the developing countries is considered. The entry to the global financial market of countries that have been on the periphery of the international system (including Latin America, Russia, Eastern Europe, etc..) has not been a simple issue.

Dow (1993) critically reviews the conventional finance and development literatures, and summarises some of its main conclusions. She argues that:

most developing countries lack adequate internal capital markets and are driven therefore to international banks not only for initial financing but also for long -term finance. It is not a shortage of saving which is the problem, but rather the lack of mechanism to turn saving into appropriate funding instruments... the investment should generate the saving to repay the debt. But repayment is made more difficult by virtue of the fact that it must be in the form of foreign exchange.[Dow,1993, p.163]

Along with Crockett (1994), Dow also suggests that the most important fact not explicitly addressed by the traditional literature is the endogeneity of credit creation within modern banking systems. Dow's main argument in the above mentioned paper is the idea that there is no longer any need for prior saving to finance investment when banks create credit to finance investment which generates the savings to fund the credit.[10] Nevertheless, when dealing with exchange-rate-based programmes the accumulation of reserves becomes a central issue.

Actually the question of pegging the exchange rate or letting it float looked at from the perspective of the developing countries with weak currencies remains still of crucial importance in the second half of the 1990s. The solution of borrowing credibility from other countries' monies by means of pegging the exchange rate, and delaying or not attempting to correct fundamental macroeconomic variables, can be a very artificial solution that might not last long, and is likely to end in a 'Mexican' type of breakdown.

3.2 Speculative Currency Attacks

Since we have been dealing with this topic albeit not explicitly in the sections presented before, in this subsection we will just summarise the main points that add to the discussion of the increased globalisation of finance and the risks and implications of this phenomenon for national policy autonomy, and for the instability of countries in the course of the implementation of disinflation stabilisation programmes. The analysis of circumstances in which a balance-of payments problem (understood as a situation in which a country is gradually losing reserves) becomes a balance-of-payments crisis (a situation in which speculators attack the currency) is strongly associated with Krugman since his pioneering work of 1979. In his own words:

[10] There is today a vast literature on the endogeneity of credit supply. Chick and Dow (1994) and several Post Keynesian economists have written several articles related to this topic. We will not discuss it with more detail here since it is not our theme. However it is an important issue to be addressed when analysing the foreign debt crisis faced by developing countries.

> I have shown that the balance-of-payments crises are a natural outcome of maximizing behavior by investors. When the government's unwillingness to use reserves to defend the exchange rate is uncertain, there can be a series of crises in which capital flows out of the country, then returns, before the issue was finally resolved.[Krugman, 1993, p.75][11]

The canonical crisis model as developed by Krugman (1979) and Flood and Garber (1984) explains currency crises

> as the result of a fundamental inconsistency between domestic policies – typically the persistence of money-financed budget deficits – and the attempt to maintain a fixed exchange rate. This inconsistency can be temporarily papered over if the central bank has sufficiently large reserves, but when these reserves become inadequate speculators force the issue with a wave of selling. [Krugman, 1997, p.3]

The mechanics of the model can be described as follows: the government has a deficit, owns a stock of reserves and pegs the exchange rate. The financing of the debt through monetary base creation leads to a steady growth of the shadow price of the exchange rate. Once the shadow price becomes higher than the price defended by the government, speculators will run on the stock of foreign reserves. The government will not be able to sustain the attack, and the system will collapse.

The main limitation of this model is the simplicity of the government policy. It is unlikely that the government will stick to this policy once the reserves start to run out. On the other hand, the recent crises in Latin America, specially the Mexican 1994-95 do not validate some of the main implications of this model. The rate of interest, for instance, should rise continuously before the attack and not suddenly shoot up, as actually happened.

A second generation of currency crisis models were developed mixing the canonical model with Barro and Gordon (1983) cost benefit game approach. The main element of these models is a trade off between inflation and unemployment or a trade off between inflation and public debt. In this kind of model PPP links the exchange rate to prices and inflation. The game ultimately leads to a trade off between fixing the exchange rate (less inflation, more unemployment and larger debt burden, for instance) and devaluing the exchange rate (more inflation, less unemployment and smaller debt burden)[12]. The final equilibrium depends on expectation of the agents, the nature of the shocks and the initial conditions. The expectations that the government will abandon the fixed exchange rate may increase the cost of defending it and may even precipitate the crisis itself.

One important implication of these models is the possibility of multiple equilibria and with it the possibility of self-fulfilling prophecies.

Contrary to Krugman's standard model in which the speculative attack results from disequilibrium in the 'fundamentals', Obstfeldt (1995, 1996) , Velasco (1996) among others advocate the possibility of currency crisis being the result of self-fulfilling prophecies, even when the 'fundamentals' are correct.

In addition to these new generation models, we should mention the important contributions of Calvo and Mendoza (1996a,b) and Krugman (1998). Despite the fact that the former develops his model to understand the Mexican 1994 collapse, and the latter analyses the recent Asian crisis, they have much in common.

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[11] This citation appears in Krugman (1993). However, it is a copy of the original work initially published in the *Journal of Money, Credit, and Banking* (1979).

[12] Debt burden denominated in domestic currency might lead governments to devaluate in order to reduce it.

Calvo and Mendoza (1996a,b), suggest a model in which currency crises are associated with financial crises. As the argument goes, greater foreign capital inflows increase private bank liquidity that becomes lending. Given the expected guarantee of the deposits by the monetary authorities, depositors do not press for any control on banking lending activities. On the other hand, bankers buy risky assets. As a result, the activities of the banking system becomes fragile. Anticipation of devaluation leads to a shift from domestic currency to foreign currency. Banks will not be able to honour the depositors and will be rescued by the Central Bank as lender of last resort[13]. The increase of the monetary base validates the bank run, and the economy will lose reserves. According to Calvo and Mendoza the currency crisis becomes a crisis of stock - too high a level of liquid assets in relation to the stock of reserves.

An alternative story is told by Krugman (1998). His interpretation is basically the same as Calvo and Mendoza's (1996a,b) with the difference that in this case he insists that the currency crisis is only one aspect of the financial crisis. As his argument goes, financial deregulation leads to boom cycle. Bankers are speculators that have nothing to lose but a lot to gain from riskier portfolios. The risky behaviour of the bankers is explained by moral hazard given that the monetary authorities guarantee the depositors. This is the same mechanism alleged by Calvo and Mendoza. The main difference is that in Krugman's case the emphasis is placed on the investment cycle. It is interesting to note that the rate of return taken into account by the financial intermediaries - pangloss rate of return according to Krugman (1998) - is higher than the expected rate of return. The explanation comes from the fact that what matters for the investors are the positive payoffs, given that they perceive a guarantee by the government on a minimum pay-off. Moral hazard that favours risky behaviour of the banks leads to over-investment.

Our understanding is that these stories embody complementary arguments. Krugman's scenario is sufficient to produce a financial crisis. Calvo and Mendonza's, on the other hand, emphasise the complementarity between currency crisis and financial crisis.

To explain the burst of capital outflow that characterises the crises Calvo (1995) adds to his story some kind of externality that he calls 'herding behaviour'. His proposition is that global investors disregard the 'fundamentals' whose information is costly and display 'herd behaviour'. Investors balance diversification and costly information gathering. The marginal benefits of gathering country specific information diminishes with geographic diversification and investment becomes highly responsive to very small changes in perceived expected returns. Calvo concludes:

> diversification encourages ignorance, and in this environment even frivolous rumours may trigger massive capital flows that are seemingly inconsistent with a country's 'fundamentals'...volatility is an inescapable feature of the global economy that comes along with its advantages for risk-diversification, transfers of technology and enhanced efficiency in resource allocation.[Calvo, 1995, p.174]

Again Mexico's recent crisis (December 1994) is particularly relevant to illustrate this point. The challenge is to reduce the risks of this excess mobility of capital without sacrificing its advantages. In this sense, several suggestions are made towards lengthening the time profile of capital inflows. Tobin's tax should be mentioned in this respect. On the other hand, a strengthening of the financial structure of the economy may reduce its vulnerability to foreign-capital mobility.

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[13] It is already a stylised fact that central banks are very sensitive to bankruptcies of financial institutions. The reason is that they fear that, as a consequence, the domestic payment system may suffer major damage. Frequently, these worries may lead to banking-system bailouts with the adoption of measures such as: reduction of minimum reserve requirements, domestic credit expansion, new loans to the banking system.

4 Major characteristics of recent currency crises: the Brazilian experiments

The *Real Plan* was officially introduced on 1st July 1994. The principal element of the programme was an exchange-rate nominal anchor. According to the Law, (Law number 9.069 approved in 29.06.1994) that created the *Real* (a new monetary unit), monetary policy was designed to keep the stock of cash currency in line with the US dollar reserves.

Internal disequilibrium

The public deficit in Brazil has been systematic as can be seen by an examination of the data displayed in Table 1, below. The situation is not very bad, in terms of comparative international standards, if we look at the relation of debt/GDP. It can, nevertheless, get worse very easily depending on the behaviour of interest rates, and on the economy's rate of growth.

Table 1: Brazil: Public Budget
(1986-1997) - percent of GDP

	Primary Budget		Operational Budget		Public Debt
	Total	Federal	Total	Federal	
1990	2.4	1.6	1.6	2.8	
1991	3.0	0.8	1.5	0.3	43.5
1992	2.3	1.3	-2.2	-0.8	42.8
1993	2.6	1.4	0.3	0	36.4
1994	4.3	3.0	0.5	1.6	28.5
1995	0.3	0.6	-4.8	-1.6	31.7
1996	-0.7	0.4	-3.9	-1.7	35.1
1997			-3.3	-1.2	41.5

Source: Dornbusch (1997), using data from Central Bank, Ministry of Finance, and Garantia.

• *Interest Rates*

The major component of the fiscal deficit has been debt servicing.

Since the beginning of the *Real Plan*, the government implemented restrictive monetary measures centred on: a) a high interest rate policy, and b) high reserves requirement imposed upon the banking system which is designed, according to the government point of view, to stimulate savings and to restrain consumer credit.[14] Despite the official explanation, the direct relationship between interest rates and an expectation of devaluation is well known.

External disequilibrium

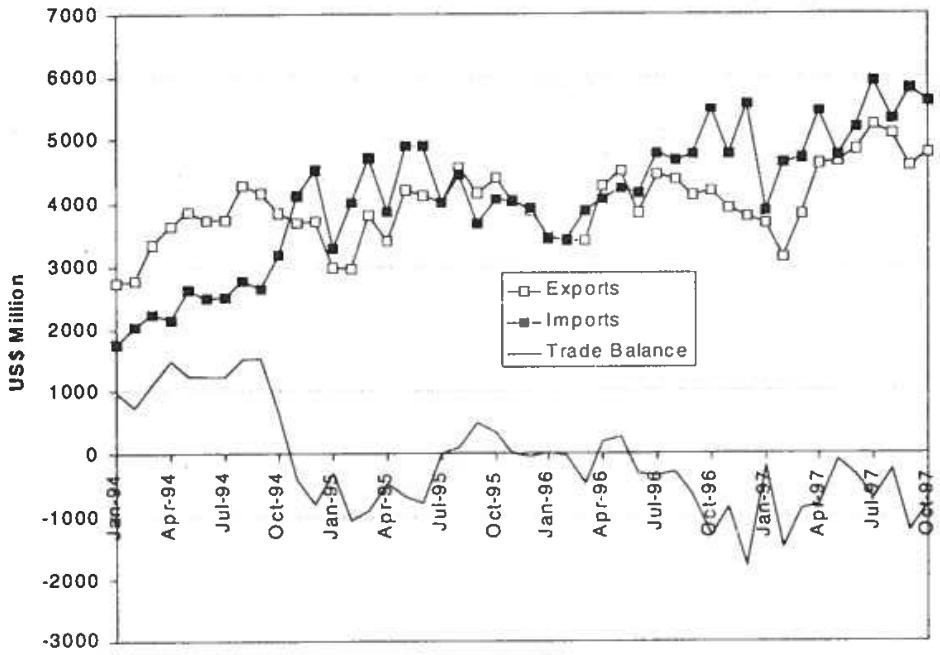
• *Overvaluation*

The exchange rate suffered a substantial overvaluation during the implementation of the programme. The alternative measures for the real exchange rate suggest an overvaluation around 40% in the period January 1994 – January 1997. [Cardoso (1996), Silva and Andrade (1996), Dornbusch (1997)]

Cardoso (1996) presents a broad range of real exchange-rate measures that confirms, in some cases, 40 percent overvaluation.

This has led to trade balance deficits that have oscillated in size since November 1994 (Figure 1).

Figure 1
Brazil: Monthly Trade Balance
1994-1997)



Source: Authors' elaboration from data published in *Boletim do Banco Central do Brasil*, several issues.

There is a relationship between internal and external disequilibria (twin deficits) however, and the trade balance reflects partly the lack of public and private savings.

Financial fragility: is there a bond - led speculative attack?

On both interpretations, Calvo and Mendoza (1996) and Krugman (1998), the presumption that the monetary authorities will rescue the financial system if necessary leads almost inevitably to a growing fragility of the system.

The Brazilian private banking system, however, seems not to fit this interpretation. One of the reasons for this is the low degree of indebtedness inherited by the *Real*. The second reason is the reform that the domestic banking system went through when the PROER[14] was implemented. Following the stabilisation of the value of the monetary unit several banks started to experience severe difficulties. Not only did tight credit lead

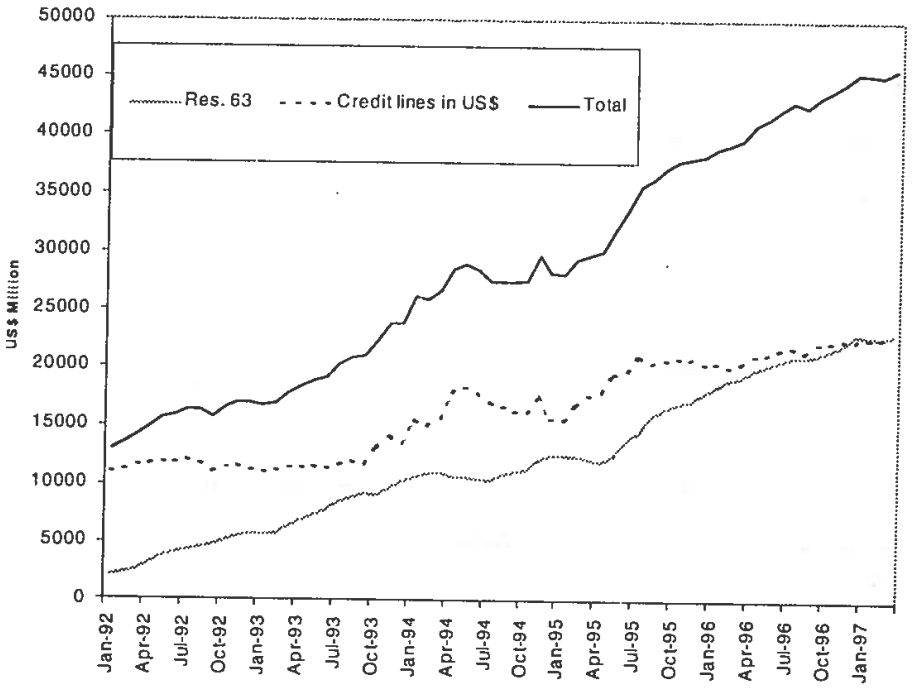
[14] To reduce the effect of the crisis the Central Bank developed three kinds of instruments: Insurance of deposits, PROER and special loans. The most important of them all was undoubtedly the PROER – Programa de Estimulo a Reestruturação e ao Fortalecimento do Sistema Financeiro Nacional. The main objectives were to promote restructuring of the institutions that did not exhibit a healthy financial condition.

to credit default, but also their easily earned endowment incomes (bank floating incomes) vanished as inflation fell sharply. An analysis of the private banks balance sheets shows, however, a conservative portfolio composition. The ratio of private sector loans to total assets presents a slight decline of 65 percent from the middle of 1996 to 60 percent in 1997, while the ratio of time deposits fluctuates around 50 percent. [15]

We should point out, however, that a major concern is the linkage between capital inflows and private banks. The ratio of foreign liabilities to total assets reaches about 16 percent in the period 1996 -1997. Part of these liabilities are hedged against exchange rate devaluation by foreign assets that average about 6 percent in the period. The degree of indebtedness of the private banks in foreign currencies makes them more or less vulnerable to currency crisis.

The behaviour of the foreign liabilities for the whole banking system is displayed below (Figure 2). As it can be seen, it represents around 80 percent of total foreign reserves. The extent to which these liabilities are hedged against exchange rate devaluation is an important question.

Figure 2
Brazil: Foreign Indebtedness of the Banking System
(Jan 92- Jan 97)



Source: Central Bank data base [16].

The same cannot be said of the public banking system. As active players of the inflation game, most of the state banks presented very bad management. Some of the state banks came to be privatised during the period, and some of them are being bought by foreign financial groups.

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[15] This analysis is based on the data presented in Boletim do Banco Central, several numbers: 1996 - 1997.

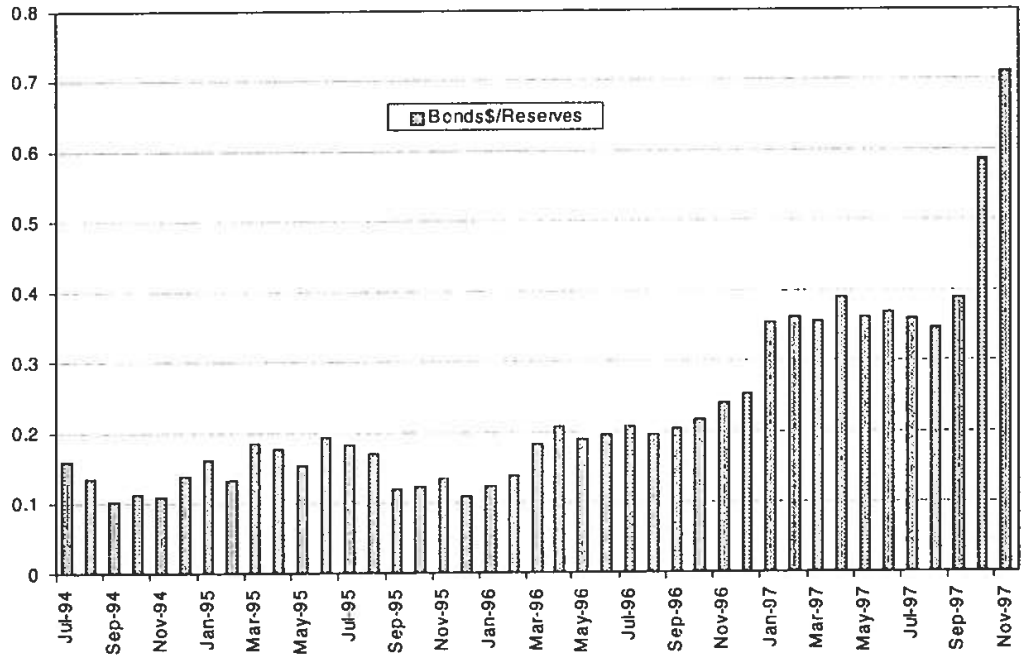
[16] Resolution n.0 63 refers to bank lending operations between foreign financial and non financial institutions and domestic investors intermediated by the banking system.

In addition to that, and even more important is the state of the public financial system that incorporates the stock of short and middle-run public bonds. The growing fiscal and public debt has been responsible for a sizeable expansion of the stock of bonds. The bonds' composition in terms of currency denomination, and the time profile reveals the degree of credibility of these aggregates.

According to the data base published by the Secretariat of Finance of the Ministry of Finance, the time profile of the bonds shows a steady increase from 1996 to 1997: from an average of 2.27 months in relation to the stock of bonds in January 1996 it rose to 8.18 months in September 1997, declining to 7.5 in December of the same year. Except for a slight decline during the start of the Asian Crisis the profile of the bonds suggests an enhancement of the health of the public sector.

The same cannot be said if we take into account the growing dollar indexation of the bonds. The ratio of dollar denominated bonds to total public debt increased from around 6 percent in 1994 to 15 percent in December 1997. On the other hand, the relation of dollar denominated bonds to the total foreign reserves rose from less than 20 percent, in July 1994, to around 70 percent in November 1997 (Figure 3).

Figure 3
Brazil: Proportion of the Value of Public Bonds
Denominated in US Dollars to the Value of Foreign Reserves
(July 1994 – Nov19 97)



Source: computations by the authors using *Banco Central do Brasil* data base.

One additional element worth observing is the nature of the monetary policy based on sterilisation policies. The capital inflow corresponds to a reduction of domestic credit almost of the same value. In fact, there is a stable relationship between domestic credit and foreign reserves. Sterilisation policies are responsible for a quasi deficit keeping a significant difference between the domestic and foreign interest rates.

• *Sterilisation policy*

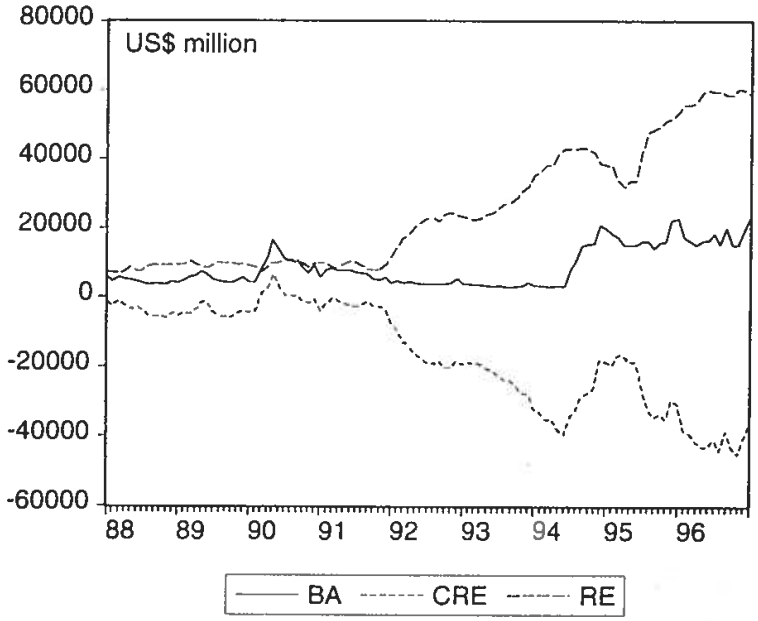
It is interesting to note that the monetary base, and most of the monetary aggregates did not follow the foreign reserves pattern during the period being examined (Figure 4). In particular it should be noticed that the monetary base was kept almost

constant during the critical period between January 1995 and April 1995.

Analysing the factors affecting the monetary base it is noteworthy that open market operations were used to try to offset the negative pressure of the decline in the foreign reserves. On the other hand, during the improvement of the foreign reserves position, in the second half of 1996, the monetary base was kept more or less constant. The insulation of the monetary base from the movements of the foreign reserves, depicted in Figure 4, is remarkable.

What is noticeable is the absence of co-movement between the two series confirming the *discretionary* character of the Brazilian monetary policy.[17] This monetary policy is consistent with the high inflow of foreign capital needed to finance imports.

Figure 4
Brazil: Monetary Base, Domestic Credit and Foreign Reserves
(1988-1996)



Source: Authors' elaboration based on data published in *Boletim do Banco Central do Brasil*, several issues.

Examining the evolution of domestic credit (CRE) and foreign reserves (RE) it becomes clear the nature of the open market policy towards sterilisation (Figure 4).

Silva and Torrance (1998) investigate the long-run properties of these time series, proceeding to a cointegration analysis of domestic credit and foreign reserves.[18]

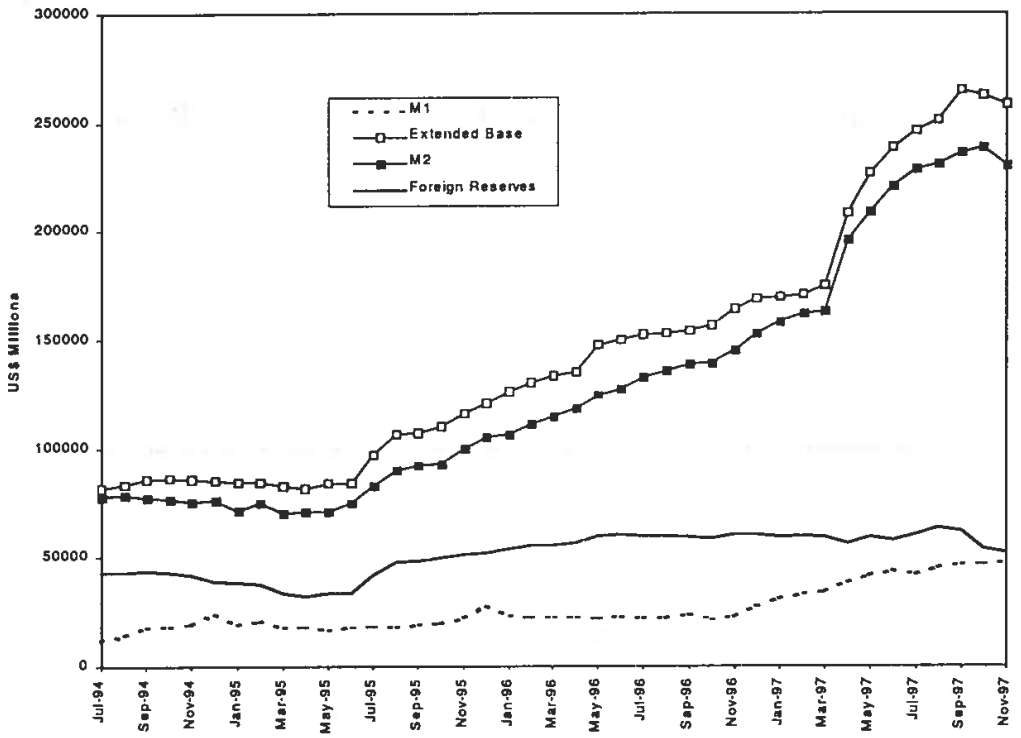
Their analysis confirms strongly the scope and the nature of the sterilisation policy. A long-run relationship between domestic credit and foreign reserves was depicted from their analysis suggesting that monetary policy has been possible even during the recent period.

[17] It should be noted, however, that the second half of 1994 was marked by the monetisation phenomenon. The change in portfolio of agents should bear very little relation to the foreign reserves.

[18] The likelihood ratio for the existence of at least one cointegrating vector was 13.61, against critical values of 12.53 (5%) and 16.31 (1%). The statistics for at least two cointegrating vectors was 3.10 against critical values of 3.84 (5%) and 6.51 (1%) confirming the stationarity of the residuals of the cointegration equation.

As a result of public deficit finance and sterilisation policy there was a steady rise of quasi money, contained in the monetary aggregate M2 as well as in the extended monetary base (Figure 5). [19]

Figure 5
Brazil: Monetary Aggregates
(1988-1997)



Source: Authors' elaboration based on data published in *Boletim do Banco Central do Brasil*, several issues.

Figure 5 displays the growing discrepancy between foreign reserves and M2 or the extended monetary base. The ratio of M2/Reserves goes from 1.8 to 4.4.

Vulnerability to External Shocks: Contagious effects

• *Mexican crisis*

A fundamental test of the stability of the Brazilian programme was the Mexican crisis of December 1994 . The government resisted a maxi-devaluation but in March 1995 introduced a system of 'expressly stated' bands, with the possibility of periodic revisions to avoid a misalignment of the exchange rate. In other words, a moving target-zone regime. Credibility was challenged, with all the consequences that the recent literature has raised about this important issue.

The size of the effects on the financial system, particularly on the foreign assets from one side, and on the monetary policy on the other, is of great importance for understanding the monetary regime and its commitment to limit discretionary actions.

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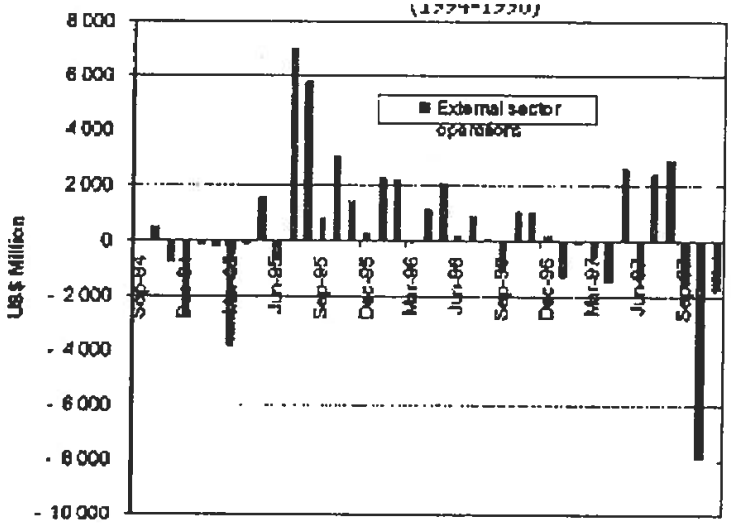
[19] Extended monetary base is defined as: Monetary Base + Reserve requirements + Total federal securities.

The increase in the demand for reserves that characterised the spill-over of the Mexican crisis is displayed in Figure 6. The total loss of reserves from December 1994 to March 1995 reached around US$ 7 billion.

The spill-over of the Mexican crisis seriously affected the net inflow of capital, particularly portfolio capital. According to Silva and Torrance (1998), between January 1995 and March 1995 there was a net capital outflow of US$ 2,052 million. This is a high figure considering the fact that in the first six months following the implementation of the *Real Plan* there was a net inflow of US$ 677 million. Brazil was losing reserves due to the speculative outflow of portfolio capital, and also due to a substantial deficit in the trade balance. The latter can be explained partly by speculation in the trade of visible goods (postponement of exports and anticipation of imports *a la* Calvo's 1994 explanation) but the main cause flowed from the overvaluation of the exchange rate.[20]

Figure 6
Brazil: External Sector Operations (US$ million)
(1994-1996)



Source: Authors' elaboration from data published in *Boletim do Banco Central do Brasil*, several issues.

To reduce liquidity several decisions were taken by the monetary authorities: an increase in reserve requirements for time deposits, an increase in the tax rate on financial operations involving bank loans (from 6 to 18 percent), a prohibition on financial intermediation involving commercial paper by banks, and a mandatory 60 percent deposit with the central bank on bank assets used for collateral guarantees and selected loans.

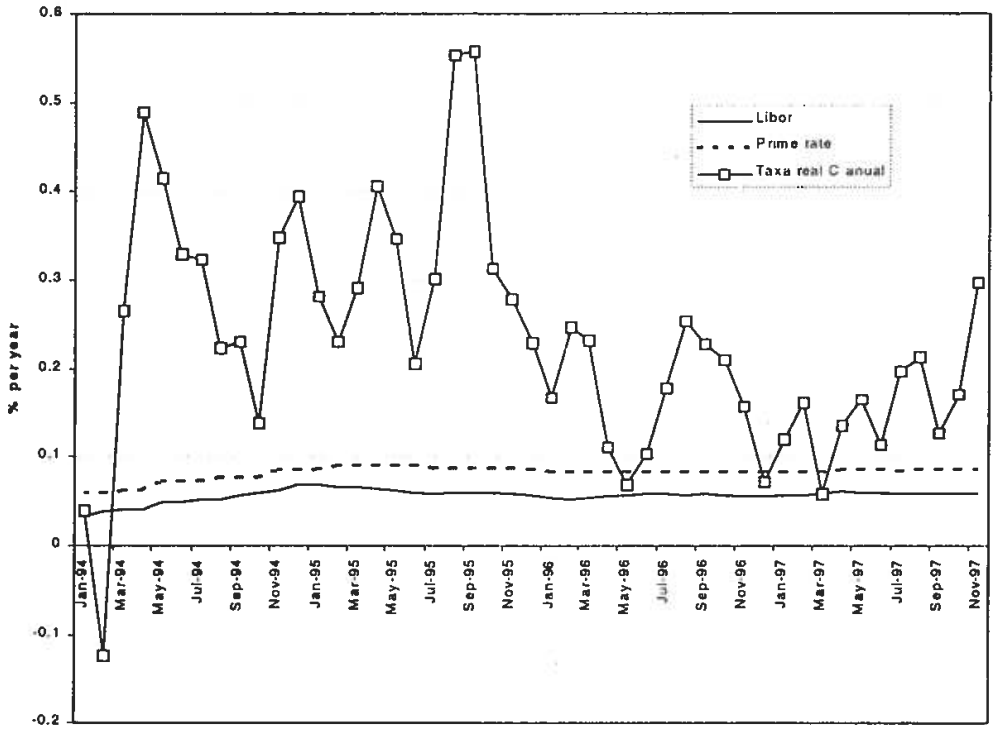
Several measures were taken on the foreign front, as well, to act directly upon the outcome of the current balance. The results of this set of policies were: a slow down in the economic growth performance and, as expected, a recovery of the trade balance as the result of the recession and the currency devaluation. In August 1995, the country presented a trade surplus that remained until October 1995. But, as said before, this

[20] The intertemporal substitution effect that Calvo (1994) points out (which in practice shows up most notably in durable goods) appears whenever there is lack of general credibility in the stabilisation plan's application beyond purely commercial liberalisation policies.

trade balance improvement was mainly due to the temporary recession, and disappeared in the second half of 1996 with the slight recovery of the economy (Figure 1).

The evidence presented by Calvo *et al.* (1993) showed that the capital inflow into emerging markets in the 1990s was motivated mostly by the relatively low interest rates in industrialised economies rather than by broadly-based economic reform in emerging markets. The reaction of the Brazilian economy to the Mexican crisis, however, suggests the importance of the interest rates differentials to reduce the wave of contagious effects. Figure7 displays the upward discontinuity of the interest rate differential during the Mexican crisis.

Figure 7
Brazil: rate of interest differentials
(1994-1996)



Source: Authors' elaboration based on data published in *Boletim do Banco Central do Brasil*, several issues.

• *Recent South-East Asian Crises*

The present crisis in Malaysia, Indonesia and Thailand, well examined in Krugman (1998) and IIF (1998), has had repercussions for Brazil that are very similar to those that followed the 1994 Mexican crisis. The data on external sector operations of the Central Bank shows a lost of reserves more severe than the one that occurred in the aftermath of the Mexican crisis, around US$ 10 billion (Figure 6). The tightness of monetary policy led the interest rate to high levels regardless of being lower than the ones effective in the Mexican episode.

These facts suggest that contagious effects are indeed embodied in speculative crises even when the economies are far away, are structurally different and possess only minor direct economic linkages.

• *Empirical Experiments confirm Contagious Effect*

We should consider some arguments dealing with the statistical evidence on contagious economic and financial effects that emerge from works developed by several analysts.

A recent study of Bastos (1996) reproduces and extends the results of Calvo *et al.* (1993). Using quarterly data from 1990 to 1996 for selected countries of Latin America, his analysis confirms the dominance of external factors in explaining the capital inflow during the period. In addition a search for country specificities was performed using a methodology that identifies the presence of outliers. The results confirm that during the period December 1994 – May 1995 there was a significant change in the process that generates the series of capital inflows towards Mexico, Brazil and Argentina. The empirical evidence suggests that Argentina's and Brazil's capital inflows were seriously affected by the Mexican crisis.

Another study of Morais (1998) applies the methodology used by Westbrook (1995) to evaluate the credibility of the Brazilian stabilisation programme. The methodology consists in explaining the risk premium associated with the covered interest differential. Using monthly data from 1992 to 1997 it is shown that the *Real* stabilisation plan had a positive impact on the risk premium (i.e. reduced the risk) and that the Mexican crisis had a negative effect.

Finally, Silva and Torrance (1996) used the Svensson's test to evaluate the credibility of the exchange rate band. The results show clearly that the interest rate was well above the credible tunnel mostly during the 1st quarter of 1995.

5 Concluding Remarks

As mentioned before several emerging economies have recently implemented ERBSP. As far as ERBSP are concerned, a generalised proposition is related to the impossibility for a country, under conditions of capital mobility, continuously to control its money supply. This has been registered in the economic literature as the "*impossibility theorem*". In the case of Brazil, however, discretionary policy has been relatively successful in controlling the money supply at the cost of high interest rates, falling growth and employment rates and growing public debt. Its main lesson is the danger of attempting to rely in practice on a tool that can never function reliably.

Another important limitation of ERBSP is the vulnerability of the economy to external shocks. The fairly general evidence seems to point towards a strong vulnerability to upsets from external shocks even with target-band regimes. In the case of Brazil, the presence of the external shocks is evident.

Once the economy follows a fixed-exchange-rate rule or a narrow-band arrangement it becomes more vulnerable to external shocks than when it follows a floating regime. Since this is the case, the time-inconsistency problem rears its head and credibility becomes a fundamental requirement for the system if it is to survive.

In addition, a complicating aspect of ERBSP is the fact that nominal anchorage of the exchange rate tends to bring with it a growing disequilibrium of the visible trade balance. Price stabilisation is easy to reach at the cost of a growing distortion of relative prices. This is a characteristic shared by most stabilisation programmes based on exchange-rate anchors and it is supported by the data used while examining the Brazilian case. Relative price distortion exacerbates the problems that these economies have to face and increases the possibility of time-inconsistent behaviour by policymakers. At this point of the discussion another conclusion should be brought up: it is impossible to maintain continuously overvalued exchange rates, and thus fixed-overvalued exchange rates lose credibility sooner or later, becoming vulnerable to speculative attacks.

External disequilibrium reflects also internal disequilibrium. Emerging economies in general, and Brazil in particular, inherit from the past oversised and inefficient state sectors in which there are chronic deficits. Excess expenditures over income reduce domestic savings and explain part of the trade deficit.

Inconsistencies in the 'fundamentals' can be partly compensated for by capital inflows. However, this strategy relies heavily on the expectations of foreign investors and the economy then tends to become very sensitive to crises of credibility and to contagious ill effects from external economic sources.

An important element of this vulnerability is certainly the sustainability of the 'fundamentals'.[22] As long as there is no liquidity constraint created by the existence of a steady flow of foreign capital the concern should be with the intertemporal budget constraint. The government should try to convince the foreign investors that it is acting within its intertemporal budget constraint.

Disequilibrium of the government sector may lead to financial vulnerability that is closely connected with speculative crises. Governments may even become insolvent, and if this happens it is inevitably that they will seek to monetise their domestic deficits. But once this occurs, it is equally inevitable that there will be a rapid drain of official foreign exchange reserves. Investors expectations of such a disaster may, in some circumstances, bring it about as a self-fulfilling prediction.

Bond finance by the government may lead to speculative crises as suggested by Calvo and Mendoza (1996a, b). As mentioned above, Brazil presents a serious vulnerability in this account for not only has M2 been growing steadily, but also has the proportion of bonds denominated in dollars. Once the investors lose faith in the governments ability to defend the domestic currency they will exchange this sort of paper for dollars. The prophecies may become true: government will lose reserves and be strained to devaluate, increasing the cost of the debt in domestic currency, and leading, eventually, to a deficit monetisation and speculative attack.

Contagious events of undesirable kinds from abroad are likely to damage economies with particular characteristics. It has been our argument that inconsistent 'fundamentals' and financial vulnerability, as understood and defined by Calvo and Mendoza, constitute the basis of an economy's sensitivity to this sort of external event. The effects on other Latin American countries of the Mexican crisis of 1994-95 is one recent example of this phenomenon. A further example today is given by the current South-East Asia crisis: this continuing disaster is a startling demonstration of what can happen when both internal and external factors are ripe for a speculative crisis.

References

Agénor PIERRE-RICHARD, Peter J. MONTIEL. *Development Macroeconomics*. Princeton :: Princeton University Press, 1996.

BACHA, Edmar. Latin America's reentry into private financial markets : domestic and international policy issues. Rio de Janeiro : Departamento de Economia/PUC, 1993. (Texto para Discussao 299).

Banco Central do Brasil, *Boletins*, several issues.

BARRO, Robert J., David B. GORDON. A Positive Theory of Monetary Policy in a Natural Rate Model. *JPE*, v. 91, n. 4, p. 589-609, Aug.1983.

BASTOS, Fabiano R. Fluxo de Capitais para América Latina nos Anos 90 : Efeito Externo Dominante e o Papel dos Condicionantes Internos. Brasília, DF : UnB, Departamento de Economia, 1997.

[21] Maka (1997) presents an interesting analysis of this issue for the Brazilian economy.

CALVO, Guillermo A. Comments on Dornbusch and Werner, *Brookings Paper on Economic Activity*, 1994.

CALVO, Guillermo A. Varieties of Capital Market Crises. [S.l.], University of Maryland, 1995. Unpublished manuscript.

CALVO, Guilhermo A., UEGH, Carlos A. Exchange-rate-based stabilization under imperfect credibility. In: FRISCH, Helmut, WORGOTTER, *Open economy macroeconomics*. London : Macmillan, 1993. p. 3-28.

CALVO, Guillermo A., Carlos A. Végh. "Inflation Stabilization and Nominal Anchors", *Contemporary Economic Policy*, 1994.

CALVO, Guillermo A., Enrique G. MENDOZA. Petty Crime and Cruel Punishment: Lessons from the Mexican Debacle. *American Economic Review*, v. 86, n. 2: May, 1996b.

CALVO, Guillermo A., Enrique G. MENDOZA. Mexico's Balance of Payments Crisis : A Chronicle of A Death Foretold. *Journal of International Economic*, (forthcoming), 1996a.

CALVO, Guillermo A., Leonardo LEIDERMAN, Carmen REINHART. Capital inflows and real exchange appreciation in Latin America. *IMF Staff Paper,* Washington, DC, n. 40, p. 108-151, 1993.

CARDOSO, Eliana. Brazil's Macroeconomic Policies and Capital Flows in the 1990s. 1996. UNPUBLISHED MANUSCRIPT.

CHICK, Victoria, Sheila DOW. Competition and the Future of the European Banking and Financial System. London : Department of Economics, University College London, 1994. DICUSSION PAPER 94-16.

CLAESSENS, S., M. Dooley, A. WARNER. *World Bank Discussion Paper*, n. 228, 1996.

CROCKETT, Andrew. The role of market and official channels in the supply of international liquidity. In: Peter KENEN, B. Francesco Papadia, Fabrizio SACCOMANNI (Ed.). *The International Monetary System*. UK : Cambrige University Press, 1994.

DE GRAUWE, Paul. *The Economics of Monetary Integration*. UK : Oxford University Press, 1992.

DETRAGIACHE, Enrica, Alfonso HAMANN. Exchange-Rate-Based Stabilization in Western Europe : Greece, Ireland, Italy and Portugal. *International Monetary Fund Working Papers*, n. 97, 1975.

DOW, Sheila C. *Money and the Economic Process*. UK : Edward Elgar Publishing, 1993.

EDWARDS, Sebastian. Exchange-Rate Anchors, Credibility, and Inertia: A Tale of Two Crises, Chile and Mexico. *The American Economic Review,* v. 86, n. 2, p. 176-180, May. 1996. Papers and Proceedings of the 1996 meeting of the AEA.

EICHENGREEN, Barry. Epilogue: Three Perspectives on the Bretton Woods System. In: Michael D. BORDO, Barry EINCHENGREEN *A Retrospective on the Bretton Woods System : Lessons for International Monetary Reform*. Chicago : The University of Chicago Press, p. 621-658, 1993.

EICHENGREEN, Barry. History of the International Monetary System: Implications for Research in International Macroeconomics and Finance. In: Frederick VAN DER PLOEG (Ed.) *The Handbook of International Macroeconomics*. Oxford UK and Cambridge USA : Basil Blackwell, p.153-191, 1994.

FLOOD, Robert, GARBER, P. Collapsing Exchange-Rte Regimes, *Journal of*

International Economics, n. 17, p. 1-14, [s.d.].

GOLDSTEIN, Morris, et al. *International Capital Markets Development, Prospects, and Policy Issues.* Washington, DC : The International Monetary Fund. Sept. 1992.

GUTTMANN, Robert. *How Credit-Money Shapes the Economy : The United States in a Global System.* US : M.E. Sharpe, 1994.

HALLWOOD, C. Paul, Ronald MACDONALD. *International Money and Finance.* 2nd ed. Oxford/UK and Cambridge/USA : Blackwel, 1995.

HARVEY, John T. Orthodox approaches to exchange rate determination : a survey. *Journal of Post Keynesian Economics* v.18, n. 4, p. 567-83. Summer 1996.

INTERNATIONAL MONETARY FUND. *Determinants and Systemic Consequences of International Capital Flows.* Washington, DC : IMF Research Department. 1991. (Occasional Paper 77).

ISARD, Peter. *Exchange Rate Economics*, Great Britain : Cambridge University Press, 1995.

JOHANSEN, Soren. Statistical Analysis of Cointegration Vectors, *Journal of Economic Dynamics and Control* n. 12, p. 231-254, 1988.

KEYNES, John Maynard. *The General Theory of Employment, Interest, and Money.* New York : Harcourt, Brace, 1964.

KIGUEL, Miguel., Nissan LIVIATAN. The Business Cycle Associated with Exchange-Rate-Based Stabilization, *The World Bank Economic Review* n. 6, p. 279-305, 1992a.

KREGEL, J.A. Risks and Implications of Financial Globalisation for National Policy Autonomy. Paper prepared for the Internacional Conference : *Macroeconomics in Face of Globalisation* org. CORECON: Brasília, DF, 1996. UNPUBLISHED MANUSCRIPT.

KRUGMAN, Paul. A Model of Balance of Payments Crises. *Journal of Money, Credit, and Banking* n. 11, p. 311-25, Aug. 1979.

KRUGMAN, Paul, Currency Crises (published on the web at: *http: //web.mit.edu/ krugman/www/DISINTER. html*), 1997.

KRUGMAN, Paul. What Happened to Asia? (published on the web at: *http: // web.mit.edu/ krugman/www/ DISINTER.html*), Jan. 1998.

KRUGMAN, Paul R., Maurice OBSTFELD. *International Economics : theory and policy* . 3rd ed., New York : Harper Collins College Publishers, 1994.

MALAN, Pedro. *The Results of the Real Plan.* Brasília, DF : Ministério da Fazenda, 1995.

MAKA, Alexis. A Sustentabilidade de Déficits em Conta Corrente, *Texto para Discussão,* Brasília, DF, n. 481, [s.d.].

MORAIS, José Franco M. Plano Real – Um Teste de Credibilidade, 1997. Brasília, DF UnB, 1997. mimeogr.

OBSTFELD, Maurice. International Currency Experience : New Lessons and Lessons Relearned. In: William C. BRAINARD, George L. PERRY (Ed.) *Brookings Papers on Economic Activity - 25th anniversary issue.* Washington, D.C. : Brookings Institution, 1995.

OBSTFELD, Maurice. Models of currency crises with self-fulfilling features. *European Economic Review* n. 40, p. 1037-1048, Apr. 1996.

SILVA, Maria Luiza Falcão, Joaquim P. de ANDRADE. Brazil's new currency: origin, development and perspectives of the Real, *Revista Brasileira de Economia,* Rio de Janeiro, v. 50, n. 4, p. 422-467, Out./Dez., 1996.

SILVA, Maria Luiza Falcão, Thomas S. TORRANCE. Exchange-Rate-Based Stabilisation Plans : the Brazilian Experience with a Target-Zone Regime. *Economia Aplicada*, 1998. (forthcoming)

STUDART, Rogério. Financial Policies, Growth and Distribution : Theory and Lessons from Latin America and East Asia. In: *Papers and Proceedings of the XXIV Conferência dos Centros de Pós-graduação em Economia.* São Paulo : Águas de Lindoia. December, 1996.

THE INSTITUTE OF INTERNATIONAL FINANCE. Capital Flows to Emerging Market Economies (published on the web at: *http :// www. iif. com*), January, 1988.

TRIFFIN, Robert. *Our International Monetary System : Yesterday, Today and Tomorrow.* New York : Random House, 1968..

VELASCO, Andrés. Fixed exchange rates : Credibility, flexibility and multiplicity. *European Economic Review,* v. 40, p. 1023-1036. Apr. 1996.

WESTBROOK, J.R. Does Exchange Rate Pegging Enhance Credibility? Evidence From the European Monetary System. *Applied Economics*, n. 27, p. 1153-1166, 1995.