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External financial fragility and the Real Plan

nº 421

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Textos para Discussão

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*External Financial Fragility and The Real Plan**

nº 421

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ABSTRACT

The article assesses Brazil's external financial fragility in the context of the Real Plan. In order to do so, we have developed an external financial fragility index, based on Minsky's concept of financial fragility. So, the index is applied to a time series of foreign sector variables from 1992 to 1997. The evidences show that - contrary the government discourse - the trends towards increasing fragility during the Real Plan has left the country quite vulnerable to changes at the international level, as shown by the crisis of October 1997.

1 INTRODUCTION

Experience with stabilization programs involving some kind of exchange anchor shows that, generally speaking, such plans at first generate an abrupt drop in the rate of inflation, accompanied by marked appreciation in the rate of exchange¹. The local currency appreciates as a result of differential evolution by domestic and foreign prices in a context where the nominal rate of exchange remains stable, causing the current account of the balance of payments to contract substantially, due principally to the increase in the value of imports. Normally, this deficit is accompanied by a large capital account surplus, thus not only enabling the former to be financed, but allowing the volume of the country's international reserves to grow. The latter increase occurs as a result of the surge of foreign capital entering the country drawn by the stabilization plan's initial success, combined generally with liberal structural reforms. Higher domestic interest rates, an added attraction to external financing, can be used to reinforce these factors still further. This influx of foreign capital can lead to a still greater real appreciation of the exchange rate, leading to a further increase in imports and also a downturn in exports.

In this context, a larger, growing deficit in current account will only be sustainable if equivalent levels of long-term external funding are available, associated with productive investment capable of generating a future flow of exchange revenues sufficient to pay off outstanding debt. The precise nature of capital inflow is fundamentally very important, since one of the great perils of stabilization plans with exchange anchors is that a

reversal in the flow of foreign capital can lead to an balance of payments disequilibrium of such a magnitude that it becomes unfeasible for the government to maintain the existing exchange rate. Expectations of exchange devaluation are generated among economic agents, leading in turn to further shrinkage in inflows of foreign capital and, consequently, a fall in levels of reserves, leaving the government no option but substantial devaluation in the nominal exchange rate. This in turn may have a prejudicial effect on domestic prices and on the behavior of non-resident investors, this jeopardizing the stabilization effort.

Many of the criticisms leveled at the stabilization program implemented in Brazil in 1994 – known as the Real Plan² – relate to the consequences of the pattern of financing for current account deficits and financial commitments assumed in the recent past. In particular, the argument goes, holding interest rates at high levels since the plan came into operation has attracted short-term foreign capital in volumes many times greater than the needs indicated by the balance of payments, thus raising the level of reserves and fostering real appreciation of the exchange rate, which has had two effects. Firstly, as trade arrangements were being liberalized, the exchange appreciation resulted in significant balance of trade deficits, a consequence of increasing importation. Secondly, this capital inflow entails foreign exchange commitments concentrated largely in the short term, which is alleged to spark off an incessant pursuit of funds to refinance them. The effects of this liberal economic policy arrangement are claimed to have aggravated Brazil's external financial fragility, due to its increasing dependence on obtaining foreign financing to sustain current account deficits and international reserves at levels necessary to avert a currency crisis.

The Brazilian government takes the view that the growth in imports that can be observed is a consequence of the restructuring of industrial production activities that has been ongoing in Brazil in recent years – as a result of the interaction of the processes of globalization, stabilization and privatization (Barros & Goldenstein, 1997) – and that the resulting productivity gains will contribute to generating trade surpluses sufficient to restore stability to the balance of payments in due course. In addition, it is argued that short-term debt is being supplanted by long-term debt and foreign direct investment, bringing the restructuring strategy into line with financial timeframes.

The aim of this article is to assess Brazil's external financial fragility in the context of the Real Plan, and to show that – contrary to government discourse – the trend towards increasing fragility has left the country quite vulnerable to changes at the international level, as shown by the crisis of October 1997. To begin with, section 2 briefly presents the Brazilian government's official view, as formulated particularly by Gustavo Franco, former director for International Affairs and currently President of Brazil's Central Bank, for whom the situation prior to October 1997 represented no risk of crisis in the external sector, there thus being no need for any major realignment of exchange policy. section 3 develops an external financial fragility index, built on the concept of financial fragility developed by Hyman Minsky, which is applied to the Brazilian economy in the years prior to and following the Real Plan in an attempt to evaluate particularly the degree of external vulnerability during the Real Plan. By way of conclusion, section 4 offers some final remarks on the text and a preliminary assessment, in the light of the analysis conducted in the article, of the recent speculative onslaught on the *real*.

2 EXTERNAL FRAGILITY AND EXCHANGE POLICY: THE OFFICIAL VIEW

One of the most striking features of the recent stabilization process in Brazil was the strong real appreciation in the exchange rate that occurred when the Real Plan came into force. This resulted fundamentally from the combination of intensive inflows of capital, attracted by high domestic interest rates, and adoption of a floating exchange rate during the first months of the program. Critics of the exchange policy adopted by Gustavo Franco have pointed out that one of the main problems of the stabilization plan was the existence of an exchange lag, which was claimed to be causing ever larger balance of payments current account deficits, which it would be impossible to sustain in the long term³.

Franco (1996a, 1996b) questions the existence of any exchange lag⁴ during the Real Plan and argues that the exchange appreciation is a product of the new macroeconomic context of price stabilization and globalization in which Brazil now finds itself. He holds that the liberalization of trade and capital flows, as well as the present exchange policy, are all elements fundamental to stabilizing prices and returning to economic growth, free of the drawbacks entailed by the import substitution-oriented growth model.

According to Franco, inherent to the notion of *delay* or *lag* is an allusion to time past, associated with arrangements typical of a context of high inflation and capital flight, conditions quite different from those of the Real. After all, rising exchange rates are to be seen with almost all successful stabilization programs, particularly as a result of increases in the prices of non-tradables. Franco (1996, p.25) argues then that the essential thing

is "to know whether current levels are appropriate; that is, whether the appreciation of the *real* is correct or merited" and he believes that the *correct, prudent level* for Brazil's current account deficit, as observed in other emerging economies, should be of the order of 3% of GDP.

Franco also believes that, in the case of Brazil, the external deficit – albeit high – has been properly financed, with increasing participation by long-term foreign capital (mainly direct investments), and has constituted a contribution by foreign savings to Brazil's development, since the imports are largely capital goods that contribute to improving the competitiveness of Brazilian industry⁵. Meanwhile, according to Franco, it must be borne in mind that labor productivity in Brazil has been growing at average rates in excess of 7% since 1991, evidence of the changes under way in the structure of production since the economy opened up to the outside, which are progressively modifying the nature of the country's competitiveness. Following this same line of reasoning, Francisco Lopes, Monetary Policy Director of the Central Bank, says: "I think that the process of stability and openness tends to generate productivity gains that will make Brazil more competitive – encouraging exports and reducing imports. That is our wager. But it is something that does not need to be planned. The market system itself will manage it better than us"⁶.

To summarize, as seen by the government's policy makers, the features of the production restructuring process in Brazil are as follows: (i) domestic investment, due to privatizations and the influx of foreign direct investment, will increase the formation of fixed capital of a magnitude sufficient to make it possible to provide the underpinning for a new cycle of development; (ii) this restructuring will produce significant, persistent productivity gains sufficient to offset the appreciation in

the exchange rate and stimulate a vigorous reaction by exporters in the medium and long terms⁷; and also, (iii) will also reverse the sizeable expansion of coefficients of penetration by imports in the production chain in Brazil.

Government economic authorities thus seem to be trusting to a gradual, spontaneous adjustment of the balance of trade in which production of tradables will expand as a result of the restructuring of the industrial sector and of the Brazilian economy's improved competitiveness due to greater openness to the outside. In time, this should lead to an increase in exports and a slowing in the pace of imports, resulting in balance of trade surpluses in the future. Consequently, on this view, the present situation in Brazil does not represent major risk of an exchange crisis.

3 THE EXTERNAL FINANCIAL FRAGILITY OF THE REAL PLAN

3.1. A measure of external financial fragility

Financial Fragility

Minsky (1982, 1986) developed the concept of financial fragility as a measure of an economy's ability (or inability) to deal with shocks to its conditions of financing (e.g., a sudden hike in interest rates) without there resulting any generalized disorganization in flows of payments among economic agents. He felt the decision to invest, to choose assets, runs hand-in-hand with the choice of the means of financing. Both decisions, taken in combination, define the extent of the economy's vulnerability to adverse change in the economic situation. An economy will be – macroeconomically – more or less fragile according to the preponderance of financial hedge

or speculative units. Financial structures, defined as the relationship between the expected future flows of profits from an economic unit and its financial commitments, can be classified into *hedge*, *speculative* or *Ponzi*.

Units classified as *hedge* adopt financially conservative attitudes; i.e., they are those where the safety margins between profits and financial commitments are sufficient to ensure that, in all future periods, profits will exceed interest expense and amortization payments (here, expected gross revenue affords some margin over debt payment commitments). A rise in interest rates will not jeopardize these units' ability to meet their payment commitments – or at least not directly.

Speculative units maintain smaller safety margins than hedge units, as they speculate that financial costs will not increase to the point where their plans become unworkable. Here, in general, expected profits are insufficient to pay off the total debt principal; that is, commitments to pay debt in cash exceed expected gross revenues, since the expectation is that in subsequent years agents will obtain a revenue surplus sufficient to offset the initial situation of deficit. For this reason, such units need to refinance their liabilities. Under these conditions, if interest rates rise, so will related financial expenses, thus directly altering the current value of their enterprises.

Economic agents that take financing with shorter maturities than the project being financed are generally assuming a speculative stance, given that they know beforehand that they will have to resort to new financing to fulfill their financial contracts. According to Minsky, this pattern of financing is typical of economies in a state of euphoria.

Ponzi units may be considered an extreme case of units with a speculative financial attitude. In the

immediate future, their profits will not be sufficient even to cover the value of outstanding interest payments, making it necessary for them to take out additional loans so that the unit can meet its financial commitments. Their indebtedness grows even when interest rates do not rise and their vulnerability to rising interest rates is even greater than in the previous case.

One of the analytical consequences of using the concept of financial fragility is that the success of tight monetary policy in controlling aggregate demand without producing instability depends on the degree of financial fragility of the economy as a whole. The effect of a rise in interest rates on a robust economy dominated by agents with a hedge attitude will be to reduce expenses and profits. In the case of a fragile economy - that is, where a majority of agents adopt a speculative attitude - a rise in interest rates will directly affect the value of their financial commitments, which may make it widely unfeasible for them to pay their debts, thus triggering a financial crisis.

Financial fragility in open economies

In an open economy, there is an added dimension to the concept of financial fragility, as compared with closed economies. When considering the contractual relationship between residents and non-residents, the future exchange rate and the determination as to who incurs the exchange risk are key elements in the composition of financial structures. In order to gauge revenue flows and compare them with outstanding financial commitments and thus assess the financial fragility of agents resident in an open economy, it is necessary to forecast the exchange rate that will be current on future payment dates.

The rate of exchange may influence the financial structure in two ways. One of these has to do with operational activities. Depending on the currency in which

receipts and spending occur, the direct impact of an exchange fluctuation may be positive, negative or neutral. The other way exchange variation affects companies' health is via the financial route. In this case, the impact will depend on the currency in which their financial commitments are to be discharged. The possible combinations among revenue and expenditure flows and financial commitments in domestic and foreign currencies make for a great variety of agents, reflecting the greater complexity of an open economy.

In order to determine exchange risk, a distinction has to be drawn among units according to the currency (dollar or real) in which they incur their costs and collect operating revenues. Table 1 below summarizes four types of unit.

Table 1
Types of unit by currency in which revenues/
expenditures occur

	A	B	C	D
Revenues	US\$	US\$	R\$	R\$
Costs	US\$	R\$	US\$	R\$

Units in groups A and D will only be affected indirectly by exchange variations, in the case their sales increase or decrease. For them, nonetheless, the proportion of revenues to expenditures should remain relatively constant. In groups B and C, however, an exchange variation - e.g., a devaluation - will have a direct effect on the ratio of revenues to expenditures. Units of type B, which are exporters, will be affected favorably. Supposing that the quantities sold remain constant, they will enjoy an immediate increase in revenues proportional to the devaluation, while their costs will remain constant. Units of type C - importers, for

example - will suffer the direct impact of an exchange devaluation on their costs, which will increase. Should they be unable to alter their selling prices or manage to hand on only part of the devaluation - at least in the short term - their profits will be reduced. It can therefore be said that, in terms of operational activities, only units of types *B* and *C* run exchange risk. At this stage, where relations of indebtedness have not yet been taken into account, units of types *A* and *D* may be considered *hedge* from the exchange point of view.

Transposing to the context of an open economy the table drawn up by Minsky for a closed economy thus generates a far more complex taxonomy of types of unit. In this case, when one considers the *economic units' sensitivity to exchange variations* - in addition to variations in interest rates - the macroeconomic impact of a tight monetary policy and/or of an exchange devaluation becomes quite diversified and its overall effect on the total economy will depend on the relative weight of units with speculative postures among agents as a whole.

For purposes of analysis, it is useful to separate the components of the degree of fragility in open economies according to the impact that a rise in interest rates or an exchange variation can cause on the economy. Initially, then, *external financial fragility* may be defined as the degree of an economy's vulnerability to changes in conditions of financing originating from alterations in external interest rates or in exchange rates⁸. This fragility may manifest itself in operational terms which, from the macroeconomic viewpoint, would entail balance of trade deficits. In terms of financing, however, if there are units with financing in foreign currency at shorter-term maturities than the activity financed and/or whose revenues are in domestic currency, they may be vulnerable to changes in exchange rates, at the same time as the

country is subject to external shocks deriving from alterations in international financing conditions.

In other words, the macroeconomic result of agents' financial attitudes - in foreign currency - will be a fragile economy if the set of resident agents involved in transactions with the outside world is of such an order that maturing financial commitments - or at least the most immediate of them - cannot be met by using available foreign exchange, unless this is complemented by the refinancing of the short-term obligations.

In an economy where trade and financing are very open, the exchange rate depends strongly on the actual and expected behavior of the balance of payments, which is an unplanned result of the action of autonomous agents. It is thus useful to assess to what point the exchange rate can be sustained in terms of available reserves and inflows and outflows of foreign currency - represented here by the US dollar - in the economy as a whole. This is why it is important to calculate the degree of a country's external fragility: an evaluation of its dependence on refinancing in order to sustain the stability of its balance of payments and any given exchange policy.

External financial fragility

Given information about a country's balance of payments, it is possible to determine its degree of external financial fragility in the light of how great (or small) is its economy's need to resort to the international capitals market in order to renegotiate outstanding financial positions (that is, that cannot be settled immediately). As the degree of fragility is related to the country's ability to pay its exchange commitments, as well as with the profile of the latter, an *external financial fragility index (EFI)* was developed to reflect the evolution of an economy's external fragility by comparing its actual

and potential foreign currency liabilities with its respective payment capacity; that is:

$$EFI = (M + D_i + D_{os} + A + STK_{-1} + NIP_{-1}) / (X + R_i + R_{os} + RE_{-1} + I_d + L_{ml})$$

Where:

M = imports;

X = exports;

D = expenditures on interest "i" and other services (OS);

R = revenues from interest "i" and other services (OS);

A = loan amortizations;

STK_{-1} = short-term capital stock, with a one-period lag;

NIP_{-1} = stock of net investment in portfolio, with a one-period lag;

RE_{-1} = aggregate official reserves at prior period end;

I_d = foreign exchange inflows corresponding to direct investments;

L_{ml} = medium- and long-term loans.

The *actual* payment obligations comprise expenditure with imports and services plus loan amortizations. *Potential* obligations are short-term capital stocks and investments in portfolio – aggregated up to the first quarter of 1991, according to their value in the balance of payments – and with a one-period lag⁹. These variables represent the country's most important liabilities – actual and potential – in a given quarter. These liabilities can be "met" by way of reserves, revenues from exports and other services (interest and other services), medium- and long-term loans and direct investment.

The higher the value of the index, the more liable the country is to be affected by changes in the international

country is to be affected by changes in the international situation (e.g., changes in foreign interest rates) and the poorer its ability to meet more immediate financial commitments, leaving it more dependent on external refinancing or its own foreign exchange reserves. Alternatively, the higher the value of the index, the greater is the country's capacity to meet its more immediate commitments without needing to resort to refinancing or to its stock of reserves. In other words, to the extent that the index decreases, actual and potential liabilities are being covered by current revenues and by sources of longer-term financing. This interpretation makes it possible to classify countries' financial postures in a manner analogous to the concept of financial fragility developed by Minsky.

In this case, an open economy is classified as *hedge* if it is able to meet fully its actual and potential foreign exchange liabilities (relating to the flow of goods and services), independently of permanent refinancing. This implies that current expenses and financial commitments – both in foreign currency – are compatible with current revenues and the degree of liquidity (in foreign currency) of its assets. On the other hand, an economy may be classified as *speculative* if, in order to meet expenditures on current transactions and financial liabilities with non-residents, recurrent use of refinancing (and/or loss of reserves) is required.

For example, an increase in short-term financing will add to the country's financial fragility if, in the following period, potential liabilities increase in relation to financial revenues obtained during the period, to current revenues and to reserves. In this case, keeping the balance of payments steady will come to depend more and more on economic policies designed to attract short-term, speculative capital.

A note on potential liabilities

One of the properties of this index is that if the value of the stock of portfolio investment increases, so the degree of external fragility will increase, indicating that short-term foreign exchange liabilities are increasing in relation to long-term assets. Caution should be exercised in interpreting this result, however, since liquidity is a concept valid at the margin, but not for the entire stock of assets.

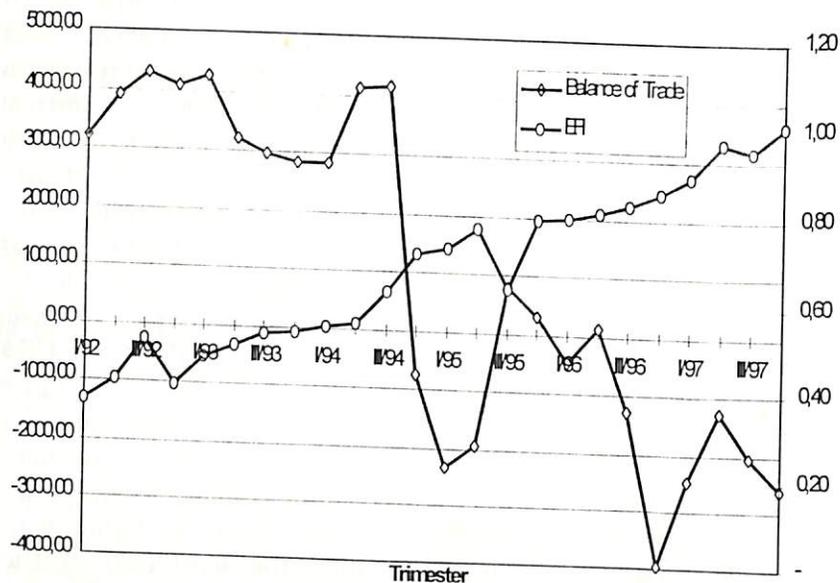
Even though there may be organized markets for the assets that make up the stock of investment in portfolio, their liquidity depends on there being a balance between sale and purchase orders, in such a way that transactions may be carried out without there being abrupt oscillations in the assets' prices. In any case, if all holders of a given asset wished to sell at the same time it would not be possible to carry through the transactions without major price reductions. Any massive liquidation of shares or other securities would lead to significant capital losses; in consequence, the value of portfolio stock which should be considered as potentially volatile is, in fact, smaller than what is included in the index.

In spite of this problem in determining the stock of investment in portfolio, the way the index evolves will evidence a country's tendency to greater or lesser external fragility, in that it shows the proportion between an economy's most immediate real and potential foreign liabilities and the funds available to meet them without precipitating an exchange crisis. It is thus to be considered as merely a trend indicator, designed to evaluate the greater or lesser importance of subjective evaluations by economic agents holding foreign exchange assets or liabilities in determining the international situation of the economy.

3.2. Applying the external fragility index to Brazil's economy

In this section, an External Fragility Index (EFI) series for the Brazilian economy, from the second quarter of 1992 through to the fourth quarter of 1997, was constructed on the basis of balance of payments data obtained from the Monthly Bulletin of Brazil's Central Bank (*Boletim Mensal do Banco Central do Brasil*). In view of the fact that balance of trade trends changed considerably with the introduction of the Real Plan, becoming closely linked to the real appreciation of exchange rate that occurred in the period, as well as the lifting of trade barriers, the graph below shows – as well as the EFI – Brazil's balance of trade, the values (in US\$ millions) appearing along the right-hand axis (see Figure 1)¹⁰. Actually, it is interesting to note how the behavior of external financial fragility – which shows an upward trend as of the introduction of the Real Plan in the third quarter of 1994 – correlates inversely with the balance of trade. This result is expected, since the evolution of the balance of trade has been the main factor responsible for the deterioration in current account, its behavior having been predominantly cyclic due to the fact that it is the component most sensitive to changes in the economic policy adopted by the government¹¹.

Figure 1. External Financial Fragility and Balance of Trade, 1992-97



Source: Table 2.

At first sight, this strengthens the argument that, during the first three and a half years of the stabilization program, the rate of exchange was inappropriate to the characteristics of the Brazilian economy and its pattern of foreign financing. It was held to be unsuitable in the light of ever larger current account deficits and because, contrary to what is suggested by Gustavo Franco, long-term financing for these deficits has not been sufficient to prevent increasing external financial fragility. On the contrary, as the evolution of the index suggests, the

volume of long-maturity capital has proven insufficient to bring Brazil's financial liabilities into line with its capacity to generate foreign exchange by way of current transactions. As a result, there has been a need to resort to short-term financing, which causes the country to continue vulnerable to changes in short-term expectations formulated by international speculators and thus to adopt typically speculative financial postures.

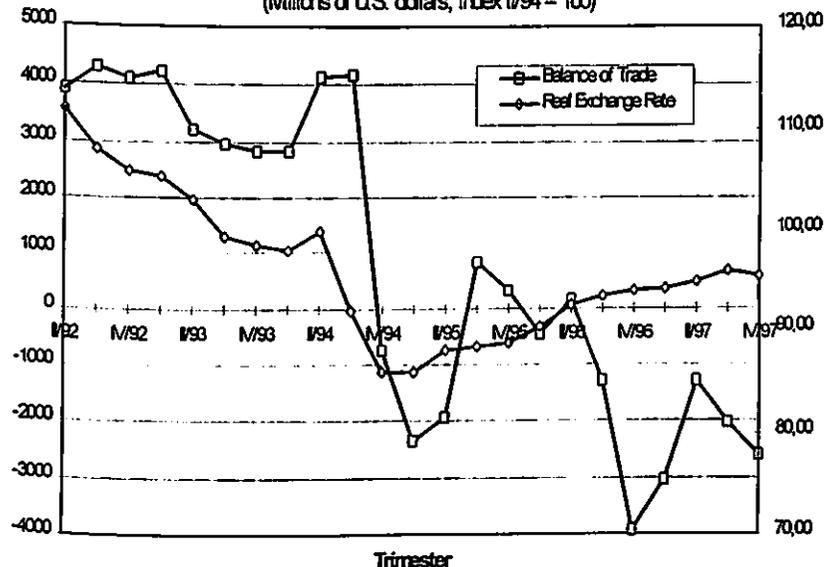
This situation was the result of a deliberate policy of attracting short-term capital - currency loans and investments in portfolio - in the course of the 90s¹², designed to eliminate external constraints imposed by the debt crisis of the previous decade by exploiting the growing supply of funds in the international financial system in a context of financial globalization. This brought about a significant increase in the volume of short-term capital and, concomitantly, in the levels of Brazil's reserves. The financial fragility index in the period prior to the Real increased very slightly and this behavior may be attributed mainly to balance of trade surpluses, in addition to the increases in reserves. It was thus during the Real Plan, with the increase in the influx of short-term capital and the explosive growth in imports, that Brazil's external fragility rose to a higher plateau and the upward tendency became more marked.

The evolution of foreign variables and their effects on the country's external vulnerability can be accompanied in detail by way of the index's behavior, which seems to point to four important periods in the evolution of the Brazilian economy's external financial fragility: (1) the period running from the second quarter of 1992 until the end of the second quarter of 1994, where one can observe a certain stability to external fragility, as well as the existence of trade surpluses; (2) the period from the third quarter of 94 until the first quarter of 1995, running from introduction of the new

currency and the substantial liberalization of imports and ending with the Mexican crisis and the resulting *Tequila effect*; (3) the brief period in which external fragility went into decline, ending in the third quarter of 1995, when the balance of trade made a rapid and short-lived recovery; and (4) a final period, from the last quarter of 1995 to the fourth quarter of 1997, marked by large balance of trade and services deficits and by steadily greater external financial fragility and, at the end of the period, by the effects of the Asian crisis on Brazil.

During the first period, the balance of trade was always positive, reflecting competitiveness in production of the nation's tradables, due largely to the depreciated real exchange rate in relation to the present day, as a result of the rule of mini-devaluations adopted at the time (see Figure 2). Investments in portfolio were already quite significant in this period, probably attracted by the possibility of carrying out "box operations", which made it possible, by using the derivatives market, to simulate the environment of fixed income applications - which offered international investors significant real interest rates¹³.

Figure 2. Real Exchange Rate and Balance of Trade, 1992-97
(Millions of U.S. dollars, Index 1/94 = 100)



Source: Monthly Bulletin of Brazil's Central Bank, various issues.

Note: Real exchange rate: nominal exchange rate deflated by wholesale price index.

At the same time, offsetting the effects of portfolio investment on the index's behavior, one can observe significant growth in medium- and long-term loans and foreign direct investment. As a result of the major influx of foreign capital into Brazil during the period, the volumes of reserves grew considerably, jumping from US\$13,000 million in the first quarter of 1992 to the region of US\$ 40,000 million in the second quarter of 1994. Meanwhile, short-term capital movement oscillated,

with sizeable net outflows until the end of the fourth quarter of 1993 and accelerating growth in net inflows from then until the end of the second quarter of 1994. There was practically no increase in the stock of this shorter-term capital in the period, however, which contributed to holding the index steady.

With introduction of the new currency - *real*, which rapidly appreciated over levels of the previous period - due to the combination of a policy of high primary interest rates with an "asymmetrical exchange band"¹⁴ - and with the freeing up of imports as of September 1994, the tendency towards balance of trade surpluses was abruptly inverted. At the same time, the balance of services showed larger deficits, mainly as concerns non-financial services, with special mentions for international travel, insurance and freight. On the other hand, portfolio investment, medium- and long-term loans and direct investment fell sharply by around US\$ 11,000 million in the first quarter of 1995 as compared with the previous quarter, with the onset of the Mexican crisis, probably because of its effects on non-residents' expectations as to the liquidity and profitability of their investments. Net inflows of short-term capital behaved erratically in the period, holding to a high plateau at first, falling sharply at the end of 1994 under the *Tequila effect* and then continuing to grow in the first quarter of 1995, which indicates that this type of capital is more sensitive to changes in government monetary policy and to expectations of an exchange crisis.

One of the final results of these movements in this period was a major reduction in Brazil's reserves, which shrank to 75% of their initial volume between the beginning of the Real Plan and the end of the first quarter of 1995. At this point, the index of Brazil's external vulnerability made a significant jump, peaking during the first quarter of 1995. As of March of that year, under the

impacts of the Mexican crisis and Brazil's deteriorating balance of trade, a new stage began in terms of economic policy characterized by greater flexibility in exchange and trade policy, with the introduction of a system of mini exchange bands and the raising of import taxes to 70% on 109 product items, including automobiles and household electrical appliances¹⁵. At the same time, the government increased the primary interest rate sharply, which was fundamental in securing a significant volume of foreign funds by stimulating absorption of short-term capital.

In the third period, beginning in the second quarter of 1995, as a result of the change in exchange and trade policy and the adoption of strong "containment" economic policy measures (higher interest rates and limitations on credit), the balance of trade steadied: exports - which had fallen off considerably in the first quarter of 1995, probably because of expectations of an exchange devaluation - began to grow, while imports began to level off. The fundamental fact, however, is that direct investment, medium- and long-term loans and portfolio investment increased substantially, as did short-term capital, net inflow of which exceeded US\$ 11,000 million in the period, demonstrating the government's success in confronting the *Tequila effect* and regaining agents' confidence in the Real Plan. With this, reserves recovered rapidly, jumping from US\$ 31,500 million in the second quarter of 1995 to US\$ 46,600 million in the third quarter. The rapid replenishment of reserves and the influx of direct investment and medium- and long-term loans were decisive in reducing the index of the Brazilian economy's external financial fragility at that point.

In the fourth period, beginning with the fourth quarter of 1995, the behavior of the balance of trade did not repeat the surpluses of the previous phase, but held steady or declined slightly until the second quarter of 1996, then decreased rapidly to reach its lowest value in

the last quarter of 1996 (a deficit of around U\$ 3,000 million), as a result of a combination of a relative stagnation of exports with a sharp increase in imports, which began to grow again vigorously. This behavior resulted from renewed economic growth in Brazil, in the context of a more expansionist economic policy, and also the ineffective non-exchange measures adopted to bolster exports, in addition to falling prices of some of Brazil's export commodities on international markets. Consequently, the EFI tended to increase - almost immediately reaching the levels of the period when Brazil was dealing with the *Tequila effect* - until topping out towards the end of 1997.

In this period, in addition to the influence of short-term capital, spending on non-financial services also contributed to driving the fragility index upwards, especially as a reflex of increased spending on freight and international travel, in the latter case strongly stimulated by the rising exchange rate and credit card facilities for financing purchases. On the other hand, interest and amortization spending, a product of the accumulated stock of medium- and long-term loans, has been growing since early 1996 although, in the case of amortizations, spending oscillated considerably during the period. The variables that performed well and contributed to preventing the index from rising still further from the beginning of 1996 onwards were medium- and long-term loans and direct investment.

Note that just before the speculative onslaught of October 1997, the external fragility index reached its highest levels since introduction of the *real*, evidence of Brazil's extreme external vulnerability at the time of the Asian crisis¹⁶. As a result of the speculative attack on the *real* there was a significant real reduction in short-term capital and in the levels of Brazil's reserves, a process stanching by the measures adopted by the government to deal with the crisis.

To conclude, the evolution of the external fragility index during the first three and a half years of the Real Plan reveals that there have been no significant changes in the trends of variables relating to external accounts that might reverse the index's growth. In spite of the fact that the growing balance of trade deficit did improve somewhat in 1997, due to a certain degree of import contention induced by stagnation of the level of economic activity and improved export performance, particularly by commodities - in turn resulting partly from an exchange devaluation slightly greater than inflation, plus specific measures to encourage exports and restrict imports - no more substantial reversal in the growth trajectory of this index will be possible unless exports can be kept growing at higher rates than imports.

4 FINAL REMARKS IN THE LIGHT OF THE EFFECTS OF THE ASIAN CRISIS

The speculative attack on the *real* that occurred in October 1997 seems to have stemmed from a mix of a "contagion crisis" arising from the effects of the Asian crisis on Brazil and an outbreak of speculative activity triggered by market operators who perceived clear macroeconomic imbalances in Brazil¹⁷. The contagion effect became evident in the fall in the price of bonds issued by Brazil (and all emerging countries) and traded on international financial markets and also in the losses taken by global players in their applications on Asian stock markets, both contributing to investors on the Brazilian market selling their positions in *reals* to cover their losses on other markets.

In terms of doubtful economics fundamentals, the unsustainable trend in its foreign accounts placed Brazil at risk of an exchange crisis, because of the high degree

of external financial fragility of the Brazilian economy, leaving it susceptible to short-term changes in the international situation. As shown in this paper, there is clear evidence that the degree of Brazil's external financial fragility increased during the Real Plan, principally in 1996 and 1997, basically because exchange liabilities – actual and potential – were not covered by current revenues and sources of longer-term financing, which has left Brazil systematically dependent on external refinancing.

The economic authorities seemed to neglect the effects of a possible change in the international situation, while putting across the idea that the Real was a bulwark. The central idea was that the large trade deficits that could be observed were the result of the process of restructuring industrial production in Brazil, which promised productivity gains sufficient, in the medium-term, to offset exchange appreciation. The exchange risks of this strategy would be minimized by the fact that the deficit was claimed to be soundly financed, with growing participation by long-term foreign capital.

Nonetheless, events in Brazil demonstrated that, in view of the increasing current account deficits, long-term financing for these deficits was insufficient to preclude external financial fragility. Brazil was thus obliged to resort to external refinancing, which contributed to increasing the already voluminous stocks of bonds and credits with short maturities, leaving the Brazilian economy more and more vulnerable to shifts in the short-term expectations formulated by foreign investors. The speculative attack on the *real* in October 1987 highlighted the external fragility of the *real* and was prevented from leading to an exchange crisis only by swift action from the government, which sold off part of its voluminous international reserves, raised interest rates sky-high (from 21% to 44% p.a.) and increased the supply of hedge financing by selling exchange-adjusted government securities, so as to revert the speculative process under

way at the time. It then promptly pushed through an emergency fiscal package. With these measures, the government sought, at the same time, to ensure cash flow sufficient to close the balance of payments gap and to reduce the balance of trade and current account deficits more quickly.

In this context, the government is likely to try to maintain its present policy of gentle exchange devaluations, while forging ahead with the privatization process, thus seeking to stabilize its foreign accounts, even if at the price of more modest economic growth. Contradictorily, at the same time as they, at least partially, restored economic agents' confidence in the *real plan*, the measures adopted to deal with the crisis have led to serious macroeconomic imbalances in Brazil: an economic slowdown, growing unemployment, increasing fragility in the banking system, fiscal deterioration (due to the economic slump and the effect of high interest rates on the cost of public debt), greater dependence on short-term foreign capital, etc. – which could jeopardize the very economics fundamentals of the Real Plan. On the other hand, they reveal how limited is the government's freedom of action in managing economic policy.

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Table 1.

Data to Make Up the External Financial Fragility Index - Brasil, 1992/97
(Millions of U.S. dollars)

Period	X	M	Ri	Di	Ros	Dos	A	STK	NIP	Id	Lml	RE
I/92	7.860	4.654	218	2.469	1.130	1.784	2.656	567	1.333	-108	2.156	13.741
II/92	8.647	4.725	269	1.325	990	1.924	1.166	290	1.947	1487	3.242	18.109
III/92	9.525	5.227	251	3.146	954	2.213	1.827	-968	2.104	850	1.780	17.682
IV/92	10.071	5.972	304	1.425	903	2.039	1.498	-870	2.281	224	2.129	19.008
I/93	9.454	5.206	280	3.281	1.109	2.495	2.189	-1.280	3.285	275	1.661	17.960
II/93	9.246	6.044	257	1.806	996	2.679	2.262	-1.647	4.007	302	3.133	18.814
III/93	10.371	7.400	188	1.755	1.070	2.895	2.467	-1.368	5.366	135	3.054	20.116
IV/93	9.873	7.050	91	2.427	1.273	3.187	2.643	-553	8.931	186	3.737	25.878
I/94	8.877	6.049	286	1.775	1.320	2.883	2.760	1.408	11.455	388	2.270	32.295
II/94	11.225	7.088	457	2.226	1.223	2.864	2.509	4.286	13.026	659	2.396	40.131
III/94	12.182	8.023	478	1.329	1.267	3.366	2.667	3.002	13.364	670	2.640	40.873
IV/94	11.275	12.007	580	2.810	1.246	4.178	3.051	-449	14.611	424	4.304	36.471
I/95	9.731	12.065	684	1.789	1.534	4.563	2.762	4.966	10.989	488	918	31.530
II/95	11.718	13.651	552	3.652	1.704	4.141	3.189	7.176	12.268	711	4.317	31.492
III/95	12.729	11.917	534	1.797	1.666	4.252	2.217	16.283	16.121	663	5.264	46.614
IV/95	12.328	12.030	715	3.405	1.712	3.864	2.858	19.218	16.905	811	4.238	50.449
I/96	10.286	10.738	618	2.485	1.945	3.921	4.120	22.087	18.782	1221	3.946	54.331
II/96	12.617	12.477	627	3.550	2.217	4.414	2.835	22.017	19.786	3256	6.301	58.639
III/96	12.955	14.235	762	2.563	2.002	5.545	3.114	23.581	21.031	1385	3.527	57.381
IV/96	11.889	15.837	911	4.160	2.081	6.232	4.355	25.304	22.944	3718	9.028	59.039
I/97	10.657	13.715	978	2.017	1.712	5.069	3.606	26.826	26.219	2752	4.150	58.120
II/97	14.130	15.409	933	4.469	2.308	6.408	8.423	20.042	29.126	4237	8.474	56.795
III/97	14.899	16.929	1.118	2.730	2.127	6.644	4.322	13.680	31.012	4462	8.927	61.161
IV/97	13.301	15.888	992	5.192	2.277	7.075	13.049	8.605	28.244	6413	8.190	51.192

Source: Monthly Bulletin of Brazil's Central Bank, various issues
Note: STK and NIP are aggregated since the first quarter of 1991.

NOTAS

¹ Dependence on foreign capital flows causes, among other problems, the real rate of exchange to appreciate, nontradables to expand at the cost of tradables and trade deficits to increase, which can leave the country's economy increasingly vulnerable to external factors. In this connection, see Gavin *et alii* (1995) and Corbo & Hernandez (1996).

² The Real Plan was conceived on same basis as stabilization programs with exchange anchor that have been applied in Latin America since the late 80s, using a fixed or semi-fixed rate of exchange in combination with more open trade policy as a price anchor. It differs from the Argentina's Convertibility Plan for adopting a more flexible exchange anchor, which means without pegging the parity of one to one between domestic currency and the U.S. dollar, in a typical Currency Board System. For a general analysis of the origins and development of the Real Plan, see Silva & Andrade (1996).

³ See, for example, Batista Jr. (1996) and Dornbusch (1997).

⁴ *Exchange lag*, according to Franco (1998, p. 131), means "out of balance", or more specifically that "the domestic currency is more expensive than the foreign currency, or it is above from what is considered correct, reasonable or consistent with equilibrium whatever this means".

⁵ See, in this regard, the interviews with Gustavo Franco in the following newspapers: *Gazeta Mercantil*, 18/Nov/96, and *O Globo*, 20/Jan/97.

⁶ Interview in *Jornal do Brasil*, 6/Jul/97.

⁷ Exports would also be encouraged by non-exchange, export promotion measures adopted by the government by way of lines of credit from the National Economic and Social Development Bank (BNDES).

⁸ An economy's external fragility may also be defined, in terms of stocks, as in Lopez (1997, p.13), "as a situation in which there is a high risk of holding insufficient foreign reserves to face an important conversion of liquid saving in national currency into foreign currency".

⁹ Aggregate short-term capital and net investment in portfolio were set back by one quarter of year because, for the purposes of this study, it was decided that liabilities could mature only in the quarter subsequent to inflow. The same was done with reserves, as it was

understood that liabilities of any given quarter may be met with exchange revenues from the same quarter in addition to aggregate reserves up to the previous quarter.

¹⁰ The data that make up the external financial fragility index can be seen in the Table 1 in annex.

¹¹ According to the Current Affairs Bulletin (*Boletim de Conjuntura*), July/97, published by Rio de Janeiro Federal University's Institute of Economics, in the first three years of the Real Plan the balance of trade was responsible for roughly 2/3 of the increase in the current account deficit.

¹² Annex IV to Resolution 1.289 of the National Monetary Council - (*Conselho Monetário Nacional* - CMN), set up on May 31, 1991, disciplined investment in Brazil in bonds and securities portfolios maintained by foreign institutional investors, permitting considerable leeway in allocating funds to assets and to the operations which were admitted and dispensing with the need to meet minimum percentage requirements of the other Annexes (I, II and III).

¹³ The nominal interest rate divided by the exchange devaluation in the period gives the foreign investor's return in terms of the foreign currency. "Box operations", in turn, by way of a mixture of operations on the spot and derivatives markets, allow international investors in Brazil to obtain returns on the variable income market similar to those of the fixed income market by exploiting the tax advantages granted to foreign investment under the provisions of Annex IV.

¹⁴ According to Bacha (1997, p.181), in the terms of the "asymmetrical exchange band", the Brazil's Central Bank undertook to intervene should the Real tend to devalue against the dollar beyond its 1:1 parity, but would leave the market free should the tendency be for the real to appreciate against the dollar.

¹⁵ As of March 1995, the government changed its exchange policy, carrying out a nominal devaluation of the *real* of about 6% and coming to adopt a policy of small monthly devaluations (around 0,6% per month) - by a slowly sliding, narrow exchange band - which has been maintained to this day. The new system consists of large bands with minibands inside that can be realigned, within a month, in days and magnitudes not previously announced.

¹⁶ This point will be covered in the next section.

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¹⁶ This point will be covered in the next section.

¹⁷ In his studies (see, for example, Krugman, 1997), Krugman distinguishes exchange crises and speculative attacks in three cases: (i) those associated with serious inconsistencies in macroeconomic policy, generally relating to a dilemma between expansionist domestic policy and an exchange policy directed to the long-term maintenance of a fixed rate of exchange; (ii) those that result from an expected future deterioration in the *economics fundamentals* or merely a self-fulfilling prophecy, originating in purely speculative processes; and also (iii) contagion crises, which occur when a financial crash in one country precipitates crashes in other countries and may cause the exchange crisis to propagate. For a critical appraisal on conventional currency crises models, see Paula e Alves Jr. (1988).

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