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**The Argentine banking crises of 1995 and 2001: An exploration into  
the role of macro-prudential regulations.**

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**Abstract**

This paper deals with two banking crises that took place in Argentina in 1995 and in 2001, when the economy was functioning under a fixed-exchange rate regime called Convertibility. The two crisis took place in a decade of significant reforms in the macro-prudential framework. The experience was contrasting. While the 1995 banking crisis was virulent but was successfully contained by the policy response, the banking system could not escape the effects of the 2001 macroeconomic crisis, eventually leading to default and the abandonment of Convertibility. We focus on the macro-prudential regulations put in place, on the crisis response by the central bank, and on some important institutional reforms designed to resolve more efficiently banking problems. We analyze the dynamics of crises and, in particular, the behavior of depositors, as well as the effects that the crises and the regulatory framework had on the evolution of the Argentine banking system. Finally, we dwell on what additional reforms and prudential regulations could have prevented the 2001 outcome.

## Introduction

For a long time, Argentina has been a case study for economists. For decades its economy was characterized by stagnation, volatility, fiscal indiscipline and high inflation, often grounded in chronic political instability. As a result, a country rich in natural resources and widely perceived with the potential of providing its citizens with a high living standard fell behind expectations.

In 1991, with the implementation of Convertibility, history appeared to change as Argentina embarked in an ambitious reform program while tackling inflation head on anchored on a quasi currency board system. Optimism also coincided with the advent of globalization and a surge of capital flows to emerging market economies.

Argentina's economic performance during most of the 1990s was indeed impressive on a number of fronts. In particular, the Convertibility regime was able to withstand successfully a severe banking crisis that occurred at the beginning of 1995, following the Mexican devaluation of December 1994. As an example of the high regard Argentina's reforms were generating in the international capital market as well as in the international official community, on the occasion of the Annual Meetings of the IMF in October 1998, the IMF's Managing Director Michel Camdessus described *"the experience of Argentina in recent years"* as *"exemplary"* and stated *"Argentina has a story to tell the world: a story which is about the importance of fiscal discipline, of structural change, and of monetary policy rigorously maintained."*<sup>1</sup>

However, as is by now well-known, the story had a sour ending; Argentina managed to backtrack once more and fell into a severe crisis at the end of 2001 and the beginning of 2002. That crisis was characterized by a trilogy: default on the public debt, currency devaluation, and mandatory conversion of foreign-currency contracts into pesos (*"pesification"*). The trilogy slashed the newly acquired credibility and seriously disrupted the rule of law.

In this paper, we focus mainly on one aspect of the reform process carries out in 1990s, that of banking and macro-prudential regulation. Although the evolution of the banking system cannot be entirely disentangled from the rest of the macro economy, there are important lessons that can be learned from the reforms undertaken as well as from those that were not put in place. In reviewing the facts around the 1995 and 2001 banking crises, we analyze the interaction between the prudential regulation put in place, the behavior of depositors, the structure of the banking sector, and the macroeconomic policy response, with particular emphasis on the role of the central bank.

The paper is organized as follows. In section 1 we set out the initial conditions that the Convertibility plan of 1991 encountered. In section 2, we discuss the regulatory and supervisory reforms adopted in the early 1990s, as well as the evolution of the Argentine financial system until the end of 1994 when the sudden devaluation of the Mexican Peso would set in motion the first episode of financial contagion that would mark emerging markets in the second half of the 1990s. Section 3 analyzes the 1995 banking crisis, and discusses the role of the regulatory framework in

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<sup>1</sup> See the "Report on the Evaluation of the Role of the IMF in Argentina, 1991-2001", issued by the IMF's Independent Evaluation Office on July 2004.

place, and the policy response that made it possible to successfully overcome a virulent banking run with little fiscal costs. The section discusses the behavior of depositors. The evidence suggests that the 1995 crisis reflected mainly internal weaknesses of the financial system and it was overcome by an efficient policy response that did not endanger macroeconomic stability. In section 4 we focus on the lessons of the 1995 crisis and on the regulatory changes that were put in place as a result. We show that the 1995 crisis, combined with the changes in macro prudential regulations, had a significant impact on the structure of the Argentine banking system. The financial system became more resilient, both in terms of capitalization and liquidity. However, as section 5 discusses, that gained strength would be seriously tested in 2001. The 2001 crisis exemplifies that, no matter how strong a banking system is, it eventually cannot survive a full-blown macroeconomic crisis. The differences between the behavior of depositors in 2001 as compared to 1995 are striking.

In sections 6 and 7, we deal with the question of what macro prudential regulations would have helped to mitigate the 2001/2002 crisis outcome. In particular, with the benefit of hindsight, we try to answer the difficult question of whether the 2001/2002 crisis could have been avoided with additional or different macro-prudential regulations, and discuss alternative courses of action that were available to the government in order to avoid or mitigate the crisis. Section 8 concludes.

## **1. Background. From hyperinflation to price stability: the Convertibility plan of 1991.**

Ever since permanently abandoning the gold standard after the Great Depression, the Argentine economy exhibited chronically high inflation relative to the US or Europe. But extremely high inflation became a daily experience for Argentines starting in 1975. Indeed, while the average yearly inflation rate from 1960 to 1974 was around 30% and never exceeded 50%, it was, on average 315% from 1975 to 1991 and it reached a maximum of almost 5000% in 1989.

The technical explanation of this, as a first approximation, is relatively simple. During that decade and a half, the government had run sustained and chronic deficits that were mostly financed by money creation from the central bank. The deficit over GDP was on average around 7%, with a minimum of 2% and a maximum of 12%. In addition, starting in the early 80's, the government defaulted on its debt and did not settle on an agreement till the early 90's, so there was no access to the credit market to finance the deficits. Money financing was the only available alternative. The reason why Argentina could not make a fiscal reform and avoid inflation is a deeper question, beyond the scope of this paper.

As a consequence, at the beginning of the 90's it was clear which bullet was at the top of the agenda: ending inflation. It may even be more accurate to say that the agenda had only that one bullet. For a variety of reasons, the monetary regime that was chosen to end inflation at the time involved a currency board that pegged the peso - the local currency - to the US dollar at a rate of one. This monetary strategy was approved by Congress who passed the "Convertibility" law. The name of the law eventually became the brand name the economic program was given.

The currency board implied, up to some limited exceptions we will mention below, that the central bank could print local currency only to accumulate reserves, so it was making money financing of the deficit illegal. The financial relationship between the treasury and the central bank were limited strictly to the purchase of bonds, marked to market, with a tight limit—set in nominal terms—to the growth of government bonds holdings by the central bank. As a byproduct, the central bank was banned from issuing its own debt.

The main short-run challenge for economic policy was on the fiscal front: Since borrowing was not an alternative the new regime was only consistent with an elimination of the fiscal deficit. This was effectively what happened, with 1992 and 1993 witnessing fiscal surpluses. Then, a Brady plan was agreed upon, so the government could then start floating bonds in international markets and financed the positive but small deficits that ensued starting in 1994.

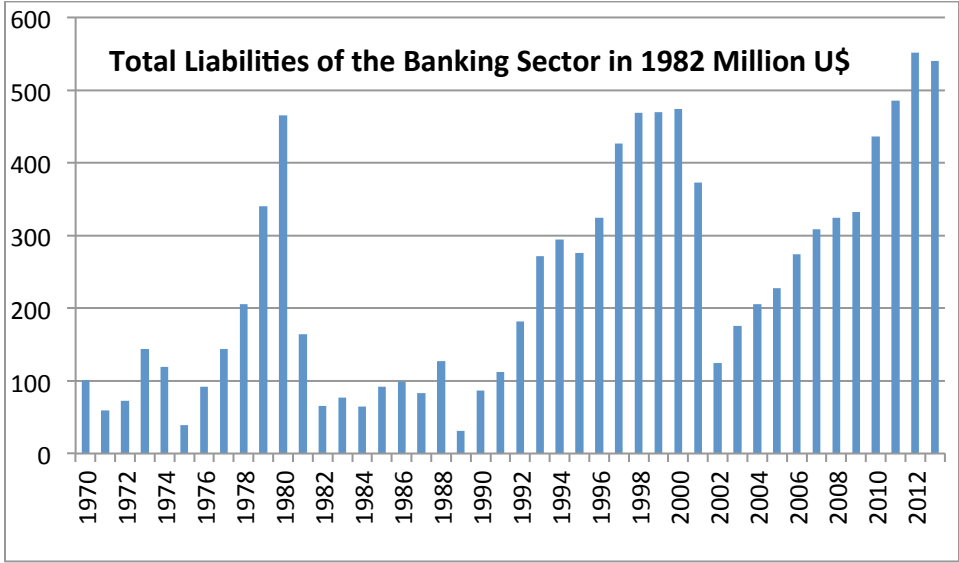
The program was remarkably successful: In 1992 the yearly inflation rate was 17%, and by 1994 it had converged from 1993 to 2001 it was always below 3%. It is reasonable to conjecture that the inflexibility of the Convertibility plan was an important component to foster credibility on the currency peg itself and on the fiscal adjustment required to make it sustainable.

But the inflexibility came with a cost: By removing the ability to discretionally lend to the banking sector it restricted severely the lender-of-last-resort capabilities of the Argentinean central bank making its financial sector potentially more vulnerable to bank runs.

In theory, one could imagine that restriction not to be very important, since the fiscal authority could eventually borrow (say, in US dollars) and use those resources to lend to the central bank. But it is important to remember that the Government launched the program while still being in default in international markets and coming out of two decades of chronic deficits. Thus, neither monetary nor fiscal measures were available to act as a lender of last resort. This was a critical and well acknowledged potential shortcoming the Convertibility plan had since its inception. It explains many of the features of the banking legislation put into place right after the Convertibility law.

The long period of very high and unstable inflation during the 80's had perverse effects on the functioning of the financial sector. With very high and extremely volatile inflation rates, the banking sector could barely function as an intermediary between savings, that were low, and investment, that was even lower. It mostly offered transactional services. As a consequence, total liabilities of the banking sector were very low. In Figure 1, we present the evolution of total

**Figure 1: Total Liabilities of the Banking Sector**



liabilities (in millions of 1982 US dollars) since 1982. As it can be seen, the numbers are very small until 1991, the year in which a period of spectacular growth starts. In addition, during the 80's, the reserve requirement on total deposits was very high, getting to over 90% in some years. These reserves paid interest rates. This mechanism was yet another distortion created by the fiscal voracity of the government that needed financing and therefore used the banking system as an intermediary between depositors and the government.

To summarize, then, during the 80's, the banking sector was very small, issuing deposits that mostly served transactional purposes (the maturity of the majority of these deposits was just a week during many years) and using those deposits mostly to finance the government through mandatory remunerated reserves.

These are the initial conditions of the banking sector that we analyze in this paper. This banking sector grew in a system with a limited lender of last resort and was therefore more exposed to banking panics than most banking sector of the world at the time. Two banking crisis ensued, as

we will explain and analyze in detail below, one in 1995 the other in 2001. Those can easily be identified in Figure 1.

## **2. The banking reforms of the early 90's and the evolution of the banking sector till 1994.**

The very rapid success the Convertibility plan had in reducing inflation to US levels and the ensuing reduction in nominal uncertainty changed the business model for banks. New saving instruments were created and credit to the domestic market started to develop as Figure 1 clearly shows. At the same time, the signing of the Brady Plan in 1993 ended the external debt crisis that started in 1982 and opened for the Argentine economy the opportunity to initiate a process of integration to the international capital market, and carry on major economic reforms that would produce a significant transformation in the functioning of the banking system and its regulatory framework.

From a macroeconomic perspective, the sharp reduction—and eventually the elimination—of inflation, a large increase in capital inflows and foreign direct investment, and the strengthening of fiscal policies represent significant achievements for emerging market economies in the first half of the 90s.<sup>2</sup>

As Figure 1 in the previous section makes clear the financial system was extremely small at the beginning of the 1990s in Argentina and, following the macroeconomic stabilization, it experienced a strong expansion. Between end-1991 and end-1994, deposits increased by 173% and more than doubled as percentage of GDP. Such expansion would continue at similar pace in the second half of the 90s.

As we mentioned above, a major policy restriction faced by the financial sector was the very limited ability of the Central Bank to operate as a lender of last resort. But there were two additional concerns that were relevant in this case.

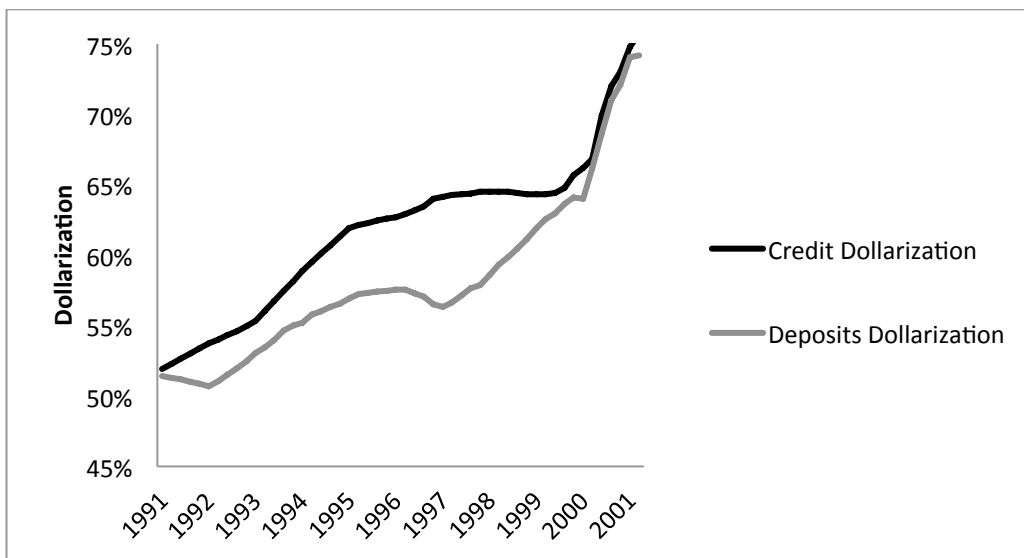
First, as in other countries of the region, one of the salient features of the Argentine banking system was its high level of dollarization, on both sides of the balance sheet.<sup>3</sup> The share of dollar-denominated deposits and credit increased systematically since the beginning of the 1990s. By the end of 1994, the share of deposits and credit that was dollar-denominated stood above 55% and above 60%, respectively. As can be seen in Figure 2, dollarization continued to increase during the entire decade. It must be noted that, while dollarization seemed a natural result of the Convertibility regime that encouraged the perception that a peso had become equivalent to a US dollar, dollarization posed a significant banking risk. Such risk derived from the fact that a large portion of credit, although denominated in US dollars, was owed by firms and consumers whose income was denominated in pesos, hence generating a potentially dangerous mismatch in the event of a large devaluation. As we will see this was a crucial problem in the midst of the 2001-2002 crisis.

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<sup>2</sup> See, for instance, Guidotti (2007).

<sup>3</sup> Guidotti and Rodríguez (1992) and Calvo and Végh (1992) analyze the phenomenon of dollarization in developing countries.

**Figure 2. Dollarization of the Financial System (in %)**



Source: Central Bank of Argentina

Second, the Argentine banking sector had inherited a number and size distribution of institutions that grew out of the banking crisis of 1982. At the end of the 1970s, Argentina had experienced a short period of financial deregulation, albeit with weak banking supervision, in which the number of banks had exploded (there were 469 institutions in 1980, of which 255 were non-banks). After the banking crisis of 1982 (see Figure 1) most of the non-banks disappeared, and a smaller banking system evolved during the years of highest inflation rates, mostly providing services to defend against the erosion in the value of means of payments.

The transformation had been substantial by 1991 (there were 212 institutions then, of which only 45 were non-banks). However, it was very natural to expect that, in spite of the dramatic growth of the sector, a major transformation in the number and size distribution of institutions would take place. Indeed, this initial composition would suffer dramatic changes during the 1990s, as the new regulatory environment put in place starting in 1993, and the 1995 banking crisis we will analyze in the next section, induced a significant further consolidation of the Argentine financial system: By end-2000, there were 90 banks in the system, and only 19 non-banks.

This was the scenario faced by policy and regulatory institutions in the early quarters of what seemed, at the time, the period in which Argentina would permanently leave behind decades of instability and stagnation.

Following the 1992 passing by Congress of a new central bank charter, Argentina initiated a wide-ranging reform of banking regulation and supervision, adapting to international standards but also recognizing the particular constraints imposed by Convertibility and the new macroeconomic risks deriving from the country's increasing integration to a volatile international capital market. The new central bank charter contained some important limitations: 1) it did not provide for deposit



insurance, although deposits were legally recognized as senior claims on assets, and 2) the lender-of-last resort function of the central bank was very limited, initially set to a maximum of 20% of the monetary base—later to increase to 33%. Furthermore, the central bank was prohibited from issuing debt, paying interest on bank reserves, and was severely limited in its capacity of providing financing to the Argentine treasury.

In light of its new charter, the Argentine central bank introduced important changes to the bank regulatory and supervisory system between 1993 and 1994.<sup>4</sup> The first step was to dismantle a tight apparatus of foreign exchange and capital controls that had been in place during the 1980s. Such apparatus had diverted the supervisory resources of the central bank away from the assessment and prevention of banking and systemic risks towards controlling that individuals, firms, and financial institutions fully complied with the vagaries of a complex administrative system of capital and exchange restrictions. Therefore, the central bank had to carry out an overhauling of its banking supervision, hire new and professionally competent staff, and train it to adequately meet the challenges stemming from the adoption of international standards in banking regulation. Such process was carried out with a special assistance program that the central bank set up with the US Office of the Comptroller of the Currency (OCC) and the Federal Reserve Bank of New York (FRBNY) to provide training for senior supervisory staff and assist in the adoption of the CAMEL rating system for financial institutions.<sup>5</sup>

As regards regulation, Argentina adopted the main international prudential standards, summarized in the following five pillars: 1) consolidated banking supervision; 2) capital requirements emerging from the 1988 Basel Accord; 3) regulations regarding assessment of credit risk and provisioning; 4) limits on risk concentration; and 5) standards regarding transactions and relations with related or connected parties.

Although based on international standards, the regulatory framework had to be adapted to the limitations imposed by the abovementioned initial conditions of the Argentine economy. In particular, a capital requirement of 11.5% of risk-based assets was adopted, a value above the Basel parameters of the time. Moreover, relatively high (non-remunerated) reserve requirements were imposed on banks in recognition of the fact that the central bank's limited ability to act as a lender of last resort needed to be complemented by non-encumbered liquidity at banks. A reserve requirement of 43% was imposed on overnight deposits—i.e., deposits at checking and savings accounts—while significantly lower and declining-according-to-maturity requirements were imposed on time deposits. The rationale for such structure reflected an interest on the part of the central bank to create incentives to lengthen the maturity of time deposits, which was then largely concentrated at 7 days.

The fact of the matter is that the incentives imbedded in the abovementioned structure of reserve requirements did not work, and the maturity of time deposits did not lengthen. As a result, the

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<sup>4</sup> See Dujovne y Guidotti (2001) for a detailed analysis of the prudential regulation put in place in the 90s. Various aspects of banking regulation and supervision are also discussed in Guidotti (1996).

<sup>5</sup> CAMEL is an acronym that stands for Capital, Asset quality, Management, Earnings, and Liquidity, as five essential areas of evaluation of banking risk.

central bank adopted in 1994 a relatively unorthodox measure to reduce liquidity risk: it imposed a minimum 30-days maturity on time deposits, the only interest-bearing deposits. The rationale for such restriction reflected a coordination problem. No bank, or for that matter no depositor, felt comfortable in choosing a longer maturity for their deposits as long as everybody else stayed at a shorter maturity. Simply, they didn't want to be last in line in the event of a bank run. Hence, the central bank action had the effect of reducing systemic liquidity risk without affecting the individual liquidity risk perception. In fact, deposit interest rates remained unchanged after the adoption of such measure, indicating that no additional liquidity premium had to be paid as result of the mandatory maturity extension. Lengthening *manu militari* the maturity of time deposits from effectively 7 days to 30 days proved enormously useful in containing the liquidity effects of the 1995 banking crisis, as it slowed by four times the pace of the deposits drainage.

Among other complementary actions taken, it is worth mentioning that all differential treatment as regards banking regulations between foreign and domestic banks were removed, and the central bank initiated with the OCC a program of joint inspections of branches of US banks in Argentina.

The above-mentioned reforms, although quite revolutionary for Latin America at the time, were still largely at an early stage of implementation when the so-called Tequila crisis erupted, following the December 1994 devaluation of the Mexican Peso. As the next section discusses, the 1995 Tequila crisis tested Convertibility and all the reforms that were taking place at the prudential regulatory and supervisory level.

### **3. The crisis of 1995 and the changes in regulation during the crisis. Key elements that explain the quick resolution of the crisis.**

Following the Mexican devaluation occurred at the end of December 1994, the Argentine banking system experienced a profound, but eventually relatively short-lived banking crisis. Although we will provide some empirical evidence that helps disentangling the extent to which the banking crisis reflected general macroeconomic factors or reflected internal factors to the financial system, its most immediate manifestation was the sudden appearance of rumors in the system that a few wholesale (investment) banks were highly exposed to government bonds—whose prices were rapidly declining because of contagion—and that heavy losses were been hidden in connected offshore companies.<sup>6</sup> These offshore companies were unknown to the central bank in spite of the consolidated supervision principle that was being adopted in the new regulation, simply because it took some time to have all financial institutions to comply with it.

For the most, wholesale banks were small institutions hardly associated with systemic risk. But soon enough, interest rates in the interbank market, which had increased significantly just after the Mexican devaluation, collapsed. The most typical indicator of systemic liquidity risk had stopped transmitting the relevant information, as it became evident that the amount of transactions in that market had collapsed—the lending volume in the interbank market fell by over

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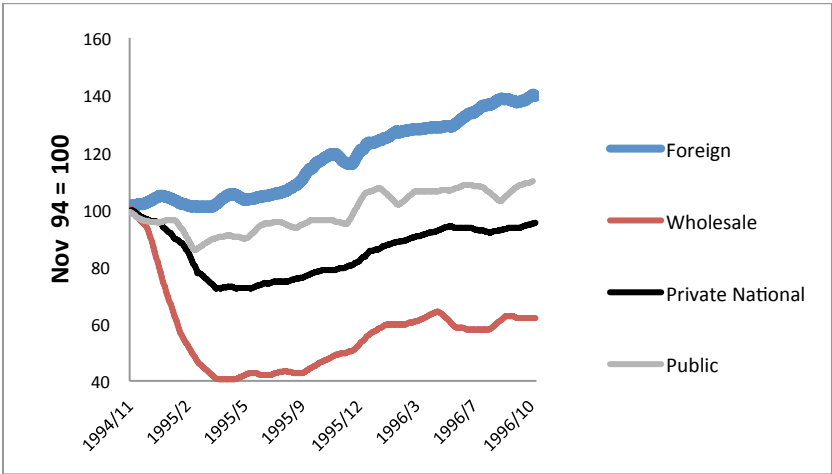
<sup>6</sup> At the end of 1994 there were 34 wholesale banks in the system, out of a total of 135 private banks. Wholesale banks had very few branches in comparison with retail banks and, hence, represented a small proportion of total bank deposits.

50%—indicating that the market had frozen in response to a sharp increase in counterparty risk. Wholesale banks were being rationed out of the interbank market and had no access to liquidity.

Soon after, still in early January, the first indications of heavy deposit losses started to become evident. Deposits fleeing wholesale banks were not from small investors but, rather, from large and more informed investors, as well as other from financial institutions that had funded the operations of wholesale banks. As shown in Figure 3, at the beginning of the crisis, wholesale banks started facing severe losses while the rest of the banking system appeared largely unaffected.

It was only a matter of time for panic to start spreading from wholesale banks to other small and medium-size banks of domestic capital. As shown in Figure 3, depositors clearly differentiated across banks, as foreign banks—and to lesser extent public banks—were quickly perceived as safe havens. During the entire period, deposits at foreign banks and federal public banks (e.g., Banco de la Nación Argentina) increased, while deposits at private-domestic and public-provincial banks fell, albeit at a much slower pace than at the wholesale banks and exhibiting significant differences across them. Large domestic-private banks suffered significantly less deposit losses than smaller banks and, especially, than cooperative banks, which had a much less transparent corporate governance and management structure. During the first three months of 1995, total deposits of the Argentine banking system fell by an impressive 18%.

**Figure 3. Tequila crisis – Evolution of deposits**



Source: Central Bank of Argentina

The banking crisis required central-bank action on several fronts. On the one hand, there was crisis management. On the other hand, new changes had to be introduced in the prudential regulatory and supervisory framework to account for the lessons learned from the crisis. The next section deals with the latter subject.

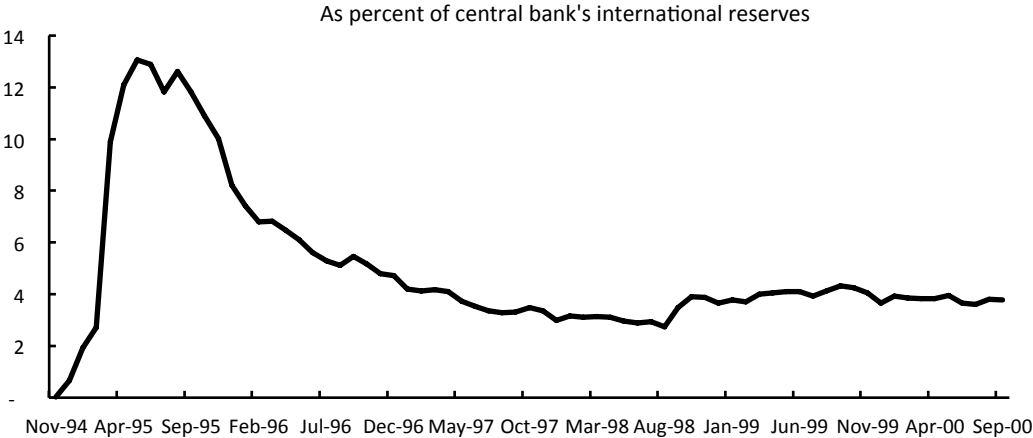
In terms of crisis management, the first challenge faced by the central bank was how to manage systemic liquidity. The Argentine central bank resorted initially to a lowering of reserve

requirements, but its effect was short lived. In the way they were structured, reserve requirements injected liquidity mostly into large retail banks that held a large proportion of overnight deposits subject to high reserve requirements. But the injection of liquidity did not arrive significantly to wholesale banks. These banks were experiencing the heaviest deposit losses and held liabilities that mostly were either not subject to reserve requirements or had low reserve requirements. More importantly, wholesale banks were cut out of the interbank market.

This situation called for the central bank to act as a lender-of last-resort and extend emergency liquidity to affected banks. However, the crisis unveiled the typical shortcomings that central banks face under systemic crises, as well as some shortcomings more specific to the Convertibility regime and its monetary institutions. The first well-known problem is the “stigma” effect of the lender-of-last- resort function. Especially in a situation where banks face different degrees of deposit losses, banks that need liquidity the most cannot get it in the interbank market and are reluctant to go to the central bank because they fear sending a clear signal that they are in trouble. On the contrary, the only banks that would potentially accept liquidity offered by the central bank are the healthy banks that don’t need it.

To resolve the problems of unequal distribution of liquidity and the stigma associated with central-bank emergency lending, a “safety net” was established at the federal public bank Banco de la Nación Argentina. This safety net was funded with an increase in the overall reserve requirement that was deposited at Banco de la Nación Argentina, which in turn made lending available to the banks that required liquidity assistance through the interbank market. In any event, as the run on deposits intensified and spread to a larger number of medium banks, the central bank’s emergency liquidity provision also expanded (Figure 4).

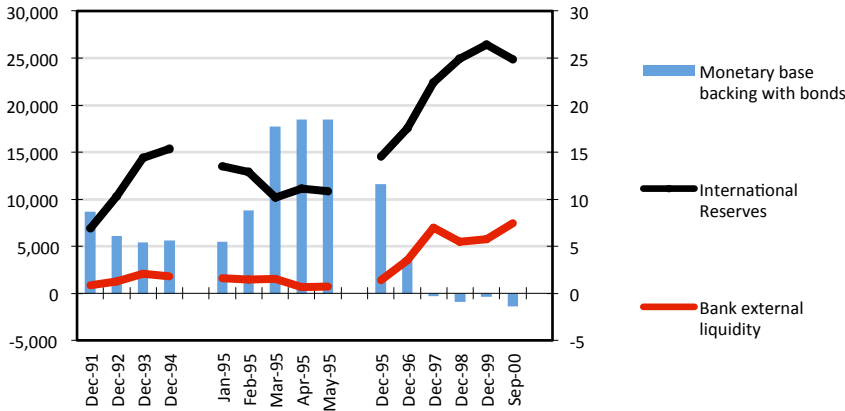
**Figure 4. Emergency central-bank liquidity assistance**



Source: Central Bank of Argentina

The emergency liquidity assistance situated the central bank very close to reaching eventually the legal limit imposed by the 1992 central-bank charter. As Figure 5 shows, the backing of the monetary base with bonds, reached 18.5%, almost at the 20% legal limit.

**Figure 5. The Tequila Effect (right scale in USD million, left scale in %)**



Source: Central Bank of Argentina

As the crisis deepened, the central bank monitored the liquidity position of all institutions that required emergency liquidity assistance on a daily basis in order to estimate how to best use the limited lender-of-last-resort function legally allowed. Notwithstanding, the central bank relaxed both the maturity, as well as the collateral requirements, of the emergency liquidity assistance provided. In addition, relying on the principle of supervision on a consolidated basis, the central bank cracked down on connected offshore companies in the Argentine banking system to improve transparency and assess the true solvency situation of a significant number of institutions.

But the above-mentioned crisis management actions alone did not reverse the deposit run. Soon enough it became clear that the liquidation of some banks was unavoidable and, hence, a profound policy discussion started in relation to the speed of the process. At one extreme lied the IMF, recommending a once-and-for-all clean up of the financial system by liquidating about 40 banks in one move. But the central bank, though acknowledging the need to restructure several banks, favored and pushed for significant institutional changes to correct the shortcomings stemming from Convertibility.

At the worst of the crisis a number of significant reforms to the domestic financial architecture were put in place with the rapid and decisive support from Congress. In February 1995, the central bank revised the position imbedded in its 1992 charter, and formally reintroduced a privately-funded and limited deposit-insurance scheme to inspire confidence in the banking system and contain the drainage of deposits <sup>7</sup> However, by being privately funded by contributions from

<sup>7</sup> Deposit insurance would be provided by a new institution, SEDESA SA, that would administer the funds paid by all banks, on a monthly basis, at a rate ranging between 0.015% and 0.06% of their deposits, depending on the CAMEL rating of the institution—i.e., the riskier the institution the higher was its deposit insurance premium. In the new scheme, depositors were insured up to USD 30.000 per person, provided that the interest paid on deposits was lower

within the banking system, the effectiveness of new deposit insurance was limited at the time it was introduced. Nevertheless, it represented a realistic institutional reform that would play an important role in the following years.

The most important reform introduced in the midst of the 1995 crisis was the creation of a mechanism for resolving troubled financial institutions. Such reform was introduced through a new article in the Law of Financial Entities—known as art. 35bis—which gave the central bank legal power to extract from certain assets and liabilities from the balance sheet of a bank that enters the process of liquidation. In particular, on the liability side, senior liabilities—deposits, labor obligations, and central bank emergency liquidity loans—could be extracted, along with the best quality assets up to an amount equivalent to the extracted liabilities. The residual bank would then be liquidated through normal bankruptcy proceedings in the justice system. The package of extracted assets and liabilities, along with the bank’s employees, could then be auctioned to interested buyers in the financial system. As this restructuring was occurring in the midst of a banking crisis, the government set up a Fiduciary Fund for Bank Capitalization, funded by an initial USD 500 million loan from the World Bank, to provide the buyer bank the required regulatory capital—in the form of subordinated or convertible loans—as well as liquidity assistance if needed.

The rationale for this innovative mechanism was twofold. Firstly, given the fiscal constraints faced by Argentina, the bailout of troubled financial institutions could result in a high fiscal cost that the capital market could regard as unsustainable and, hence, could weaken the credibility of the Convertibility regime. Secondly, it is well known that as soon as a bank enters liquidation, the value of assets tends to deteriorate rapidly as debtors stop servicing their obligations and the failed bank has no resources to monitor the debtors’ compliance. Therefore, art. 35 bis provided an efficient mechanism to restructure a failing bank that would protect the value of bank assets and the repayment of senior liabilities with the bank’s existing resources, thus minimizing the fiscal cost of bank closures as well as their disruptive effects on credit and on employment.<sup>8</sup>

The results from the application of the Art. 35 bis mechanism were impressive. It was used to resolve 19 private financial institutions between 1995 and 1999. About 97% of the deposits at liquidated banks were absorbed by the acquiring bank, or bank syndicate in few cases. Contrary to the international experience, where the fiscal costs associated with banking crises often exceed 15% of GDP, the successful resolution of the Argentine 1995 banking crisis required a small fiscal cost, estimated at just 0.1% of GDP.<sup>9</sup>

In parallel to the resolution of private banks through Art. 35 bis, the government actively promoted the privatization of several provincial public banks. As a result, the number of public banks fell from 33 institutions at the end of 1994 to 15 institutions by the end of 1999.

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than a rate established by the central bank. The latter feature was meant to discourage the phenomenon known as “gambling for resurrection” by which a troubled bank tries to keep its deposit base by offering higher and higher interest rates.

<sup>8</sup> See De La Torre (2000) and Dujovne and Guidotti (2001) for a more detailed description.

<sup>9</sup> See Guidotti (1996) and IMF (1998).

Argentina was clearly the country most affected by contagion from the Mexican devaluation, and the Convertibility regime was put to a test by foreign investors as well as depositors. As a result, economic activity contracted, as evidenced by a 2.8% fall in GDP in 1995. Moreover, the leading stock market index (Merval) fell by 50% and bond prices fell by 45% reaching their trough on March 8<sup>th</sup> of 1995. The spread on government bonds over comparable US Treasuries averaged over 1400 basis points during the first quarter of 1995.

In addition to the measures taken by the central bank to cope with the banking crisis, the government took decisive action on the fiscal front, and sped-up the privatization of several state-owned provincial banks.<sup>10</sup> Moreover, in order to reassure investors about the government's ability to meet its financing needs, in mid-March of 1995, the government signed a program with the International Monetary Fund (IMF) that included disbursements from that institution for USD 2.4 billion and loans from the World Bank (WB) and the Inter-American Development Bank (IADB) for an additional USD 2.3 billion. To complement the official effort, a number of companies and banks subscribed the issue of the Argentina Bond (also called the "Patriotic Bond") by an additional USD 2 billion.

The combination of official financing and clear and decisive policy actions by the government produced the desired result: the bank run ceased and financial activity returned to normal levels in the second half of 1995.

#### **The behavior of depositors: A closer look**

One important aspect of the 1995 crisis relates to the behavior of depositors during the crisis and the nature of risks that brought it about. It is often very difficult to disentangle banking crises from macroeconomic crises, as no matter which one starts first they are often seen as inseparable twins. In the case of Argentina, with a long history of economic and financial instability, a fixed exchange-rate regime such as Convertibility could easily be perceived as a natural candidate to come under market pressure and, in that case, the banking system is a natural weak link. In this view, the banking crisis would result from a loss of confidence in the general macroeconomic framework and not vice versa.

However, a different hypothesis could be constructed. It could be argued that the 1995 crisis reflected, to a large extent, weaknesses that were internal to the Argentine financial system, a system experiencing rapid growth, in a context where prudential regulation was still at its initial stages of development and implementation.

Empirical analysis carried out by Guidotti (2008) sheds light on these competing hypotheses. His cross-section empirical analysis (at the individual bank level) focuses on what factors explain the deposit run—occurred between December 1994 and April 1995—and, in particular, why it was different across the various financial institutions in the system.

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<sup>10</sup> In addition to a number of expenditure cuts, including a reduction in public sector wages, the government increased the value-added-tax (VAT) rate from 18% to 21%, increased temporarily import tariffs, partially reversed a previous reduction in employers' labor contributions, and widened the tax base for the VAT and income taxes.

To take into account the various hypothesis, the independent variables included to explain the deposit loss occurred between December 1994 and April 1995 (i.e., the dependent variable) were: 1) the interest paid by banks on deposits before the crisis (at November 1994); 2) the origin of bank capital (domestic or foreign); 3) the market share of the financial institution (at November 1994); and 4) the exposure of banks to the public sector (at November 1994).

The empirical results are quite illuminating. The coefficients of first three explanatory variables are statistically highly significant and possess the expected sign.<sup>11</sup> Results show that those financial institutions that were paying the highest interest rates on their deposits suffered the heaviest deposits losses. This result is consistent with the hypothesis that depositors were aware of the positive association between interest rates paid and the risk profile of the financial institution. Thus, as soon as systemic risk increased, depositors fled with the highest intensity from the banks they perceived as more risky.

As regards the origin of capital, results also suggest that internal factors to the banking system played the most significant role in explaining the behavior of depositors. By being foreign-owned a bank was perceived as a less risky bank, because of the potential support of head offices as well as better governance. Hence, results show that—given the other variables—depositors took into account the origin of capital in their behavior, and run from domestic banks but not from foreign banks (see Figure 3).

In a similar vein, results show that the size of the bank mattered in the eyes of depositors. Given the other explanatory variables, larger banks suffered less deposit losses than smaller banks, as measured by their market share before the crisis. One possible interpretation of this result relates to the well known too-big-to-fail problem. Large banks were perceived as having systemic implications and, therefore, were expected to be bailed out by the central bank with higher probability than that of small banks. In this interpretation, depositors would not be concerned about the fiscal capacity of the government in the event a bailout would become necessary. Hence, if the too-big-to-fail concept was present in the perception of depositors, this result would support the hypothesis that the 1995 crisis reflected, to a larger extent, factors internal to the banking system rather than uncertainty about the Argentine macro economy.

The above view is also consistent with the last result: that the exposure of banks to the public sector turned out not statistically significant in explaining the behavior of depositors. Hence, this result supports the hypothesis that depositors did not perceive the fiscal situation, or a potential default on the public debt, to be a significant risk in deciding their deposit withdrawals.

In summary, the 1995 banking crisis exhibited the characteristics of an event generated largely by internal weaknesses of the financial system at a time of rapid credit growth and a changing regulatory and supervisory environment. In this context, the successful management of the crisis reflected the role of the reforms put in place, which made the crisis resolution consistent with macroeconomic and fiscal sustainability. The scenario will be very different when, later on, we will analyze the banking crisis of 2001.

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<sup>11</sup> Overall, the regression has an R2 of 51.3%.



#### **4. Changes in regulation post-crisis and the evolution of the banking sector from 1995 to 2000.**

Despite the intensity of the 1995 Tequila crisis, the flexibility shown by the economy and the government's success in weathering the external shock without altering the Convertibility regime boosted significantly the international and domestic confidence in the Argentine economy. Such confidence translated, for instance, into a significant increase in the inflows of foreign direct investment. Foreign direct investment that had totaled USD 3.6 billion in 1994 almost doubled in 1996, reaching USD 7 billion. As the Argentine economy recovered, the spread paid by government bonds over US Treasuries fell markedly. The spread on government bonds that had averaged 740 basis points during 1994 (*i.e.*, before the Tequila crisis) fell to an average of 450 basis points in 1997.

From the last quarter of 1995 to the second quarter of 1998, Argentina's economy grew at a fast pace. During those eleven quarters, GDP growth averaged 1.8% a quarter, equivalent to an annual growth rate of 7.4%. As a result, yearly GDP growth reached 5.5% in 1996, 8.1% in 1997, and 3.9% in 1998.

The fast recovery of the economy provided the opportunity to draw fresh lessons from the 1995 financial crisis and strengthen the prudential regulation and supervision of the banking system. At the same time, the regulatory changes and the crisis itself produced a significant consolidation of the Argentine banking system.

As regards prudential regulations the main changes introduced by the central bank following the crisis impinged on the two central features of banking-risk management: capital and liquidity. Once again, the changes in prudential regulation followed the evolving nature of international standards, but also reflected the lessons learned from the recent experience in actual crisis management.

Bank capital requirements were increased further on account of, on the one hand, the introduction of a Risk Indicator in the determination of the required capital and, on the other hand, the adoption of capital surcharges reflecting market risk and interest-rate risk, derived from Basel upgraded recommendations.

The introduction of a Risk Indicator was instrumental in raising the capital requirement to an effective level of 13% to 15% of risk-based assets, measured according to the Basel methodology. The Risk Indicator was computed as a function of the interest rate charged by banks on their loan portfolio. Thus, the higher the interest rate charged, the higher was the Risk Indicator. The Risk Indicator was then multiplied to the basic 11.5% capital requirement.<sup>12</sup> In addition, the central

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<sup>12</sup> Although the objective of the Risk Indicator was prudential—so as to require riskier banks to hold more capital, as measured by a market measure such as the interest rate on loans—some observers interpreted this feature as a mechanism to induce a reduction in interest rates charged by banks on their loans.

bank introduced the CAMELS ratings in the computation of capital adequacy, thus requiring more capital to institutions with lower ratings from banking supervisors.<sup>13</sup>

Besides increasing the bank capital requirement, the Risk Indicator introduced a pro-cyclical element into it.<sup>14</sup> In practice, possibly due to the pro-cyclical nature of the capital requirement, Argentine banks exhibited significant excess capitalization, ranging from a maximum of 39% in 1996 to a 32% in 2000. The excess capitalization exhibited by banks reflected a precautionary motive, as bankers knew that the required capital would increase if there were a general increase in interest rates. Interestingly, such precautionary behavior on the part of banks ended up compensating the pro-cyclical feature of the capital requirement.

In addition to the Risk Indicator, and following the evolving international discussion leading to Basel II, capital adequacy requirements were modified to incorporate surcharges for interest-rate risk, and market risk. The most important element in these modifications was that government bonds, although remained with a zero weight in the requirement for credit risk, now became subject to the surcharge for market and interest-rate risk. Given that exposure to government bonds had been important determinants in the loss of confidence experienced by wholesale banks in the 1995 crisis, the central bank decided to depart from Basel recommendations and subject government bonds to a capital requirement. In particular, government bonds had a capital surcharge that fluctuated between 1% and 5%, depending on their modified duration.

Recognizing the importance of bank liquidity when the central bank's ability to act as a systemic lender of last resort is limited, the adoption of Minimum Liquidity Requirements (MLR) constituted the second pillar of the post-1995 of the macro-prudential framework.

During the 1995 banking crisis, the policy of lowering reserve requirements had played an important role in complementing the emergency liquidity extended by the central bank. However, that experience showed important shortcoming of how the reserve requirements were designed. In particular, the fact that reserve requirements were high on checking and overnight savings accounts, but much lower on time deposits, generated an unequal distribution of liquidity in the system. Moreover, time deposits showed a much higher propensity to flee than overnight accounts that were mostly transactional in nature. Hence, liquidity was parked in the wrong place and, as argued earlier, the interbank market proved to be a poor channel of transmission of liquidity across institutions in a systemic crisis.

Two additional shortcomings were also worth considering. Firstly, as mandated by the central bank charter, reserve requirements were non-remunerated. Hence, increasing liquidity requirements on financial institutions increased the cost of funding.<sup>15</sup> Secondly, by being

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<sup>13</sup> CAMELS is the second-generation of CAMEL, and adds a sixth component to the original rating to assess the bank's sensitivity to market and interest-rate risk. The multiplicative factor entering the computation of the capital requirement that was associated with the CAMELS ratings varied from 0.97 for an institution rated 1 (the highest rating) up to 1.15 for an institution rated 5 (the worst rating).

<sup>14</sup> The Risk Indicator was not the only pro-cyclical factor in the capital requirement. Also the surcharge for market risk played a similar role.

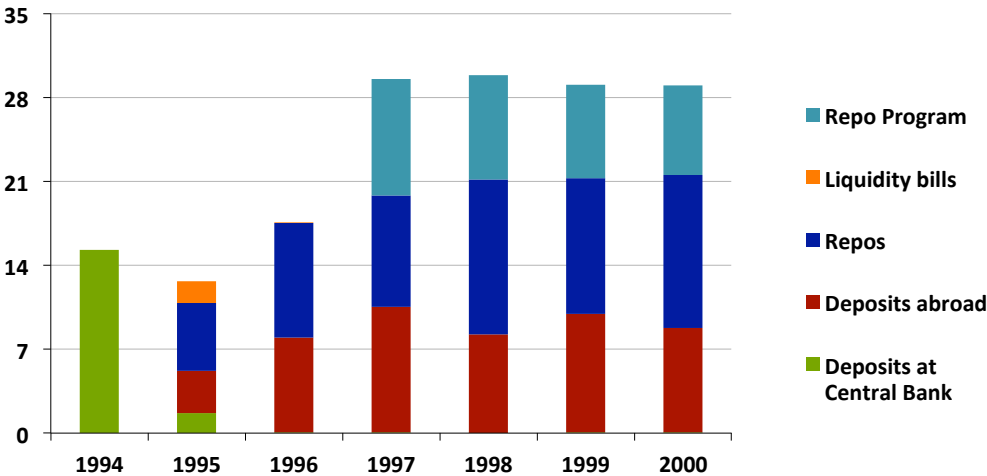
<sup>15</sup> See Fernandez and Guidotti (1999), and Guidotti (2003) for an analysis of the effects of capital and liquidity requirements on the banking system, and on lending and deposit interest rates.

deposited at the central bank, reserve requirements were not regarded as entirely risk-free by the capital market.

Therefore, at the end of 1995, reserve requirements were replaced by the newly created MLR. MLR could be met through three main components: 1) repos on government bonds with the central bank; 2) holdings of foreign government bonds with a credit rating not below A and other selected foreign assets of similar characteristics; and 3) stand-by one-year letters of credit with foreign financial institutions rated AA or higher, up to 20% of the MLR. In order to ensure that MLR constituted unencumbered liquidity and, in particular, to avoid back-to-back loans, Deutsche Bank (New York branch) was chosen as the mandatory custodian, with a contract that could be monitored by the Argentine central bank.

To complement systemic liquidity, the central bank set up a contingent repo line with a number of large international banks, using its government bond holdings. As shown in Figure 6, systemic liquidity increased with the various measures described above to over 28% of total deposits of the Argentine financial system. The adoption of MLR and the contingent repo line constituted a central feature on the central bank’s strategy in strengthening the financial system’s resilience to face volatility.<sup>16</sup>

**Figure 6. Systemic Liquidity (as % of total deposits)**



Source: Central Bank of Argentina

The financial system’s internal weaknesses exposed by the 1995 banking crisis, and the vast reform of macro-prudential regulations, were critical factors in explaining the extensive restructuring and consolidation that occurs in the Argentine banking system after 1995. Such restructuring and consolidation modernized the banking system and strengthened its solvency and liquidity.

<sup>16</sup> See Guidotti (2003) for a discussion of how to build a liquidity-management strategy in emerging market economies.

Two main facts illustrate the extent of the consolidation that took place in the Argentine financial system after 1995 banking crisis. Firstly, the total number of financial institutions fell sharply, from 212 in 1992 to 109 by end-2000. Secondly, reflecting the significant process of privatization at provincial public banks, the total number of public banks falls from 33 at end-1994 to 14 at end-2000. Table 1 illustrates the main features of the consolidation process that took place after 1995.

**Table 1. Deposits share (in %)**

	1995	1996	1997	1998	1999	2000	2001
<b>Private</b>	68.2%	70.9%	72.9%	70.7%	72.1%	71.7%	71.0%
<b>National</b>	43.5%	42.2%	32.0%	22.2%	20.9%	19.0%	15.2%
<b>Foreign</b>	24.7%	28.7%	40.9%	48.5%	51.2%	52.7%	55.8%
<b>Public</b>	31.8%	29.1%	27.1%	29.3%	27.9%	28.3%	29.0%
<b>Ten Largest Banks</b>	34.6%	35.2%	40.6%	47.3%	50.2%	51.4%	50.7%

*Source: Central Bank of Argentina*

The share of the ten largest banks in total deposits increased from 35% in 1995 to 51% in 2001. Moreover, the share of foreign banks in total deposits expanded as a result of a number of acquisitions occurred between 1996 and 1998, in particular the acquisition of two large domestic banks, Banco Rio and Banco de Crédito Argentino, by the two largest Spanish banks, Banco Santander and Banco BBVA, respectively. Between 1995 and 2001, the share of foreign banks in private deposits increased from 25% to 56%, and from 21% to 48% in total deposits.

The increase in market share experienced by foreign banks had an important implication for systemic risk. Under the assumption that their home offices would support foreign banks, systemic liquidity available to deal with eventual deposit losses was perceived to be larger than the coverage ratio of the MLR. As shown in Table 2, not only systemic liquidity increased by the adoption of MLR, it increased to over 55% of total deposits once deposits at foreign banks were excluded from the computation.<sup>17</sup>

**Table 2. Foreign banks and systemic liquidity**

Share of Foreign Banks in Deposits and Systemic Liquidity					
	Deposits in Foreign Banks / Total	Total Deposits	System Liquidity	Liquidity/ Deposits	Liquidity/ Deposits excl. (a)
	(a)	(b)	©	(c)/(b)	
1995	21.4%	44,981	4,000	8.9%	11.3%
1996	24.6%	54,671	9,401	17.2%	22.8%
1997	35.5%	69,931	20,355	29.1%	45.1%
1998	42.3%	78,258	22,975	29.4%	50.9%
1999	45.4%	81,573	24,743	30.3%	55.6%
2000	47.9%	87,846	25,425	28.9%	55.6%

*Source: Central Bank of Argentina.*

<sup>17</sup> In the successful resolution of its 2001 crisis, the Uruguayan government adopted the criterion of placing on home offices of foreign banks the responsibility of providing liquidity assistance to their operations in Uruguay.

As previously mentioned, the strong recovery experienced by the Argentine economy after the 1995 Tequila crisis boosted significantly the international and domestic confidence in the Convertibility regime. However, the 1996-1998 period of strong economic growth was again interrupted by the fallout from the Russian default in August 1998. As Russia declared a default on its public debt, Argentina together with several other emerging market economies was affected severely by the contagion effects stemming from the Russian crisis. As a result, risk spreads increased again and economic growth halted. The effects of the Russian default compounded as a result of the Brazilian devaluation in March 1999.

During the eight-month period marked by the Russian and Brazilian crises—from August 1998 to March 1999—the risk spread on Argentine bonds averaged 800 basis points reaching a peak of 1100 basis points in September 1998. As illustrated in Table 3, the increase in risk spreads was a generalized phenomenon among a large number of emerging market economies and affected Argentina relatively less than Brazil, Mexico, and the group of countries included in JPMorgan’s Emerging Markets Bond Index+ (EMBI+) index.

**Table 3. The Emerging Markets Bond Index - Period Average**

Period	EMBI+	Latin	Argentina	Brazil	Mexico	Russia
Jan '98 - Jul '98	535	489	447	542	413	782
Aug '98 - Mar '99	1,210	996	799	1,223	772	5,084
Apr '99 - Dec '99	1,069	806	706	943	573	3,527

*Source: J.P. Morgan.*

*Note: Latin America, Argentina, Brazil, Mexico and Russia refer to the respective components in the Global EMBI+ index, expressed in basis points.*

Notwithstanding the increase in risk spreads, bank deposits—unlike what had happened in the 1995 crisis—continued rising, as did bank credit to the private sector. This was reflective of the investors’ confidence in Argentina’s convertibility system, which had successfully managed the Tequila effect.

Beyond the volatility of risk spreads on the public debt, confidence in the Argentine economy also was reflected in the fact that foreign direct investment continued to increase during that period. Foreign direct investment amounted to USD 7.3 billion in 1998 and USD 24 billion in 1999, equivalent to 2.4% and 8.5% of GDP, respectively. These foreign direct investment figures compare favorably with an annual average of USD 6.3 billion in the period 1994-1997. In 1999, the current account of the balance of payments displayed a deficit of USD 12 billion, equivalent to 4.2% of GDP. Given that during that year international reserves at the Central Bank increased by USD 1.5 billion, the presence of a current account deficit was a clear indication of the willingness of foreign residents to increase their holdings of Argentine assets (as well as of the country’s ability to attract foreign capital).

In the second half of 1999, the Argentine economy was already recovering. Industrial production increased markedly by 10% in seasonally-adjusted terms —equivalent to an annualized rate of increase of 20%— between June and December 1999, while the year as a whole exhibited an

increase in industrial production of 6.6% (measured as the change from December 1998 to December 1999). The favorable perspectives that the Argentine economy was displaying in the second half of 1999 also translated into a lower spread that the government had to pay over US Treasuries compared to the risk spread applying to Brazil (283 basis points higher in December 1999), to Russia (2350 basis points higher), and to the average of Latin America (60 basis points higher in December 1999). The reduction in spreads took place notwithstanding Argentina was facing presidential elections after two consecutive terms in office by then President Menem. By the end of 1999, the risk spread on government bonds —measured by the Argentine component of the EMBI+ index— had fallen to 586 basis points over US Treasuries.

In October 1999, a coalition (the Alianza) composed by two parties, Unión Cívica Radical (UCR) and Frente País Solidario (Frepasso), beat the traditional Peronist party in the general presidential elections. On December 10, 1999 President Fernando De la Rúa was sworn into office and was met with a very favorable sentiment prevailing among international investors as Argentina was seen as leaving behind the effects of the Russian and Brazilian crises. As a result, in the first quarter of 2000, government's access to the international capital market was very ample as it issued new bonds in the amount of USD 4.1 billion. Moreover, risk spreads on government debt continued to decline to an average level of 538 basis points in March 2000, as measured by the Argentine component of the EMBI+ index.

An important reason behind the market's optimism was related to the perception that the Argentine economy had strong fundamentals and had displayed in its recent past a remarkable commitment and ability to overcome crises. In particular, the sizes of the public debt and of the interest bill measured as a proportion of GDP were perceived as manageable, and were lower than the levels exhibited by other emerging market economies.<sup>18</sup> Argentina initiated year 2000 with a ratio of public debt to GDP of 43%; the average interest rate paid on the public debt was relatively low, an annual rate of 7.3%. In nominal terms, gross public debt amounted to USD 121.9 billion, and the interest bill had amounted in 1999 to USD 8.2 billion, equivalent to less than 3% of GDP. In fact, most analysts at the time considered that Argentina needed only a moderate and attainable fiscal adjustment to ensure debt sustainability. According to analysts at JP Morgan, for instance, the required adjustment was in the order of 1.6% of GDP while according to Deutsche Bank it was 2.1%.<sup>19 20</sup> As these reports were issued, Argentina was undertaking a fiscal adjustment of that order of magnitude.

However, as Argentina's domestic capital market was small, the government depended significantly on the international capital market for the necessary roll over of its debt. Hence, the economy was vulnerable to shifts in external investors' sentiment and in particular to sudden stops in capital inflows.<sup>21</sup>

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<sup>18</sup> For instance, Brazil exhibited during year 2000 a ratio of public debt to GDP of approximately 74%, and notwithstanding a primary fiscal surplus of 3.5% of GDP, the interest bill amounted to over 7% of GDP.

<sup>19</sup> See Sekiguchi D., *Argentina's debt dynamics: Much ado about not so much*. September 6, 2000.

<sup>20</sup> See Ghezzi, P. and L. Leiderman, *Debt sustainability in Latin America*, December 20, 2000.

<sup>21</sup> There is by now a vast academic literature on what Guillermo Calvo called "sudden stops". See, for instance, Calvo (1998), Mendoza (2001), Guidotti, Sturzenegger, and Villar (2004).

In a stable macroeconomic context and with a growing financial system, the new regulatory framework posed an important challenge for the banking business: to expand the deposit base as well as credit provision would require more capital. If the additional required capital would not come from new capital injections, then it would have to come from the reinvestment of profits. In fact, after the 1995 crisis, new capital injections were improbable for domestic banks (unlike foreign banks), so that profitability would need to play a central role in the growth of the financial industry. Table 4 shows the main changes in the balance sheet of the Argentine financial system after 1995.

**Table 4. Simplified Balance Sheet of the Financial System**

	Dec-95	Dec-96	Dec-97	Dec-98	Dec-99	Dec-00	Dec-01
<b>Assets</b>	<b>93.9</b>	<b>108.3</b>	<b>133.1</b>	<b>144.5</b>	<b>152.8</b>	<b>163.5</b>	<b>124.0</b>
Liquid Assets	5.9	12.2	18.5	18.1	20.4	20.3	13.0
Loans to Government	13.9	18.2	21.5	23.7	27.5	28.0	28.4
Credit to the Private Sector	45.6	49.5	57.8	64.0	61.8	57.4	44.9
Other Assets	28.5	28.4	35.3	38.8	43.1	57.9	37.7
<b>Liabilities</b>	<b>79.9</b>	<b>93.1</b>	<b>117.1</b>	<b>127.9</b>	<b>136.2</b>	<b>146.5</b>	<b>107.7</b>
Deposits	45.4	54.8	70.8	78.3	81.6	86.6	66.4
Public Sector	4.2	5.8	8.3	8.1	7.2	7.3	4.3
Private Sector	41.0	49.0	62.5	70.2	74.3	79.3	62.1
Emergency Central-Bank Loans	2.3	1.2	0.3	0.3	0.2	0.0	4.4
Notes Payable	2.7	4.1	5.4	6.5	7.3	7.2	6.1
Other Liabilities	29.7	33.0	40.6	42.8	47.1	52.6	30.7
<b>Equity</b>	<b>14.0</b>	<b>15.2</b>	<b>16.0</b>	<b>16.6</b>	<b>16.6</b>	<b>17.0</b>	<b>16.3</b>
<b>Liquid Assets/Deposits (%)</b>	<b>13.0</b>	<b>22.3</b>	<b>26.1</b>	<b>23.1</b>	<b>25.0</b>	<b>23.4</b>	<b>19.6</b>
<b>Government Bonds/Total Assets (%)</b>	<b>14.8</b>	<b>16.8</b>	<b>16.2</b>	<b>16.4</b>	<b>18.0</b>	<b>17.1</b>	<b>22.9</b>
<b>Equity/Assets (%)</b>	<b>14.9</b>	<b>14.0</b>	<b>12.0</b>	<b>11.5</b>	<b>10.9</b>	<b>10.4</b>	<b>13.1</b>
<b>Credit to the Private Sector/Assets (%)</b>	<b>48.6</b>	<b>45.7</b>	<b>43.4</b>	<b>44.3</b>	<b>40.4</b>	<b>35.1</b>	<b>36.2</b>

Source: Central Bank of Argentina

The following trends are worth mentioning. On the liabilities side, the system experienced a significant growth of deposits between 1995 and 2001. The deposits growth reflected increased confidence in the banking system after the successful management of the 1995 crisis. In particular, the low cost experienced by depositors, as well as by the state, in the crisis resolution contributed to boost public confidence in the post-1995 period.

On the asset side, two main trends appear clearly. Firstly, liquidity and the banks' exposure to the public sector increased their share in total bank assets, reflecting in part the effects of the new regulatory environment—i.e., the introduction of MLR and the relatively favorable treatment of government bonds in the capital requirement. The banks' exposure to the public sector increased from 15% of assets in 1995 to 18% of assets in 2001. During the same period, the share of bank liquidity in total assets increased from 13% to 25%, while the share of credit to the private sector declined from 49% to 35%.

Behind these trends lied the fact that the Argentine financial system did not have high profitability. For most of the post-1995 period, the return-on-equity (ROE) was very low, ranging between 0.6% and 6.2%. Although the ten largest banks managed to reach ROEs between 8% and 13%, that profitability could not be sustained, reflecting largely high operating costs and relatively high losses from non-performing loans. Part of the problem was that, by international standards, the Argentine financial system was small.

In summary, the new regulatory environment introduced in the 1990s had made the banking system more resilient to a crisis originated from internal factors—such as the 1995 crisis—due to its high capital and liquidity requirements. However, high dollarization—not discouraged by the regulatory framework—implied a potentially high risk exposure to changes in the exchange rate, and high exposure to the public sector implied a high risk in the event of a macroeconomic crisis that was external to the system. In addition, the system’s low profitability shed doubts about the banks’ ability to generate a dynamic credit growth to the private sector. In these conditions Argentine banking system would face the difficult events of 2001, a subject to which we now turn.

## **5. The 2001 banking crisis.**

Uncertainty about the evolution of the Argentine economy, as well as the political dynamics generated within the newly governing coalition that had succeeded the Menem administration after winning the presidential election of end-1999, tested again the resilience of the Argentine banking system at the beginning of 2001. In particular, starting in October 2000, the new government faced a sequence of unsettling political events, summarized in the resignation of vice-president Alvarez (head of one of two main parties conforming the coalition), and subsequent and traumatic cabinet reshuffles in October 2000 and March 2001. Part of the political crisis stemmed from accusation—within the coalition—of a corruption scheme designed to pass a labor reform through Congress.

The apparent political weakness of then President De La Rúa was not what Argentina needed at a time when emerging markets were still under pressure—a crisis in Turkey had taken place at the end of 2000—and when the Convertibility regime seemed particularly vulnerable to international capital volatility. After the cabinet crisis of March 2001, which led to the replacement of the Economy minister just after 15 days of being in office, prompted the first episode of significant deposits loss in the banking system. Total deposits, which had increased to a level of USD 90 billion at the end of February 2001, fell by 6.7% in less than a month, and by mid-May the loss had reached 7.6%. Although Argentina had secured a USD 40 billion IMF-led emergency assistance package in December 2000—so-called the “Armor”—the loss of bank deposits reflected dwindling confidence by the public in the economy and in the political environment.

Risk spreads on Argentine government bonds—as measured by the EMBI+—increased by 200 basis points in the period April-June relative to the value of February 2001. Nevertheless, risk spreads remained below the maximum levels reached during the 1995 Tequila crisis until November 2001.

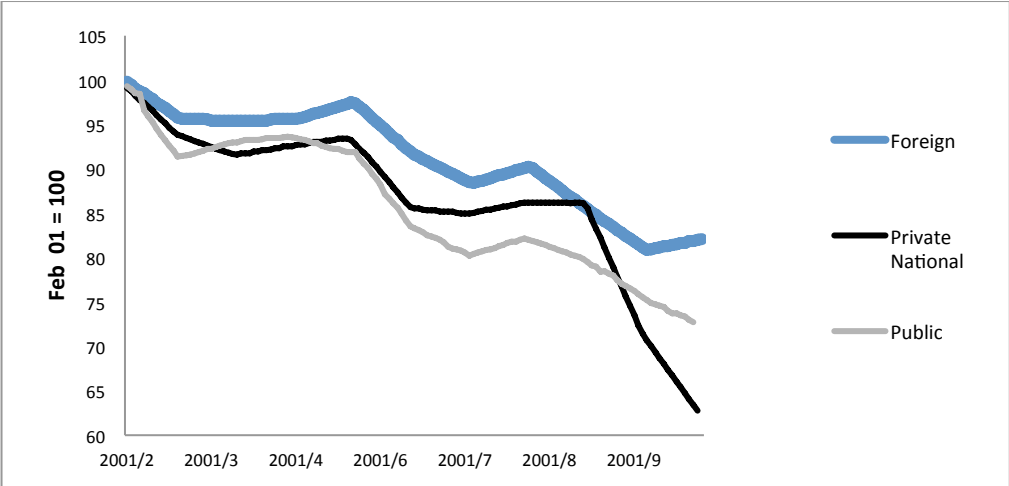
During the first half of 2001, deposits fluctuated. After the initial fall, they increased by 2.6% between mid-May and end-June, to fall again in July. Between July and August, deposits fell by



11%. Although in September deposits recovered by 3.3% in response to a further augmentation of the IMF program, the deposit loss resumed soon after.

As shown in Figure 7, the behavior of bank deposits during 2001 showed significant differences in contrast with that observed during the 1995 crisis. Firstly, the deposit run in 1995 had been more virulent, as it took eight months in 2001 to reach the 18% deposit loss that in 1995 had taken place over a three-month period.<sup>22</sup>

**Figure 7. The 2001 crisis – Evolution of deposits**



Source: Central Bank of Argentina

Secondly, in contrast to 1995, deposits fell sharply at public banks in 2001, indicating that fiscal worries were starting to play a significant role in depositors’ minds. In fact, almost half of the deposit loss experienced by the system between March and October is explained by the run on deposits at the two largest public banks, Banco de la Nación Argentina and Banco de la Provincia de Buenos Aires.

Thirdly, while foreign banks had increased their deposits during the 1995 crisis, this time they were no longer considered safe heavens by the public. While, by mid-2001, 48% of total deposits were placed at branches and subsidiaries of foreign banks, these banks also faced significant deposit losses, albeit at a relatively slower pace than domestic banks.

Although the central bank provided less emergency liquidity assistance to banks than in 1995, in view of the substantially higher bank liquidity, the perception of depositors focused on the rapidly deteriorating political situation and on the increasing probability of a full-blown macroeconomic crisis in Argentina.

In such an event—if Argentina would default on the public debt and devalue its currency—all banks, domestic or foreign, private or public could face serious solvency issues. As illustrated in

<sup>22</sup> By end-September the cumulative deposit loss stood at 12.9%.

Figure 7, the last two months before the imposition of restrictions on deposit withdrawals—so-called *corralito*—the deposit run accelerated especially at private domestic banks.

Some actions taken by the government in the final days of Convertibility contributed to fuel the deposit run. In particular, a ceiling on the interest rate banks could offer to depositors had the counterproductive effect of increasing the run on domestic banks *vis-à-vis* foreign banks. Moreover, the introduction of quasi-currencies in several provinces, with the approval of the federal government, rapidly increased the loss of public confidence in the viability of the fixed exchange rate that was the cornerstone of the Convertibility.

## **6. Lessons from the experience: Which additional prudential-regulation measures could have helped in preventing the 2001 crisis?**

As argued in the previous sections, during the 1990s Argentina had strengthened significantly the prudential regulatory framework of its financial system. As a result, the banking system was highly capitalized and held significant liquidity in foreign assets. Hence, it showed remarkable resilience even under the stressing conditions that led to the macroeconomic crisis of 2001.

However, even though after the 1995 crisis the government became aware of the systemic risks deriving from the connection between sovereign debt and banking risks—and therefore imposed capital requirements on bank's government bond holdings—it was not fully aware of the balance-sheet risks that extensive dollarization posed for the banking system in the event of a devaluation. At least, prudential regulations did not recognize this risk explicitly.

Part of the problem was that Convertibility was designed to be a *permanent* monetary regime. And in that context dollarization was perceived to play a useful role in aligning government incentives and, therefore, was perceived to contributing to strengthening the credibility of convertibility.<sup>23</sup>

With the benefit of hindsight it is clear that the inadequate attention paid by regulators to exchange rate risks constituted the single most important weakness of the banking regulatory framework. In particular, the recourse of banks to dollar-denominated funding should have been in our view limited to a bank's capacity to lend to firms whose income was genuinely earned in foreign currency (e.g., exporters).

This is precisely what happened after the 2001/2002 crisis, when bank credit denominated in foreign currency was limited mostly to fund trade financing, and dollar-denominated deposits were subject to very high reserve requirements—i.e., deposited at the central bank and invested in international reserves—and, thus, paid extremely low interest rates.

Adoption of such regulation in the 1990s would have had pros and cons. The clear systemic advantage is the reduction in the perceived exposure of the banking system to exchange rate risk, which would have played a significant useful role in 2001. The disadvantage lies in the fact that peso-denominated credit and deposits carried higher interest rates and lower maturity. Hence,

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<sup>23</sup> See Calvo (1988) and Calvo and Guidotti (1990) on the role of dollarization in enhancing credibility in price stability.

for instance, the development of a mortgage credit market would have been much slower and more difficult than what it was by relying on foreign-currency denominated contracts.

A much more revolutionary reform would have been one that required a modification in the corporate structure of banks in order to recognize the limits that central banks in emerging-market economies have in acting as lender of last resort. A critical objective of central banks during systemic crises is to protect the payments system. Hence, a possible way to shield the payments system in a systemic banking crisis, as proposed by Guidotti (2003), is to adopt a specific corporate structure that facilitates resolution while isolating the bank's transactional role from the credit/intermediation role that enters liquidation.<sup>24</sup>

According to this proposal, financial institutions would be organized according to the following corporate structure. A Bank Holding Company would own, at a minimum, two separate subsidiaries: a Payment Bank and a Financial Subsidiary. Typically, to improve external discipline, Bank Holding Companies would be required to issue at least between 20% and 30% of its capital in an organized exchange market.

Liabilities of the Payment Bank would be composed of checking accounts, savings accounts, and time deposits up to a maximum per depositors. The maximum amount of time deposits per depositor would be consistent with the amounts covered by the deposit insurance. Thus, the liabilities of the Payments Bank should be considered either as directed related to the payments system, or connected to the objective of protecting small depositors.

On its asset side, the Payment Bank would only be allowed to hold prime quality (liquid) assets and, except for overdraft on checking accounts, it would also hold the fixed assets related to its transactional role.<sup>1</sup> Prime quality assets would include: 1) foreign assets (public and private with high credit-risk rating), 2) domestic government bonds, and 3) private domestic assets rated investment grade internationally.

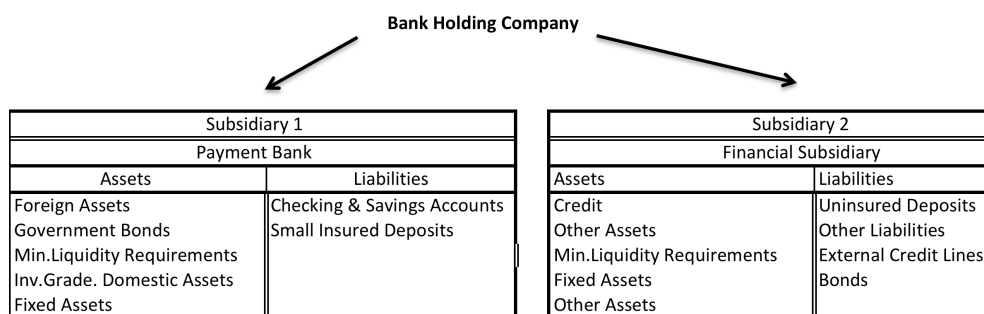
The Financial Subsidiary would contain all remaining banking asset and liabilities. Therefore, the Financial Subsidiary would be similar to a normal bank with the exception of the assets and liabilities directly linked to the payments system that are now located at the Payments Bank. Figure 8 shows the corporate structure of a typical Bank Holding Company.

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<sup>24</sup>Guidotti's (2003) proposal is a direct precedent of the concept of "living wills", created in response to the recent global financial crisis.

<sup>1</sup> Emphasis is placed here on transparency in the valuation of assets. Of course, liquid assets are prime-quality assets by definition.

**Figure 8: The Bank Holding Company**



In terms of prudential regulations, the capital requirement would apply to the Bank Holding Company, and a positive capital would be required at the level of the Payment Bank, with assets marked to market. The Bank Holding Company and the Financial Subsidiary would be subject to the prudential regulatory framework that would apply normally to financial institutions.

As regards management, the above-mentioned corporate structure allows for a joint administration of the Payments Bank and the Financial Subsidiary, in order to avoid costly overlapping and duplication of functions. However, a critical element of the proposal is that the Bank Holding Company would be required to identify, ex ante and at all times, and implementing contracts accordingly, a self-contained management structure for the Payments Bank in case the Financial Subsidiary would be liquidated or sold. Hence, for instance, although the branch network could be operated jointly, it would need to hold separate accounting records.

The above-mentioned state-contingent corporate structure is a natural extension of the instruments—such as Art. 35 bis—given to the central bank to resolve banking problems. The main advantages of such corporate structure is that it make the process of resolution efficient, without having to resort to ex post emergency measures, and would enormously facilitate the process of dividing assets and liabilities.

Consider then how the actual mechanics of a liquidation or resolution would work. In the event the financial institution faces illiquidity problems that exceed the central bank’s emergency assistance capability, such illiquidity is likely to appear at the level of the Financial Subsidiary.<sup>3</sup> In such an event, the central bank would force the Financial Subsidiary into “suspension”, while the Payments Bank would continue to operate. During the “suspension” period, when assets are valued at liquidation levels, and equity and subordinated debt may be marked down to zero and remaining senior liabilities would be converted into shares in the Financial Subsidiary’s assets, the central bank would be able to apply Art. 35 bis on the Financial Subsidiary and auction, either part or its entirety, to interested buyers. Any residual of assets and liabilities would be sent to final liquidation.

<sup>3</sup> This happens because of two reasons: 1) because the Payments Bank holds the most liquid assets; and 2) because empirical evidence suggests that transactional deposits tend to be more stable during bank runs in relation to other bank liabilities.

The resolution process described above has the advantage of isolating the payments system from bank failures, while making efficient the process of transferring assets and liabilities to healthier financial institutions. As most of bank capital is lost in the process, it would be reasonable to expect that the Payments Bank, though operative, would also be auctioned to prospective buyers at the same time. In this context, there would be clear economies of scale for a buyer to purchase the remains of the Financial Subsidiary together with the Payments Bank.

## **7. Was the 2001/2002 crisis avoidable? Two possible alternative courses of action.**

A critical question that arises when evaluating the course of events leading to the 2001/2002 crisis is to what extent default could have been avoided and what policy options were open to the government at various points in time. Two possible courses of action are explored in what follows.

### **Let the exchange rate float, pay the debt.**

In our view, even well into 2001 Argentina could have avoided default by adopting adequate economic policy measures. The key to the first argument we explore lies in the relative priority that should have been given to maintaining the convertibility regime on the one hand, and to avoiding default at all costs on the other hand. All of the alternatives considered by the government as well as by the IMF took for granted that Convertibility was going to be maintained. No alternative policy options were seriously considered. For all that matters the authorities and the international official community treated Convertibility as a taboo and in the end, pushed by political disarray, default led to the repeal of Convertibility materializing the (avoidable) worst possible scenario. In this section we will argue and explain why, even in 2001, Argentina could have avoided default by exiting Convertibility.

In order to elaborate the above argument we will start by addressing three issues that topped the list of concerns of investors and analysts as Argentina was entering 2001. The first issue was whether public debt dynamics were sustainable. The second issue was whether Convertibility was making Argentina uncompetitive and, hence, needed a large correction in the real exchange rate. The third issue was whether Argentina was able to obtain the required financing in international capital markets to meet its obligations while facing considerable skepticism on the part of investors.

Let's start with debt dynamics and the stance of fiscal policy. As Argentina entered year 2000, the ratio of public debt to GDP was about 40% carrying an average interest rate of less than 7.5% per annum. Hence, by conventional standards, the size of the public debt and of the interest bill measured as proportion of GDP were perceived as manageable and, indeed, they were lower than the levels exhibited by other emerging market economies. In fact, most analysts at the time considered that Argentina needed a modest fiscal adjustment to ensure debt sustainability.

The usual computations performed by analysts in the capital market to gauge debt sustainability were favorable and certainly were distant from describing an economy affected by grave or irresolvable problems. Reports written by leading international players in the capital market can be cited as examples of what actions—in their view—were needed in order to stabilize over time Argentina's ratio of debt to GDP. These analyses placed the necessary fiscal adjustment in the

primary fiscal balance in the range of 1% to 2% of GDP relative to the observed level in year 2000. When examining Argentina's fiscal situation, JP Morgan<sup>25</sup> stated that:

*"A primary surplus of 3.1% of GDP, up from the current 1.5% would be sufficient to stabilize public debt-to-GDP, even assuming that growth remains at the current depressed levels...Alternatively 4.4% nominal GDP growth would stabilize the government's debt ratio.... It is expensive for Argentina to cover its current financing needs, but the average interest rate is still low at 7.9%, and its increase is gradual (pp 1)."*

A similar view can be found in a research piece published by Deutsche Bank,<sup>26</sup> where the authors state that:

*"The results indicate that a structural primary surplus of 2.9% of GDP is needed to achieve sustainability. Thus the adjustment that is required in order to stabilize the debt is an increase in 2.1% of GDP in the structural primary surplus beyond its level in year 2000 (pp. 4)."*

Of course, all these analysis were based on assumptions, and a particularly critical one was the rate of economic growth. In the case of JP Morgan, the analysis was based on an improvement in the primary surplus of 0.9% to be carried out gradually between 2000 and 2003, assuming a rate of growth of 1.8% in 2000 and 3% thereon. Under those assumptions JP Morgan was projecting a slight decline in the ratio of debt to GDP.

In the case of Deutsche Bank the projected rate of growth was similar to JP Morgan's—2.5% in 2000 and 3% thereon—but the required fiscal adjustment was larger because Deutsche's analysis was based on a higher initial debt stock—50 percent of GDP—on account of implicit debts not included in the official statistics.

The conclusions reached by academics who studied ex-post Argentina's implosion are not distant from the views of capital market participants in year 2000. In their analysis of Argentina's crisis Hausmann and Velasco<sup>27</sup> also dismiss the fiscal cause by arguing that:

*"...In spite of the strong temptation to blame everything on the politician and their irresponsibility, the simple fiscal explanation is also inadequate. There is no evidence of a spending boom: as a share of GDP, primary Government expenditure remained roughly constant in 1993-2001. True, public debt grew rapidly. But this paper shows the accumulation of debt was driven mainly by the transition costs of the Social Security system, recession, and recognition of preexisting debts, not by a lack of adjustment efforts..."<sup>28</sup>*

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<sup>25</sup> See Sekiguchi, David. *Argentina's debt dynamics: Much ado about not so much*, September 6, 2000.

<sup>26</sup> See Ghezzi, P. and L. Leiderman. *Debt sustainability in Latin America*, December 20, 2000.

<sup>27</sup> "Hard money's soft underbelly: Understanding the Argentine crisis". Kennedy School of Government. Harvard University. 2002.

<sup>28</sup> Also Guidotti (2006) documents the significant impact the Social Security reform on Argentina's fiscal dynamics.

Hence, despite relatively minor variations, the prevailing view was that Argentina’s debt was not clearly unsustainable provided the country could resume its economic growth.<sup>29</sup> On this issue, however, there was less agreement. The main question was whether Argentina could shortly resume growth while maintaining a fixed-exchange rate regime at a moment when capital markets were unsettled, the US dollar had strengthened against other major currencies, and commodity prices were depressed. In this vein, Calvo, Izquierdo and Talvi (2003) concluded that a devaluation was inevitable given the size of the external shocks hitting Argentina, and that the government would have had to acquire additional debts because of the balance-sheet effects on the private sector, requiring an additional fiscal adjustment of 0.6% of GDP assuming a 50% devaluation.

In sum, the concerns regarding fiscal sustainability were not necessarily pointing at fiscal irresponsibility, but were focused on whether growth could be resumed under Convertibility, and on whether a possible exit from the fixed-exchange-rate regime was manageable. And a critical question here was to evaluate how large a devaluation would have occurred in the case Convertibility was abandoned. The assessment of how undervalued was the peso was central to both concerns, an issue to which we now turn.

To this effect, we start by examining whether export performance had been weak during Convertibility. As can be observed in Table 4, the monetary system implemented by Argentina in April 1991 coexisted with a strong growth in exports, while the real effective exchange rate<sup>30</sup> (weighted by using the exports basket) appreciated only moderately compared to other successful economies in the region—despite the fact that most of them had flexible exchange rates.

**Table 4. Real Effective Exchange Rate and Exports Change between 2000/1991**

Selected countries	Argentina	Brazil	Chile	Colombia	Ecuador	Mexico	Peru	Venezuela	Average
<i>Real Exchange Rate</i> *	35%	6%	10%	22%	3%	17%	-8%	89%	20%
<i>Real Effective Exchange Rate</i> *	8%	13%	22%	-2%	58%	18%	1%	86%	28%
<i>Exports</i>	121%	74%	115%	83%	77%	289%	104%	125%	124%

\*January 2001 / Average 1991 (+) means REER appreciation, (-) depreciation

Source: Real Effective Exchange Rate – J.P. Morgan REER Index, Exports – IMF. International Financial Statistics.

Between 1991 (the beginning of the Convertibility regime) and January 2001, the real effective exchange rate for Argentina suffered an appreciation of only 8%.<sup>31</sup> The strong export performance displayed by Argentina during Convertibility suggests that the real exchange rate, if moderately appreciated, was not making Argentina uncompetitive in international trade. The growth of exports in the period 1991-2001 reflected mostly the increase in exported volumes, rather than price changes. In particular, exports increased from USD 12 billion in 1991 to USD 26.6 billion in

<sup>29</sup> It is important to stress that there was no consensus on the role of fiscal policy in Argentina’s crisis. Mussa (2002), for instance, argues that fiscal policy had been too expansionary on cyclically adjusted terms and that it led to an excessive build-up of public debt.

<sup>30</sup> The real effective exchange rates figures are published in Bloomberg under the Ticker JBXR.

<sup>31</sup> Considering that during that decade productivity improved significantly, such moderate appreciation did not affect Argentina’s external competitiveness, as shown by its export performance.

2001, at an average annual growth rate of 7.8%. This growth rate can be attributed entirely to export volumes, as the annual change in export prices averaged -0.1% during the period under consideration.

However, the evolution of exports under Convertibility was not uniform. Export performance was particularly strong in the period 1994-1998, growing at an average annual rate of 15.1%, in comparison with a much weaker performance both in the initial and the latter years of Convertibility. The performance of Argentina's exports also compares favorably to the evolution of world trade flows. In particular, the share of Argentina's exports in world exports increased by 26% between 1991 and 2001, increasing from 0.34% in 1991 to 0.43% in 2001.

Independent assessments undertaken by the investment bank Goldman Sachs in March 2000 are consistent with the above findings. They show that Argentina's real exchange rate was overvalued by just 7.6% compared to the equilibrium level that obtained from their own model, compared with a 22.7% overvaluation of the Mexican peso and one of 9.7% of the Chilean peso. With that in mind Goldman Sachs recommended their investors to take positions in the Argentine peso.<sup>32</sup>

The issue whether the Argentine peso was undervalued and by how much has been extensively analyzed in the aftermath of the 2001/2002 crisis. For instance, Calvo, Izquierdo and Talvi (2003) examined in a simple model the relation between the real exchange rate, the balance of payments, and the degree of trade openness. In that context and for a sample of emerging market economies, they estimated the adjustment in the real exchange rate required to eliminate a current account deficit in the event of a sudden stop in capital flows similar to that occurred after the 1998 Russian crisis. In the case of Argentina, the authors estimated that a 46% real depreciation would have been required to eliminate the current account deficit, a figure that compares to a 52.5% real depreciation required in the case of Brazil, and a 43% and a 32.4% real devaluations required in the cases of Colombia and Chile, respectively.<sup>33</sup>

Another study that focused on the overvaluation of the peso as a cause for the 2001/2002 crisis was carried out by the IMF's Independent Evaluation Office (IEO) in 2004.<sup>34</sup> Interestingly, the IEO finds that while today there appears to be a consensus that the peso was undervalued, such consensus did not exist from the standpoint of year 2000:

*"...In the spring of 2000, before the further worsening of economic and financial conditions in Argentina and before the further weakening of the euro relative to the U:S dollar, there were equally divided views of the peso's overvaluation. For example, the overvaluation was estimated to be 7% by Goldman Sachs, 13% by JP Morgan and 17% by Deutsche Bank."*

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<sup>32</sup> See Goldman Sachs, March 2000.

<sup>33</sup> The Calvo, Izquierdo and Talvi (2003) exercise may be considered an upper bound, as the computed adjustment was consistent with reducing the current account deficit to zero. In light of what happened, private capital flows to emerging markets fell by 55% in 1998 compared to the 1997 peak, but did not disappear. In the period 1998-2002 private capital flows to emerging markets were on average 46% smaller in comparison to 1997, and increased sharply again since 2003 to reach in 2005 a level 75% higher than prior to the Russian crisis. Moreover, considering the depressed levels of commodity prices, using 1998 as the base for the experiment may overestimate the required change in the real exchange rate.

<sup>34</sup> "The IMF and Argentina 1991-2001". Independent Evaluation Office, IMF, 2004.



Finally, Hausmann and Velasco (2002) even without estimating the size of the overvaluation conclude that the fixed-exchange rate regime had a major role to play in the Argentine crisis:

*“There is an unmistakable sense then that Argentina did have an exchange rate problem. What is much less clear, however, is whether it had an exchange rate solution available to it. It was the combination of relative price misalignment with increasingly scarce financing that made the situation vulnerable. And, with a large accumulated dollar debt, both private and public, the competitiveness gains of a potential devaluation had to be weighted against the balance sheet damage it would inflict, and the additional market access this would bring....”*

In summary, the Argentine economy under Convertibility could have benefited from exchange rate flexibility but it can hardly be characterized as an economy in need of a large devaluation. With this premise in mind, we now turn to the policy actions that were available to the government in order to avoid default, and which were anchored in providing flexibility to the exchange rate by exiting Convertibility. The crucial point here is to establish how Argentina would have had to manage the exit from Convertibility in a context of significant stress in international capital markets. In our view, as will be discussed below, the government could have exited convertibility in an orderly fashion.

According to the Convertibility Law the monetary base had to be backed a 100% in liquid foreign assets, limiting the central bank’s ability to act as a lender of last resort to the banking system. However, if the authorities had decided to abandon convertibility when the country still had a significant amount of international reserves at the Central Bank, then it would have had a significant amount of funds that—added to those obtained from multilaterals—would have allowed Argentina to cover all of the debt payment obligations coming due over more than one year without having to issue a single US dollar of new debt in the capital market. That period of time would have likely been enough to restore confidence in local depositors as well as in foreign investors.

The Convertibility Law prevented the central bank from assisting the financial system up to a limit established in the law. However, once convertibility was abandoned, the ratio of US dollar reserves to the monetary base could have been reduced, for instance, up to 50%. Moreover, to the extent that the authorities would have considered adopting a solution *á la Uruguay* according to which banks who chose to do so could reprogram the maturity of their time deposits, the liquidity available to the central bank could have been directed at, for instance, covering up to a 30% run on transactional deposits while using the remaining portion to cover Treasury obligations.

It is relevant to examine the amount of funds available to the central bank, including those available from the *Contingent Repo Facility* that the central bank had contracted with a group of international banks after the Tequila crisis.<sup>35</sup> By mid 2001, the amount of funds available under such facility amounted to USD 1.2 billion.

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<sup>35</sup> The term “repo” stands for repurchase agreement.

In addition to the funds that would have been freed by abandoning convertibility and to those available from the repo facility, the government could have had access to the remaining disbursements available under the existing IMF program. Taking into account the amount of funds disbursed from the IMF between January 2000 and September 2001 (SDR 4.8 billion), the available credit to Argentina at the time when the last IMF agreement was signed in January 2001 amounted to SDR 12.1 billion, equivalent to USD 15.2 billion. Of this amount, the IMF disbursed only SDR 4.9 billion during 2001, remaining available at the year-end about SDR 7.2 billion, equivalent to approximately USD 9 billion.

Based on these figures one can estimate the total amount of funds available to the government — with the already committed IMF support— in order to assure the capital market that it could service its debt for the significant period of time without resorting to new bond issues. Table 5 shows the results of computing the available funds at various relevant dates during 2001. Available funds are defined as the excess funds over those required to keep a 50% backing of the monetary base and to provide the central bank with the additional capacity to provide liquidity assistance to the banking system for an amount equivalent to 30% of all transactional deposits.

**Table 5. Available Funds**

Year 2001	International Reserves	Bank's liquidity abroad	Repo Facility	IMF undisbursed Funds	Monetary base	Transactional deposits	Excess of funds *		Available Funds under Convertibility Law **
							Exchange rate ARS : USD ARS/USD=1	ARS/USD=2	
January	28,758	7,395	4,000	11,896	24,774	39,859	31,008	41,155	22,070
February	26,245	6,974	3,600	11,896	24,990	40,154	27,477	37,713	21,225
March	23,040	6,772	3,200	11,896	21,453	36,159	26,637	35,610	20,760
April	21,419	5,045	2,800	11,896	20,406	36,525	23,304	31,999	18,209
May	20,574	4,996	2,400	11,896	20,184	35,944	22,295	30,898	17,868
June	21,556	5,710	2,000	7,236	20,943	35,644	23,302	30,416	18,500
July	16,784	3,473	1,600	7,236	16,698	32,873	18,846	25,202	15,421
August	14,445	3,022	1,200	7,236	14,863	29,980	17,442	23,047	14,887
September	21,469	3,330	1,200	9,260	16,685	29,023	17,950	23,554	9,829
October	18,304	2,886	1,200	9,260	13,969	27,024	16,298	21,354	9,170
November	14,802	393	1,200	9,260	15,201	24,958	12,299	16,535	6,471

All figures in USD Millions

\* Assuming a 30% coverage of transactional deposits and a 50% backing of the monetary base

\*\* Assuming compliance with the Law, 1/3 of the Monetary Base could have been backed with Government Securities

*Source: Own calculations based on data from Central Bank of Argentina and the Economy Ministry*

For the computations two different exchange rate between the Peso and the US dollar were used: the one-to-one exchange rate prevailing under convertibility, and an alternative scenario of a 100% devaluation.<sup>36</sup>

The analysis shows that, if the exchange rate had devalued by a 100% had convertibility been abandoned, the government would have had available in June 2001 excess funds for USD 30.4 billion, compared with the USD 18 billion it had under the Convertibility Law. Of course, the amount of excess funds is larger the earlier the exit from Convertibility would have been taken

<sup>36</sup> The Peso ultimately devalued by a 100% between January and February of 2002, under quite chaotic circumstances of default, deposit freezing, and “asymmetric” pesification.

during 2001. For instance, if Argentina had exited Convertibility in March 2001, excess funds available under the assumption of 100% devaluation were USD 35.6 billion.

These figures need to be contrasted with the government's financing requirements at the time. In this respect, the Argentine government had explicitly adopted after 1995 a strategy of lengthening the maturity of its public debt to reduce liquidity risk. By 2001, the average maturity of the public debt exceeded 8 years and the size of the yearly government's financing requirement had reached USD 12 billion and would be between USD 13 and 14 billion in the following two years.<sup>37</sup> Hence, the amount of excess funds available to the government was large enough to cover the financing needs of the following year and a half (without issuing new debt), even after allowing for a significant lender-of-last resort capability in hard currency.

With a floating exchange rate and the financing needs covered for a significant period of time in advance, interest rates would likely have fallen and the economy would have resumed growth. Hence, it can be concluded that the government had alternative policy options to avoid default, devaluation and pesification. At the end of the third quarter of 2001 the Central Bank of Argentina had a stock of international reserves of USD 21.5 billion and the banking system held foreign liquid assets for an additional USD 3.3 billion. Moreover, the IMF program in place had still to disburse additional funds to the government by USD 9.3 billion. Even in late 2001, such amount of resources provided the government with significant capacity to manage an orderly resolution of the economic crisis without having to resort to unprecedented and arbitrary measures such as asymmetric pesification.

Another important question that would have arisen in this scenario was that of the potential losses that a devaluation would have had on the banking system and what would have been the amount of capital the government could have been required to inject into the system. In this respect, one possible route could have been to allow financial institutions voluntarily to restructure foreign currency loans of those clients whose revenues derived mostly from the non-tradable sector (i.e. services) and, hence, were subject to a significant (but temporary) adverse relative price shock, and provide government funds to recapitalize those institutions that did not have the capital to absorb the resulting losses. A significant distinction may have been drawn here between domestic and foreign banks, as the latter group would have the capacity to absorb losses provided the rule of law was not broken.

As shown in Table 6, the stock of bank loans to the private sector denominated in US dollars amounted to USD 34.7 billion on December 31<sup>st</sup>, 2001 while the stock of foreign-currency deposits totaled USD 37 billion. On that date, foreign-currency loans provided by foreign banks and foreign-owned subsidiaries amounted to USD 20.6 billion while foreign-currency loans provided by domestic banks amounted to USD 14.1 billion.

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<sup>37</sup> Guidotti (2006) documents the significant lengthening of debt maturity occurred in the period 1994-2000.

**Table 6. Dollar-denominated loans in the Argentine banking system in 2001**

<b>Dollar denominated loans of Argentine financial institutions</b>	
In USD Millions	
	12/31/01
Foreign banks	20,622
Domestic banks	14,085
<i>Tradable sector</i>	2,479
<i>Non tradable sector</i>	11,606
Total	34,707

*Source: Own calculations based on data from Central Bank of Argentina*

Moreover, out of the total stock of foreign-currency loans to the private sector, about 17.6% was allocated to the tradable sector. To reach this figure, a very restrictive definition of tradable sector is used, as it contains only loans to the primary sector (holding a share of 8.7% of the loans) and manufacturing industry (holding a share of 9% of the loans). Assuming that the proportion of loans distributed between the tradable and non-tradable sector is similar across foreign and domestic banks, we obtain that the stock of foreign-currency loans provided by domestic banks to the non-tradable sector and households amounted to approximately USD 11.6 billion.

Hence, to obtain an estimate of the recapitalization that would have been required by the financial system under the above-mentioned scenario, we computed the impact that three different loan restructuring options on bank capital and assumed that the loss faced by domestic banks would have required recapitalization in full (it is important to keep in mind that such recapitalization of domestic banks reflected the lack of additional capital of domestic shareholders and would most likely have been required independently if banks themselves would have changed ownership or not).

A first option considered is one in which the restructuring of the USD 11.6 billion in loans to the non-tradable sector would have likely entailed an extension of maturity of existing dollar loans to 5 years (with bullet amortization) and a reduction of interest to 5% per year, with a grace period of 2 years in which the interest capitalizes. Using a discount rate of 10% per year, the relief received by a debtor amounts to 32.7% in net present value, yielding a bank capital loss of USD 3.1 billion.<sup>38</sup>

A second option considered is one where interest is reduced to 4% per year, and the maturity is extended to 10 years, with a 2-year grace period and amortizations divided in equal installments of 12.5% in years 3 to 10.<sup>39</sup> In this option, the recapitalization required would have amounted to USD 3.3 billion.

<sup>38</sup> A variation of this option is one where the loan restructuring entails a reduction of the interest rate to 3% per year, an extension of maturity to 5 years but with amortization in three installments in years 3, 4, and 5. Using the same discount rate, this option would have implied a recapitalization of USD 2.6 billion.

<sup>39</sup> This structure replicates that of the dollar-denominated bonds that were issued in 2002 (i.e., the Boden 2012) to pay depositors whose deposits had been frozen by the government.

As can be seen, the potential banking losses that could have emerged from a devaluation, and the required capitalization, were manageable under the assumption that the rule of law would be maintained.

### **Dollarize with an agreement with the Fed?**

While the alternative of exiting Convertibility was never seriously considered by Argentine policymakers, after the 1998 Russian default, the government—specifically, the economy ministry and the central bank—initiated discussions with US authorities on a very different exit strategy: the design and implementation of an Argentine-US Monetary Agreement that would serve as the legal framework for Argentina to fully adopt the US dollar as its own currency.<sup>40</sup>

The dollarization debate in Argentina reflected two contrasting factors. On the one hand, there was a general perception that Convertibility had contributed to substantially improve macroeconomic performance and had facilitated the adoption of a number of structural reforms in connection with the government's objective of increasing the economy's integration to international trade and finance. On the other hand, despite the successful weathering of the 1995 Tequila crisis—which had strengthened significantly domestic and international credibility in Convertibility—there was an increasing perception that Argentina remained vulnerable to financial contagion. Hence, the vulnerability associated with a still incomplete credibility in the Convertibility regime translated into a significant risk premium that had to be paid on government and private debts.

Moreover, by 1998, the international consensus had clearly shifted in favor of the adoption of flexible exchange rate by emerging market economies. To be sure, the so-called “bipolar” view of exchange-rate regimes—that recommended either flexible exchange rates or very hard pegs was mostly a diplomatic effort to account for Hong Kong 'currency board and Argentina's Convertibility.<sup>41</sup>

In this vein, in 1998, the Argentine government started exploring with the US Treasury and Federal Reserve the implementation of a monetary agreement between the two countries.<sup>42 43</sup> In addition to the adoption of the US dollar as its own currency, the discussion contained an important feature: the rebate of seigniorage. The most innovative aspect of the seigniorage discussion was its use. The Argentine government envisaged that the rebate of seigniorage from the US Treasury would imply a revenue that Argentina—the dollarizing country—would receive a revenue flow of US dollars that could in turn be used as (AAA-rated) collateral to obtain a liquidity facility from the

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<sup>40</sup> This section is based largely on Guidotti and Powell (2003) that contains a detailed discussion of the dollarization debate.

<sup>41</sup> See Fischer (2001) for a discussion of the bipolar view on the choice of exchange-rate regimes.

<sup>42</sup> Other close observers of the Argentine economy suggested full dollarization as another alternative route for the government to pursue to restore investor confidence and produce a turnaround in the Argentine economy. See, for instance, Steve Hanke, “*Argentina's Current Political-Economic Crisis*,” Statement before the Subcommittee on International Monetary Policy and Trade, Committee on Financial Services, United States House of Representatives, of March 5th, 2002. Available at <http://www.cato.org/testimony/ct-hanke030502.html>.

<sup>43</sup> The US Senate Banking Committee held hearings on possible dollarization in 1999, see [www.banking.senate.gov/docs/reports/dollar.htm](http://www.banking.senate.gov/docs/reports/dollar.htm).

US Federal Reserve to the Argentine central bank. Thus, such credit line would provide the Argentine central bank with a US-dollar capacity to act as lender of last resort in potential systemic crises, resolving an important argument put forward by critics of dollarization: that, under dollarization, the central bank would lose its capability to act as lender of last resort.<sup>44</sup>

Guidotti and Powell (2003) estimated the amount of seigniorage associated with full dollarization and the potential size of the liquidity facility that could be obtained by collateralizing its rebate. Although the estimates depend on a number of technical assumptions and the on the discount (risk-free) rate used, Guidotti and Powell (2003) reached the conclusions that the potential size of the liquidity facility was significant. Estimated at around USD 20 billion—equivalent to about 7% of GDP—the liquidity facility would have more than doubled the Argentine central bank's ability to act as a lender of last resort, when compared to what was legally possible under Convertibility.

While full dollarization would not resolve the issue of currency overvaluation—although some argued that the government could have devalued before dollarizing (the so-called *D&D* option)—the main benefit for the economy would accrue from a reduction in the sovereign risk premium.<sup>45</sup> Therefore, an important factor weighing on the decision was by how much sovereign risk would be reduced in the event of dollarization. The estimation of the impact of full dollarization on the sovereign risk premium is complex as the risk premium contains both devaluation risk and default (or credit) risk. Moreover, the two risks certainly may interact. Given the currency mismatches existing in the Argentine economy, a devaluation of the currency, depending on its size, may force the sovereign into default. Using different methodologies, Guidotti and Powell (2003) estimated that full dollarization may have reduced the sovereign risk spread between 120 and 325 basis points from a spread of about 600 basis points, namely the potential reduction would range between 20% and 54% of the default spread.

The dollarization discussion, although it stimulated a wide debate in policy and academic circles, both domestically and internationally, required significant political actions to take place both in Argentina and in the US, which involved both Congresses.<sup>46</sup> The timing of the debate was not aligned with Argentina's political calendar as the Menem administration was entering its last year in office, with no possibility of re-election. After a new administration took office at the end of 1999, the discussion of full dollarization was ultimately abandoned.

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<sup>44</sup> While the US response to the seigniorage question and to the collateralized liquidity facility was positive, three issues remained clear from the start: 1) Argentina would get no say whatsoever in the conduct of US monetary policy; Argentine banks would have no access to the discount window of the US Federal Reserve; and 3) the US would have no banking-supervision responsibilities *vis-à-vis* Argentine banks.

<sup>45</sup> The reduction in the risk premium directly related to the interest rate convergence that the southern EU economies, such as Italy, Portugal, and Spain, had experienced with the creation of the Euro.

<sup>46</sup> Around that time, Ecuador and El Salvador had unilaterally dollarized.

## **8. Concluding remarks**

This paper has analyzed two banking crises occurred in Argentina in 1995 and 2001, in the midst of significant reforms in terms of banking regulation and supervision, and in a macroeconomic context dominated by a “hard peg” exchange-rate regime known as Convertibility. As usual, macroeconomic stress and banking crises are events that tend to be closely associated and where the direction of causality tends to be difficult to identify.

The two crises analyzed in this paper are a rare example where, from the behavior of depositors, we can get light on the direction of causality between macroeconomic stress and banking crises. We have shown that, despite the significant reforms put in place in the early 1990s, the crisis experienced by the Argentine banking system in early 1995 (after the December 1994 devaluation of the Mexican Peso) can be attributed largely to internal weaknesses of the system, which was still in the process of adapting to the new prudential regulatory environment. In that case, as macroeconomic policy stayed the course, and reforms were consciously designed to meet the limitations of the lender-of-last-resort function of the central bank, as well as to maintain fiscal sustainability, the banking crisis was virulent but short lived and its successful resolution translated into renewed public confidence in the system.

The 2001 crisis shows the reverse. The consolidation of the banking system and the new macro-prudential regulations implemented after 1995 had made the financial system more resilient, both in terms of capitalization as well as in terms of liquidity. However, the macroeconomic side of the 2001 crisis proved to be an insurmountable obstacle for the financial system, and the macroeconomic crisis led to a banking crisis as well. As we have discussed, Argentina had policy options that could have mitigated and even avoided the 2001 crisis, but these options now remain as elements for an ex-post analysis of the causes of the crisis, rather than part of its factual history.

## References

- Calvo, G. (1998), "Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops," *Journal of Applied Economics*. Vol. 1, Nbr. 1.
- Calvo G. (1988), "Servicing the Public Debt: The Role of Expectations," *American Economic Review*, September, pp. 647-661.
- Calvo G., Izquierdo A. and E. Talvi. "Sudden stops, the real exchange rate and fiscal sustainability: Argentina's lessons," IADB, May 2003.
- Calvo G. and P.E. Guidotti (1990), "Indexation and Maturity of Government Bonds: An Exploratory Model", in Dornbusch R. and M. Draghi (eds.), *Public Debt Management: Theory and History*, Cambridge: Cambridge University Press, October, pp. 52-82.
- Calvo, G. y C.A. Végh (1992), "Currency Substitution in Developing Countries – An Introduction," *Revista de Análisis Económico*, Vol. 7, Nbr. 1.
- De La Torre, A. (2000), "Resolving Bank Failures in Argentina. Recent Developments and Issues," Policy Research Working Paper 2295. Washington, D.C.: The World Bank.
- Dujovne, N. y P.E. Guidotti (2001), "El Sistema Financiero Argentino y su Regulación Prudencial," en *Crecimiento y Equidad en la Argentina*: Buenos Aires: FIEL (October), pp. 131-211.
- Fernandez, R. y P.E. Guidotti (1996), "Regulating the Banking Industry in Transition Economies: Exploring Interactions between Capital and Reserve Requirements," *Journal of Policy Reform*, Vol. 1 (May), pp. 109-134.
- Fischer, S. (2001), "Exchange Rate Regimes: Is the Bipolar View Correct?," Distinguished Lecture on Economics in Government, American Economic Association and the Society of Government Economists, Delivered at the Meetings of the American Economic Association, New Orleans.
- Guidotti, P.E. (1996), "Supervisory, Regulatory, and Banking Practice Issues in Avoiding Crises," in Hausmann, R. and L. Rojas-Suarez (ed.) *Banking Crises in Latin America*, IDB and The Group of Thirty, Washington, D.C.
- Guidotti, P. E. (2003), "Toward a Liquidity Management Strategy for Emerging Market Economies", in Gonzalez, J., Corbo, V. Krueger, A. and Tornell, A. (eds) *Latin American Macroeconomic Reforms: The Second Stage*, Chicago: The University of Chicago, pp. 293-323.
- Guidotti, P. (2006), "Argentina's Fiscal Policy in the 1990s: A Tale of Skeletons and Sudden Stops," publicado en *Fiscal Policy in Latin America: Trends and Challenges*, Organization for Economic Co-Operation and Development, Chapter 3.
- Guidotti, P.E. (2007), "Global Finance, Macroeconomic Performance, and Policy Response in Latin America," *Journal of Applied Economics*, Vol. X, No. 2 (November), pp. 279-308.



Guidotti, P.E. (2008), "El Sistema Financiero Argentino desde la Crisis 2001/2002: el Manejo de Riesgos Bancarios, la Regulación Prudencial y el Impacto de la Política Pública," *Anales*, Academia Nacional de Ciencias Económicas, Vol. LIII, pp. 115-200.

Guidotti, P.E. and A. Powell (2003), "Dollarization in Argentina and Latin America," en Auernheimer L.(ed.), *International Financial Markets: The Challenge of Globalization*, The University of Chicago Press.

Guidotti, P.E. and C.A. Rodriguez (1992), "Dollarization in Latin America: Gresham's Law in Reverse?," *IMF Staff Papers*, Vol. 39, No.2 (September), pp. 518-544.

Guidotti, P., Sturzenegger F. and Villar A. (2004), "On the Consequences of Sudden Stops," *Economia*, Vol. 4, No. 2 Spring, pp. 171-214.

Hausmann R. and A. Velasco (2002), "The Argentine Collapse: Hard Money and Soft Underbelly: Understanding the Argentine Crisis," in *Brookings Trade Forum: 2002*, edited by S. Collins and D. Rodrik Washington, DC.

Mendoza, E. G. (2001), "Credit, Prices, and Crashes: Business Cycles with a Sudden Stop," National Bureau of Economic Research. Working Paper 8338.

Mussa, M. (2002), *Argentina and the Fund: From Triumph to Tragedy*. Institute for International Economics, Washington, DC.

International Monetary Fund (1998), *Financial Crises: Characteristics and Indicators of Vulnerability*, Washington, D.C.