

# The Brazilian Currency Turmoil of 2002: A Nonlinear Analysis\*

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## Abstract

This paper investigates the main sources of instability in Brazil during the currency and financial distress episode of 2002. We test for financial contagion from the Argentine crisis and the impact of factors including IMF intervention and political uncertainty in raising the probability of crisis. The empirical investigation employs a Markov-switching model with endogenous transition probabilities.

*Keywords:* Brazil; contagion; financial crises; IMF intervention; Markov-switching model; political uncertainty.

*JEL classifications:* C11, C22, F32, F34, F42.

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# 1 Introduction

During the last decade or so, a number of Latin American countries experienced severe financial and currency crises, from Mexico in 1994 to Argentina in 2001. Debt sustainability problems have been a crucial issue in all of these episodes of distress. Even when a country's foreign debt exposure was relatively low, the structure of its sovereign bonds made it vulnerable to speculative attack or any other financial market turbulence. In the spring of 2002, a strong currency depreciation and a sudden and sharp rise in sovereign bond spreads put Brazil under strain, by severely impacting upon its indexed debt, despite the important reforms of the previous years and the relative sound fundamentals.

The financial turmoil generated by the change in the economic environment appeared to be the result of a shift in market equilibria, from stability to crisis. The fact that the crisis occurred in the run-up to the Brazilian presidential elections in October 2002, coupled with the concerns expressed by some financial commentators relating to the expected victory of the socialist candidate, Lula da Silva, a former trade unionist known for his past declarations on debt repudiation, has led authors such as Williamson (2002) to interpret the Brazilian experience as a financial distress episode triggered by uncertainty on the political outcome. In contrast, very little attention has been devoted to the contemporaneous crisis in Argentina as a possible explanation of the Brazilian turmoil. The Argentine debt crisis has been mainly regarded as an entirely predictable and independent event, unable to influence the other economies of the region apart from marginal financial spillovers<sup>1</sup>. Some authors – e.g. Miller et al. (2003) – have, however, suggested a role for the Argentine crisis and, more generally, of its underlying political events in coordinating public expectations concerning the behavior of a possible left-wing government in Brazil.

This paper aims to investigate the events of 2002 in Brazil, by testing empirically some of the interpretations recently proposed by the theoretical literature on the subject. In light of the literature on catalytic finance and recent work by Corsetti et al. (2002) and Morris and Shin (2003), we also address the role of IMF intervention on investor sentiment. Finally, we consider the effect of global factors in the Brazilian turmoil. In particular, we look for evidence of a contemporaneous increase in global risk aversion as a potential threat to the vulnerable Brazilian economy during this period.

Building on previous work on contagion by Jeanne and Masson (1998) and Fratzscher (2002) as well as the econometric literature on business cycles

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<sup>1</sup>See Krueger [2002].

(Filardo and Gordon, 1998), we apply a time-varying transition probability Markov-switching model to the analysis. We find the use of such methodology particularly useful in detecting shifts in regime and find that its performance is superior to simple linear models. In contrast to previous work on this issue, we employ high-frequency financial data, as they seem better able to capture shifts in investors' behaviour. Specifically, we use sovereign bond spreads as a proxy for country default risk. We assess the existence of a political "mistrust effect" for the left-wing candidate by means of an opinion polls variable and create an IMF dummy variable in order to capture any catalytic effect arising from both positive and negative news from the IMF or domestic politicians. We test for both financial and political contagion between Argentina and Brazil by extending the analysis to Argentine data. Finally, we account for a global factor effect by introducing into the empirical model the high-yield spread in developed markets.

The empirical results strongly support the hypothesis of a shift in regimes in Brazil during 2002, and indicate the political instability of the pre-electoral period and the global increase in market risk aversion as main causes of the jump in equilibria. Negative news concerning IMF intervention also has a significant impact on the probability of shifting between regimes. Argentine country risk, however, affects only the *extent* of the Brazilian turmoil, without triggering it.

The remainder of the paper is organised as follows. Section II reviews the main events in Brazil during the summer of 2002 and the problem of public debt sustainability. Section III addresses the main interpretations of the 2002 events with reference to the current economic debate and the recent literature on financial crises. Section IV presents the Markov-switching methodology adopted in the analysis. Section V discusses the main empirical results of the model. Section VI concludes.

## **2 The Depreciation of the Brazilian Real of 2002 and the Problem of Debt Sustainability**

In the summer of 2002, the Brazilian economy was subject to major currency turmoil with a depreciation of its currency, the *real*, of over 30% between April and October (see Figure. 1). The exchange rate disorder was associated with a net drop in capital inflows, a sharp rise in the interest rate spreads of Brazilian debt over US Treasury securities, and a fall in domestic debt rollovers. This turbulence has been interpreted as the result of financial market fears

that Brazil could default on its public debt, following the example of other emerging markets and especially that of its closest neighbour, Argentina.

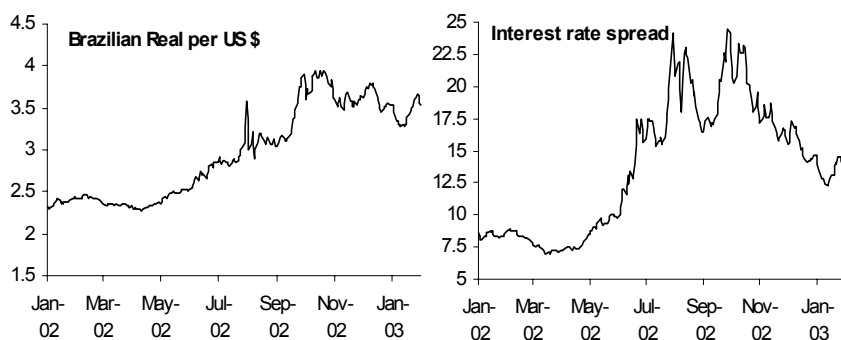


Figure 1: Nominal Exchange Rate and Bond Spreads  
Sources: DataStream, JP Morgan (EMBI Global)

In the years preceding this financial distress episode, however, the Brazilian authorities had achieved a substantial improvement in the country’s institutional framework: the 1998 Fiscal Stabilisation Plan<sup>2</sup> and the 2000 Fiscal Responsibility Law—as well as the greater transparency that came with the publication of improved government statistics and the recognition of fiscal hidden liabilities—being among the most relevant reforms<sup>3</sup>. Since 1995, the fiscal balances had registered significant primary surpluses averaging about 3.5% of GDP and high levels of fiscal revenue had been collected. The macroeconomic environment also benefited from an effective inflation-targeting policy, which delivered relatively stable inflation in spite of the large currency depreciation. With respect to the trade position, the competitive exchange rate allowed an improvement of the current account balance (Figure 2). These outcomes are even more remarkable in light of the deteriorating macroeconomic situation in neighbouring Argentina, Brazil’s single-largest trading partner<sup>4</sup>: it is, in fact, estimated that Brazilian exports to new markets were able to offset more than 80% of the drop in exports to Argentina.

This economic framework seems at first sight to contain all the necessary ingredients for a successful trend in Brazilian fundamentals, specifically

<sup>2</sup>This law governs the spending patterns of the country’s federal states, by establishing limits on public indebtedness or expenditure in personnel, and defining annual fiscal targets for three successive years.

<sup>3</sup>See Goldfajn [2002].

<sup>4</sup>The weight of the Argentine peso in the real effective exchange rate calculated by Banco do Brasil is equal to 15.8% (second only to the US dollar with 32.4%) and reflects trade during the period 1998-2001.

with regard to debt dynamics. On the basis of these results and of a consistent medium and long-term scenario, an IMF fiscal sustainability analysis, released in January 2001, estimated a gradual net public debt decline over time, assuming a continuation in the fiscal efforts of the federal government.

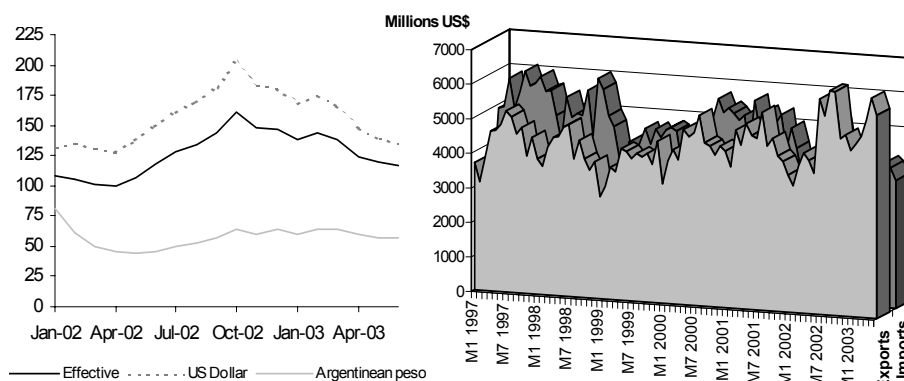


Figure 2: Real exchange rates and trade dynamics  
Sources: Banco Central do Brasil, IFS

Nevertheless, these positive signals were unable to quell investors' concerns over the sustainability of Brazilian debt. In fact, the vulnerability of the Brazilian economy to shifts in investor sentiment and other external shocks depended critically on the composition of its public sector debt. Increased volatility in emerging markets in previous years, coupled with Brazil's past history of monetary and fiscal mismanagement, led to a strong demand for indexed debt from foreign as well as domestic investors. As a result, beginning with the East Asian crisis in 1997, a large share of prefixed Brazilian public debt had been converted into indexed debt. As depicted in Figure 3, the share of public debt with a floating interest rate<sup>5</sup> (37% of the total) or linked to the exchange rate (42%) represented a major source of vulnerability for the country. As a result, panic behaviour in the summer of 2002 was more than sufficient to offset the efforts of the Brazilian authorities: any hostile market sentiment was self-validated by the rise in bond spreads and depreciation of the currency, which pushed the debt-to-GDP ratio up to around 56% by end-2002<sup>6</sup>.

<sup>5</sup>The Selic is the overnight interest rate that is set by the Brazilian Central Bank.

<sup>6</sup>Williamson [2002] regards the 56% figure declared by the Brazilian CB as too low and takes this figure up to 66%. Goldstein [2003] reports similar estimates for major rating agency and investment banks. Favero and Giavazzi [2002] remark on the existence of hidden liabilities that are still not officially recognised and that may account for as much as 10% of GDP.

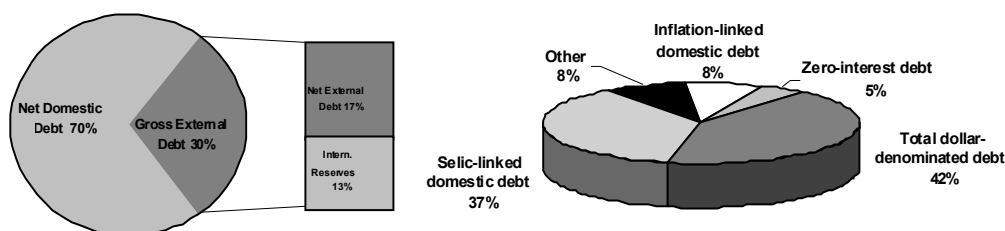


Figure 3: Composition of Brazilian Public-Sector Total Debt (Aug-2002)  
Sources: Williamson [2002], Banco Central do Brasil.

### 3 Financial Contagion and Political Uncertainty

#### 3.1 A Multiple Equilibria Story?

The 2002 currency panic in many ways resembles a self-fulfilling crisis episode, as opposed to a “wake-up call” effect, where an external event reveals to investors the true state of the fundamentals. In effect, the fiscal situation of Brazil in 2001 was far from unsustainable; yet the level of public debt and, in particular, its flexible structure were not adequate to keep the economy in the no-crisis state and left it vulnerable to shifts in investors’ expectations.

As described by second-generation crisis models,<sup>7</sup> when an economy is exposed to multiple equilibria, sunspots—i.e. factors able to coordinate and redirect investors’ expectations—can induce jumps between them. Such a mechanism is enabled only within a certain range of the fundamentals necessary to place the country in the crisis zone: low reserves, a negative trade balance and/or a large variable debt, as in the Brazilian case, are among the most likely causes of vulnerability. According to this theoretical framework, it follows that, given its fiscal situation, Brazil had two alternative stable equilibria: a “good” equilibrium, characterised by constant capital inflows, relatively low interest rates, a stabilisation of the exchange rate and, as a result, a manageable fiscal burden; and a “bad” equilibrium, characterised by diminished foreign investment, high interest rates, an over-depreciated currency and a far from sustainable debt-service figure.

Nevertheless, recent work on currency crises by Morris and Shin (1998) has focused attention on the role of uncertainty and lack of common knowledge. In these models, the introduction of noisy private information about fundamentals eliminates any common device able to coordinate investors’

<sup>7</sup>See the seminal paper of second-generation crisis models by Obstfeld (1996) or, for a text-book treatment, Sarno and Taylor (2002).

actions and leads eventually, by iterated elimination in a global-game framework, to selection of a unique equilibrium. Morris and Shin (2001) (and Prati and Sbracia, 2003) extend this analysis in order to distinguish between different sources of uncertainty (fundamental and strategic) as well as a different taxonomy of information (private or publicly available). The result is a condition for uniqueness of equilibrium which relies strongly on the precision of private signals relative to the underlying uncertainty on the fundamentals. From this perspective, the Brazilian events of 2002 may have been caused by a shift in fundamentals, where each agent takes a global perspective and deduces when an adequate number of other players is ready to attack the currency. This scenario needs by assumption to focus on the noisy character of the surrounding public signals. In particular, with reference to the presidential campaign in Brazil during 2002, uncertainty over economic fundamentals could include uncertainty over “political fundamentals”, assessed by agents according to their correlated private signals together with the noisy public signals in the form of public opinion polls.

Notice, however, that if the strength and direction of common signals overcame the precision of private information, we would be brought back to a multiple-equilibria scenario,<sup>8</sup> where sunspots are replaced by increases in the noise of individuals’ signals.<sup>9</sup> Following this latter interpretation, the precision of private information may have been further compromised by the vulnerable character of indexed Brazilian debt, since under indexation a rise in the sovereign spread will actually increase the size of the debt, which may in turn adversely affect market sentiment in a vicious spiral.

## 4 Modelling Crisis in a Nonlinear Framework

### 4.1 Nonlinear Analysis of International Financial Markets: A Brief Review

The use of linear models in the analysis of financial time series presents a number of limitations, as their formulation does not allow for the existence of unobservable factors (such as changes in investors’ beliefs, herding behaviour, financial panic and political uncertainty) that are likely to affect the process under investigation. For this reason, nonlinear empirical analyses of financial and international financial variables have become increasingly popular over the last decade or so. In particular, Markov-switching (MS) models

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<sup>8</sup>See Hellwig (2002).

<sup>9</sup>Heinemann and Illing (2002).

represent a valuable tool for the purposes of the present analysis.<sup>10</sup> Their attractiveness in the context of the present analysis are clear: As MS models are designed explicitly to capture discontinuity in the data-generating process, they allow us to model regime changes due to a structural alteration in the economic system as well as extraordinary short-period events such as a financial turmoil episode. Moreover, by allowing the estimation method to determine the probability of being in any particular regime, we can avoid the *a priori* identification of regimes and their timing, thereby enhancing the extent of flexibility in the analysis.

Given these attractive features, it is not surprising that the empirical literature on financial crises and contagion reveals a growing interest in the use of this category of models. The work of Jeanne and Masson (1998), who propose the utilization of a MS framework in order to depict empirically the existence of multiple equilibria, represents one of the first attempts in this vein. Specifically, these authors test a model of self-fulfilling expectations in the speculation episode against the French franc in the period 1992-1993. Their results show that the performance of the model improves significantly once sunspots are introduced to influence devaluation expectations, by means of a MS approach. In Masson (1999), however, some limitations in the use of MSVAR to the analysis of contagion are discussed: in particular, the application of MS analysis to interest rates for Argentina and Brazil seems not to produce the expected results. Among the main problems identified by Masson is the availability of an adequate data sample: the use of high frequency data and the analysis of large asset price movements rather than crises per se are suggested as possible alternatives. Fratzscher (2002) employs a MSVAR methodology to allow for a systematic comparison of the possible explanations of financial crises: fundamentals, sunspots and contagion. Fratzscher's empirical study is based on monthly data from 24 emerging markets over the period 1986-1998. Only the inclusion of contagion variables—measuring trade, financial and stock market interdependence across countries—allows the linear model to perform as well as the nonlinear one, suggesting the effectiveness of MS modelling in the detection of latent, crisis-generating factors. The MS methodology is applied to high-frequency data by Sola et al. (2002) in order to account for changes in expectations and investors' beliefs in the test of volatility spillovers across stock markets. Finally, Tillmann (2003) adopts a time-varying regime-switching regression in order to model the probability of a currency crisis for the French franc and the Italian lira under the ERM. In particular, the model tests for the theoretical predictions of models *à la* Morris and Shin (1998), by introducing a measure of information disparities.

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<sup>10</sup>For a wide coverage of Markov switching models refer to Kim and Nelson [1999].



## 4.2 A Markov-Switching Model of Crisis with Endogenous Transition Probabilities

In the present analysis, we use the Brazilian sovereign bond spread as a proxy for the perceived risk of default, and estimate an equation explaining the behaviour of this equation that has a Markov-switching mean, in order to capture the presence of an immediate jump of the series vector to its new level<sup>11</sup>. The model we consider is therefore of the form:

$$BRSR_t = \alpha_0 + \alpha_1 S_t + \beta' x_t + \varepsilon_t, \quad \varepsilon_t \sim N(0, \sigma^2), \quad (1)$$

where  $BRSR_t$  denotes the Brazilian spread,  $\alpha_0$  and  $\alpha_1$  are scalar parameters,  $x_t$  is a vector of variables that influence the level of the spread,  $\beta$  is an associated vector of coefficients and  $\varepsilon_t$  is a white-noise disturbance term. In this setup, a shift into crisis is represented by a shift from the ‘normal state’, where  $S_t = 0$  and the intercept term is just  $\alpha_0$ , to the crisis state, where  $S_t = 1$  and the intercept term becomes  $\alpha_0 + \alpha_1$  so that (assuming  $\alpha_1 > 0$ ) a higher level of the sovereign spread is indicated, for any given values of  $x_t$ .

In the standard MS model, the probabilities of switching between regimes are assumed to be constant and exogenous. In the present analysis, however, we want to extend this approach in order to examine whether the probability of being in a crisis state is dependent upon one or more of a range of variables, as discussed above. Following Filardo and Gordon (1998), we can model these probabilities using a latent variable probit model, such that

$$\Pr\{S_t = 1\} = \Pr\{S_t^* \geq 0\}, \quad (2)$$

where  $S_t^*$  is a latent variable defined by the following equation

$$S_t^* = \gamma_0 + \gamma_1 S_{t-1} + \delta' z_t + u_t, \quad (3)$$

in which  $z_t$  is a vector of variables that influence the transition probability with corresponding factor loadings determined by the  $\delta$  vector of parameters,  $\gamma_0$  and  $\gamma_1$  are scalar parameters and  $u_t$  is a standard normally distributed

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<sup>11</sup>The same indicators estimated in a simple linear framework are not significant, with the only exception of the Argentine spreads. The variables of the linear model, whose results we omit for brevity, are estimated in differences, as integrated of order one and not cointegrated. However, the same variables are found stationary at 10% critical level once structural breaks are accounted for, following the testing methodology by Perron (1990). This result justifies the use of levels in the Markov switching specification.

white-noise disturbance.<sup>12</sup> The transition probabilities can then be derived by evaluating the conditional cumulative distribution function for  $u_t$ . Specifically, if the probability of the economy remaining in the crisis state at time  $t$  once it is in crisis ( $S_{t-1} = 1$ ), given the values of  $z_t$ , is  $p_t^{cc}$ , then

$$\begin{aligned} p_t^{cc} &= \Pr \{S_t = 1 | S_{t-1} = 1, z_t\} = \Pr \{u_t \geq -\gamma_0 - \gamma_1 - \delta' z_t\} \\ &= 1 - \Phi[-\gamma_0 - \gamma_1 - \delta' z_t] \end{aligned} \quad (4)$$

where  $\Phi[\cdot]$  denotes the standard normal cumulative density function. Similarly, the probability of remaining in the tranquil state at time  $t$ , given  $z_t$  (and, of course,  $S_{t-1} = 0$ ) may be written:

$$\begin{aligned} p_t^{\tau\tau} &= \Pr \{S_t = 0 | S_{t-1} = 0, z_t\} = \Pr \{u_t < -\gamma_0 - \delta' z_t\} \\ &= \Phi[-\gamma_0 - \delta' z_t] \end{aligned} \quad (5)$$

Note that the probability of switching from state  $i$  to state  $j$  ( $i, j = c, \tau$ , where  $c$  denotes the crisis state and  $\tau$  denotes the tranquil state) is straightforwardly given by  $p_t^{ij} = 1 - p_t^{ii}$  ( $i, j = c, \tau$ ).

Estimation of the time-invariant parameter vector  $(\alpha_0, \alpha_1, \beta', \gamma_0, \gamma_1, \delta', \sigma^2)'$ , together with estimated time series for the unobservable  $S_t$ ,  $S_t^*$ ,  $p_t^{11}$  and  $p_t^{22}$ , can be carried out in a Bayesian context using an application of the Gibbs sampler,<sup>13</sup> as suggested by Filardo and Gordon (1998). We followed the Gibbs-sampling methodology, although we employ diffuse priors for all of the parameters so that the resulting estimator is in fact equivalent to a standard maximum likelihood estimator.<sup>14</sup>

Of course, application of the model requires selecting a list of candidate variables to include in  $x_t$  and  $z_t$ . Given the previous discussion, we considered the developed market high-yield as a proxy for global factors, the Argentine sovereign spread as a potential indicator of the contagion effect, opinion polls relating to the popularity of the left-wing candidate in the 2002 Brazilian presidential elections, Lula de Silva, as a proxy for a “political mistrust” variable, and an “aid and commitment” variable designed to capture positive and negative declarations by the IMF concerning possible or agreed support programs to Brazil or Argentina during this period. In the next sections we further justify the use of these variables, while more detailed descriptions are given in the data appendix.

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<sup>12</sup>Normalising the variance of  $u_t$  is an identifying assumption that can be imposed without loss of generality.

<sup>13</sup>Albert and Chib (1993) suggest applying the Gibbs sampler to estimation of Markov-switching models with fixed transition probabilities.

<sup>14</sup>Convergence of the Gibbs sampler was achieved by using 10,000 passes, with the first 1,000 discarded.

### 4.3 Global Factors: the Developed Market High-Yield Spread

There are at least two reasons why one might expect the developed market high-yield spread—the spread between the return on less-than-investment-grade (“junk”) bonds and government or other highly rated bonds—to have an effect on emerging markets. The first is that movements in the high-yield spread may be a countercyclical leading indicator of economic activity in developed markets, so that a rise in the spread may presage a reduction in economic activity with a concomitant adverse effect on capital flows to emerging markets. The second is that the wedge between the return on high-yield bonds and investment-grade bonds must, more generally, reflect the general attitude towards risk of investors at that point in time—the bigger the wedge, the greater the degree of risk aversion and the less willing will investors be to invest in emerging markets, other things equal.

The idea that the high-yield spread may be a countercyclical leading indicator of economic activity derives from the theory of the financial accelerator.<sup>15</sup> While the finer details of financial accelerator models differ, their central features are reasonably uniform and their key elements may be set out informally as follows: There is some friction present in the financial market, such as asymmetric information or costs of contract enforcement, which, for a wide class of industrial and commercial businesses, introduces a wedge between the cost of external funds and the opportunity cost of internal funds—the “premium for external funds”. This premium is an endogenous variable, which depends inversely on the balance-sheet strength of the borrower, since the balance sheet is the key signal through which the creditworthiness of the firm is evaluated. However, balance-sheet strength is itself a positive function of aggregate real economic activity, so that borrowers’ financial positions are procyclical and hence movements in the premium for external funds are countercyclical. Thus, as real activity expands, the premium on external funds declines, which, in turn, leads to an amplification of borrower spending, which further accelerates the expansion of real activity. This is the basic mechanism of the financial accelerator. In line with the predictions of the theory, Gertler and Lown (1999) and Mody and Taylor (2003) find evidence of a strongly significant and negative relationship between the US high-yield spread and US real activity.

With reference to the Brazilian events under investigation, the credit crunch and the depressed real activity in developed markets associated also with the *Enron* scandal and the related worries about firm accountability,

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<sup>15</sup>See for example Bernanke, Gertler and Gilchrist (1998) and the references therein.

may have generated serious spillovers into developing markets. In particular, the global portfolio rebalancing across classes of investment risk, due to increased risk aversion, pushed up the bond rates of the major Latin American economies. Figure 4 shows how the trends of the Brazilian sovereign spread and the index of developing countries' high-yield spread show quite a similar pattern, especially during the 2002 turmoil. However, the extent of the increase in the developed market high-yield spread seems able to explain only partially the dramatic jump in Brazilian country risk.

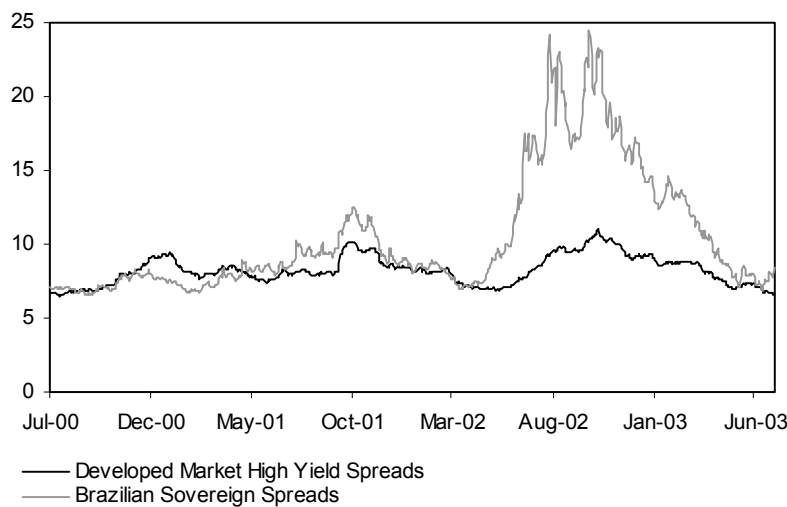


Figure 4: Developed-Market High-Yield and Brazilian Sovereign Spreads  
Source: JPMorgan

#### 4.4 The Role of the Argentine Crisis

Recent studies on financial crises in emerging markets have underlined the existence of substantial spillover effects and contagion episodes amongst countries within a given regional area. This feature can be related to common external macroeconomic shocks, trade and financial linkages among countries or simply a shift in market sentiment. In his analysis of the Mexican crisis, Calvo (1996) supports the idea of herd behaviour in this context, with agents withdrawing their exposure from an entire group of interconnected markets in response to signs of distress in just one of them, rather than bearing the costs of assessing the true state of the underlying fundamentals relating to each market.

This interpretation of contagion episodes could provide a potential explanation for the events in Brazil. At the turn of the century, Argentina, the third largest economy in Latin America and a key trade partner of Brazil,

had been in recession since 1998 and was registering a growing public-debt-to-GDP ratio, associated with high political instability, and an overvalued exchange rate with large current account deficits. In January 2002, the country devalued its currency abandoning the parity with the USD introduced under the currency board in 1991. After the country default on public debt, the currency crisis degenerated into a financial one, jeopardised by the asymmetric pesification of bank assets and liabilities with an estimated mismatch of US\$ 54 billion. The result of these events was a loss of confidence in the domestic authorities and a corresponding currency and bank run in an attempt to circumvent the introduced restrictions on cash current account withdrawals and the freeze on time deposits.

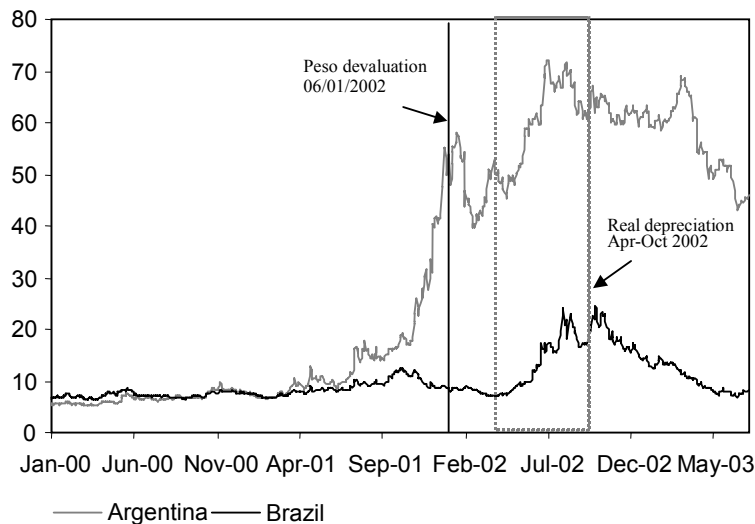


Figure 5: Sovereign Spreads in Brazil and Argentina  
Source: JPMorgan EMBI Global

Despite the stronger fundamentals of the Brazilian economy, its vast stock of public debt and its vulnerable composition made the country highly exposed to capital flow reversals resulting from changes in market sentiment. The scene was therefore set for a neighbouring crisis such as the Argentine one to generate wide spillovers. Although all emerging markets were experiencing a reduction in foreign investments at the time, due to portfolio reallocation and changes in risk assessment by investors, a “sudden stop” phenomenon impacting upon Argentina and Brazil independently does not seem a plausible explanation. Similarities and closeness probably determined a financial contagion effect of its own which self-reinforced the common external shock. Nevertheless, this view is not shared in academic and institutional circles.

According to Krueger (2002), “contagion was limited because the Argentine default was largely expected. Indeed, the crisis seemed to unfold almost in slow motion. As a result investors had ample opportunity to restructure their portfolios in advance. With the exception of Uruguay, most Latin American banks have maintained only a small exposure to Argentina.”. The following empirical analysis may be viewed as an attempt to check the validity of these conclusions, by testing the effect of the Argentine crisis on Brazil, in terms of increased country risk (Figure 5)<sup>16</sup>. We therefore included data on Argentine spreads in our empirical analysis.

## 4.5 Electoral Expectations and Country Risk

“Brazil has implemented strong and consistent macroeconomic policies in recent years that have improved fundamentals [...] Despite these achievements, the uncertain economic environment and some concerns about the course of economic policies following the upcoming presidential elections have put substantial pressure on financial variables” (IMF Press release 02/40, September 2002).

The IMF, as well as a number of other economists, has pointed to the presidential elections held in October 2002 as one of the main sources of economic instability in the country in that period. The drop in net capital flows has in fact been explained as the result, among other reasons, of investors’ worries concerning a possible shift in macroeconomic policy following the likely victory of the left-wing candidate, Lula da Silva, in the presidential election contest, mainly due to Lula’s past declarations in favour of debt repudiation<sup>17</sup>.

Following this view, Razin and Sadka (2002) propose a multiple-equilibria debt-crisis model for Brazil in 2002. The trigger able to coordinate market expectations and induce creditors to change their beliefs about the country’s credit worthiness is represented by the forthcoming elections, with a regime change. Once again, the crucial assumption in the model for the occurrence of multiple equilibria is the presence of an indexed debt and the dependence of the country risk on foreign lending. Miller et al. (2003) address the same issue with a model of Bayesian learning, where the voters learn about the candidate’s policy preferences and, above all, his attitude towards debt default. These authors allow also for contagion effects from Argentina: the events

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<sup>16</sup>See Pericoli-Sbraccia [2001] for a comprehensive review of the relevant literature on contagion.

<sup>17</sup>See Williamson (2002) and (2003) for a wide examination of Brazilian politics in 2002.

in the neighbouring country do not cause directly a shift between multiple equilibria; instead, the country debt repudiation raises default expectations in Brazil by shifting prior beliefs about the nature of an incoming left-wing government.

In light of these considerations, we added to our empirical analysis an examination of the effect of a political variable. In particular, we attempted to capture public sentiment towards the likely victory of the socialist candidate and the resulting worries for the country’s future fiscal situation by using opinion-poll data in the run-up to the presidential election. The net predominance of Lula’s support during the year preceding the elections is clearly described by Figure 6, which presents the dynamics of the opinion polls for the favourite candidates in terms of the percentage of those asked who stated that they were going to vote for the candidate in question.

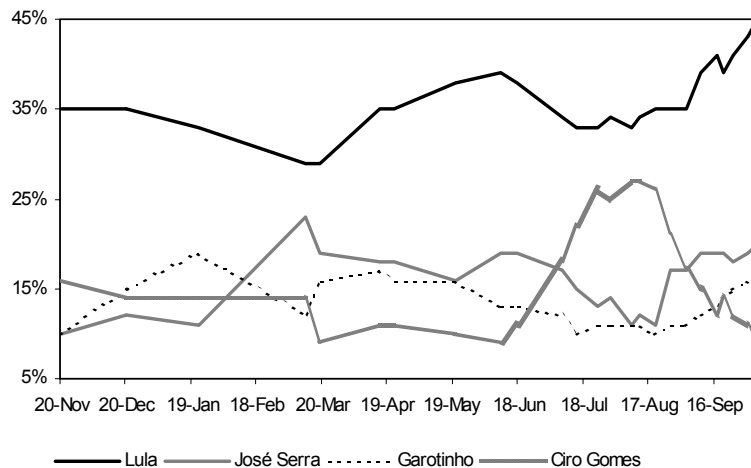


Figure 6: Brazilian Political Opinion Polls  
Source: IBOPE.

In their paper on the influence of political instability on economic vulnerability, Bussière and Mulder (1999) criticize the use of polls as an indicator because of their lack of credibility, remarking how many election outcomes differ significantly from polls forecasts. Nevertheless, in the context of this study, we believe that polls are the most suitable variable, since we are not looking for exact forecasts of the political outcome, but for the best public signal, available to foreign investors, of the average Brazilian voter preferences for the presidential elections.

## 4.6 What Role for IMF Catalytic Finance?

Finally, we are interested in considering whether the intervention of international financial institutions (IFIs), such as the IMF, can potentially avoid the jump towards the crisis regime or even preclude the existence of multiple equilibria.

In this regard, the literature on currency crises has tended to focus on the role of a common lender of last resort, able to guarantee sovereign debt and honour it in case of country default. This international guarantee has been widely criticised in the aftermath of the Asian crisis, because of the strong moral hazard implications.

A parallel role attributed to IFIs is based on the doctrine of catalytic finance: official assistance to a country in crisis would not only provide the necessary liquidity but would contribute to a strengthening of market sentiment and hence encourage a return of private-sector funding. Recent work by Corsetti et al. (2003) provides an explanation of how such a stabilising mechanism may come into effect, by focusing on the coordination of agents' expectations and government incentives. The main characteristics of the model are the resurgence of a liquidity problem, rather than a solvency one; the effectiveness of IMF support even if the resources available are less than what is needed to close the financing gap; and the possibility of restoring market confidence and thus generating a strong herding effect that is able to solve any coordination failures among creditors. As regards potential distortions in the policymaker behaviour, moral hazard arises only if the true nature of government is misunderstood. In all other cases, a well-intentioned policymaker would find in the IMF's liquidity support, and in the private funding it promotes, the necessary means to realise all the needed reforms. As suggested by Morris and Shin (2003), a useful integration of the literature on catalytic finance would suggest regarding IMF financial support as conditional on earlier actions and the pre-commitment of the government.

Corsetti et al. (2003) refer to the Brazilian events as a likely example of the effectiveness of IFI intervention in the presence of a country liquidity problem. The successful exit from the currency and financial turmoil of Summer 2002 is likely to have been determined by the positive reaction of the markets to the IMF intervention on September 6, with the approval of a 15-month stand-by credit of about US\$31 billion. Furthermore, as has been remarked by the IMF itself, "the commitment that the leading presidential candidates have given to the core elements of the program already appears to have helped market confidence"<sup>18</sup>, thus supporting the view that financial aid needs to be linked to a fiscally committed government in order to be

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<sup>18</sup>IMF Press release 02/40, September 2002.



effective and credible.

With reference to the Brazilian experience, IMF intervention—coupled with the letters of intent of policymakers and the policy declarations of the presidential candidates—could have had an influence on the vulnerable debt situation as well on the political uncertainty in the pre-election period. The mistrust of Brazilian and international investors regarding the future policies of a left-wing government could have been more than offset by the support action from the Fund.

The commitment not to repudiate the sovereign debt and to undertake all the necessary policy actions to ensure fiscal sustainability, underpinned by the IMF agreement, may have given a strong signal to the public on the true type of government. Chang (2002) shows how financial assistance programs can have a significant impact on domestic politics and, surprisingly, how commitment to a common fiscal policy can especially benefit the pro-labour party, by making candidates more alike. According to this view, the hypothesis of the IMF’s intrusion in Brazilian politics, as well as its indirect support to the outgoing administration’s candidate was totally unjustified.

From an empirical perspective, these theoretical results offer further possibilities for investigation. As Miller et al. (2003) indicate, “just as bad news from Argentina could increase sovereign spreads [...], so arrangements with the IMF might have the opposite effect”. We therefore decided to introduce into our analysis two “aid and commitment” variables, including both Argentine and Brazilian news, in order to test whether positive and negative news concerning IMF intervention, as well as the political commitments from the current government and the presidential candidates, may have had a significant impact on the country default risk.

## 5 Empirical Results

### 5.1 Estimates and Interpretation

Given the previous discussion, the candidate variables to include in our analysis in order to explain the level and shifts in the level of the Brazilian sovereign spread (*BRSPR*) were the Argentine sovereign spread (*ARSPR*), a measure of the perceived probability of Lula’s successes in the presidential election, as measured by Brazilian opinion polls (*LULAOPP*), the developed market high-yield spread (*HY*) and an aid-and-commitment variable which took the value  $-1$  when positive declarations were made concerning IMF programs to Argentina or Brazil (*IMF\_YES*) and zero otherwise, one which took the value  $1$  for negative declarations by IMF in this respect—which in the

event only concerned negative declarations about Argentina for this period—(*IMF\_NO*)<sup>19</sup>. Further, because of the high level of Argentine spreads over the period in question, we investigated whether there was threshold effect concerning the influence of the Argentine sovereign spread when *ARSPR* breached a 60% threshold.<sup>20</sup> See the data appendix for further discussion of data sources and methods.

Estimations were carried out using daily data for the period November 20, 2001 to October 28, 2002, with a total sample of 245 observations. With the exceptions of the IMF news dummy variables, all variables were included with a one-period lag in order to preclude any issues of endogeneity of the explanatory variables. In the initial estimations, we included all of these variables in both of the estimated equations (i.e. in both  $x_t$  and  $z_t$ ). After sequentially setting statistically insignificant parameters to zero (using a 5% nominal significance level), we settled on the following preferred specification (where  $I(\cdot)$  denotes an indicator variable that takes a value of unity when the indicated inequality is true, and zero otherwise and estimated standard errors are given in parentheses below coefficient estimates):

$$BRSPR_t = \begin{matrix} 6.832 \\ (0.555) \end{matrix} + \begin{matrix} 5.687 \\ (0.301) \end{matrix} S_t + \begin{matrix} 0.031 \\ (0.009) \end{matrix} I(ARSPR_{t-1} < 60\%)ARSPR_{t-1} + \\ + \begin{matrix} 0.125 \\ (0.004) \end{matrix} I(ARSPR_{t-1} \geq 60\%)ARSPR_{t-1} + \varepsilon_t; \quad (6)$$

$$\varepsilon_t \sim N(0, 2.41) \quad (7)$$

$$P(S_t = 1) = P(S_t^* \geq 0); \quad (8)$$

$$S_t^* = \begin{matrix} -5.054 \\ (0.753) \end{matrix} + \begin{matrix} 3.288 \\ (0.178) \end{matrix} S_{t-1} + \begin{matrix} 0.042 \\ (0.006) \end{matrix} LULAOPP_{t-1} + \\ + \begin{matrix} 0.203 \\ (0.075) \end{matrix} HY_{t-1} + \begin{matrix} 0.761 \\ (0.174) \end{matrix} IMF\_NO_t + u_t. \quad (9)$$

$$u_t \sim N(0, 1) \quad (10)$$

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<sup>19</sup>For merely computational reasons, pessimistic news have a positive sign in the dummy variable.

<sup>20</sup>The threshold level of 60% was suggested by estimating a univariate, constant probabilities Markov-switching autoregressive model for *ARSPR*.

The results are extremely encouraging in that all of the estimated coefficients are strongly statistically significantly different from zero and their sign in each case accords with our economic intuition. The coefficient of  $S_t$  in equation (6) shows that a switch into the crisis regime entails a jump of about 5.7% in the Brazilian sovereign spread. Interestingly, the only other explanatory variable that was found to be significant in this equation was the Argentine spread. Although this variable does not appear in the final latent variable equation (9), this in fact suggests a strong contagion effect, since a movement of the Argentine spread above 60% is accompanied by an increase in the slope coefficient by a factor of about four (from 0.031 to 0.125), indicating a contribution to the Brazilian spread in excess of 7%.

With regard to the latent variable equation, the estimated coefficient for the political variable is also strongly significant<sup>21</sup> and shows, as expected, a positive sign, in line with the hypothesis of a direct relationship between Lula’s victory chances and the perceived country default risk. As regards the global factor variable, the high-yield spread for developed markets has a strong and significant impact on the probability of being in crisis.

We also find a positive relationship between the probability of being in crisis and the IMF dummy variable for negative news, in favour of the idea that a programme refusal or a pessimistic declaration by the IMF can deeply affect investors’ beliefs. In particular, the negative-news variable reports the IMF refusal, on December 5, 2002, to complete the latest review of Argentina’s IMF supported program, which would have allowed the country to draw a further US\$ 1.3 billion from the IMF<sup>22</sup>.

The positive IMF news variable was not found to be statistically significant. This seems to reflect a bias of investors’ reaction towards bad news: while reassuring declarations by political candidates and new agreement with the IMF appear to have had no notable impact on market sentiment, negative remarks—which represent sporadic events—can induce strong capital outflows and even trigger a crisis, by decreasing the probability of remaining in a tranquil state. However, a deeper analysis of the estimated probability of being in the crisis state, as drawn in fig. 7, shows a temporary tendency of the crisis state to reverse towards the tranquil one in mid-August 2002: this trend precedes closely the announcement of the approval of a \$30.4 billion stand-by credit for Brazil and the extension of Argentina’s SRF repayment by one year, respectively on September 6 and 5. As a result, we cannot exclude the hypothesis of a leak of information concerning the two IMF in-

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<sup>21</sup>The LULAOPP variable is also economically significant, given it is expressed in percentage.

<sup>22</sup>See IMF Survey 30-23.

terventions in the two weeks immediately before their official announcement to the press.

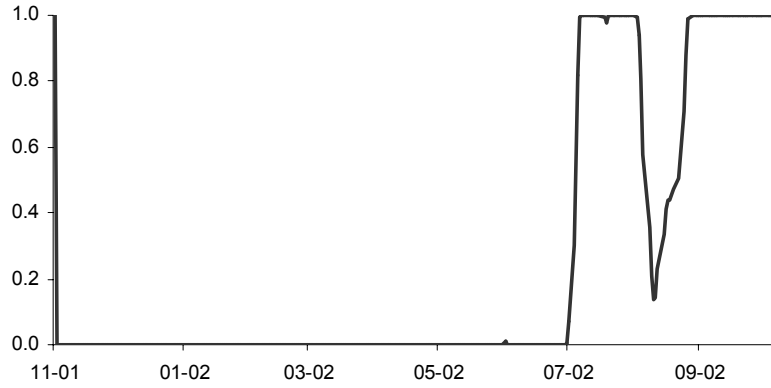


Figure 7: Probability of a crisis state

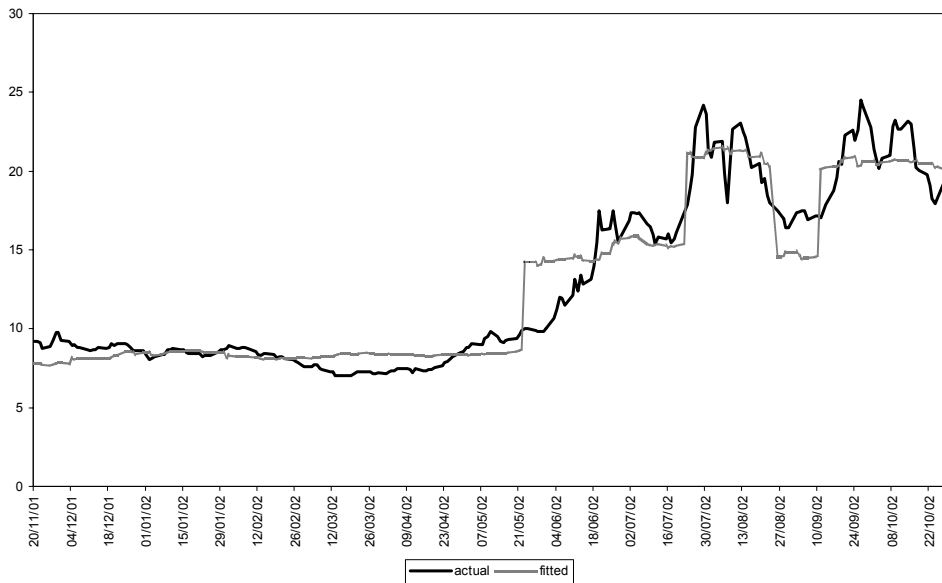


Figure 8: Brazilian spreads: actual versus fitted values

The  $R^2$  for the regression is equal to 0.9192, indicating that the selected explanatory variables in the regression account for over 90% of the variation in the actual Brazilian spreads. The good explanatory power of the specification is also illustrated by the plot of the actual versus the fitted values of BRSR in fig. 8.

We have shown how the currency and financial turmoil of 2002 in Brazil was triggered by three kinds of signals: political mistrust by foreign investors

concerning the conduct of the expected winner at the presidential elections, the behaviour of high-yield spreads in developed markets and negative news concerning IMF intervention in Argentina. Financial spillovers from Brazil's neighbour, Argentina, appear also to have a role in the 2002 events.

## 6 Concluding comments

This paper has investigated the events of 2002 in Brazil, by testing empirically some of the leading interpretations that have been advanced to account for the financial turmoil that characterised that period. Markov switching modelling proved an appropriate econometric tool in the analysis of distress periods. In effect, the possibility of capturing self-fulfilling changes in market behaviour, by means of an endogenous regime-shift selection, allows researchers to test multiple equilibria models empirically. Our estimates provide evidence in favour of financial contagion from the Argentine crisis as well as of political uncertainty during the pre-election period in Brazil. In particular, such instability is interpreted as political mistrust concerning the future conduct of the left-wing leader with respect to the country's fiscal obligations. While political uncertainty contributed to the strong jump in Brazilian bond spreads, the spillover effect from Argentina seems to have affected only the extent of the turmoil in Brazil. The intervention of the IMF, coupled with the fiscal pre-commitments of the domestic authorities and the declarations of the presidential candidates, appeared instead to have a reverting effect on country risk. Nevertheless, while positive news do not show up as a significant factor in avoiding a crisis, negative news and declarations seem to have a deep impact on investors' sentiment and to be determinant in the probability of switching into a crisis regime.

However, this study is by no means exhaustive. Data availability represents the main limitation of the analysis: the use of high-frequency data allows a better representation of the dynamics of investors' behaviour, but reduces the quantity of variables available at the same time. The absence of daily observations for foreign reserves as well as for other fundamental variables excludes the possibility of including these variables in the estimations. In addition, even at lower frequency, there is still a difficulty in obtaining country-level data on capital flow movements, while these are widely available for trade statistics. Finally, the chronology of political events and IMF news would need to be compiled with reference to the effective day of disclosure of the information to the markets, in order to take account of the possible existence of "insider trading" and information leaks, given the large numbers of people and institutions involved in the decision process.

Finally, the results of our study suggest a number of policy considerations. The significant role of contagion between South American economies clearly needs to be taken constantly into account by IFIs, notably the IMF, in their intervention strategies, perhaps by means of more effective policy coordination in the region. Moreover, the potential for IMF declarations and agreements to act as a common public signal able to coordinate market expectations and hence generate a catalytic-finance effect strongly encourages further research on this topic.

## References

- [1] Bernanke, B.S., Gertler, M. and Gilchrist, S. (1999), The financial accelerator in a quantitative business cycle framework. In Taylor, J.B., Woodford, M. (Eds.), *Handbook of Macroeconomics: 1341-93*, Amsterdam, New York and Oxford: Elsevier Science, North-Holland.
- [2] Bussière, M. and Mulder, C. (1999), Political Instability and Economic Vulnerability, IMF Working Paper 99/46, April.
- [3] Calvo, G. (1996), Capital Inflows and Macroeconomic Management: Tequila Lessons, *International Journal of Finance and Economics* 1, July.
- [4] Chang, R. (2002), Electoral Uncertainty and the Volatility of International Capital Flows, Mimeo, Rutgers University, December.
- [5] Corsetti, G., Guimarães, B., and Roubini, N. (2003), International Lender of Last Resort and Moral Hazard: A Model of IMF's Catalytic Finance, Mimeo, April.
- [6] Favero, C.A. and Giavazzi, F. (2002), Why are Brazil's Interest Rates so High? Mimeo, July 14.
- [7] Filardo, A. J. (1994). Business-Cycle Phases and Their Transitional Dynamics. *Journal of Business and Economic Statistics* 12(3): 299.
- [8] Filardo, A. J. and S. F. Gordon (1998). Business cycle durations. *Journal of Econometrics* 85: 99-123.
- [9] Fratzscher, M. (2002), On Currency Crises and Contagion, ECB Working Paper 139, April.
- [10] Garcia, R. and Perron, P. (1996), An Analysis of Real Interest Rates under Regime Shift, *Review of Economics and Statistics* 78.
- [11] Gertler, M. and Lown, C.S. (1999), The Information in the High-Yield Bond Spread for the Business Cycle: Evidence and Some Implications. *Oxford Review of Economic Policy* 15: 132-150.
- [12] Goldfajn, I. (2002), Are There Reasons to Doubt Fiscal Sustainability in Brazil? Banco Central do Brasil Technical Notes, 25.
- [13] Goldstein, M. (2003), Debt Sustainability, Brazil and the IMF, Institute for International Economics, WP 03-1, February.

- [14] Hamilton, J.D. (1989), A New Approach to the Economic Analysis of Non-stationary Time Series and the Business Cycle, *Econometrica* 57.
- [15] Heinemann, F. and Illing, G. (2002), Speculative Attacks: Unique Equilibrium and Transparency, *Journal of International Economics* 58: 429-450.
- [16] Hellwig, C. (2002), Public Information, Private Information, and the Multiplicity of Equilibria in Coordinating Games, *Journal of Economic Theory* 107: 191-222.
- [17] IMF (2001), Brazil: Selected Issues and Statistical Appendix, IMF Country Report, January.
- [18] J.P. Morgan (1999), Introducing the J.P. Morgan Emerging Markets Bond Index Global, Methodology Brief, New York: August 3, 1999.
- [19] Jeanne, O. and Masson, P. (1998), Currency Crises, Sunspots and Markov-Switching Regimes, CEPR Discussion Paper Series 1990.
- [20] Kass, R. E. and A. E. Raftery (1995). Bayes Factors. *Journal- American Statistical Association* 90(430): 773.
- [21] Kim, C.-J. and C. R. Nelson (1999). *State-space models with regime switching : classical and Gibbs-sampling approaches with applications*. Cambridge, Mass., MIT Press.
- [22] Koop, G. and S. Potter (1995). Nonlinearity, structural breaks, or outliers in economic time series? Economic theory; in *Nonlinear econometric modeling in time series*, Aarhus, Denmark, Cambridge.
- [23] Krueger, A. (2002), Economic Outlook for the Americas, IMF Speech to the Council of the Americas, U. S. State Department, Washington DC, May 7, 2002.
- [24] Leamer, E. E. (1978). *Specification searches : ad hoc inference with nonexperimental data*. New York, Wiley.
- [25] Masson, P. (1999), Multiple Equilibria, Contagion and the Emerging Market Crises, IMF Working Paper 99/164, November.
- [26] Miller, M., Thampanishvong, K. and Zhang, L. (2003), Learning to Forget? Contagion and Political Risk in Brazil, University of Warwick, Mimeo.
- [27] Mody, A. and Taylor, M. P. (2003), The High-Yield Spread as a Predictor of Real Economic Activity: Evidence of a Financial Accelerator for the United States, IMF Staff Papers, 50, 373-402.



- [28] Financial predictors of real activity and the financial accelerator. *Economic Letters* 82: 167-172.
- [29] Morris, S. and Shin, H-S. (1998), Unique Equilibrium in a Model of Self-Fulfilling Currency Attacks. *The American Economic Review* 88, 3: 587-597.
- [30] Morris, S. and Shin, H-S. (2001), Coordination Risk and the Price of Debt. Mimeo, December.
- [31] Morris, S. and Shin, H-S. (2003), Catalytic Finance: When Does It Work? Mimeo, January.
- [32] Obstfeld, M. (1996), Models of Currency Crises with Self-fulfilling Features, *European Economic Review* 40.
- [33] Pericoli, M. and Sbracia, M. (2001), A Primer on Financial Contagion, Banca D'Italia, Temi Di Discussione 407, January.
- [34] Perron, P. (1990), Testing for a Unit Root in a Time Series with a Changing Mean, *Journal of Business and Economic Statistics* 8, 2: 153-162.
- [35] Poirier, D. J. (1998). Revising Beliefs in Nonidentified Models. *Econometric Theory* 14(4): 483-510.
- [36] Prati, A. and Sbracia, M. (2003), Currency Crises and Uncertainty about Fundamentals, Mimeo, May.
- [37] Razin, A. and Sadka, E. (2002), A Brazilian Debt-Crisis, NBER Working Paper 9160, September.
- [38] Sola, M., Spagnolo F. and Spagnolo, N. (2002), A test for volatility spillovers, *Economics Letters* 76, 77-84.
- [39] Tillmann, P. (2003) Information Disparities and the Probability of Currency Crises: Empirical Evidence, forthcoming, *Economics Letters*.
- [40] Williamson, J. (2002), Is Brazil Next? International Institute of Economics, PB 02-7, August.
- [41] Williamson, J. (2003), Lula's Brazil, *Foreign Affairs* 82-1, January/February.

## A Appendix: Data Definitions and Sources

### A.1 Sovereign spreads

The data source for bond spreads is the JP Morgan Chase’s Emerging Markets Global Bond Index (EMBI Global). According to JP Morgan’s methodology brief<sup>23</sup>, the EMBI Global includes U.S.-dollar-denominated Brady bonds, Eurobonds, traded loans and local market debt instruments issued by sovereign and quasi-sovereign entities. The weight of each individual issue in the country-by-country index is determined on the basis of market-capitalisation. The use of a bond-spread index rather than the difference between an individual sovereign bond yield and the US Treasury bill yield closest to it in issue date and maturity allows for a better homogeneity of the data sample for different countries over time. The EMBI Global Spreads are available at daily frequency since January 1, 1998 for Argentina and Brazil (These two variables are referred to in the analysis as ARSPR and BRSPR).

### A.2 Developed Market high-yield Spread

The data source for this variable is the JP Morgan Chase’s Developed Market high-yield Summary Spread to Worst. The JPMorgan Developed Market HY Index represents all US\$ denominated corporate issues, with issuers domiciled in countries labelled as industrial by JPMorgan’s Economic Research Group. The spread is given by the difference between the high-yield and yield of the Treasuries. Issues included in the index must be rated ”5B” or lower. That is, the highest Moody’s/S&P ratings are Baa1/BB+ or Ba1/BBB+. The inception date of the index is January 1994.

### A.3 Political variable

Data on opinion polls during the 2002 presidential electoral campaign in Brazil have been obtained from IBOPE (*Instituto Brasileiro de Opinião Pública e Estatística*). Daily observations have been linearly interpolated from the data series available, from November 20, 2001 to October 28, 2002, with a total sample of 245 observations (The variable is named LULAOPP in the analysis). In particular, the following list of *Pesquisas De Opinião Pública Sobre Assuntos Políticos/ Administrativos* (Public Opinion Surveys on Political/Administrative Affairs) has been considered:

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<sup>23</sup>J.P.Morgan (1999)

OPP169 19/nov/2001; OPP203 19/dez/2001; OPP006 21/jan/2002;  
 OPP035 11/mar/2002; OPP051 18/mar/2002; OPP079 21/apr/2002;  
 OPP085 21/apr/2002; OPP107 19/mai/2002; OPP135 19/jun/2002;  
 OPP172 07/jul/2002; OPP184 14/jul/2002; OPP202 23/jul/2002;  
 OPP218 30/jul/2002; OPP225 08/ago/2002; OPP235 13/ago/2002;  
 OPP249 20/ago/2002; OPP279 27/ago/2002; OPP305 03/set/2002;  
 OPP329 09/set/2002; OPP351 17/set/2002; OPP357 20/set/2002;  
 OPP385 24/set/2002; OPP450 01/out/2002; OPP422 05/out/2002;  
 OPP438 6/out/2002; Result 1st round; OPP469 15/out/2002; OPP513  
 22/out/2002; OPP524 26/out/2002; OPP537 27/out/2002; Result  
 2nd round.

## A.4 Aid and commitment variable

In the analysis we consider two different “aid and commitment” variables. The first dummy variable (IMF\_YES) takes a value equal to minus one each time the IMF released optimistic declarations regarding possible or agreed supported programs to Brazil or Argentina. The variable also includes the issue dates of letter of intents by the Brazilian national authorities. In addition, news concerning the disbursement delay of the IMF to Argentina on December 5, 2001 and any related event has been included in another dummy variable (IMF\_NO), with a value of one. The main news sources were the IMF website and major Brazilian newspapers and news and information agencies. For the purposes of the analysis and according to the other variable sample-periods, we used observations from between November 20 2001 through October 28 2002, for a total of twenty news items for Brazil and eleven for Argentina. The events captured by the two variables are listed below by country and typology of news.

POSITIVE NEWS:

### *Brazil*

19 November 2001 Statement by Mr. Pedro Malan, Minister of Finance of Brazil, at the International Monetary and Financial Committee, Ottawa, November 17, 2001

30 November 2001 Brazil Letter of Intent, Memorandum of Economic Policies, and Technical Memorandum of Understanding

23 January 2002 News Brief: IMF Completes First Review of Stand-by Arrangement with Brazil

28 January 2002 IMF Survey: IMF approves review of Brazil's performance;

07 February 2002 Public Information Notice: IMF Concludes 2001 Article IV Consultation with Brazil

04 March 2002 Brazil Letter of Intent, Memorandum of Economic Policies, and Technical Memorandum of Understanding, March 4, 2002

26 March 2002 News Brief: IMF Completes Second Review of Stand-By Arrangement with Brazil

22 April 2002 Statement by Mr. Pedro Malan, Minister of Finance of Brazil to the International Monetary and Financial Committee, Washington, D. C., April, 20, 2002

27 May 2002 IMF Survey: Brazil positioned to speed up growth;

05 June 2002 Brazil – Letter of Intent, Memorandum of Economic and Financial Policies, Technical Memorandum of Understanding

14 June 2002 Brazil – Letter of Intent

18 June 2002 News Brief: IMF Completes Third Review of Stand-By Arrangement with Brazil

21 June 2002 Lula's "Carta ao Povo Brasileiro"

24 June 2002 IMF Survey: Brazil can draw \$10 billion;

23 July 2002 Lula's "Compromisso com a soberania o emprego e a segurança do povo brasileiro"

07 August 2002 News Brief: IMF Managing Director Köhler Confirms Agreement with Brazil

29 August 2002 Brazil – Letter of Intent, Memorandum of Economic Policies, and Technical Memorandum of Understanding

06 September 2002 Press Release: IMF Approves US\$30.4 Billion Stand-By Credit for Brazil

16 September 2002 IMF Survey: Brazil loan;

30 September 2002 IMFC Statement by Mr. Pedro Malan, Minister of Finance of Brazil, on behalf of the Constituency comprising Brazil, Colombia, Dominican Republic, Ecuador, Guyana, Haiti, Panama, Suriname, and Trinidad and Tobago

28 October 2002 News Brief: IMF Managing Director Köhler Congratulates Brazil's President-Elect

*Argentina*

16 January 2002 Press Release: IMF Extends Argentina's SRF Repayment by One Year

28 January 2002 IMF Survey: IMF extends Argentine debt deadline;

08 February 2002 News Brief: IMF's Köhler Welcomes Remes Visit, says IMF Working Closely with Argentina

13 February 2002 News Brief: IMF's Köhler: Good Start to New Relationship with Argentina

04 March 2002 News Brief: IMF Sending Mission to Argentina

11 March 2002 IMF Survey: IMF mission to Argentina;

15 March 2002 News Brief: Press Statement by the IMF Mission to Argentina

25 March 2002 IMF Survey: IMF statement on Argentina

10 April 2002 IMF Encourages Argentine Reforms, By Thomas C. Dawson, Director, Ext. Rel. Dept, IMF; Introductory Remarks on the Role of the IMF Mission in Argentina by Anoop Singh, Dir. for Special Operations, IMF

17 April 2002 Statement by the IMF Mission to Argentina

21 May 2002 News Brief: IMF Managing Director meets Argentine Economy Minister, Board extends repayment of SRF

28 June 2002 News Brief: IMF's Köhler Welcomes Progress in Talks with Argentina

08 July 2002 IMF Survey: Köhler on Argentina;

10 July 2002 News Brief: IMF Managing Director Horst Köhler Announces Advisory Group on Argentina

15 July 2002 Press Release: IMF Extends Argentina's SRF Repayment by One Year

22 July 2002 IMF Survey: Advisory panel for Argentina;

29 July 2002 News Brief: IMF Managing Director Köhler Welcomes Independent Advisors' Report on Argentina

05 August 2002 IMF Survey: Krueger on Argentina;

05 September 2002      Press Release: IMF Extends Argentina's SRF  
Repayment by One Year

NEGATIVE NEWS:

*Argentina*

05 December 2001      Transcript of a Press Briefing by Thomas C.  
Dawson, Director, External Relations Department, IMF

06 December 2001      Transcript of a Press Briefing by Thomas C.  
Dawson, Director, External Relations Department, IMF

10 December 2001      IMF Survey: Argentine disbursement delayed