Fiscal and exchange rate policies during the Argentine and Uruguayan crisis of 2001-2002

José Mourelle
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Abstract

In this paper we study the Argentine and Uruguayan crisis of 2001-2002 with emphasis in the role played by the exchange rate and fiscal policies followed by the two countries. We find that in both cases the crisis can be understood as the result of an adverse external shock in a vulnerable environment. This environment was characterized by a perverse combination of fixed exchange rate, a fiscal policy not sustainable in a strong sense, and a great de facto dollarization.

The Uruguayan peg was more flexible which facilitated a more gradual adjustment of the real exchange rate. Uruguay enjoyed better credit conditions during recession which derived in a different public debt dynamics.

By testing cointegration between government expenditures and revenues we find that fiscal policy was not sustainable in a strong sense in Argentina and Uruguay which favored the speculative attacks suffered by the public debt of both countries. We find no clear difference in terms of fiscal sustainability between Uruguay and Argentina. Different credit conditions seem to reflect a different reputation.

Keywords: crisis, Argentina, Uruguay, country risk, fixed exchange rates, fiscal sustainabilty, dollarization.

JEL classification: E32, F33, F34, F41, H63

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Política fiscal y cambiaria durante la crisis en Argentina y Uruguay de 2001-2002 *

José Mourelle **

30 de Diciembre de 2010

Resumen

En este artículo estudiamos la crisis argentina y uruguaya de 2001-2002 con énfasis en el rol jugado por las políticas fiscales y cambiarias seguidas por ambos países. Encontramos que en ambos casos la crisis puede ser entendida como el resultado de un shock externo adverso en un ambiente vulnerable. Este ambiente estaba caracterizado por una combinación perversa de ausencia de flexibilidad cambiaria, una política fiscal no sostenible en sentido fuerte y una alta dolarización.

La mayor flexibilidad cambiaria de Uruguay le permitió un ajuste del tipo de cambio real más gradual. Uruguay disfrutó de mejores condiciones de crédito durante la recesión lo que derivó en una dinámica de deuda pública distinta.

Mediante un test de cointegración entre egresos e ingresos fiscales, encontramos que la política fiscal no era sostenible en sentido fuerte en Argentina y Uruguay lo que favoreció los ataques especulativos sufridos por la deuda pública de ambos países. Nuestro análisis no encuentra diferencia clara en materia de sostenibilidad fiscal entre Argentina y Uruguay. Las desiguales condiciones de crédito parecen originarse en diferencias de reputación.

Palabras clave: crisis, Argentina, Uruguay, riesgo país, tipos de cambio fijos, sostenibilidad fiscal, dolarización.

Clasificación JEL: E32, F33, F34, F41, H63

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1. Introduction

Argentina and Uruguay experienced during the 1990’s an important growth process, with a decreasing inflation and a declining public debt to GDP ratio. Both countries had their currency pegged to the US dollar.

The Russian default of August 1998 led to a sudden stop in capital inflows to emerging economies and Latin America economies in particular. In the second part of 1998 a recession started in Argentina and Uruguay. The recession derived in a deep crisis in 2001-2002 when finally the two countries abandoned their peg.

The abandonment of the peg implied a huge devaluation that led to a great increase in the burden of the public debt that was mostly denominated in foreign currency. Argentina finally defaulted in 2002, and the posterior debt restructuring process included an unprecedented haircut. The Uruguayan public debt was market friendly restructured in 2003. The different resolution of the public debt crisis was in part explained by the worse credit conditions that suffered Argentina during the long lasting recession.

This paper analyzes the similarities and differences in the fiscal and monetary policies followed by Argentina and Uruguay. We analyse what factors explain the long lasting recession suffered by these countries.

In particular we will discuss if the fiscal policy followed by Argentina and Uruguay was sustainable. We also try to check if the different credit conditions of Argentina and Uruguay were related to a different situation in terms of fiscal sustainability. By testing cointegration between government expenditure and revenues we find that fiscal policy was not sustainable in a "strong" sense in Argentina and Uruguay. This situation facilitated the speculative attacks suffered by both economies. We find no clear evidence that Uruguay and Argentina were different in terms of fiscal sustainability. This suggests that different credit conditions were originated in reputational considerations.

The paper is organized as follows. Section 2 analyses the evolution of the Argentine and Uruguayan economy during the 1990’s, and examines the monetary and fiscal policies followed by the two countries during that period. Section 3 discusses the issue of fiscal sustainability in Argentina and Uruguay in the pre-crisis period. Section 4 studies the development of the crisis with emphasis in the role played by macroeconomic policies. Finally, Section 5 concludes.
2. Argentina and Uruguay in the 1990’s

2.1. A decade of regional integration and growth

During the nineties Argentina and Uruguay participated in the Mercosur integration process. The Mercosur was established on 26 March 1991 with the signature of the Asunción Treaty by the Presidents of Argentina, Brazil, Paraguay and Uruguay. This treaty included a Program of Trade Liberalization with the objective of eliminating all tariffs within Mercosur by 31 December 1994. However, several items were excepted from the reduction. In 1994, the Protocol of Ouro Preto deepened the integration process by the introduction of a common external tariff ranging from 0 to 20%.

The interregional trade was fostered by the signature of the Asunción Treaty. In 1990 the trade among the Mercosur members was US$ 4,1 billion (9% of Mercosur total exports), in 1998 this trade amounted to US$ 20,4 billion (25% of Mercosur total exports). The growth of the interregional exports coincided with a period of expansion of the external trade of the Mercosur economies. The Argentine exports increased from US$ 12,3 billion in 1990 (14,8% destined for Mercosur) to US$ 26,4 billion in 1998 (35,6% destined for the region). In the case of Uruguay, its exports were incremented from US$ 1,7 billion in 1990 (34,8% destined for Mercosur) to US$ 2,8 billion in 1998 (55,3% destined for the region).

The economies of Argentina and Uruguay also experienced during this period an important economic growth, as can be seen in Figure 1. The Argentine real GDP increased at 5,9% per
year from 1991 to 1998, while the Uruguayan one increased at 4.4% per year in the same period. The economies of Brazil and Paraguay also enjoyed a period of growth but at a slower pace (2.7% and 2.4% per year, respectively).

Given its size, the Mercosur process is very much influenced by the behavior of Brazil. The Brazilian GDP represented 68% of the Mercosur GDP in the period 1991-2002.

As we will discuss in Section 2.2, the currencies of Argentina and Uruguay experienced an important appreciation during this period. This fact and the output increase motivated an increase in imports even more important than the one of the exports. According to the evidence reported in IMF (2003), when trade liberalization is combined with real exchange rate depreciation the result is a strong export performance. In Argentina and Uruguay, given the currency appreciation the trade liberalization was accompanied with negative net exports and current account deficits, as can be seen in Figure 8. These current account deficits were financed by capital inflows.

2.2. Monetary policy: The stabilisation plans

Argentina and Uruguay applied during the nineties stabilisation plans with the intention to overcome their inflationary past. In both cases, these plans implied the management of the exchange rate in order to induce a decrease in inflation. However the systems applied in Argentina and Uruguay had some differences.

The Argentine stabilization plan was in operation from 1991 to 2001, and consisted in a currency board. The exchange rate was fixed by law in 1 Argentinean peso equal 1 US$. The complete monetary base had to be backed up by international reserves of the Central Bank of Argentina. The Uruguayan stabilisation plan was in operation in almost the same period, from 1991 to 2002, and implied a crawling band. At the beginning of the program, the exchange rate of the Uruguayan peso in relation with the US$ was allowed to fluctuate within a band of 7%, the band was devaluated at 2.5% per month.\(^1\)

The fact that the exchange rate regime used in Uruguay was more flexible than the one used in Argentina was motivated by several reasons. In particular it was related to the different inflation rates experimented by both countries before the implementation of the plans. Argentina suffered an important hyperinflation in 1989-90, while Uruguay had a chronic moderate

\(^1\)The width of the band and the month devaluation changed several times, until the peso was allowed to float in 2002.
inflation that experimented a peak in 1990.

These plans were successful in reducing the inflation, as can be seen in Figure 2. The Argentine inflation was reduced from 2314% in 1990 to 4.2% in 1994. In the case of Uruguay the inflation was diminished from 112.5% in 1990 to 5.7% in 1999.

However, as we commented, the currencies of Argentina and Uruguay suffered a significant appreciation during this period. During the 1990s the Mercosur economies had important capital inflows from abroad. As Mishkin (1999) states, these capital inflows were encouraged by the lower perceived risk for the foreign investors originated in the more stable value of the currency. The existence of indexation mechanisms, developed during the inflationary past, did not allow a quick reduction of the inflation rate and also promoted the appreciation of the real exchange rate. As it is suggested by De Brun and Licandro (2005), the appreciation of the local currencies was promoted by the expansion of private and public consumption.

During the first half of the decade, the real exchange rate with respect to the US suffered an important appreciation, it decreased\(^2\) 50% in the case of Argentina and 42% in the case of Uruguay, from 1990 to 1995. The effective real exchange rate also suffered a strong appreciation during this period.

During the second half of the 1990’s, real exchange rate with respect to the US, remained almost constant. However, the value of the dollar was increased relative to the major currencies. As a consequence the currencies of Argentina and Uruguay, also experienced an appreciation process with respect to these currencies.

\(^2\)Given the definition of the real exchange rate that we will use throughout this paper, a decrease implies a real appreciation.
Although the currencies of Argentina and Uruguay suffered a continuous appreciation during the 1990’s, it is not clear that this appreciation represents a process of progressive misalignment of the exchange rate. According to the evidence reported on Perry and Serven (2003) and Gianelli and Mednik (2006), the appreciation of the first half of the 1990’s seems to be an equilibrium phenomenon. Real exchange rate become appreciated with respect to its equilibrium value in the last part of the 1990’s, as we will discuss in Section 4.

2.3. The currency substitution phenomenon

During this period Argentina and Uruguay were highly de facto dollarized. A great part of the deposits and credits in the banking sector were in foreign currency. The public debt was also in a great extent dollarized, as can be seen in Figure 3.

The currency substitution phenomenon is primarily a response of the agents to an inflationary environment. As the inflation erodes the store of value quality of the domestic currency, agents switch to the foreign currency in order to avoid this outcome. However, once the currency substitution acquires an important dimension, the process shows a great persistence even after the inflation is reduced to low levels.

As Licandro and Licandro (2003) argue, a high degree of currency substitution imposes several limitations on the monetary policy. The interest rate channel and the credit channel of the monetary policy do not work as usually. As the credit is dollarized both channels work through the exchange rate. With a high degree of dollarization of assets and debts, the relevant interest rate for the decisions about investment and consumption is the dollar interest rate that is not under the control of the Central Bank.

Another problem with a high degree of de facto dollarization is that it can impose an important rigidity to a fixed exchange rate system. If the circumstances suggest the necessity of devaluate, the authorities can be exposed to a difficult dilemma. Under an important degree of financial dollarization a devaluation could have negative consequences on the balance sheets of numerous agents of the economy, that had their debts denominated in foreign currency but their assets denominated in domestic currency, as it is suggested by Mishkin (1999). This was the situation, in Argentina and Uruguay, of the firms that operate in the non tradable sector. The same situation affected the households and the government that collected taxes in home currency, but had their debt mostly issued in foreign currency. The banks were also prone to
Although inflation was decreasing during the 1990’s, and both countries had one-digit inflation at the end of decade, there is no evidence of a decrease in the degree of the facto dollarization. The participation of the credits in dollars in the banking credit to the private sector increased during the pre-crisis period, as we will discuss in Section 4.4. The percentage of public debt in foreign currency were also increasing during this period, as it is shown in Figure 3.

It can be argued that the fiscal and monetary policies that were followed promoted the development of the financial dollarization.

Under a stabilisation plan based on an exchange rate peg, the authorities have to convince the agents that the exchange rate is under strict control. This generates little incentives to implement a policy that prevent the non-tradable agents from taking credits in dollars. Such a policy would have as main argument that a devaluation can have negative consequences on the balance sheets of the agents of the non tradable sector.

An unsustainable fiscal policy can encourage the appreciation of the national currency. This appreciation will increase the GDP in dollars, and can decrease the public debt to GDP ratio if public debt is denominated in dollars, even if the public debt is increasing. This generates an incentive to finance an unsustainable fiscal policy by issuing public debt in foreign currency.
2.4. Fiscal policy

In 1990, the level of public debt over GDP was similar in Argentina and Uruguay, as can be seen in Figure 4. According to IADB, at that moment, the Uruguayan public debt was US$ 5,330: (57% of GDP), while the Argentine public debt was US$ 78,889: (56% of GDP).

At the beginning of the nineties, as a result of the Brady agreement the public debt of Argentina and Uruguay were reduced. According to Rial and Vicente (2003) in the Uruguayan case, due to this agreement signed in 1991, the stock of gross public debt was reduced in US$ 634:. In the case of Argentina, Damill et al. (2005) estimates that the agreement signed in 1992 implied a haircut of US$ 2,323:.

As is shown in Figure 4, during the early nineties the fiscal deficit was low (annual average of 0.2 and 0.5 points of GDP, for Uruguay and Argentina respectively, in 1990-1994). During this period the public debt over GDP ratio decreased. With a dollarized public debt, this fact was mostly related to the increase in the GDP in dollars, induced by real GDP growth and the currency appreciation, which is also shown in Figure 4. The real appreciation of the Argentine peso, was more intense than the Uruguayan one, so the decrease of the Argentine public debt over GDP ratio was also more important.

In the following years fiscal deficit was increased (annual average of 1.6 and 1.3 points of GDP, for Uruguay and Argentina respectively, in 1995-1997). During this period GDP increased at a slower pace. The real exchange rate with respect to the US did not suffer relevant changes, with a small depreciation in Argentina, and a small appreciation in Uruguay. As a result public debt over GDP suffered a small increase in Argentina and decreased slightly in Uruguay.

The increase in fiscal deficit was partly explained by the implementation of a Social Security Reform in Argentina in 1994 and in Uruguay in 1995. In both cases the social security was transformed from a public pure pay-as-you-go system to a mixed system. The new system combines a public pay-as-you-go part, with a capitalization component that includes private funds. The new system implied a medium term fiscal cost, and a long term improvement in fiscal solvency. For Uruguay, Caristo and Forteza (2003) estimate that the reform caused an initial increase in annual fiscal deficit of 0.6% of GDP, this cost was progressively reduced until 2007 when the reform started to provoke an improvement in fiscal accounts. According

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3In this period Argentina and Uruguay had a short recession in 1995 related to the "tequila" crisis.
to Damill et al. (2003), in the case of Argentina, the reform triggered an initial rise in annual fiscal deficit of 1.2% of GDP.

In the case of Argentina, during the first half of the nineties several public companies were privatized. The income obtained by these operations was partly used to finance the public budget. In Uruguay, there was also a privatization process, but it was stopped by a referendum in 1992.

In 1997 credit rating agencies gave investment grade status to Uruguayan public debt. Although the rating of Argentine public debt was raised during 1997, it did not reach the investment grade.
The fact that Uruguayan public debt reached the investment grade status but Argentine public debt not, had important consequences in the posterior evolution of the public debt of each country. Argentina had in 1997 a similar public debt to GDP ratio (35% in Argentina versus 37% in Uruguay). The Argentine and Uruguayan public debt increased in the following years, but the different rating implied that each debt had to pay a quite different interest rate.

As we will analyse in Section 4, a long lasting recession started in Argentina and Uruguay during the second half of 1998. The beginning of the recession was related to the reversal of capital flows that affected emerging economies at that time. The sudden stop of capital inflows implied an increase in the sovereign spread of Argentina and Uruguay.

However, during the next three and a half years, the spreads of Argentina and Uruguay were quite different. The average Argentine EMBI\(^4\) and the average Uruguayan UBI\(^5\) were 9.5% and 2.2% during the same period.

The Uruguayan spread only suffered a sharp increase after public debt lost the investment grade status in February 2002. These different credit conditions had an important influence in the public debt dynamics throughout the recession and in the resolution of the severe public debt problems that both countries suffered during the crisis.

3. Fiscal sustainability in Argentina and Uruguay

Given the dollarization of the public debt, the movements in the ratio public debt over GDP were explained by the important swings in the real exchange rate (and to a lesser extent by the GDP movements), as can be seen in Figure 4. The relation between the evolution of the public debt and the fiscal deficit process was less clear. In particular it is not obvious if the fiscal deficits of the pre-crisis period necessarily led to an explosive public debt dynamics (i.e. it is not clear if fiscal policy was sustainable).

In this Section we will try to test the sustainability of the Argentine and Uruguayan fiscal policies. By this way we will try to shed light on two different questions. Firstly we will try to assess the origins of the public debt problems. We will analyse if the source of the problems was

\(^4\)EMBI ("Emerging market bond index"), elaborated by JP Morgan, corresponds to the sovereign spread (% over US government risk free bonds that have to pay public bonds).

\(^5\)UBI ("Uruguay Bond Index"), elaborated by Republica AFAP with a similar methodology than EMBI, corresponds to the sovereign spread (% over US government risk free bonds that have to pay public bonds). For Uruguay we use UBI instead of EMBI because the information about Uruguayan EMBI starts in 1999.
the lack of fiscal sustainability or the occurrence of self-fulfilling speculative attacks. Finally, we will discuss if Argentina and Uruguay were different in terms of fiscal sustainability.

3.1. Condition for Fiscal sustainability

We compare Uruguay and Argentina in terms of fiscal sustainability, testing for both countries if revenues and expenditures including interest payments are cointegrated, provided that they are I(1) processes.

This type of analysis was originated by the seminal paper of Hamilton and Flavin (1986), and extended by Quintos (1995) and Martin (2000), that discuss "strong" and "weak" conditions for fiscal sustainability.

Following Quintos (1995), the government one period budget constraint is given by:

$$\Delta B_t = G^*_t - R_t$$

(1)

where $B_t$ is the market value of the public debt, $R_t$ is tax revenues, and $G^*_t = G_t + r_t B_{t-1}$ is government expenditures including interest payments. Assuming that $r_t$ is stationary around the mean $r$, defining $E_t = G_t + (r_t - r)B_{t-1}$, by forward substitution we arrive to:

$$B_t = \sum_{j=0}^{\infty} \gamma^{j+1}(R_{t+j} - E_{t+j}) + \lim_{j \to \infty} \gamma^{j+1} B_{t+j}$$

(2)

with $\gamma = (1 + r)^{-1}$. Fiscal sustainability implies that the current market value of debt has to be equal to the present value of future surplus. For this to hold, taking expectations in both sides of equation 2, we need that $E_t \lim_{j \to \infty} \gamma^{j+1} B_{t+j} = 0$ (i.e. bubble term has to converge to zero).

Using the difference operator in equation 2, and applying equation 1, we arrive to:

$$G^*_t - R_t = \sum_{j=0}^{\infty} \gamma^{j+1}(\Delta R_{t+j} - \Delta E_{t+j}) + \lim_{j \to \infty} \gamma^{j+1} \Delta B_{t+j}$$

(3)

In this case sustainability implies: $E_t \lim_{j \to \infty} \gamma^{j+1} \Delta B_{t+j} = 0$. Empirically we test the stationarity of $G^*_t - R_t$. Alternatively, we test for cointegration on the regression equation:

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6Theoretically, the government could also take the decision to default without any solvency or liquidity problem. This kind of default is emphasized in the literature on sovereign debt with strategic default initiated with the seminal work of Eaton and Gersovitz (1981)
\[ R_t = \mu + bG_t^r + \epsilon_t \]  \hspace{1cm} (4)

The requirement of strong sustainability implies additionally that \( b = 1 \).

Writing Equation 4 into Equation 1 we arrive to:

\[ \Delta B_t = (1 - b)G_t^r - \mu - \epsilon_t \]  \hspace{1cm} (5)

Using the definition of \( G_t^r \) and rearranging, we have:

\[ B_t = (1 + (1 - b)r_t)B_{t-1} + (1 - b)G_t - \mu - \epsilon_t \]  \hspace{1cm} (6)

According to Equation 5, \( \Delta B_t \) is stationary if \( b = 1 \) and \( \epsilon_t \) is stationary (i.e. if \( G_t^r \) and \( R_t \) are cointegrated). We will refer to this situation as "strong" fiscal sustainability.

If \( 0 < b < 1 \), then \( \Delta B_t \) is non stationary (\( G_t^r \) is non stationary), and Quintos (1995) shows that the bubble term can still converges to zero, although at a slower rate of convergence. This will be a situation of "weak" fiscal sustainability. According to Quintos (1995), cointegration is not a necessary condition for weak sustainability. However, Martin (2000) argue that if we do not have cointegration, the interpretation of \( b \) is not clear.

<table>
<thead>
<tr>
<th>Cointegration</th>
<th>( b )</th>
<th>Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>0</td>
<td>Non-sustainable</td>
</tr>
<tr>
<td>No</td>
<td>-</td>
<td>Non-sustainable*</td>
</tr>
<tr>
<td>Yes</td>
<td>0 &lt; ( b ) &lt; 1</td>
<td>Weak</td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td>Strong</td>
</tr>
</tbody>
</table>

Note: * Following Quintos (1995), weak sustainability if \( 0 < b \leq 1 \)

In our empirical strategy we test non stationarity of revenues and expenditures including interest payments. After that we test cointegration using Johansen test. If we find no cointegration, or if we cannot reject the hypothesis of \( b=0 \), we conclude that fiscal policy is non-sustainable.\(^7\) If we find cointegration and we reject \( b=0 \), we test \( b=1 \), if we also reject this last hypothesis we conclude that fiscal policy is sustainable in a "weak sense", otherwise

\(^7\)As we commented if we find no cointegration but \( 0 < b \leq 1 \), according to Quintos (1995), fiscal policy is sustainable in a weak sense.
we consider fiscal policy as "strong sustainable". These criteria are summarized in Table 1.

3.2. Argentina and Uruguay compared

We analyse fiscal sustainability in Argentina and Uruguay using monthly data from the period: 1993:1 to 2001:12. We choose this sample due to data availability and to focus on the pre-crisis period after the implementation in 1991 of the stabilisation plans. The selected data are shown in Figure 5.

Figure 5: Argentina and Uruguay: Government Revenues and Government Expenditures, Non financial Public Sector, 1993-2001. Sources: MECON and BCU.

Our data represents total government revenues and expenditures (including interest payments) from Non Financial Public Sector.

We first test the non stationarity of the data using the Augmented Dickey Fuller (ADF) test. As we can see in Table 2, ADF test favored the unit root hypothesis in the four cases.

We then try to analyse the sustainability of fiscal policy by means of the Johansen test.

In the case of Argentina we run the test for a specification with one lag, recommended by Akaike information criteria and for a specification with 0 lags suggested by Schwartz criteria. We include seasonal dummies\(^8\) and a dummy that takes the value of one in 1995:12 and 1999:01, in these dates Argentina received extraordinary revenues originated in privatizations. We also include one lag for the privatizations dummy.\(^9\) We have a good behaviour of the residuals of

\(^8\)We also try using seasonal-adjusted data and the results were similar to the ones reported here.

\(^9\)Although the inclusion of the privatizations dummy and its lag is important to obtain normality, the results of the cointegration test and the value of the coefficient \(b\) are unchanged by its inclusion.
the implied VEC. We do not include a constant in the VEC given that it was not significant.\(^\text{10}\)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Level</th>
<th>First difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue Argentina</td>
<td>-1.13</td>
<td>-4.71(^*)</td>
</tr>
<tr>
<td>Expenditure Argentina</td>
<td>-1.07</td>
<td>-3.32(^*)</td>
</tr>
<tr>
<td>Revenue Uruguay</td>
<td>-1.02</td>
<td>-3.97(^*)</td>
</tr>
<tr>
<td>Expenditure Uruguay</td>
<td>-1.96</td>
<td>-3.65(^*)</td>
</tr>
</tbody>
</table>

Note: Model with intercept and trend in level and intercept in first difference, except for Argentine revenues: model with intercept in level, and no constant, no trend in first difference. Lags according to AIC.
\(^*\),\(^**\) We reject the unit root hypothesis at 5\% or 1\%.

As can be seen in Table 3 we reject the hypothesis of no cointegration in the two cases, and we reject the null hypothesis of \(b=0\) and the null of \(b=1\). The estimated \(b\) was 0.62 in the specification with one lag, and 0.65 in the specification without lags. We conclude that fiscal policy was sustainable only in a "weak sense" in Argentina during this period.

For Uruguay we use a specification with 2 lags recommended by Akaike information criteria and a specification with 1 lag suggested by Schwartz criteria. We include seasonal dummies.\(^\text{11}\)
We have a good behaviour of the residuals of the implied VEC. We do not include a constant in the VEC given that it was not significant.\(^\text{12}\)

The existence of one cointegration relation is suggested by Johansen test in the one lag case. We reject the hypothesis of \(b=0\) and of \(b=1\) (we estimate a \(b\) of 0.75). This implies weak sustainability of the Uruguayan fiscal policy in the pre-crisis period. However if we use the specification with two lags we reject cointegration. Following Martin (2000), we may conclude that fiscal policy was not sustainable. If we use Quintos (1995) criteria we could also conclude that fiscal policy was weak sustainable.

### 3.3. Discussion of our results

Our analysis suggest that fiscal policy was not sustainable in a strong sense in Argentina and Uruguay. We find no clear evidence that Argentina and Uruguay were different in terms

\(^{10}\)Including the constant, we obtain the same results.
\(^{11}\)We also try using seasonally adjusted data and the results were similar to the ones reported here.
\(^{12}\)Including the constant, we obtain the same results.
Table 3: Johansen test

<table>
<thead>
<tr>
<th></th>
<th>Johansen Trace</th>
<th>Max eig</th>
<th>Estimated Coef b</th>
<th>Fiscal Sust</th>
<th>b test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina 1</td>
<td>37.49**</td>
<td>34.25**</td>
<td>0.62</td>
<td>0&lt;b&lt;1</td>
<td>Weak</td>
</tr>
<tr>
<td>Argentina 0</td>
<td>58.92**</td>
<td>52.36**</td>
<td>0.65</td>
<td>0&lt;b&lt;1</td>
<td>Weak</td>
</tr>
<tr>
<td>Uruguay 2</td>
<td>12.44</td>
<td>10.73</td>
<td>0.80</td>
<td>Non-sustainable ⊗</td>
<td></td>
</tr>
<tr>
<td>Uruguay 1</td>
<td>20.03*</td>
<td>15.90*</td>
<td>0.75</td>
<td>0&lt;b&lt;1</td>
<td>Weak</td>
</tr>
</tbody>
</table>

Note: *,** We reject the null of no cointegration at 5% or 1%
⊗ Following Quintos (1995), weak sustainability

of fiscal sustainability during the pre-crisis period.

Although, according to our results, we could consider fiscal policy as sustainable in a weak sense, the lack of strong fiscal sustainability is not free of charge. The debt process is sustainable under the weaker condition, but the lack of strong fiscal sustainability implies that $\Delta B_t$ is non stationary. This makes the debt process more sensible to shocks.

With a dollarized public debt, a devaluation implies a shock that increases the weight of the public debt. Without strong fiscal sustainability this can have a high and durable effect on the debt process, as happened in Argentina and Uruguay after the abandonment of the peg.

As we saw in Equation 6 the growth rate of debt is given by $(1 - b)r$. This implies an explosive debt process under the weaker condition. The rate at which debt is exploding will be higher the smaller is $b$. Under the weaker condition, a sudden stop shock (that implies an increase in $r$), combined with a low value of $b$ and a persistent recession could push debt into an unsustainable path (i.e. debt could start to grow faster than the economy).

Our results are consistent with the results of Aráoz et al. (2007) for the Argentine case. The results are also consistent in the Uruguayan case with the analysis of De Brun and Licandro (2005), although they used a different methodology. In their study they find evidence of over accumulation of public debt (with respect to a fiscal rule that ensures fiscal balance over the business cycle), in Uruguay between 1993-2001.

There exists additional evidence about weakness in the fiscal policy design in Argentina and Uruguay.

The results of Badagián and Cresta (2005) suggest that fiscal policy did not play a stabilizing role in Argentina and Uruguay. They find evidence of procyclical fiscal policy behaviour.

Rial and Vicente (2008) analyse several indicators of fiscal vulnerability in Uruguay during 1976-2006. They showed that several factors, as the procyclical fiscal policy and the inability to obtain long run financing in local currency, have determined a public debt structure vulnerable to adverse macro-financial shocks.

According to Aboal et al. (2001), the Uruguayan fiscal policy could have had an opportunistic character during 1925-2000. This kind of policy implies that fiscal deficit increases in electoral years and decreases after. This seems to be the case, in the electoral years 1989 and 1994.

As it is noted by De Brun and Licandro (2005), the health of the Uruguayan fiscal accounts was linked to the health of the banking sector by several ways. The state owned Banco Hipotecario del Uruguay (BHU) accepted deposits in dollars and gave loans in UR (Unidades Reajustables, a wage index unit). This currency mismatch exposed the BHU to an important currency risk. In the case of the private banking sector, although in their balance the currency mismatch was less important, they were lending in dollars to agents with income in pesos, so they were indirectly exposed to an important currency risk. The existence of an implicit deposit insurance, implies a contingent liability for the public sector associated to the financial fragility of the banking system. In the case of Argentina the financial fragility of the dollarized banking sector implies also an important fiscal cost associated to an eventual public intervention in the case of a banking crisis.

Our previous analysis have also some drawbacks. In particular the analysis that we have seen was developed to study the sustainability of US fiscal policy. The idea was to evaluate if the increase of US fiscal deficit could finish in a default or not. However in the case of a country that already had a default this kind of analysis has less sense.

This is particularly true in the case of Argentina after the default. A primary analysis suggests that the sustainability of fiscal policy was increased if we considered also the years after 2001. However, this increase in the sustainability was obtained by assuming that fiscal policy was unsustainable (via default).

Finally our exercise does not provide evidence about a different fiscal sustainability behavior in Argentina and Uruguay. The different credit conditions seem to be originated in another
As we commented in Section 2.4, in 1997 credit rating agencies gave investment grade status to Uruguayan public debt, a status that Argentine public debt did not reach. This fact had important consequences in the posterior public debt dynamics of both countries. However our results do not support the idea that the different credit conditions were originated in a different behavior in terms of fiscal sustainability.

In table 4 we show data of Uruguay and Argentina in 1997, according to Moody’s (2007). The selected data represent the main variables that explain the qualification given by the rating agencies according to Pena (2002). Argentina had at that time an equal or better performance than Uruguay in terms of GDP per capita, inflation rate, fiscal balance and external vulnerability. However its performance was worse in terms of external debt over Current Account receipts (Argentina is a more closed economy), and Government Effectiveness. The latter fact reflects the bad reputation of Argentine institutions, and in particular its bad reputation as debtor.

The different credit conditions had important consequences in the posterior public debt dynamics of both countries. The ratio public debt over GDP suffered a big jump after the abandonment of the peg in both countries. However, the interest rate of the Argentine public
debt was very high at that moment. On the contrary the interest rate of the Uruguayan public debt was relatively small, given that the majority of the debt was issued under the "investment grade" status. This situation favored the tough approach followed by Argentina to solve its public debt problems, that included a default and an unprecedent haircut in the posterior swap. However, this approach is likely to deep the Argentine reputational problems, implying a sort of "vicious circle". We will discuss again this problem in Section 4.8.

4. The crisis

4.1. The beginning of the recession

During the second half of 1998 recession started in Argentina and Uruguay. As can be seen in Figure 6, the GDP decline was highly persistent in both countries and was reverted only during 2002 in Argentina and during 2003 in Uruguay.
4.1.1. The capital flows reversal

The beginning of the recession was related to a deterioration in the external conditions. The Russian default of August 1998 led to a sudden stop in capital inflows to emerging economies and Latin America economies in particular. According to Calvo and Talvi (2005) capital flows to the seven largest Latin America economies (including Argentina and Brazil) were 100 billions dollars (5,5% of GDP) in the year ending in the second quarter of 1998 but decreased to 37 billions dollars (1,9% of GDP) one year later. Interest rates suffered a sharp increase in emerging economies. The sovereign spread in emerging economies was doubled, EMBI was 5,2% in the first half of 1998 and jumped to 11% in the second half of the year.

As can be seen in Figure 6 Brazil suffered an increase in country risk in line with the rest of emerging economies. Brazilian EMBI was 5,3% during the first half of 1998 and 10,7% during the second.

The sovereign risk of Argentina and Uruguay, also shown in Figure 6, increased as well. Paradoxically the raise was a bit lower than the average increase in emerging economies. Argentine EMBI was 4,4% during the first half of 1998 and jumped to 7,6% during the second half. In the case of Uruguay UBI rose from 1,5% to 2,5% in the same period.

The impact of this shock in Argentina and Uruguay was more persistent than in other emerging economies due to local vulnerabilities. In particular, the shock was amplified by the different exchange rate policies followed by other Latin America economies.

4.1.2. The Brazilian devaluation

After the sudden stop the currencies of many emerging economies suffered an important depreciation. This was not the situation of Argentina and Uruguay that decided to maintain their pegs. The decision was related to the high degree of financial dollarization that suffered both countries. As we discussed in Section 2.3, devaluation can have negative consequences on a dollarized economy, via negative balance sheets effects on agents that have debts in foreign currency but assets in domestic currency (notably the public sector). Fears of returning to previous high inflations could also have played in the decision. However, Brazil, the main trading partner of Argentina and Uruguay, took another option.

At the moment of the capital flows reversal Brazil had in operation the Real Plan, a stabilisation plan similar to those in force in Argentina and Uruguay. This plan was in operation...
from 1994 to 1998. Initially, the intention was to implement a fixed exchange rate with a 1:1 parity with the US$, but later, in order to avoid an excessive appreciation of the Real, a band with regular mini devaluations was established. As in the case of Argentina and Uruguay, the plan was successful in reducing the inflation, that was decreased from 2076% in 1994 to 3.2% in 1998.

The Brazilian economy suffered important fiscal and external problems that were aggravated after the Russian default and there were doubts about the continuity of the exchange rate regime. Brazil experimented a great loss of reserves. In January 1999, the governor of one of the states of Brazil declared a moratorium on the state debt that reinforced the speculative attacks.

Finally, 10 days after the declaration of moratorium, the Real Plan was abandoned and an important fiscal adjustment was implemented. Financial dollarization was less important in the Brazilian case so the negative balance sheet effects were less relevant. The devaluation alleviated the external problems of the Brazilian economy, the GDP continued increasing and the economy did not return to its inflationary past.
4.2. Activity drop

The Brazilian exchange rate suffered a sharp adjustment after the flotation of the Real. The exchange rate was 1,2 reals per dollar in December 1998, and jumped to 1,9 reals per dollar in February. This change implied also an important real depreciation for Brazil. As we can see in Figure 6, the Brazilian bilateral real exchange rate with respect to the US increased 46% from the last quarter of 1998 to the first quarter of 1999.

The depreciation of the Brazilian currency implied an important appreciation for the currencies of Argentina and Uruguay, as we can see in Figure 6. During 1999 the bilateral real exchange rate with respect to Brazil was appreciated 32,1% in the Argentine case, and 31,2% in the Uruguayan case. The effective real exchange rate, shown in Figure 8, was also appreciated, 5,3% in Argentina, and 4,8% in Uruguay.

At that time the Brazilian economy was very important for Argentina and Uruguay, and the devaluation of the real aggravated their external problems. According to the works of Perry and Serven (2003) and Gianelli and Mednik (2006), the real exchange rate of Argentina and Uruguay was appreciated with respect to its equilibrium value during 1999. As we will discuss, this overvaluation remained until the end of the peg.

The Argentine exports to Brazil were US$ 8.133 million in 1997 (30,8% of total exports) and were diminished to US$ 5.690 million in 1999 (24,4% of total exports). The Uruguayan exports to Brazil were US$ 894 million in 1997 (34,4% of total exports) and were reduced to US$ 557 million in 1999 (24,9% of total exports).

The drop of the Brazilian demand was not easy to substitute for other external customers, given the type of products and services involved, and given that the Mercosur currencies were appreciated with respect to the rest of the world. This situation aggravated the recessive effects of the sudden stop.

The behavior of the GDP components is shown in Figure 7. As we can see, internal components of aggregate demand decreased. The decrease was particularly intense in the case of investment, affected by the drop in available external financing. Although imports also decreased at the beginning of the recession, the adjustment of the Current Account was only possible after the abandonment of the peg and the abrupt adjustment of the real exchange rate as we can see in Figure 8.
4.3. Exchange rate and fiscal policies

The maintaining of the peg with respect to the dollar implied that the adjustment of the real exchange rate, required by the sudden stop, was very gradual. In the Argentine case, the lack of adjustment of the exchange rate called for an adjustment in internal prices, that had to evolve below the international prices. In Uruguay we had a similar situation but less dramatic considering the more flexible regime in force. Given price rigidity this type of adjustment was accompanied by a long recession.

After the Russian default and the capital flows reversal, this type of adjustment allowed a gradual depreciation of the real exchange rate with respect to the US, as we can see in Figure 8. However the different exchange rate behavior of other trading partners, notably Brazil, implied that the effective real exchange rate was appreciated in 1999, as we already commented.

After the Brazilian devaluation of January 1999, the Uruguayan authorities decided to postpone a preannounced reduction in the rate of the crawling band, trying to facilitate the adjustment in the relative prices.

During 2000 the effective real exchange rate was depreciated 1% in Uruguay and 2% in
During 2001 the Brazilian currency suffered a new real depreciation, as we can see in Figure 6. This provoked a new appreciation of 4.7% of the Argentine effective real exchange rate. In Uruguay, in mid 2001 the rate of the crawling band and the width of the band was multiplied by two (the width was fixed in 6% and the rate in 1.2% per month). This helped to confront with the new Brazilian depreciation, and the Uruguayan effective real exchange rate was depreciated 0.8% during 2001.

In the last quarter of 2001, 3 years and a half after the Russian default, the Uruguayan effective real exchange rate was almost at the same value of 1998. At the same moment, Argentine effective real exchange rate was 8.5% appreciated with respect to 1998. In 2001, the deviation of the actual Argentine real exchange rate from its equilibrium value was estimated in 53% by Perry and Serven (2003). As we will see in Section 4.5 Convertibility was abandoned at the beginning of 2002, and Uruguay abandoned its peg in mid 2002.

The financial restrictions and the idea that a tight fiscal behavior could restore confidence motivated that fiscal policy was mostly oriented in a contractive way.

In the Argentine case, where the financial restriction was more intense, this orientation was more clear. During 1999, that was an electoral year, no cut in real primary expenditures were implemented. However, total expenditures rose given that interest expenses had an important increase. On the contrary, public revenues decreased due to the recession. As a result fiscal deficit increased from 1.4% of GDP during 1998 to 2.9% in 1999.

At the end of 1999, the Argentine Parliament approved the "Fiscal Responsibility Law". The norm included the creation of a "Countercyclical Fiscal Fund" that consisted in the obligation for the government to accumulate resources until the Fund reached 3% of GDP, the resources would be used when a "reversion in the economic cycle" took place. Indeed the economy was already in recession and the Fund never materialized. The law also included limitations to the increase in public expenditure with the intention to reduce the fiscal deficit to zero in 2003.

The application of the law started in 2000, and during that year all the components of primary public spending were reduced. The fall was specially strong in the case of public investment. However, the decrease in total expenditure was minor given the permanent in-

\[\text{For a more detailed description of the discussion and execution of the Fiscal Responsibility Law see Gadano (2003)}\]
crease in interest expenses. Several taxes were increased during 2000 and government revenues increased, despite the recession. The fiscal deficit was reduced 0.5% of GDP up to 2.4%.

The declared objective of these measures was to restore the confidence in Argentine macroeconomic policy. Nevertheless, sovereign spread remained during 1999-2000 at the high levels attained after the sudden stop of mid 1998. During 2001 the spread started to increase again very fast pushing public debt into an unsustainable dynamics, as we will discuss in Section 4.5.

In Uruguay, during the electoral year of 1999 no contractionary measure was taken. Instead, public investment was increased. Additionally, recession provoked a decrease in tax collection, and social security expenditures were increased in part explained by the rise in the payments of unemployment benefits. Fiscal deficit increased from 0.9% of GDP during 1998 to 3.7% in 1999. During 2000 and 2001, public investment was reduced, but the decrease in tax collection and the increase in interest expenses implied that fiscal deficit was kept at a high level.

Despite the fiscal deficit and the recession, credit rating agencies kept the rating of Uruguayan public debt. Sovereign spread decreased during 1999 and remained at low levels until February 2002 when the debt lost its investment grade status.

4.4. Financial deterioration

The slow type of adjustment followed by Argentina and Uruguay after the sudden stop, did not help to reduce the exchange rate risk exposure of debtors. As we can see in Figure 9, the proportion of credits in dollars in the banking system increased during the recession. This fact was favored by the lack of a regulation that discouraged non tradable agents from taking credits in dollars. This absence of anti-dollarization regulation was consistent with the exchange rate regime, specially in the Argentine case. Given that the peso-dollar relation was fixed by law, it was no clear why regulation had to establish limits on currency mismatches.

As can be seen in Figure 8 the behavior after the sudden stop of the real exchange rate with respect to the US and the effective real exchange rate was different. The real exchange rate with respect to the US was gradually depreciated during the recession. This implied some small negative balance sheet effects, added to the recession, that affected public finances and the banking sector.\textsuperscript{14}

\textsuperscript{14}For agents with debts in dollars and assets in pesos, the relevant real exchange rate is the one with respect to the US.

The recession combined with increasing de facto dollarization and gradual depreciation of
the real exchange rate with respect to the US affected the financial system solvency. As we can see in Figure 9 the problems to recover credits were increasing during the recession in both countries. Deposits in the banking system increased during the recession, and liquidity problems only arose during 2001 in Argentina and in 2002 in Uruguay. The financial situation of the public sector was also damaged by the decrease in tax collection associated to the recession, and the increase in interest expenses of the dollarized public debt.

4.5. The final stage

4.5.1. The end of the convertibility

The left panel of Figure 10 displays the evolution of some Argentine financial variables during 2001 and the first half of 2002. As we can see in the Figure, the final phase of the Argentine crisis was marked by a triple run (against banking deposits, public debt and currency) that provoked a decrease of 20% of the level of reserves.

\(^{15}\)Due to data limitations we can not show the same variable for the two countries. Although the definitions of unrecoverable credits and expired credits are not the same, both clearly show the increase in the difficulties to recover credits in the banking system.
Figure 10: Financial indicators in Argentina (Jan 2001-Jun 2002) and Uruguay (Dec 2001-Dec 2002). Vertical line represents the end of peg.

During this period many attempts were made to restore confidence. At the end of 2000 an important package of 40 billion dollars of financial support leaded by the IMF was announced, (the plan was called "blindaje"). The plan attempted to alleviate the short run financial constraint, giving time to execute measures that improved the fiscal sustainability in the long run. The beneficial effect of the plan on the expectations was modest and after a few months, country risk started to rise again.

In May 2001 a voluntary debt swap (the "megacanje") was put into operation. According to Mussa (2002), as a result of the "megacanje" debt service was diminished by 12 billion dollars in 2001-2005, but given the high interest rate of the new issued debt (between 15% and 16%), debt service was increased by 66 billion dollars after 2005. The high interest rate accepted by the Argentine government for the operation, reinforced the vision that the public debt was unsustainable.

In mid 2001 a more severe "zero deficit" fiscal policy was put into practice. This policy implied a 13% cut in public wages and pension benefits, and reductions in public investment. The effects of this policy were different from what the authorities had expected. The same day
that Minister Cavallo announced this policy (15/07/2001), Argentine EMBI rose from 1200 to 1600 basis points.\footnote{To see different explanations about this striking fact, see Powell (2002) or Hausmann and Velasco (2002).}

In November 2001 another swap, was executed for about 42 billion dollars. In this swap participated bonds in power of local creditors (mostly banks and pension funds) that were changed for loans with lower yield but guaranteed with taxes.

In the banking sector the withdrawal of deposits that started by the end of 2000, was intensified during 2001, as can be seen in Figure 10, with some small pauses related to the implementation of the "blindaje" and the "megacanje".

As we can see in Figure 10, EMBI was growing during 2001, and passed the barrier of 10% in June 2001. According to Mussa (2002) IMF staff estimations in 2000 suggested that with a sovereign spread of 10% or more it was unlikely that Argentina would have been able to grow, given the implied high interest rates. Also with this level of spread the primary budget surplus necessary to stabilise public debt was so high that default could have been unavoidable. During the second half of 2001 spread continued growing very fastly. At the beginning of December 2001, the spread was 40%.

As we commented during 2001 Argentine real exchange rate was again appreciated as a result of a new Brazilian depreciation, and became strongly misaligned.

The combination of increasing interest rates, new currency appreciation, contractionary fiscal policy and increasing credit crunch,\footnote{According to the private banks statements of source and application of funds, published by the Central Bank of Argentina, during 2001 deposits repayments become the main application of the banks funds while the recover of credits became the main source. This fact reflects the financial disintermediation process suffered by Argentina during 2001.} led to a strong GDP decrease during the second half of 2001. Seasonal adjusted GDP decreased 7,5% in the second half of 2001 with respect to the first half of the year. This drop in GDP was added to the persistent GDP decrease of the previous 3 years. Unemployment rate, that was 13,2% during 1998, attained 18,3% during the second half of 2001.

Finally, in December 2001, the government imposed several restrictions on cash retirements (the "corralito"). These measures were highly unpopular and were added to the strong social discontent associated with the long lasting recession and the high and increasing unemployment rates.

After some days of strong anti-government demonstrations, that included episodes of looted
stores, bank attacks, and almost 30 deaths in confrontations with the police, the government resigned.

Several provisional and short-lived governments took office during the following days. During this period the government decided a default on the public debt, the convertibility was abandoned and a free floating regime for the peso was initially adopted. The foreign currency deposits in the banking sector were compulsory transformed into peso deposits at an exchange rate of 1,4 pesos per dollar and their maturity was extended, the credits in dollars were transformed into peso credits at a rate of 1 peso per dollar (the "asymmetric pesification"). Some months after these measures Argentine GDP started to grow again.

4.5.2. The end of the Uruguayan peg

As we can see in Figure 10 the Argentine exchange rate was multiplied by four in the months following the convertibility collapse. This implied a sharp depreciation of the Argentine real exchange rate. For Uruguay, whose economy was closely connected to Argentina, the convertibility collapse represented an important appreciation of its effective real exchange rate. As a result, the Uruguayan real exchange rate was strongly misaligned during the first half of 2002, according to Gianelli and Mednik (2006).

Trying to confront with this new shock, the rate of devaluation and the width of the band were doubled again, in January 2002. Moreover, a fiscal adjustment plan was sent to the Congress.

The Uruguayan banking sector had important linkages with Argentina. In particular, an important part of the deposits of Argentines were made in the Uruguayan banking system given its better reputation with respect to the Argentine one. After the "corralito" was implemented in Argentina, Argentines started to make important withdrawals from the Uruguayan branch of "Banco de Galicia", an Argentine bank that was suspected of lack of solvency. In January 2002, the Vice-President and the General Manager of the Banco Comercial, the most important private bank of Uruguay, resigned to their position. These managers, were accused of fraudulent practices in Argentina where they also managed an important financial institution. Banco Comercial suffered important withdrawals during this period. Banco de Galicia was suspended by the Central Bank of Uruguay on February 13. One day after, Standard & Poor's decided to take away the investment grade status of the Uruguayan public debt. As can be seen in the
right panel of Figure 10 in the following months the run against the banking sector and the public debt became intense. As a result, foreign exchange reserves in Central Bank decreased during 2002. In June 2002, when the government allowed the flotation of the peso, reserves were more than 50% lower than in December 2001.

Trying to restore confidence, Banco Comercial was capitalized by the government and the owner institutions. By the end of February the Parliament approved a fiscal adjustment law, including new taxes. In March, a new stand-by agreement with the IMF was signed. However the run against the banking sector and the public debt continued after these measures.

By the end of May an augmentation of the program with the IMF was announced. As we commented, the Uruguayan peso was allowed to float in June.

Nevertheless, the run in the banking sector was accelerated until July 30, when a banking holiday was decreed. The insolvent banks were suspended. On August 4, the Parliament approved a Law creating a Fund for Stability of the Banking System (FSBS) of 1.5 billion of dollars, financed by international financial institutions (loans of the IMF, IDB and WB). This fund gave full backing to the sight and saving dollar deposits in the public system and in the suspended banks. The dollar time deposits in the public banks were reprogrammed up to 3 years. On August 5, banks were re-opened and the run was progressively weakened. However a clear reversion in the flow of deposits only occurred after the restructuring of the public debt in May 2003.

4.6. Public debt restructuring process

4.6.1. Argentina’s Sovereign Debt Restructuring

The default declared in December 2001 affected about half of the Argentine public debt (67.8 billion dollars over a total public debt of 144.5 billion dollars). The suspension of debt service did not include the rest of the debt, constituted by debt with multilateral organizations and local debt resulting from the swap of November 2001.

The Argentine government continued issuing new debt after the declaration of the default. New debt was issued to compensate banks for their losses originated mainly by the "asymmetric pesification", to compensate savers for the pesification at a lower exchange rate than the Uruguayan peso.

A more detailed description of the events of 2002 can be found in De Brun and Licandro (2005)
actual, to rescue debt from provincial government, to account liabilities with purveyors, and to compensate public employees and pensioners from the cut in their nominal wages and pension benefits, that was declared unconstitutional by the Supreme Court. The new debt issued for these reasons during 2002 and 2003 amounted to 28.5 billion dollars, according to Damill et al. (2005).

A proposal for restructuring the defaulted public debt was made by the government in September 2003. The proposal implied a nominal cut of 75%, and was strongly rejected by the financial market. Another proposal was made in June 2004. This proposal implied the possibility of issuing a maximum of 41.8 billion dollars in bonds in exchange for a defaulted debt of 81.8 billion dollars. The proposal included 3 options for the exchange: i) Par bonds, implied nominal value equal to the original debt, 35-year maturity and fixed and increasing interest rate of 1.33% at the beginning and 5.25% at the end, ii) quasi-Par bonds, implied a haircut in the nominal value of 30.1%, 42 year maturity and a fixed interest rate of 3.31%, and iii) Discount bond, involved a haircut of 66.3% of the nominal value, 30 year maturity and a fixed interest rate. For each bond it was stipulated a maximum issuing. The new bonds included a coupon tied to GDP growth. The proposal implied that an important part of past due interests would not be recognized.

On May 3, 2005 the acceptance of the swap reached 76.15%, and nominal debt of 62.3 billion dollars were exchanged for 35.3 billion dollars of new nominal debt. An important part of the new debt (44%) was issued in local currency; these bonds were CPI-linked. The defaulted debt that did not enter in the swap was not recognized. The operation implied a reduction of 67.3 billion dollars in public debt, and the ratio public debt over GDP was reduced from 113% to 72% due to the operation.20

Sturzenegger and Zettelmeyer (2008) studied several restructuring processes during the period 1998-2005, and they conclude that the Argentine swap was the "toughest" one. They compute haircuts as the difference between the present value of old and new instruments, using as discount rate the yield of the new instrument after the swap. They estimate a haircut of 73% in the Argentine case.

20For a more detailed description of the restructuring process of Argentine public debt see Damill et al. (2005)
4.6.2. Uruguay’s Sovereign Debt Restructuring

After the abandonment of the peg, the nominal and the real exchange rate rose, as can be seen in Figure 10. As a consequence, the ratio public debt over GDP also rose, see Figure 4. The country risk, that was 217 points in December 2001, suffered an important increase after the loss of the investment grade, reaching 1038 points in May 2001. After the flotation of the peso, the country risk continued increasing and remained at more than 2000 points until May 2003, as it is shown in Figure 10.

This situation implied a virtual exclusion from financial markets. In March 2003 the government started a round of consultations with national and international investors about the reasons and possible characteristics of a public debt restructuring. Given that the Uruguayan government interpreted that the problem was mainly a liquidity issue,\textsuperscript{21} the proposed swap implied basically an extension of the maturity of the bonds, maintaining the other conditions of the debt (currency, amount of the bond and interest rate). There were two available options for the swap: i) \textit{Extension}: implied an addition of five years of the maturity of the bond, ii) \textit{Liquidity}: implied the exchange of the bonds for "benchmark" bonds, these bonds had longer maturities, but with high amount overdue, and so better liquidity in secondary markets.

On May 15, 2003 when the period of acceptance was closed, the participation reached near 90\%. The period of acceptance was extended until May 22, and finally the participation was 93\%. The debt that did not enter in the swap was finally paid with the original conditions. This decision was taken in order to avoid legal problems, and with the intention to allow a quick return to the international financial markets. The decision was also favored by the fact that the implied amount of debt was relatively marginal. The result of the swap was seen as successful, and the market value of the debt was rapidly increased, a result that was anticipated by the bondholders and favored their participation in the swap.\textsuperscript{22}

The already cited work of Sturzenegger and Zettelmeyer (2008), found that the Uruguayan swap was the mildest of a group of debt restructuring processes that took place during 1998-2005. They estimate a net present value haircut of 13\% in the Uruguayan case. The Uruguayan GDP started to grow again after the swap.

\textsuperscript{21}According to De Brun and Licandro (2005) this interpretation was not shared by the IMF staff, that thought that the problem was a solvency one.

\textsuperscript{22}For a more detailed description of the swap, and the treatment of the holdout problem, see De Brun and Della Mea (2003)
4.7. Monetary and fiscal policies after crisis resolution

The free floating policy adopted by Argentina, led at the beginning to a huge depreciation of the peso. The exchange rate rose from 1 peso per dollar to 4 pesos per dollar. Exchange rate controls were introduced to avoid an excessive depreciation that could have led to a high inflation. Other anti-inflationary, non-monetary measures were adopted, as export taxes and the freezing of the public utility rates. Finally, when the capital flows were reversed, Central Bank intervened in the exchange market trying to avoid the appreciation of the peso.

In the Uruguayan case after the free floating of the peso the exchange rate rose, as can be seen in Figure 10. The exchange rate was $ 15 per dollar at the beginning of 2002 and attained $ 32 in September, 2002. In order to avoid an increase in inflation, monetary policy was tightened by issuing treasury bills in local currency at a very high interest rate (150 %) and increasing legal reserve requirements for peso deposits. Central Bank started to follow a policy of monetary base targets in 2003. After the successful debt swap an important reversal in capital flows occurred allowing a decrease in the exchange rate ($ 27 on June 30, 2003), in the interest rate (20 % at the end of 2003), and in the inflation rate that finally was 10,2 % in 2003. In 2004 the monetary policy was based on the announcement of a monetary base target with a subsidiary inflation target. In 2006, the inflation target started to be considered the most important while the monetary target was considered subsidiary. Finally, in 2007 the monetary target was definitely abandoned and the operational target started to be the interbank interest rate.

The Argentine fiscal policy after the end of the convertibility succeeded in obtaining an important primary surplus. Given the important reduction in interest expenses as a result of the default and the posterior restructuring process, the consolidated public sector also registered a surplus. An important part of the improvement in the primary surplus was related to the introduction of export taxes, which coincided with a period of high commodity prices. The reserves were also augmented as a result of the interventions to avoid the appreciation of the Argentine peso. Part of these new resources were used to pay in advance the important debt with the IMF inherited from the previous period.

As a result of the swap of 2005, as we commented, the ratio public debt over GDP of Argentina decreased in an important way. Given the characteristics of the swap, average debt maturity increased, and the degree of dollarization of public debt decreased. The sovereign
spread sharply decreased after the swap. In the following period the average maturity of debt and the degree of dollarization remained basically the same. The ratio public debt over GDP continued decreasing, as a consequence of the high economic growth. Sovereign spread continued decreasing until the first quarter of 2007 when attained 2%, a similar level to the average emerging countries spread.

However, it seems that the reputational problems, that we have analysed in Section 3.4, remains unsolved, and could have been increased after the default and tough debt restructuring. Argentina faced restrictions to normally issue bonds in international markets, given the possibility of claims or embargoes by holdouts (the bondholders that did not participate in the swap). In spite of this, Argentine government managed to issue an important amount of public bonds in international markets, via an arrangement with the government of Venezuela. This new debt was issued at a high interest rate, which was interpreted by some analysts as a symptom of fiscal problems. The process of de-dollarization of the public debt, in great part based on the issue of CPI-linked debt, also had some difficulties. The official CPI data has been disputed since January 2007. Some analysts, that consider that the inflation is underestimated, interpret this fact as a sign of reluctance to pay CPI-linked public debt, see on this Weisbrot (2008). In part due to these problems, the Argentine sovereign spread started to increase again during 2007, while the average spread of emerging markets remained basically constant. During the last quarter of 2008, and the first quarter of 2009, Argentine EMBI attained a peak. During this period there was also a general increase in emerging markets sovereign spread, due to the international crisis, but the increase in Argentina was higher than the average. The composite EMBI was 6,6%, while the Argentine EMBI was more than 16% during this period. After this peak the sovereign spread of Argentina seems to decrease, accompanying the general trend of emerging markets, but it remains at a high value, well above the composite EMBI.

The Uruguayan fiscal policy also achieved an important fiscal primary surplus after the crisis. The interest expenses represented an important fraction of the GDP after the floating of the peso, given the high degree of dollarization of the public debt but were progressively decreased accompanying the posterior appreciation of the Uruguayan peso. As a consequence total deficit evolved from a moderate deficit in 2003 to an almost equilibrium in 2007. Uruguay’s fiscal deficit showed a small deterioration in 2008, basically due to extra costs in the state-owned corporation that monopolizes electricity.
In October 2003, few months after the swap, Uruguay issued an important amount of public debt in the international financial markets. Country risk had a strong decrease after the swap. After that the sovereign spread continued declining, as a consequence of the high capital inflows and the improvement in the Uruguayan financial situation. In 2007 sovereign spread was 1.8%, a level lower than the average emerging countries spread. In the following period the Uruguayan spread followed the general evolution of the emerging countries spread.

The management of the public debt, looked for an improvement in its profile, increasing the average maturity (the debt with a maturity lower than 5 years represented 64% in 2002, and 29% in 2008), and increasing the proportion of the debt denominated in local currency (4% in 2002, 30% in 2008). The debt with the IMF was cancelled in advance.

4.8. Some considerations about the crisis

4.8.1. External shocks and internal vulnerabilities

The long lasting recession and the final crisis of Argentina and Uruguay can not be explained alone by the capital flows reversal. Other Latin America economies (e.g. Brazil or Chile) suffered an even more important initial shock with lower consequences in their activity level. It seems that some local vulnerabilities, added to the sudden stop, had played an important role in the Argentine and Uruguayan crisis.

Firstly, the lack of strong fiscal sustainability, made Argentina and Uruguay specially vulnerable to an increase in sovereign spread. In the Argentine case, where reputational problems were added to the sustainability ones, the difficulties in rolling over the debt, favored a contractionary fiscal policy that exacerbated the recession. The final explosive public debt dynamics, derived in the default and the posterior tough restructuring process.

Secondly, financial dollarization seems to have played a role in the difficulties to confront the external shock. An adverse external shock calls for a real depreciation. In a financial dollarized environment this is likely to induce financial problems. If the real depreciation is made directly by an adjustment of the exchange rate, we will have the complications associated to the balance sheet effects on agents that have debts in dollars but assets in domestic currency. If the authorities did not allow the exchange rate to move and the real exchange rate adjustment is made by a process of deflation, we can also have financial problems. A deflation process usually is associated with a recession, given price rigidity, and the recession can affect the financial
situation of many agents in the economy. This financial deterioration could be magnified by
a final overshooting of the exchange rate, if the process of adjustment via deflation is not
successful and the abandonment of the peg is made in the middle of a crisis. It seems that a
process of de-dollarization can help the economy to confront with this kind of external shocks.

In the third place, the exchange rate peg seems to have been a vulnerability for these
economies. The exchange rate peg with respect to the US dollar was a powerful tool to reduce
inflation, but seems to be a weak instrument to deal with adverse external shocks. As it is
noted by Hausmann and Velasco (2002) Argentina does not seem to satisfy the requirements of
an optimum currency area with the US, and the same can be argued about Uruguay. Sudden
stops are an asymmetric shock for these economies and the US, so the peg, that forced these
countries to have a similar monetary policy, could not provide the correct response to the
shock. Given the recurrent presence of these type of shocks it seems better to assign the task
of maintaining a low inflation to a monetary policy compatible with exchange rate flexibility.
An institutional framework that precludes an inflationary bias in monetary policy, can help to
improve Central Bank reputation. This could reduce the necessity to import credibility from
a low inflationary country via an exchange rate peg.

Banking regulation problems appear as another vulnerability. The regulation problems
seem to have not been limited to the lack of currency mismatches restrictions. The lack of
a strong financial system put additional pressure on reserves, and interacted in a negative
way with the fiscal front problems. The management of the financial crisis seems to have had
also some deficiencies. The answer of the Uruguayan authorities to the banking run was slow.
The drastic measures adopted by Argentina, first corralito and then pesification, seems also
to have some drawbacks. These measures implied a quick response to the liquidity problems
of the banking system and to the solvency problems of the debtors in dollars. However, these
decisions were at the expense of the depositors rights, which could harm the reputation of the
Argentine financial system.

Another source of vulnerability seems to be related with the lack of macroeconomic coor-
dination inside the Mercosur agreement. The Brazilian devaluation in face of the sudden stop
implied for Argentina and Uruguay an additional adverse shock. This problem was even more
important for Uruguay, that was more dependent on the region. As we already commented,
the Uruguayan exports of goods to the region represented 55% of its total exports in 1998. The
region had also a decisive importance, through Argentina, in the demand of the tourist and financial sector. Although its more flexible exchange rate regime allowed Uruguay to gradually adjust the relative prices after the sudden stop and Brazilian devaluation, it was extremely difficult for Uruguay to confront with the additional shock represented by the Argentinian collapse at the end of 2001. This fact suggests the importance of increase the macroeconomic coordination inside the Mercosur. For Uruguay this policy probably has to be complemented with some trade diversification.

4.8.2. The crisis resolution

The exit from the recession was only possible when the exchange rate peg was abandoned allowing the relative prices to adjust, and when the problems associated with the combination of real exchange rate depreciation with liability dollarization (of the public debt and the financial system) were "elucidated".

The resolution of the public debt crisis in Argentina and Uruguay were quite different. In the Argentine case, the public debt was in default during 3 years, while in the Uruguayan case the public debt service was never interrupted. The Argentine swap implied a very important change in the conditions of the debt including an extraordinary haircut. On the contrary, the Uruguayan swap implied basically an increase in the maturity. The approach to the holdout problem was also very different, the debt that did not enter in the swap was not recognized by Argentina, while it was paid by Uruguay.

The quite different restructuring process is the result of a different strategy, and it is not the product of a different diagnosis about the consequences of the lack of fulfillment of the debt service. Both countries supposed that this behavior would imply the exclusion from the financial markets. Based on this analysis, Uruguay tried to affect minimally the financial rights of the bondholders, searching for a small punishment and for a quick return to the financial markets. As it is argued by Damill et al. (2005) Argentina made a strong haircut in order to have a public debt that could be managed without issuing new public debt in the international financial market. The "self exclusion" strategy of Argentina was favored by the high interest rates of its public debt, a problem that was intensified after the "megacanje". The interest rate of the Uruguayan public debt was relatively small, given that the majority of the debt was issued under the "investment grade" status. The Argentine reputational problem could
have increased after the default. This fact illustrates a sort of "vicious circle", bad reputation implies bad credit conditions, which leads to a default in some circumstances, which reinforces the bad reputation.

5. Conclusions

The Argentine and Uruguayan crisis can be seen as the result of an adverse external financial shock in a vulnerable environment. This environment was characterized by a perverse combination of fixed exchange rate, a fiscal policy not sustainable in a strong sense, and a great de facto dollarization. Banking regulation problems and the lack of macroeconomic coordination inside the Mercosur agreement, also contributed to amplify the original adverse shock.

By testing cointegration between government expenditure and revenues we find evidence that fiscal policy was not sustainable in a "strong" sense in Argentina and Uruguay. The lack of a "strongly" sustainable fiscal policy favored the speculative attacks against public debt suffered by these economies. This fact also restricted the possibility of following a countercyclical fiscal policy during the recession. We find no clear evidence that Uruguay and Argentina were different in terms of fiscal sustainability in the pre-crisis period. This result suggests that the different credit conditions in that period were originated in reputational considerations.

Along with the similarities the processes that finished with the Argentine and Uruguayan crisis shows some differences. Uruguay had a more flexible exchange rate peg, that allowed a more gradual adjustment of the real exchange rate. The Uruguayan institutions had a better reputation, and in particular Uruguay had a better reputation as debtor. This favored the obtaining of the investment grade status for the Uruguayan public debt. Uruguay was able to issue public debt with low interest rates, and after the devaluation was in a better position to restructure the public debt in a market friendly manner, which in turn allowed a quick return to international markets.

In the case of Argentina, the rigid exchange rate regime made the adjustment process more complicated, and the crisis resolution included a severe social and political crisis. The bad reputation, added to the lack of a strongly sustainable fiscal policy, led to the accumulation of a huge public debt with high interest rates. Argentina finally opted for a default and then imposed a very important haircut in the restructuring process. The Argentine reputational
problem could have worsened after the default which implies a kind of vicious circle.

The analysis of the Argentine and Uruguayan crisis shows that internal factors play a key role in the economy response to a sudden stop. This fact suggests that the most pernicious effects of these shocks could be avoided by policies that reduce the vulnerabilities that we have analysed.

References


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A. Data Appendix

Unless otherwise indicated in the text the sources of the data are the following:

Argentina: GDP, GDP deflator and CPI are from INDEC. Exchange rate is from the Central Bank of Argentina (BCRA). EMBI and effective real exchange rate are from JP Morgan. Public expenditure and government revenues are from MECON, and were deflated with GDP deflator. Fiscal variables were seasonally adjusted using the Multiplicative Census X12 procedure. Public debt over GDP and public debt in dollars are from IADB. Public debt maturity and currency composition of public debt are from MECON. Deposits, credits and un recoverable credits are from BCRA. Foreign exchange reserves in the Central Bank are from IMF. Private consumption, exports and imports are from national accounts (INDEC). Quarterly private investment was estimated from annual private investment (INDEC) using Chow-Lin method with quarterly total investment from national accounts as high frequency indicator. Current Account and terms of trade are from INDEC. Destination of exports and exports composition are from ECLAC.

Uruguay: GDP, GDP deflator and exchange rate are from Central Bank of Uruguay (BCU). CPI is from INE. UBI is from República AFAP. Public expenditure, and government revenues are from BCU, and were deflated with GDP deflator. Fiscal variables were seasonally adjusted using the Multiplicative Census X12 procedure. Public debt over GDP and public debt in dollars are from IADB. Public debt maturity and currency composition of public debt are from BCU. Effective real exchange rate is from IMF. Deposits, credits and expired credits are from BCU. Foreign exchange reserves in the Central Bank are from IMF. Quarterly private consumption, private investment, exports and imports were estimated from annual national accounts (BCU), using Chow-Lin method with quarterly IVF (BCU) as high frequency indicator. Current Account and terms of trade are from BCU. Destination of exports and exports composition are from ECLAC.

USA’s CPI is from Bureau of Labor Statistics.

Brazilian exchange rate is from IMF, CPI is from Central Bank of Brazil.