

# **Systemic Shocks and Financial Crises: Lessons from Argentina, 1991-2001**

Marcella Mulino, Luisa Giallonardo, Beatrice Gorga  
*University of L'Aquila*

## ABSTRACT

Throughout the second half of the 1990s, conventional indicators of bank fundamentals depicted the Argentine banking system as potentially resistant to liquidity and solvency shocks. Against this background, in 2001 the Argentine banking system experienced a massive run on deposits that culminated in the disruption of the payment system. We argue that the drawbacks of the currency board regime have been at the roots of this crisis. The dollarization of the economy, the huge overvaluation of the real exchange rate and the exposure to Government debt, all contributed to the building up of the banks' critical vulnerabilities. The lack of monetary and exchange-rate tools made it difficult to address the recession of the last years of the 1990s and triggered a collapse of confidence in the sustainability of the public debt and the currency board itself. In such a context, the banks' vulnerabilities became explicit so that the collapse of confidence affected the banking system, becoming the vehicle for financial disaster.

## **1. Introduction**

Following a decade of high inflation and stagnant output, and several failed attempts to stabilize the economy, Argentina fell into hyperinflation in 1989, with an annual rate of 4,924 percent, downsizing to 1,344 percent in 1990. In April 1991, in order to fight hyperinflation and to place the economy on a growth path, Argentina adopted a currency-board regime. The Convertibility Plan pegged the domestic currency to the dollar according to a one-to-one rule,

committing the Central Bank to guarantee a substantial backing of the domestic currency with dollars. In so doing, Argentina's Central Bank acquired an anti-inflationary credibility, inflationary expectations were curbed, and domestic inflation gradually decreased to very low levels, compatible with healthy economic growth. At the same time, the government adopted a series of economic reforms, thus fostering massive capital inflows that supported the following remarkable growth.

At the same time, the banking sector underwent a process of liberalization, internationalization and consolidation, associated with an increasing level of domestic financial intermediation. As a result, notwithstanding the difficulties following the contagion from the Mexican crisis in 1994, Argentina's banking sector was ranked second among those of a number of emerging countries' economies, in terms of regulatory environment as well as sound fundamentals for both domestic and foreign-owned banks.

Starting from 1999, the macroeconomic stance deteriorated sharply due to external shocks. The currency-board regime implied that the monetary and exchange-rate policies could not be employed as adjustment tools, so that much of the burden of the macroeconomic stabilization rested on fiscal policy. While the government met increasing constraints in financing its budget deficit through bonds, the international and domestic-market participants lost confidence in the viability of the currency-board regime and the sustainability of the public debt. The loss of confidence ultimately extended to the banking sector and resulted in huge deposit withdrawals mounting to a run on banks at the end of 2001.

Yet, still at the end of 2000, based on conventional indicators of financial health, Argentina's banking sector was still judged resilient. In particular, capital adequacy and liquidity ratios were strong by international comparisons, whereas asset quality ratios showed only a modest deterioration. Stress tests run in 2000 by the Central Bank of Argentina confirmed to a large degree that the banking system was intrinsically sound.

In this paper, we provide an account of the reasons behind the

limited predictive power of standard banking indicators in anticipating the potential systemic risks for the Argentine financial sector. In particular, we analyze the role of the main factors in contributing to the building up of critical, albeit latent, vulnerabilities in the financial sector. The most important of these relate to the high and increasing dollarization of the economy fostered by the hard-peg regime, the potential credit risk in the context of a huge overvaluation of the real exchange rate and the exposure of the banking system to government risk. The above factors were mainly the result of systemic features stemming from the adoption of the currency-board regime. The latent fragility of the banking sector emerged on the occasion of the deep recession of the last years of the 1990s. Due to the lack of monetary and exchange-rate tools for stabilization purposes, the future of the exchange-rate regime and the sustainability of the public debt were questioned. In such a context, as the banks' vulnerabilities became explicit, the loss of confidence passed to the banking system, becoming the vehicle for financial disaster.

This paper is organized as follows. The first section lays out a general description of the functioning of the currency board, discussing advantages and shortcomings. The second section considers how the currency board rigidities weigh against the banking sector stability, and focuses especially on the challenges posed by the lack of a lender of last resort. Within the above framework, the third section describes the actual functioning of Argentina's currency board, while the fourth section deals with the reform process, aiming at the strengthening of the financial sector, with the evolution of the banking system in the country, and its ability to cope with the contagion from the Mexican crisis. The next section explores the Argentine banking sector's vulnerabilities, hidden under the veil of an apparent strength and highlights the buildup of solvency risks. Summing up the results of the analysis, the final section draws the conclusion that the Argentine banking crisis was mainly due to causes outside the banking system, as the loss of confidence and negative expectations on solvency were triggered by a collapse of confidence in the sustainability of the public debt and the currency board itself.

## 2. Advantages and shortcomings of currency boards

A currency-board arrangement can be seen as an extreme case of a fixed exchange-rate system. Its main distinctive characteristics are that the Central Bank announces an exchange rate against some designated reserve currencies and, at that rate, offers or demands domestic currency according to the situation on the foreign-exchange market. Under a currency board, monetary policy is run according to a very simple rule: the monetary authority leading the currency board issues money only against the designated reserve currency. In its “pure” version, the currency board is not supposed to acquire any domestic assets, so that the entire monetary base it issues is fully backed by foreign reserves. In other words, a currency board mechanism ensures that the proportion of monetary base to reserves remains constant at the fixed exchange rate. Currency boards eliminate traditional Central Bank tasks like monetary regulation and the lender-of-last-resort function. Institutional arrangements, which see an explicit legislative (or even constitutional) commitment to the exchange-rate regime, typically make the abolition of a currency board considerably more difficult<sup>1</sup>, thus providing credibility to the exchange-rate regime.

The pros and cons of irrevocable pegs are well known in the literature. They have been traditionally assessed in the framework of Mundell’s theory of Optimal Currency Areas (OCA)<sup>2</sup>. Mundell suggests that an irrevocable peg is more likely to be beneficial if the country trades a lot with the anchor country, and if both countries are not exposed to significant asymmetric shocks which would demand monetary-policy responses of different sign in the two economies. The peg might still be warranted even when the possibility of asymmetric shocks is substantial, provided that the country can easily adjust to real shocks via nominal price and wage flexibility, or

---

<sup>1</sup> A currency board is often adopted by law, so that the exchange-rate regime may be altered only by parliamentary or even constitutional changes.

<sup>2</sup> See Robert Mundell, “A Theory of Optimum Currency Areas”, in *American Economic Review*, 51, 1961, pp. 657-665.

via other mechanisms such as fiscal transfers and/or labour mobility between the two countries.

With reference to Mundell's theory, it must be stressed that a currency board makes the probability of asymmetric shocks higher and their effects much more painful when compared with 'ordinary' pegs. As to the probability of being hit by asymmetric shocks, one has to consider that, when establishing a currency board, the reserve currency is chosen more with regard to its 'soundness' than according to the degree of trade or financial integration. Thus, the domestic economy is tightly linked to the reserve country, regardless of the well-known criteria for forming an optimal currency union. The productivity growth and economic cycle of the two countries may be very dissimilar and, obviously, there is not enough price flexibility or factor mobility to compensate for it. To a certain extent, the same applies also to unilateral pegs. The difference is that, besides 'importing' the reserve country's monetary policy, a currency board is totally constrained to shape the domestic money supply.

As autonomous monetary policy is ruled out, so is the monetary financing of the budget. The need to finance budget deficits through the issue of government bonds imposes a strict discipline on fiscal policy. In fact, the accumulation of public debt must be kept under firm control in order to avoid the risk of rising interest rates required from market participants and/or problems of debt unsustainability.

Actually, currency-board arrangements are often meant to provide a nominal anchor in fighting domestic inflation, since they are seen as a way to import anti-inflation credibility from the country to which the domestic currency is pegged. However, as domestic inflation converges to international levels only gradually, currency-board regimes are often characterised by cumulative real-exchange rate appreciations, loss of competitiveness and structural worsening of the trade balance. In the short run, capitals are likely to flow into the currency-board country owing to higher nominal interest rates resulting from the gradual inflation decline. Initial capital inflows can help supporting the economy. In the medium run, however, they are likely

to cause a further real-exchange rate appreciation and to increase the country's vulnerability to shifts in foreign investors' confidence. Regardless of whether a country adopts a currency-board regime or not, large capital inflows (in optimistic periods) or outflows (when expectations of devaluation prevail) can occur. Yet, in a currency board, they pose an additional problem inasmuch as the Central Bank is not allowed to sterilise their effects on the monetary base. When capitals flow out, the monetary base falls, domestic interest rates are forced to rise, putting under considerable stress both domestic banks and firms. As a result, a recession may follow, feeding back expectations of unsustainability of the exchange-rate regime.

Moreover, real exchange-rate appreciations may continue to occur well after the domestic inflation rate reaches international levels. When the reserve currency appreciates against the currency board country's trading partners or when trading partners devalue against the reserve currency, the peg of the domestic currency to a reserve currency implies a real overvaluation. The subsequent current account imbalance, if not matched by capital inflows, leads to a decrease in the monetary base. Assuming that wages and prices react rather quickly, real overvaluation can be tackled through deflation (or "domestic devaluation"). In such a case, real interest rates will be higher than abroad even if the currency-board regime is fully credible and there is no sovereign risk, that is, even when nominal interest rates are the same as the reserve country's ones. High real interest rates, in turn, strengthen the depressing effect of the drop in exports on aggregate demand. In the case of domestic nominal inertia, the adjustment process is slower and more costly in terms of output and employment, since the real overvaluation is long lasting. The fact that the required adjustment process may entail significant output losses could in turn undermine the confidence in the sustainability of the peg. Experiences with currency-board arrangements show that real exchange-rate appreciations do occur to a considerable extent<sup>3</sup>.

---

<sup>3</sup> For instance, between 1990 and 1997 the Hong Kong currency appreciated in real terms by over 30 percent, while in Estonia the real appreciation of the currency since the adop-

In addition, countries adopting a currency board are more prone to financial crises, due to the lack of domestic or foreign institutions providing lender-of-last-resort services in the face of system-wide liquidity crises. As in the “twin crises”<sup>4</sup> approach, financial and currency crises are tightly intertwined. When devaluation expectations grow, speculative attacks make the monetary base decrease and interest rates increase. Given the required reserve ratios, banks are forced to recall loans and firms may go bankrupt. Unless foreign banks provide additional liquidity or the Central Bank holds excess foreign reserves with respect to the monetary base, the pressure on foreign reserves may trigger a financial panic, with the public trying to convert its demand deposits into the reserve currency. It is likely that commercial banks may not be able to ensure the convertibility of demand deposits. In fact, while fully (or near-fully) backing the monetary base (M0), a currency board does not hold reserve currency assets matching the entire stock of liquid monetary assets (M1, let alone M2). Given that the domestic financial assets that may be used to buy foreign currency are usually a multiple of the monetary base, speculative attacks may well be successful.

In general, by establishing a currency board, the monetary authority subordinates other policy objectives to the defense of the exchange-rate parity. Specific monetary policy-objectives may be pursued only when they do not conflict with the stability of the exchange-rate regime, whereas an autonomous fiscal policy can be carried on as long as the public sector is able to finance its needs on the market. As a result, the ability to respond to shocks is restricted due to limited tools for stabilization policy.

---

tion of the currency board in 1992 has been equal to over 70 percent and in Lithuania the real appreciation has been nearly 60 percent since 1994. Argentina’s real exchange rate appreciated by over 50 percent between 1991 and 2001 (Alberola *et al.*, 2004).

<sup>4</sup> See, for instance, Ilan Goldfajn, Rodrigo O. Valdes, *Capital Flows and the Twin Crises: The Role of Liquidity*, IMF Working Paper, No. 97/87, 1997 and Graciela L. Kaminsky, Carmen Reinhart, “The Twin Crises: The Causes of Banking and Balance-of-Payments Problems”, in *American Economic Review*, 89, 1999, pp. 473-500.

### 3. Currency boards and the banking sector

A currency-board arrangement poses a particular burden on the banking sector. As said before, since the monetary base has to be fully backed by foreign reserves, the Central Bank cannot sterilize capital flows. When a balance of payment deficit or rapid capital outflow occur, they will automatically be translated into domestic liquidity tightening and higher interest rates<sup>5</sup>. Large fluctuations in interest rates have a direct impact on the banking system through the changed valuation of its assets and liabilities. A rise in domestic interest rates depresses the market value of the banks' domestic currency assets, brings about a recession and causes the share of non-performing loans to grow. It thus induces a significant increase in credit risk within the banking system. If high interest rates persist, less capitalized banks may find it difficult to stay liquid and become insolvent.

In addition, the currency board-backing rule limits the scope for lender-of-last-resort support and other monetary operations, which, in times of crisis, might facilitate the stabilization of the banking system. The limit is set by the amount of foreign exchange in excess of that required for monetary backing. Typically, bank deposits are some multiple of their reserves and so the lender-of-last-resort function would require a much larger stock of official reserves as compared with the monetary base. In fact, the commitment to convert the domestic currency into foreign exchange enables the private sector to exchange bank deposits for foreign cash. Moreover, given the backing rule, it does not matter whether the private sector withdraws domestic or foreign currency from its bank deposits. In the event of a shock, in order to remain credible, the banks must have access to sufficient cash to meet any resulting deposit drains, while

---

<sup>5</sup> The short-term adjustment mechanism in a currency board, which is based on the interest rate volatility in a context of high international capital mobility, is somewhat similar to the gold standard's price level volatility mechanism. In contrast to the traditional gold-standard regime, however, there is no symmetry in the adjustment mechanism among countries.

holding only a fraction of reserves against their deposits. In the absence of a lender-of-last-resort support, the unmitigated effects of a liquidity crisis of individual banks may spread to the whole system<sup>6</sup>; in such a case, a bank run is likely and may put at risk the exchange-rate arrangement. Thus, there appears to be a trade-off between the credibility of the currency board backing rule and the need to be able to provide lender-of-last-resort support to the banking sector.

In the light of the above considerations, the monetary authorities of most countries with a currency board have established explicit, albeit limited, lender-of-last-resort facilities, with differences in their designs depending on both institutional arrangements of the currency boards and problems of the banking systems<sup>7</sup>. In some currency-board countries, high reserve requirements have been imposed on bank deposits with the advantage of reducing the scope for lender-of-last-resort support, albeit at a cost for the banks. Reserve requirements have been subsequently relaxed to provide liquidity in case of stress. While addressing a liquidity shortage, however, a reduction in reserve requirements may not be a solution to the problem, as it may signal liquidity problems and thus undermine depositors' confidence.

It has been stressed (Santiprabhob, 1997) that the banking sector in countries adopting a currency board must be more sound than elsewhere, precisely because of the restricted, or even null, scope for monetary operations. Indeed, a weak banking system may call for a broader lender-of-last-resort support, requiring the monetary authority to maintain a higher amount of excess foreign exchange. Given the limited availability of foreign currency, such a need may translate into a narrower scope for monetary backing and undermine the credibility of the convertibility commitment. Besides, in currency-board regimes

---

<sup>6</sup> "I do not claim that currency boards create banking crises, but rather that they have very limited ability to prevent them" (Zarazaga, 1995, p. 22).

<sup>7</sup> For a description, see Veerathai Santiprabhob, *Bank Soundness and Currency Board Arrangements: Issues and Experience*, IMF Paper on Policy Analysis and Assessment, no. 97/11, 1997.

nominal interest rates on domestic currency assets tend to converge towards those prevailing in the reserve-currency country. Unsound banks slow down such a process, since they are willing to take higher risks, and depositors ask for higher risk premiums. This may contribute to weaken the credibility of the nominal exchange-rate anchor, as higher interest rates are bound to prevent economic agents from incorporating a lower inflation path into their inflation expectations.

In order to favor a strengthening of the banking sector, countries with a currency board have imposed prudential regulations and supervision stricter than international standards as in Argentina, Estonia, Hong Kong and Lithuania. More stringent standards have been applied to risk-based capital adequacy ratios, to foreign exchange exposure limits, to maximum exposure to a single borrower.

#### 4. The currency board in Argentina

Following a decade of high inflation and stagnant output, and several failed attempts to stabilize the economy, Argentina fell into hyperinflation in 1989. The Convertibility Plan, introduced in April 1991, was designed to stabilize the economy through drastic, and almost irreversible, measures. The Convertibility Plan aimed at achieving a definitive break in the vicious circle of peso depreciation followed by a surge in domestic prices and inflationary expectations. The core of the Plan was the currency board-like arrangement<sup>8</sup>, in which the domestic currency, the peso, was fixed at par with the U.S. dollar. The credibility of the commitment to low inflation rested on the external nominal anchor specified by the hard-peg regime. Moreover, the exchange-rate parity was established by law, so that only a Parliamentary act could alter it. The law precluded the creation of pesos not backed by dollars, with the exception of a limited range<sup>9</sup>:

---

<sup>8</sup> The new policy, dubbed “convertibility,” had a number of differences from an orthodox currency-board approach.

<sup>9</sup> In this respect, Argentina was said to follow a “quasi-currency board” rule. Zarazaga (1995), Schuler (2003).

the money base had to be kept equal to or less than the amount of foreign-exchange reserves plus no more than 33 percent of the total money-base backing to be constituted by dollar-denominated government bonds<sup>10</sup>. Thus, as explained below, the Convertibility Law gave the Central Bank some flexibility to act as lender of last resort.

Full convertibility of the peso was established for both current and capital transactions. Besides, the law stated the right of any Argentine citizen to hold and transact business in foreign currency. The latter provision, which was meant to boost the credibility of the one-peso-one-dollar rule, led to a persistent and rising level of financial dollarization, given the enduring market perception of exchange-rate risk that convertibility could not remove, despite its heavy institutional and legal shield.

With reference to the Mundell's conditions for an OCA with the U.S. dollar, Argentina did not meet any of them. In particular, the trade and productive structure made a peg to the dollar highly inadequate, since the U.S. accounted for less than 15 percent of Argentine total trade<sup>11</sup>, leaving a considerable scope for asymmetric shocks. In addition, Argentina had a substantial share of foreign trade with countries whose currencies fluctuated with respect to the U.S. dollar. Wage and price flexibility, as well as factor mobility, were limited, thus making the adjustment to real shocks difficult. Actually, as in other currency-board countries, the adoption of the Convertibility Law was not guided by the OCA arguments, but by the credibility-enhancing effect that renouncing monetary discretion was expected to have after many years of acute monetary instability. In

---

<sup>10</sup> Holdings of those securities could not expand by more than 10 percent per year. Initially, the minimum ratio of reserves excluding Argentine government bonds was set at 90 percent. Subsequently, it was stated that during the first three years of the operation of the currency board, the normal minimum ratio would be at 80 percent, but the Central Bank could declare a 90-day emergency period during which it could reduce the ratio to 66.6 percent. The Central Bank never used the provision. After three years, the law provided for the minimum ratio to be at 66.6 percent under all circumstances, with the 10 percent annual growth ceiling.

<sup>11</sup> Bilateral trade with the USA was an even smaller share of Argentina's GNP: less than 3 percent.

such a context, the Argentine currency board made more likely the occurrence of asymmetric shocks, whereas the inadequate price mechanism and the limited policy makers' ability to react to shocks contributed to the buildup of dangerous vulnerabilities.

In any case, the choice of the hard peg led to the successful disinflation of the early nineties, and to a restored credibility in the implementation of sound policy reforms, fostering massive capital inflows that supported Argentina's remarkable growth. During 1991-1994, prior to the Mexican crisis contagion, average real GDP growth was 8.2 percent p.a. After a 3.3 percent decline in 1995, real GDP resumed its growth, averaging 5.8 percent p.a. in the period 1996-1998<sup>12</sup>. Yet, the currency-board regime was not consistent with several features of the economy: labour market rigidities and price inflexibilities, limited openness to international trade, small size of the domestic financial sector, currency mismatches in the balance sheets of private and public sectors. The above structural weaknesses made the choice of a nominal anchor to the dollar a straightjacket for the economy, as it limited the authorities' ability to support the economic activity. In 1998, when a period of recession started, the currency board arrangement limited the Argentine authorities' ability to prevent a tightening of the monetary policy, while the public debt dynamics, exacerbated by the protracted slump<sup>13</sup>, ruled out the loosening fiscal policy. During the convertibility period, the buildup of a sizeable foreign currency debt and the corresponding balance-sheet vulnerabilities dramatically increased the cost of leaving the fixed exchange-rate regime. The result was a policy dilemma that ultimately undermined the confidence needed to prevent the ensuing crisis.

Several economists have dealt with the analysis of the Argentine experience in the period of the Convertibility Law, addressing in particular the causes of the crisis. Most of the analyses point to mul-

---

<sup>12</sup> IMF, *World Economic Outlook Database*.

<sup>13</sup> Real GDP dynamics were again negative from 1999, averaging -2.8 percent p.a. in the period 1999-2001.

tiple domestic vulnerabilities, which were reinforced under the effect of external shocks. Some authors argue that the crisis was the outcome of an over-borrowing process, which initially fostered growth and eventually made Argentina financially fragile, due to the accumulation of dangerously high levels of external debt (Cavallaro, Maggi and Mulino, 2011; Maggi, Cavallaro and Mulino, 2012). The loss of confidence and consequent capital reversals could not be addressed, due to the strong commitment to maintain the peg, which left no room for stabilization purposes. Other authors emphasize that the crisis was rooted in insufficient fiscal tightening in a period of economic expansion and consequent excessive debt accumulation (Mussa, 2002), whereas others claim the peg was maintained too long (Krueger, 2002a). Many analysts agree the peso became overvalued under the currency board parity with the dollar, although by how much is more disputed (Feldstein, 2002; Perry and Servén, 2003; Stiglitz, 2002). Argentina's competitiveness was impaired; the country had to rely on capital inflows to finance external imbalances and became vulnerable to foreign investors' confidence. Roubini (2001), De la Torre et al. (2002) and Perry and Servén (2003) emphasize the existence of a hard peg as a crucial factor in the deteriorating situation, since corrections to the real exchange rate could only take place through price deflation, implying falling output and growing unemployment, which erodes the repayment capacity of debtors whose earnings come from the non-tradable sector. Finally, most recognize the contribution of external shocks, including the 'sudden stop' in capital inflows after the Russia's default, Brazil's major devaluation, and the appreciation of the dollar against the Euro and other currencies (Hausmann and Velasco, 2002; Calvo, Izquierdo, and Talvi, 2003).

All the above factors contributed to the loss of confidence in the maintenance of the peg, triggering the Argentina's currency crisis. With a growing perceived probability of exiting the convertibility regime, the collapse in confidence spread to the banking sector, whose liquidity and solvency were put into question and made explicit the banks' hidden vulnerabilities. The currency crisis was thus

coupled with a financial crisis of unprecedented severity; both crises led to the abandonment of the currency-board regime in January 2002 with a subsequent impressive devaluation of the peso. In the context of Argentina's experience in the 1990s, we concentrate on the role of the dollar peg in the building up of potential risks for the financial sector.

With reference to the bearing a currency board put on the banking sector, the monetary authority of Argentina's currency board has recognized the importance of ensuring bank liquidity. It established a number of explicit lender-of-last-resort facilities and liquidity provisions. In particular, the Central Bank of Argentina could use as disposable reserves dollar-denominated public bonds up to a third of the monetary base, so that it could exploit this facility to manage the monetary base, thus acting as the lender of last resort. However, the coverage of the monetary base with foreign reserves has always been higher than the minimum ratio of 66.6 percent: even during the Mexican crisis contagion, it was around 75 percent.

Moreover, the Central Bank was allowed to provide limited rediscounts and advances to facilitate the commercial banks' liquidity management. In the wake of the Mexican crisis of 1995, some of the above limits were relaxed with a widening of facilities and the rolling-over of rediscounts. In addition, some open-market operations using repos and swaps were managed. Besides, in 1996 a contingency credit line was established with a consortium of large international banks, from which the domestic banks could draw with the assistance of the Central Bank. Finally, in order to ensure liquidity in time of stress, the Central Bank imposed high reserve requirements on deposits.

## **5. The banking sector in Argentina during the 1990s**

The decision to peg the peso to the US dollar through a currency board was accompanied by a series of economic reforms. The banking sector as well experienced a number of ambitious reforms aimed at strengthening the entire financial sector in view of the par-

ticular context in which they were called to operate. The reforms of the banking sector involved both the institutional set-up and the regulatory framework. As to the former, a process of liberalization and internationalization of the banking sector started in 1992 and, following the Mexican crisis contagion, subsequently intensified. The system experienced also substantial concentration (see Tables 1 and 2): many public banks (especially provincial banks) were privatized, private banks were consolidated through mergers and selective bank liquidations<sup>14</sup> and a number of foreign banks entered the Argentine financial market. Overall, the system underwent a remarkable financial deepening as indicated by the strong growth in the volume of deposits: they registered a growth of around 187 and 77 percent during 1992-1999 and 1994-1999, respectively<sup>15</sup>. The process of privatization, started in 1992, intensified after the Mexican crisis: in 1999, the number of public banks was less than half than that of 1994, whereas the share of their assets declined from 36 percent in 1994 to 30 percent in 1999<sup>16</sup>. Moreover, up to the end of the decade, the process of internationalization increased: in September 1999, the number of foreign banks accounted for more than 50 percent than that before the Tequila crisis. Data reported by Perry and Servén<sup>17</sup> for December 2000, when the number of foreign banks was 39, indicates that 9 banks closed between September 1999 and December 2000. Nevertheless, foreign banks accounted for 15 percent of total banking assets in 1992, 55 percent in 1998 and 73 percent in 2000<sup>18</sup>. On this point, it is worth noting that the presence of foreign banks, believed as reputedly solid and ready to stand behind their affiliates once fa-

---

<sup>14</sup> In the first nine months of 1995, 34 banks closed (through acquisitions, mergers, or liquidations). See Carrizosa *et al.* (1996).

<sup>15</sup> Authors' calculations from data of Table 1.

<sup>16</sup> John Hawkins, Dubravko Mihaljek, *The Banking Industry in the Emerging Market Economies: Competition, Consolidation and Systemic Stability - An Overview*, BIS Papers, no. 4, 2001.

<sup>17</sup> Guillermo Perry, Luis Servén, *The Anatomy of a Multiple Crisis: Why Was Argentina Special and What Can We Learn From It*, The World Bank Policy Research Working Paper, no. 3081, 2003, p. 44.

<sup>18</sup> *Ibid.*, p 43.

cing trouble, contributed to reinforce over time the general perception of a banking system able to withstand liquidity and solvency problems<sup>19</sup>.

**TABLE 1**  
Structure of the Banking Sector 1980-1999

	1980	1992	1994	1999 <sup>a</sup>
Total Number of Banks	214	167	168	96
Number of Private Banks	179	131	135	81
Foreign	27	31	31	48
Domestic	—	—	—	—
Number of Public Banks	35	36	33	15
Total Deposits <sup>b</sup>	55,020	26,002	42,278	74,693

<sup>a</sup> September 1999; <sup>b</sup> In millions of pesos of 1993.

Source: Calomiris and Powell (2000), p. 7.

As to the regulatory reforms, the deposit insurance was abolished in 1992 aiming to reduce the possibility of moral hazard behaviour on the side of the financial institutions. In addition, the Basel standards for capital requirements were adopted, with the ratio of capital to risk-weighted assets equal to 9.5 percent. The reform process went together with a rapid financial deepening in the 1990s, as reflected by the steep growth of bank deposits and loans. For instance, bank deposits increased steadily from 5.7 percent of GDP in 1991 to 30.4 in 2000<sup>20</sup>.

**TABLE 2**  
Banking-Sector Concentration 1994-2000

	Shares in Total Deposits in Percent		
	Number of Total Banks	Three Largest Banks	Ten Largest Banks
1994	206	39.1	73.1
2000	113	39.8	80.7

<sup>a</sup> September 1999; <sup>b</sup> In millions of Pesos of 1993.

Source: IMF (2001), p. 127.

<sup>19</sup> Contrary to the general perception, in the midst of the crisis foreign banks reacted to the increased financial risk by reducing their exposure. Their presence, therefore, did little to improve the situation (Dominguez and Tesar, 2005, p. 12).

<sup>20</sup> Kurt Schuler, *Argentina's Economic Crisis: Causes and Cures*, Joint Economic Committee, U.S. Congress, 2003.

Notwithstanding the strengthening of the banking sector, the stability of the financial system was seriously threatened following the Mexican crisis of 1994-95. The resulting deposit and liquidity crisis – with 18 percent of total deposits withdrawn between December 1994 and May 1995 and 51 institutions failed<sup>21</sup> – prompted the immediate intervention of the IMF and the World Bank and was followed by a decisive action of the Argentine authorities, including the reduction of reserve requirements, the easing of liquidity constraints, and the creation of a liquidity buffer<sup>22</sup>. Reserve requirements on dollar deposits were reduced in order to provide more liquidity to the banking system, followed by a reduction of reserve requirements also on peso deposits<sup>23</sup>. A special security fund<sup>24</sup> was set-up to assist institutions suffering from high deposit withdrawals, and a Trust Fund for Provincial Development was established to provide support to the provincial banks. A limited deposit insurance network was again put in place through a private institution, called SEDESA, which covered up to 20,000 dollars per person (later increased to 30,000 dollars) for certain bank deposits. In addition, standards for capital requirements were tightened: at the end of 1994, they were set at 11.5 percent, 3.5 percentage points above the Basel standards of 8.0 percent. Changes were made to the Central Bank Charter to allow it to provide liquidity, in case of emergency and only over a limited period of time, equal to 100 percent of a bank's capital. Besides, with the new Charter the Central Bank could use repos and rediscounts to help troubled banks. In addition, new loan agreements were signed with the international financial institutions, which in-

---

<sup>21</sup> Adolfo Barajas, Emiliano Basco, V. Hugo Juan-Ramón, Carlos Quarracino, *Banks During the Argentine Crisis: Were They All Hurt Equally? Did They All Behave Equally?*, IMF Working Paper, no. 06/42, 2006, p. 7.

<sup>22</sup> Kathrin M.E. Dominguez, Linda L. Tesar, *International Borrowing and Macroeconomic Performance in Argentina*, NBER Working Paper, no. 11353, 2005, p. 6.

<sup>23</sup> However, there are potential negative effects in relaxing liquidity requirements, since it can have adverse signaling effects, further weakening confidence.

<sup>24</sup> The Fund was managed by Banco Nación (the largest government bank), with the participation of 5 private institutions and 2 public banks.

creased the Central Bank's international reserves and its ability to meet the commercial banks' liquidity needs. Overall, the reduction of the banks' reserve requirements, coupled with the deposits insurance, the easing of liquidity constraints, the creation of a liquidity buffer succeeded in preserving the liquidity as well as the solvency of the banking sector<sup>25</sup>.

By the end of August 1995, the intermediation process gave important signs of recovery and restructuring: half of the deposits withdrawn after November 1994 entered the banking system again, this time flowing mainly towards the largest banks, with the proportion of deposits held by foreign banks increased from 16 to 20 percent and the share of peso deposits to dollar deposits decreased from 49 to 44 percent<sup>26</sup>. In the years following the Mexican crisis, the banking sector's regulation and supervision made further advances. Between December 1995 and December 2001, mainly due to changes driven by large banks, the number of banks decreased by 27 percent with an increase in the volume of total assets equal to 20 percent<sup>27</sup>. Large banks (classified as those with assets greater than one percent of the market) increased their market share in assets from 71 to 85 percent, with the rise driven by the largest banks (those with assets share higher than 5 percent). At the same time, small banks (those with assets less than or equal to one percent) decreased their market share in assets from 29 to 15 percent<sup>28</sup>. During 1995-2001, the year 1998 revealed itself as crucial: up to 2001, the number of large banks remained almost constant (22) but among them the number of largest banks increased from 4 to 7 in 1998. During the same period, the number of small banks decreased from 105 to 66<sup>29</sup>.

During 1994-1995, provisioning requirements were tightened and a liquidity requirement system was introduced. In addition, the

---

<sup>25</sup> For details on this points, see The World Bank, 1998, p. 58.

<sup>26</sup> Ritu Basu, Pablo Druck, David Martson, Raul Susmel, *Bank Consolidation and Performance. The Argentine Experience*, IMF Working Paper, no. 04/149, 2004, pp. 6-7.

<sup>27</sup> *Ibid.*

<sup>28</sup> *Ibid.*, pp. 7-11.

<sup>29</sup> *Ibid.*

BASIC oversight approach<sup>30</sup> – an approach providing timely and relevant information on single banks to regulators and to private markets, making it possible for the first to impose higher capital requirements on banks with excess exposure to credit risk and for the second to price down banks' subordinated debt – was adopted. Finally, in 1999, differentiated risk-weighted capital requirements were introduced: since the interest rate charged on each loan was seen as a signal of credit risk, capital ratios were required to rise accordingly.

As a whole, all the regulatory advances triggered an impressive development of the banking regulatory environment. As a result, up to the end of the 1990s, according to the international standards for bank fundamentals, the banking system appeared to be not only healthy but also resilient and thus consistent with the convertibility system.

As reported by the World Bank's CAMELOT rating system relative to the year 1998<sup>31</sup>, the Argentine banking sector ranked second, alongside Hong Kong, in terms of banking-system regulation over 12 emerging countries. The CAMELOT rating system is a combination of separate rankings for a number of different requirements: capital requirements (C); loan loss provisioning requirements with definition of past-due loans (A); management (M) operationalized in terms of the percentage of high quality foreign banks; liquidity requirements (L); operating environment (O) defined as a combination of single rankings in property rights, creditor rights, and enforcement; and transparency (T) detected when banks are rated by international risk-rating agencies and are given as indicators of degree of corruption. The Argentine banking sector ranked 1 for C, 4 for A, 3 for M, 4 for L, 7 for O and 2 for T.

Standard indicators of financial health continued to depict a he-

---

<sup>30</sup> Acronym with B standing for Bonds, A for Auditing, S for Supervision, I for Information and C for Credit Rating.

<sup>31</sup> The World Bank, *Argentine Financial Sector Review*, Report n. 17864-AR, Washington D.C.: The World Bank, 1998, pp. 53-54 and 97-99.

althy banking system even after the Russian financial crisis of 1998, with the parallel capital flows' reversal, after the Brazilian devaluation shock of 1999 and, more important, notwithstanding the underlying worsening of the macroeconomic imbalances. Indeed, up to 2000, the banking sector had relatively strong provisions, was well capitalized and highly liquid, notwithstanding the increasing underlying losses and percentage of non-performing loans (see Table 3)<sup>32</sup>.

**TABLE 3**  
Selected Banking Sector Indicators (percentage at end year)

	1997	1998	1999	2000
Net Worth/Assets	12.11	11.44	10.72	10.52
Capital/Risk-Weighted Assets	18.13	17.64	18.56	21.18
Non-Performing Loans/Total Loans <sup>a</sup>	8.23	5.98	7.14	10.21
Provisions/Total Loans	7.70	7.10	7.82	8.65
Provisions/Non-Performing Loans <sup>a</sup>	108.64	140.40	122.25	77.13
Systemic Core Liquidity <sup>b</sup>	42.98	39.58	40.89	38.69
Returns on Equity before Provisions	22.59	10.61	8.43	7.76
Returns on Equity after Provisions	7.41	-2.24	-6.71	-9.42
Returns on Assets after Provisions	1.04	-0.27	-0.77	-1.01
Leverage Ratio (not in percent)	6.11	7.26	7.74	8.33

Notes: <sup>a</sup> Non-Performing Loans is defined as the sum of loans with problems, loans with high risk and non-recoverable loans; <sup>b</sup> Defined as the ratio of international reserves of the Central Bank in foreign currencies and other liquidity requirements held abroad and total deposits.

Source: Perry and Servén (2003), p. 43.

An IMF Staff Country Report in December 2000 still reported that “capital adequacy and liquidity indicators are strong in the Argentine banking industry” (p. 6). A stress test on capital adequacy

<sup>32</sup> It is worth noting that the data for “systemic core liquidity” in Table 3, provided by the Central Bank, are calculated with international reserves including liquidity requirements held abroad, according to past arrangements between the IMF and Argentina. See on this point, Pellicchio and Cady (2005), p. 8. This may account for levels and percent values higher than published elsewhere, as in Schuler (2003), Table 1, that gives a ratio of 29 percent in 1997, steadily decreasing to reach 20.9 percent in 2001, and Pou (2002), p. 5, that gives a ratio of around 20 percent for the years 2000-2001.

run by the Argentine Central Bank in 2000 detected 4 banks failing to meet the Basel capital adequacy standard and 12 banks failing to meet the higher Argentine capital adequacy requirements. In a “bad” scenario simulation, the number of banks falling short of Basel and Argentine criteria increased to 10 and 37, respectively, amounting to 3.6 percent and 10.3 of assets<sup>33</sup>. As to the total liquidity cushion available to absorb deposit withdrawals (*systemic core liquidity*), on March 2000, it was 38.69 percent of total deposits, indicating an ability to resist the withdrawal of over a third of total deposits, an amount almost twice as large as the one that occurred during the 1995 crisis.

Two other factors pointed to a greater capability of the system to withstand some significant deposit withdrawals without systemic disruption, compared with that in 1995: first, the larger share of deposits held by the foreign banks, seen to be better able to manage liquidity; second, a better management of reserve requirements with respect to the term-structure of liabilities. In short, over the last years of the decade, conventional indicators captured a banking system potentially resistant to liquidity and solvency shocks and the worsening of macroeconomic imbalances. Indeed, as said above, it gave some proof of resiliency withstanding the Mexican crisis and, thereafter, the trouble originated from the Russian and the Brazilian crises.

The picture provided by conventional bank indicators can be hardly reconciled with the December 2001 massive run on deposits. Still at the end of the decade, conventional indicators failed in fact to detect the imminent disruption of the payment system into which the crisis of the banking system culminated. In December 2001, in order to halt the run on banks, the Ministry of Economy imposed the freezing of withdrawals for bank deposits: restrictive measures allowed the withdrawal of 250 pesos (dollars) per week per account, the notorious *corralito* that ended in December 2002<sup>34</sup>. The gover-

---

<sup>33</sup> Also according to a value-at-risk approach, actual provisioning and capital levels for the banking system exceeded the adequacy values.

<sup>34</sup> *Ibid.*, p. 55.

nment prohibited as well any fund transfer abroad on the side of domestic and foreign investors, thereby implementing capital controls to guarantee the peg. Always in December 2001, the default of the state, given the recent sharp increase of bank financing of the government's debt, left the banks with large asset losses.

On the sharp contrast between the banking sector crisis and the portrait provided by standard indicators, lines of criticism<sup>35</sup> have focused on some intrinsic problematics of the reform process. First, the dynamic inconsistency of the reform process: deposit insurance abolished in 1992 was reintroduced in 1995 and afterwards its coverage limits were raised; liquidity requirements were changed over time, mostly under severe stress, as after the Mexican crisis. Second, the fragility of some aspects of the reform process: the obligation to issue subordinated debt, a key point of the BASIC approach, was associated with a low penalty in case of noncompliance; through regulatory incentives, the reform process left significant room for discretion in the creation of excessive bank financing of government debt.

## 6. Hidden weaknesses of the financial sector

Some specific factors contributed to the building up of critical vulnerabilities in the financial sector<sup>36</sup>. The most important ones relate to the high level of financial dollarization, the external disequilibria, together with the limited openness of the Argentine economy and the exposure of the banking system to the public sector.

Once the negative effects of the external shocks, coupled with the inherent rigidities of the currency board, hit the economy, the continuation of the exchange-rate arrangement was put into question. In such a context, the factors mentioned above made bank credit risk soar to a very high level, leading to the unsustainability of

---

<sup>35</sup> The World Bank, 1998.

<sup>36</sup> For a comprehensive and systematic analysis of financial crises, see Allen and Gale (2007).

the banking system. Thus, the lack of confidence in convertibility extended to the solvency of the banking sector so that currency and financial crises became tightly intertwined, amplifying their negative outcomes.

The commitment to “one peso for one dollar, forever” resulted in an asset substitution, since a credible commitment makes assets equivalent in the eyes of investors, regardless of currency denomination. As the Convertibility Law aimed at reinforcing the viability of convertibility, the authorities could not discourage the use of the dollar in financial contracts. Indeed, it was legal to write contracts in the reserve currency and dollars could be used as alternative means of payment. Yet, the credibility of the Currency Board was never fully established, as indicated by the Argentine Emerging Market Bond Index (EMBI) spread that during the decade showed values similar to the average of emerging markets (Calvo, Izquierdo and Talvi, 2003). Thus, due to the lasting perception of a residual risk of nominal devaluation, the share of dollar deposits was high and increasing<sup>37</sup>, in particular after the Russian crisis and the Brazilian devaluation. Time deposits became more and more dollarized during Convertibility, reaching nearly 80 percent of the total. In contrast, the degree of dollarization of saving accounts, albeit high (about 40 percent) grew only at the end of the 1990s, whereas the degree of dollarization of demand deposits was well under 10 percent and remained stable during most of the decade<sup>38</sup>.

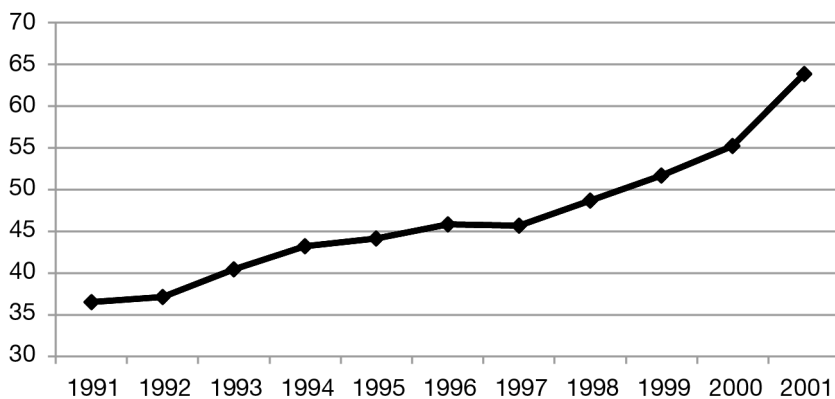
Following the accumulation of dollar-denominated assets, the banks extended dollar credits, which were increasingly demanded by the private sector because of lower interest rates on dollar contracts. Thus, the share of dollar credit over total credit to the private

---

<sup>37</sup> Yet, another explanation for the increase in dollar deposits was put forward, namely that an increase in confidence in the domestic banking system induced the residents to move dollar-denominated assets from offshore to domestic banks. See Caprio *et al.* (1996).

<sup>38</sup> Augusto De La Torre, Eduardo Levy-Yeyati, Sergio L. Schmukler, *Living and Dying with Hard Pegs. The Rise and Fall of Argentina's Currency Board*, The World Bank Policy Research Working Paper, no. 2980, 2003, p. 7.

**FIGURE 1**  
Share of dollar deposits over total deposits



Source: Schuler (2003), Table 1. Authors' calculations.

and public sectors showed a steady rise, from less than 50 percent in 1991 to more than 60 percent at the end of the decade. As stated above, the interest-rate factor may also have encouraged credit dollarization because peso loans carried higher interest rates than dollar loans, given the persistent currency premium<sup>39</sup>. In fact, the spread between peso and dollar interest rates was very high at the start of the currency board (due to the gradual inflation decline), subsequently it recorded an average of 230 basis points from 1993 to 2000, and soared to over two thousand basis points in 2001<sup>40</sup>. Dollarization characterized both the private and public debt. By mid-1999, 80 percent of the private debt, whether domestic or foreign, was denominated in US dollars, whereas the share of credit in US dollars over total credit to the public sector soared from less than 50 percent in

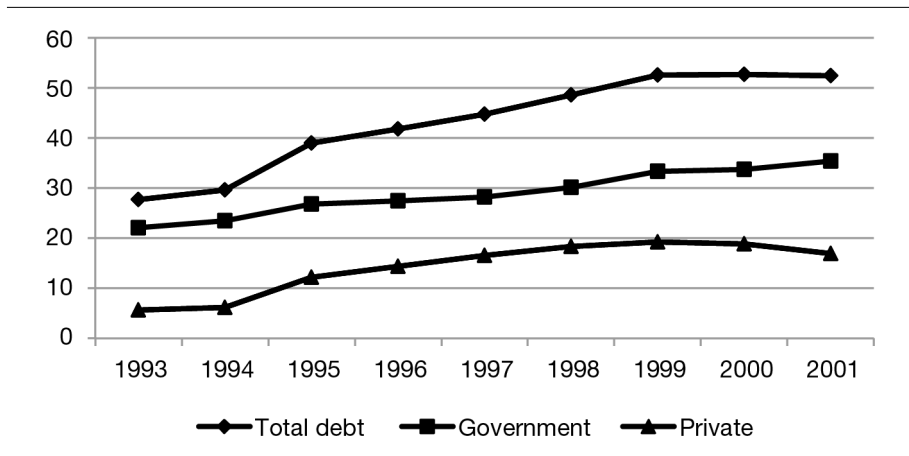
<sup>39</sup> Perry and Servén (2003), p. 47.

<sup>40</sup> Dominguez and Tesar (2005), Table 1.

<sup>41</sup> Perry and Servén (2003). The government did not issue peso debt in domestic markets not solely because dollar debt was less costly, but also because incurring the additional interest-rate cost could have been interpreted as a hedge against a future devaluation, undermining the confidence in the one-to-one convertibility rule.

1991 to more than 90 percent prior to the crisis<sup>41</sup>. Owing to lower interest rates, a relatively small financial sector and liquidity constraints on the domestic market, both the firms and the government turned to financial international markets, so that external debt represented a growing share of GDP (see Figure 2). The high incidence of foreign-currency debt led to a balance-sheet currency-denomination mismatch, as the revenues in non-tradable sectors and the fiscal revenues were in domestic currency<sup>42</sup>.

**FIGURE 2**  
External debt stocks (in % of GDP)



Source: World Bank, World Development Indicators. Authors' calculations.

The financial dollarization exposed the Argentine banks to a potential source of credit risk, linked to the possibility of a devaluation of the peso against the U.S. dollar. While most of the banks' assets and liabilities were matched in terms of their currency of denomination, only a minor part of the banks' lending capacity arising from currency denominated deposits was allocated to those sectors eligible to make reimbursements in foreign currency (manufacturers of

<sup>42</sup> Indeed, Reinhart and Rogoff (2013) underline that a sustained surge in capital inflows makes countries more prone to banking crises.

goods subject to export). Many dollar-denominated bank loans went to Argentine companies and households that had earnings in pesos. It is estimated<sup>43</sup> that only 25 percent of productive activities were in the tradable sector, and, therefore, potentially capable of generating earnings in hard currency<sup>44</sup>. In “good” times, the currency denomination of private debt is irrelevant. In “bad” times, however, currency mismatch positions for households, non-tradable firms and the government add to the traditional credit risk a specific risk of dollar loans to the debtors whose income is in pesos.

As stated above, the latent risk of non-repayment for dollar loans would materialize in the event of a devaluation of the peso against the U.S. dollar. It is worth noting, however, that it would occur also in the event of significant adverse shocks requiring a real effective exchange rate (REER) depreciation, that is – under a hard-peg regime – a deflationary adjustment. Between 1991 and 1993, during the early stages of stabilization, the CPI-based REER appreciated by more than 30 percent. From 1993 until 1996, Argentina’s CPI-based competitiveness remained roughly unchanged<sup>45</sup>, but afterwards it worsened, partly due to stagnant productivity and partly as a reflection of the appreciation of the US dollar and of the Brazilian real devaluation. The latter were manifestations of specific disturbances to which the currency board was vulnerable. Different estimates – depending, among others, on the deflator employed – put the magnitude of the overvaluation of the REER between 30 and 55 percent by

---

<sup>43</sup> Guillermo A. Calvo, Ernesto Talvi, *Sudden Stops, Financial Factors and Economic Collapse in Latin America: Learning from Argentina and Chile*, NBER Working Paper, no. 11153, 2005, p. 21.

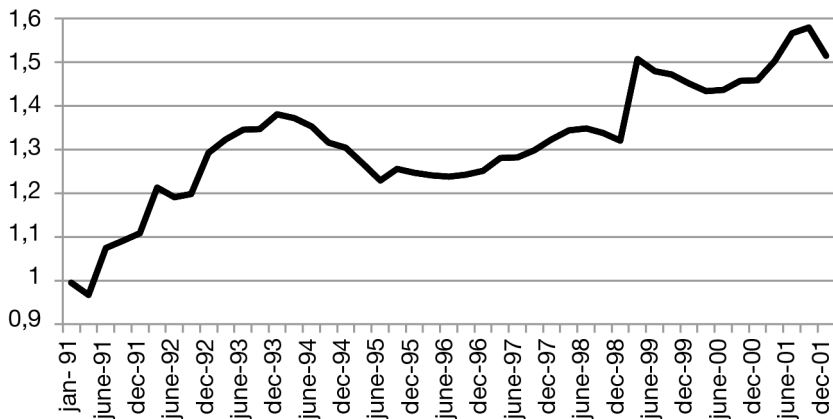
<sup>44</sup> According to traditional measures of openness, i.e., imports plus exports as a share of GDP, Argentina was a fairly closed economy, as the share averaged 19 percent for the period 1991-1997, prior to the Russian crisis. Calvo and Talvi (2005).

<sup>45</sup> Perry and Servén (2003) argue that through 1996 important gains in relative productivity in the tradable sector warranted the REER appreciation.

<sup>46</sup> Perry and Servén (2003); Guillermo A. Calvo, Alejandro Izquierdo, Ernesto Talvi, *Sudden Stops, the Real Exchange Rate, and Fiscal Sustainability: Argentina’s Lessons*, NBER Working Paper, no. 9828, 2003; William R. Cline, *Restoring Economic Growth in Argentina*, The World Bank Policy Research Working Paper, no. 3158, 2003; Dominguez and Tesar (2005).

2001<sup>46</sup>. Figure 3 depicts the evolution of the REER during the convertibility period (according to our definition, a REER increase means an appreciation).

**FIGURE 3**  
Real Effective Exchange Rate, CPI deflated (April 1991 = 1)



Source: Banco Central de la República Argentina. Authors' calculations.

The deflationary adjustment required to restore competitiveness tends to reduce aggregate demand and domestic production, which in turn would erode the capacity to pay off the debtors whose earnings come from the domestic demand (non-tradable sectors). Consequently, a “potential” severe deterioration of the quality of the banks’ loan portfolio would follow, since loan repayment becomes increasingly difficult. In turn, the recession following an ‘internal devaluation’ increases the government budget deficits and determines a growing public debt. Given the currency mismatch of the public-sector balance sheet, it deteriorates the government ability to meet its liabilities and exposes the banking sector to a further worsening of its portfolio. In Argentina, the banks’ credit risk was enhanced by the extent of the REER overvaluation: international evidence reported by Goldfajn and Valdes (1999) shows that, once a real overvaluation exceeds a threshold of around 30 percent, it becomes very difficult to reverse it through a deflationary adjustment,

and a collapse of the nominal exchange rate is likely to occur. Thus, to the growing credit risk stemming from the non-tradable sector's difficulty to repay its debt a devaluation risk was added.

The banking sector was also vulnerable to a sovereign debt crisis, owing to its exposure to the public sector's growing debt. Argentina's public finances deteriorated in the course of the 1990s, albeit until 1998 the deficit was moderate, in the range of 1.5 – 3.0 percent of GDP. However, when taking into account the persistent off-budget spending<sup>47</sup>, the deficit was higher (see Figure 4). As the currency-board regime precluded direct money financing of fiscal deficits, the public debt ratio increased from 31 percent of GDP at the end of 1992 to 41 percent at the end of 1998. The rise was substantial but the level of the ratio did not yet appear to be dangerous. The successive prolonged economic slump led to higher deficits and growing indebtedness, which resulted in rising interest rates and higher debt service. The debt-to-GDP ratio rose from 47.6 percent in 1999, to 50.9 percent in 2000 and to 60.2 at the end of 2001 (see Figure 4). Again, fiscal indicators did not point to an apparent risky level, albeit the rate of debt accumulation was impressive. The main driving force behind the deteriorating public-debt dynamics during this period was the differential between the interest rate and GDP growth<sup>48</sup>. Such a differential, which contributed on average to more than 80 percent of the debt/GDP growth from 1998 to 2001, resulted from the government's difficult access to capital markets, requiring rising interest rates, and from the deep and prolonged recession characterized by a GDP which was declining, not only in real terms, but even in nominal terms, due to deflation<sup>49</sup>. The extent of the recession was impressive: according to IMF's estimates (2003), the output gap widened from -2.7 percent of potential GDP in 1999 to -12.1 in 2001.

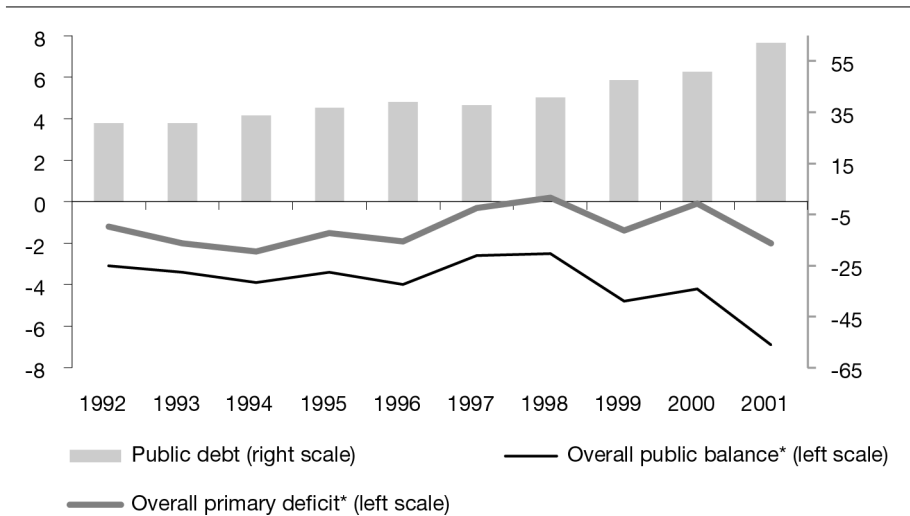
---

<sup>47</sup> It comprised various court-ordered compensation payments, including payments to pensioners and former victims of political prosecution.

<sup>48</sup> IMF (2003), Table 2.

<sup>49</sup> The GDP deflator fell at an average rate of 0.9 percent annually in 1998-2001.

**FIGURE 4**  
Main fiscal indicators, 1992-2001 (in % of GDP)



\* Includes off-budget federal expenditure.  
Source: IMF (2003), Table 1. Authors' calculations.

At the same time, Argentina's fiscal indicators concealed some critical vulnerabilities of the public sector that materialized during the convertibility period. The weaknesses of the public sector mainly rested in the currency denomination of the public debt and in the government's recourse to the international capital markets in order to meet its growing financing needs. As said above, more than 90 percent of public debt was foreign-currency denominated. As a result, and considering that the real exchange rate was deeply overvalued, the figure for debt-to-GDP ratio was a misleadingly indicator of fiscal-policy sustainability, as it underestimated the actual figure. In addition, nearly 80 percent of the overall public-sector debt consisted of external debt, meaning that – given the low Argentine export/GDP share – the public debt-to-exports ratio alone was well above 350 percent<sup>50</sup>. In the aftermath of the Asian and the Russian crises, this made

<sup>50</sup> See Dominguez and Tesar (2005). Indeed, rating agencies looked more at the public-debt-to-exports ratio than at the conventional public-debt-to-GDP ratio (Pou, 2002).

the external financing of fiscal policy highly susceptible to any change in market sentiment and rendered Argentina's access to capital markets increasingly difficult, both for new bond emissions and for rolling over the public debt coming to maturity.

Already after the Tequila crisis, the government started moderately to resort to domestic savings, notably pension funds and local banks. The share of claims on the public sector to total assets in Argentina's banking system was less than 10 percent in 1994. It did not change significantly until 1998 and it started growing only after that date. At the end of the nineties, as external credit dried up, the government accelerated the placement of domestic debt with local banks because other sources of financing gradually ran out. The share of loans and public bonds in the banks' assets jumped from 15 percent at the end of 2000 to nearly 30 percent by the end of 2001<sup>51</sup>. The increasing reliance of public finances on domestic financial markets was not restricted to the federal government since provincial governments also absorbed local banks' liquidity, adding to the stress on the banking sector<sup>52</sup>.

The above process caused the banking system to be less liquid, and its solvency became strictly linked to that of the government, which, in turn, was increasingly put into question<sup>53</sup>. In an attempt to avoid a default over debt service, the government drained the liquidity of the financial system through a somewhat compulsory placing of the public debt. In April 2001, it used moral suasion to place US\$2 billion of bonds with the banks, allowing them to use those bonds to meet up to 18 percent of the liquidity requirement. At the same time, prudential regulations were revised so that it was established a positive weight for the loans to the government for the purpose of determining capital requirements; in addition, the banks

---

<sup>51</sup> IMF (2003).

<sup>52</sup> Moreover, because of limited financing availability, some provincial governments resorted to issuing IOUs. The circulation of IOUs affected bank operations, especially their credit risk evaluation.

<sup>53</sup> Between January and December 2001, the spread on government bonds, as indicated by the EMBI+ index for Argentina, rose from 703 to 4,385 basis points (Perry and Servén, 2003).

were compelled to correct the value of their public bonds according to a “mark-to-market” criterion. The effect on the banks’ balance sheets was disruptive as the market value of the government obligations was only half of the nominal value.

Ultimately, the latent risks linked to the widespread dollarization of the economy, the overvaluation of the REER and the growing exposure to the public sector debt materialized, putting Argentina’s banking system in a very difficult position which eventually led to a huge run on bank deposits.

## 7. Concluding remarks

In the paper, we have discussed how several factors contributed to the building up of latent vulnerabilities in the Argentine banking sector, in sharp contrast with the conventional bank indicators that provided a picture of a banking system potentially resistant to liquidity and solvency shocks. Indeed, the low level of domestic financial intermediation (albeit it increased over the convertibility decade) and the modest recourse to equity financing contributed to the economy’s excessive reliance on foreign lending and thus to a higher risk of liquidity problems.

Here, however, the argument is that the root of the financial system crisis did not lie in an incorrect or irresponsible behaviour on the side of the Argentine banks. As analyzed in the paper, the bank’s hidden vulnerabilities were the result of systemic features stemming from the adoption of the currency-board regime. Apart from some unwise decisions (for instance, the choice of the reserve currency), the functioning of a currency board in itself restricts the ability of the policymakers to support economic activity because of the absence of policy instruments for stabilization purposes. Hence, the continued economic contraction in the last part of the 1990s could not be addressed by tightening monetary policy<sup>54</sup>, while the con-

---

<sup>54</sup> In fact, the currency-board arrangement implies a pro-cyclical monetary behaviour.

straints on public-debt financing ruled out loosening the fiscal policy. Consequently, the international and domestic-market participants lost confidence in the viability of the currency-board regime and the sustainability of the public debt. The above factors, i.e., the deep recession, the increasing government default risk, and uncertainty about the future of the exchange-rate regime, reinforced each other in a vicious circle and ultimately made explicit the banking-sector vulnerabilities and called into question the solvency of the financial sector as well.

The result was a massive run on bank deposits. At the end of 2001, the government imposed strict limits on cash withdrawals from bank accounts (the so-called “*corralito*”), with the consequent disruption of the payment system. Our argument that the banking crisis was due to causes outside the banking system is confirmed by the fact that, up to 2000 and in the first months of 2001, withdrawals concerned peso deposits, while dollar deposits kept increasing. Dollar deposits increased from 39.4 billion dollars in 1998 to 43.2 in 1999 and to 47.7 in 2000. In 2001, dollar deposits fell to 44.2 billion dollars, albeit this figure may be overstated due to the imposition of the *corralito* in December 2001. In the same period, peso deposits steadily decreased from 38.8 billion pesos in 1998 to 25.0 in 2001<sup>55</sup>. For fear of a nominal devaluation, depositors withdrew their peso deposits or converted them into dollar deposits. Actually, in the months preceding the arrival of the crisis, the share of dollar deposits soared (see Figure 1) as depositors withdrew more peso deposits than dollar deposits from their bank accounts. Only a minor fraction of depositors feared a freeze on deposits or a *pesification*, therefore withdrawing dollar deposits from the banks. In any case, until mid-2001 the depositors’ behaviour did not point to a loss of confidence in the banks’ liquidity and solvency.

The turning point was the sharp deterioration in the macroeconomic stance in 2001. Doubts about the one-to-one peg to the dollar

---

<sup>55</sup> See Schuler, 2003, Table 1.

soared after April 2001, when the government announced the eventual peg of the peso to an equally weighted dollar-euro basket, once these two currencies would have reached parity, a move perceived as masking a way out from convertibility. The government pushed also for a reform of the Central Bank Charter, removing the limits on the monetary authority's ability to inject liquidity. Thereby, it effectively dismantled the backing rule that underpinned convertibility, thus fostering concerns about a potential abandonment of the currency-board arrangement. In addition, on its way towards an outright monetary financing of its budget, the Argentine government dramatically increased the exposure of the banking sector to a sovereign debt crisis. In such a process, the future of the currency, the public finances, and the banking system became tightly linked. By the end of 2001, once the government was clearly headed towards the default in a context of no access to the capital markets, and once the debate was centred not around if, but only around how, to exit from the currency-board arrangement<sup>56</sup>, the attempt to safeguard their savings led investors and depositors to a widespread withdrawal of deposits.

While the currency-board regime initially brought significant benefits, ending decades of high or hyperinflation, it also implied restrictions on the use of monetary policy and the exchange rate as adjustment tools. Thus, it required excessive nominal flexibility of the economy and put much of the burden of macroeconomic stabilization onto fiscal policy. To the extent that the banks held claims on the domestic private and public sectors, they were exposed to both non-tradable sector risk and domestic government risk, in addition to the traditional risk of intermediation. Notwithstanding a relatively high total liquidity cushion, the absence of a lender of last resort made the financial system vulnerable and, eventually, it collapsed under the run on deposits.

---

<sup>56</sup> As economic conditions deteriorated, a growing number of analysts began overtly to debate alternative ways out of the Convertibility Law.

## References

- ALBEROLA E., LÓPEZ H., SERVÉN L. (2004), *Tango with the Gringo: The Hard Peg and Real Misalignment in Argentina*, The World Bank Policy Research, Working Paper, no. 3322, June.
- ALLEN F., GALE D. (2007), *Understanding Financial Crises*, Oxford University Press, New York.
- BARAJAS A., BASCO E., JUAN-RAMÓN V.H., QUARRACINO C. (2006), *Banks During the Argentine Crisis: Were They All Hurt Equally? Did They All Behave Equally?*, IMF Working Paper, no. 06/42, February.
- BASU R., DRUCK P., MARTSON D., SUSMEL R. (2004), *Bank Consolidation and Performance. The Argentine Experience*, IMF Working Paper, no. 04/149, August.
- CALOMIRIS C.W., POWELL A. (2000), *Can Emerging Market Bank Regulators Establish Credible Discipline? The Case of Argentina, 1992-1999*, NBER Working Paper, no. 7715, May.
- CALVO G.A., IZQUIERDO A., TALVI E. (2003), *Sudden Stops, the Real Exchange Rate, and Fiscal Sustainability: Argentina's Lessons*, NBER Working Paper No. 9828, July.
- CALVO G.A., TALVI E. (2005), *Sudden Stops, Financial Factors and Economic Collapse in Latin America: Learning from Argentina and Chile*, NBER Working Paper, no. 11153, February.
- CAPRIO G., DOOLEY M., LEIPZIGER D.M., WALSH C. (1996), *The Lender of Last Resort Function Under a Currency Board. The Case of Argentina*, The World Bank Policy Research Working Paper, no. 1648, September.
- CARRIZOSA M., LEIPZIGER D.M., SHAH H. (1996), "The Tequila Effect and Argentina's Banking Reform", in *Finance & Development*, March, pp. 22-25.
- CAVALLARO E., MAGGI B., MULINO M. (2011), "The Macrodynamics of Financial Fragility within a Hard Peg Arrangement", in *Economic Modelling*, 28, pp. 2164-2173.
- CLINE W.R. (2003), *Restoring Economic Growth in Argentina*, The World Bank Policy Research Working Paper, no. 3158, October.
- DE LA TORRE A., LEVY-YEYATI E., SCHMUKLER S.L. (2003), *Living and*

- Dying with Hard Pegs. The Rise and Fall of Argentina's Currency Board*, The World Bank Policy Research Working Paper, No. 2980, March.
- DELLA PAOLERA G., TAYLOR A.M. (2003), *Gaucha Banking Redux*, NBER Working Paper, no. 9457, January.
- DOMINGUEZ K.M.E., TESAR L.L. (2005), *International Borrowing and Macroeconomic Performance in Argentina*, NBER Working Paper, no. 11353, May.
- FELDSTEIN M. (2002), "Argentina's Fall: Lessons from the Latest Financial Crisis", in *Foreign Affairs*, Vol. 81, March-April, pp. 8-14.
- GOLDFAJN I., VALDES R.O. (1997), *Capital Flows and the Twin Crises: The Role of Liquidity*, IMF Working Paper, no. 97/87, July.
- GOLDFAJN I., VALDES R.O. (1999), "The Aftermath of Appreciations", in *The Quarterly Journal of Economics*, February, pp. 229-260.
- HAUSMANN R., VELASCO A. (2002), *Hard Money's Soft Underbelly: Understanding the Argentine Crisis*, Brookings Trade Forum 2002, pp. 59-104.
- HAWKINS J., MIHALJEK D. (2001), *The Banking Industry in the Emerging Market Economies: Competition, Consolidation and Systemic Stability - An Overview*, BIS Papers, no. 4.
- IMF (2000), *Argentina: Selected Issues and Statistical Annex*, IMF Staff Country Report, no. 00/160, December.
- (2001), "Financial Sector Consolidation in Emerging Markets", chapter V from MATHIESON D.J., SCHINASI G.J. (eds.), *International Capital Market Report*, IMF, Washington D.C.
  - (2003), *Lessons from the Crisis in Argentina*, IMF Paper prepared by the Policy Development and Review Department, October.
  - (2004), *Debt-Related Vulnerabilities and Financial Crises - An Application of the Balance Sheet Approach to Emerging Market Countries*, IMF Paper prepared by the Policy Development and Review Department, July.
- KAMINSKY G.L., REINHART C.M. (1999), "The Twin Crises: The Causes of Banking and Balance-of-Payments Problems", in *American Economic Review*, 89, June, pp. 473-500.
- KRUEGER A. (2002), *Crisis Prevention and Resolution: Lessons from Ar-*

- gentina*, Paper presented at the NBER Conference on “The Argentina Crisis”, Cambridge, MA, July 17<sup>th</sup>, available at: <http://www.imf.org/external/np/speeches/2002/071702.htm>.
- MAGGI B., CAVALLARO E., MULINO M. (2012), “The Macrodynamics of External Overborrowing and Systemic Instability in a Small Open Economy”, in *Studies in Nonlinear Dynamics & Econometrics*, Vol. 16, 2, pp. 1-27.
- MUNDELL R. (1961), “A Theory of Optimum Currency Areas”, in *American Economic Review*, 51, September, pp. 657-665.
- MUSSA M. (2002), *Argentina and the Fund: From Triumph to Tragedy*, Institute for International Economics, Washington D.C.
- PELLECCHIO A., CADY J. (2005), *Data Consistency in IMF Publications: Country Staff Reports versus International Financial Statistics*, IMF Working Paper, no. 05/46, March.
- PERRY G., SERVÉN L. (2003), *The Anatomy of a Multiple Crisis: Why Was Argentina Special and What Can We Learn From It*, The World Bank Policy Research Working Paper, no. 3081, June.
- POU P. (2002), *NBER: The Argentine Crisis*, NBER Conference on “The Argentina Crisis”, Cambridge, MA, July 17<sup>th</sup>, available at: <http://users.nber.org/~confer/2002/argentina02/pou.pdf>.
- REINHART C.M., ROGOFF K.S. (2013), “Banking Crises: An Equal Opportunity Menace”, in *Journal of Banking & Finance*, Vol. 37, November, pp. 4557-4573.
- ROUBINI N. (2001), *Should Argentina Dollarize or Float? The Pros and Cons of Alternative Exchange-Rate Regimes and Their Implications for Domestic and Foreign-Debt Restructuring*, Stern Business School Working Paper, December.
- SANTIPRABHOB V. (1997), *Bank Soundness and Currency-Board Arrangements: Issues and Experience*, IMF Paper on Policy Analysis and Assessment, no. 97/11, December.
- SCHULER K. (2003), *Argentina’s Economic Crisis: Causes and Cures*, Joint Economic Committee, U.S. Congress, June, available at: <http://www.hacer.org/pdf/Schuler.pdf>.
- STIGLITZ J. (2002), *Argentina, Short-changed: Why the Nation that Followed the Rules Fell to Pieces*, The Washington Post, B01, May 12.

WORLD BANK (1998), *Argentine Financial Sector Review*, Report no. 17864-AR, The World Bank.

ZARAZAGA C.E. (1995), "Argentina, Mexico, and Currency Boards: Another Case of Rules Versus Discretion", in *Economic Review*, Federal Reserve Bank of Dallas, Fourth Quarter, pp. 14-24.