IRIBA Working Paper: 06

Restructuring Brazil's National Financial System

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August 2014

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ISBN 978-1-910502-05-1

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Summary

This paper focuses on the recent development of the Brazilian financial system and its institutions. It begins by presenting an overview of the credit market in the post-Real Plan period. After stabilization, financial institutions had to be completely reformed. A very conservative and successful regulatory framework was created to avoid the permanent instability of the past. The paper also analyses the impact of the rapid credit growth after 2004 and the role of state-owned banks in compensating for the impact of the international crisis of 2008. It is important to note that the process of formulation and implementation of the financial market reforms was not the result of prior strategic planning, but a response based on the past experience of internal and external crises and the political opportunities created after 1994.

Key words: Financial System; Brazilian Economy and National Development Bank.

Jel Code: 016 (Financial Markets); 043 (Institutions and Growth)

Acknowledgement

This document is an output from a project funded by the UK Aid from the Department for International Development (DFID) for the benefit of developing countries. However, the views expressed and information contained in it are not necessarily those of or endorsed by DFID, which can accept no responsibility for such views or information or for any reliance placed on them.

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1. Introduction

Stabilizing an Unstable Economy is the title of one of the masterpieces of the American economist Hyman Minsky. The purpose of his book was to explain why the US and other market economies are endogenously unstable. This statement was a significant departure from the mainstream economic school of thought, which believed in the natural path of markets towards a stable equilibrium unless disrupted by an external shock or a policy mistake.

Minsky argued that there was a contradiction between profit-maximizing behavior and stability in financial markets. The longer markets remain stable, the more they see innovation and the willingness of investors to take risks. The economic system becomes more fragile as Ponzi borrowers (those who borrow to make interest payments but must keep rolling over the debt principal) take the place of less risky investors. This process reaches a tipping point – a “Minsky moment” – that causes a financial crash. Government agencies – central banks, treasuries, etc. – are then forced to step in and a new regulatory architecture is built to prevent a new financial crisis. Unfortunately, this is also the starting point of a new cycle of instability.

Minsky’s theory was developed for the US. As the leading economy of the world, America issues the de facto international currency. Its financial markets are deep and large. That position has little in common with the economies of emerging countries, such as Brazil. Those countries, in the second half of the twentieth century, relied on the US financial markets to access the hard currency needed to finance their external deficits, as well as sourcing long-term funds for investments.

The Brazilian financial crisis of the 1980s was part of a particular Minskian crisis in the US. The Brazilian public and private sectors had accumulated large debts in foreign currency after the First Oil Shock of 1973, mostly with American banks. By the end of the 1970s, the amortization and interest on those loans due in US dollars had to be refinanced by new loans. The US Federal Reserve raised the federal funds rates to a peak of 20% in June 1981. A few months later, Brazil could no longer refinance its liabilities in hard currency with the private market. This was the start of the Brazilian external debt crisis of the 1980s, which is also known as “the lost decade”.

For almost fifteen years, Brazil was considered a particular case of Ponzi scheme. As a sovereign entity, its assets could not be transferred and sold by creditors. At the same time, most of its earnings were paid in local inconvertible currency in domestic banks under Brazilian law.

The external debt crisis of the 1980s had a severe impact on the domestic economy. GDP stagnated. High inflation became rampant. The fiscal deficit was out of control. Public debt became a sort of indexed money, extremely short term and liquid. Real interest rates were kept at very high levels. Banks crashed and credit shrank. The domestic financial system became very unstable and volatile.

Two decades later, in 2008, Brazil was again hit by a very severe external crisis, which also started in the US. However, unlike in the 1980s, this time the Brazilian economy was able to absorb most of the impact of the external shock. The Brazilian Central Bank provided the hard currency needed by the private and the public sectors. The international reserves had reached US$206.8 billion at the end of 2008 and were larger than the sum of external debt of the private and public sectors. This neutralized any negative direct impact on the public debt. State-owned banks increased their loans, compensating for the "sudden stop" of private institutions. Economic growth resumed in 2009. The experience of external crisis in 2008 was very different to that in the 1980s (Reinhart and Rogoff 2008). Brazil was able to avoid becoming a Ponzi borrower in the international market.

Against this background, this paper examines the main institutional reforms that had a major impact in terms of building a robust (but not flawless) domestic financial system in Brazil after 1994, when the high inflation period came to an end. Its aim is to identify the most important policy measures that were taken as well as the economic and political motivations that supported the decision-making process. The paper points out some links to other spheres of stabilization, such as macroeconomic and fiscal ones, which are the main themes of other papers in the IRIBA project.

The present work reaches two important conclusions. The first is that the reforms implemented after 1994 to stabilize the domestic financial system in Brazil may be regarded as a model which can provide lessons for African countries in terms of developing local financial markets and institutions. Those lessons, however, have to take in to consideration that the Brazilian experience was a consequence of fifteen years of high inflation, low and unstable growth and no access to voluntary international markets, and that the economic, political and social conditions of African countries nowadays are not similar to the Brazilian dilemmas of the 1990s.

The second conclusion is that the success of these reforms was heavily dependent on the role of public institutions, which had political support from the government to implement the transformations in financial markets. Those reforms were mainly based on the experience accumulated during the crisis management of the 1980s by the staff of those governmental organizations and, to a lesser extent, on lessons from other countries. The implementation of those reforms was very pragmatic and didn't follow any master plan or pre-established timetable.

The main challenge was to build a financial system that could avoid instability, even in extreme macroeconomic environments. In that sense, it was very important to reshape markets in such a way as to strengthen the power of public regulators and institutions, particularly the Central Bank. This was the reason that, for example, almost all of the banks owned by sub-national governments were liquidated or sold to private investors in the second half of the 1990s, and that the responsibility of the payment system was transferred from the Central Bank to the banking system in the beginning of the 2000s.

The paper is structured as follows. The first part presents an overview of the development of Brazilian financial markets after the period of high inflation that lasted until the mid-1990s. It shows the evolution of the main indicators, and points to the most important changes in market structure and competition.

The second part focuses on the main institutional reforms that were adopted after the "Plano Real", particularly in three areas: public debt, banks, and capital markets. The goal is to identify and evaluate the changes in the institutional, legal, and regulatory frameworks that were essential to this pathway as well as the motivations that ultimately led public authorities towards their implementation. The success of the 1994 stabilization plan opened the way to reforms that involved institutions and markets in order to eliminate the financial fragilities of the past. These reforms changed the financial market's composition, degree of concentration, and profile of participating institutions.

In methodological terms, one of the main challenges for this paper is in identifying the existence of any initiative to coordinate ex-ante the different financial reforms. Academic work relating to this theme is still scarce[1]. As such, part of the information used in this paper was obtained by means of interviews with governmental officials – from the Ministry of Finance, the Central Bank, and BNDES (the Brazilian Development Bank) – and with private financial institutions' bankers, who played a significant role in this process.

No interviewees mentioned documents that could have formed the basis of integrated proposals. The only exception was the publication in September 2002 of a study by a group of scholars, entitled "*A Agenda Perdida*" (Lisboa 2002). This study was influential during the two terms of former President Lula. It provided a diagnosis of the situation of scarcity of the credit market, relating this phenomenon to specific aspects of the legal system. Some of its reform proposals have been or still are being implemented, such as changes in the Bankruptcy Law and the development of the payroll loans legal framework. Both had a significant impact on the recent expansion of the credit market in Brazil.

Despite the relevance of "*Agenda Perdida*", all the interviewees agreed that there was no ex-ante comprehensive plan or document guiding or integrating the various actions taken in different areas of the federal government. The testimonies mentioned, however, that some efforts towards coordination were made by means of the creation of formal or informal committees, which gathered officials from government agencies directly involved in the decision making and implementation of reforms.

The third part of the paper provides an overview of the Brazilian response to the 2008 international financial crisis. For the first time in modern history when facing an international crisis, the Brazilian economy managed to avoid a long recession and an external debt problem. However, Brazilian private banks followed the example of their counterparts in the US and Europe and also froze credit after September 2008. The impact on the demand for durable consumer goods and corporate credit was

[1] Goldfajn et al. (2003) analyze the 1990s reforms of the financial system and Garcia (2011) gives an overview of the impact of the financial crisis of 2008.

significant. Economic growth came to a halt and there was a shortage of liquidity in local as well as foreign currencies. One of the main problems was the impact of derivative operations on the balance sheet of large export companies, due to the sharp devaluation of the real against the dollar. This crisis was the worst experienced by the Brazilian financial market since the late 1990s. Nevertheless, the problems were managed and mitigated quickly, and the new architecture and organization of the financial system survived almost intact.

The final part deals with two themes: the (ex-post) Brazilian model of financial stabilization; and the lessons of the Brazilian financial stabilization experience for African countries.

2. Financial Development in Brazil after the Real Plan

2.1 Overview

Credit in Brazil until the middle of the 2000s was characterized by five salient features. The first two were scarcity and high volatility. The evolution of bank loans and corporate debt illustrates those two aspects. Between the beginning of 1996 and the end of 2004, total bank loans to GDP fluctuated between a minimum of 24.3% and a maximum of 33.3%; the average was 27.5%. This was a low level compared with the figures of other countries, particularly industrialized nations. During the same period, the local private bond market was also small. The stock of corporate bonds, for example, ranged between 1.8% and 3.0%, reaching an average of 2.3% of GDP.

The third striking feature of Brazilian credit was the high cost. Throughout the 1990s and 2000s, interest rates were maintained at very high levels in both nominal and real terms. For example, from 1995 to 2008 the Brazilian Central Bank's basic rate (Selic) accumulated, in the 12 months held, a difference of 12 percentage points ahead of inflation, on average. Additionally, the spreads charged by banks were among the highest in the world (Jorgensen and Apostolou 2013).

The fourth characteristic was the role played by large banks, particularly the three big state-owned ones[2]. From 1995 to 2012, the participation of the 10 largest banks in the total assets of the banking industry increased from 71% to 89%, a result of consolidation and concentration (Banco Central do Brasil 2014a). The share of state-owned commercial banks in total loans grew from 34% at the beginning of 2008 to more than 47% by the end of 2012 (Banco Central do Brasil 2014b).

Finally, the last major feature was segmentation. Large quasi-fiscal funds earmarked credit for investments. They funded almost all long-term loans to industry, infrastructure, and housing. The costs and the length of those credits were set regardless of the prevailing conditions in the rest of the financial market, which followed the Central Bank rate and were mostly short term.

Nowadays, the Brazilian financial market is very different from the early 2000s. According to the World Bank (2013), domestic credit to the private sector in Brazil reached 61% of GDP in 2011, above the global average of 58%. This figure is higher than that of other major Latin American economies (Mexico, Argentina and Colombia). It is, however, well below the percentage reached by high-income countries, such as the United Kingdom (187%), and by some emerging nations, such as South Africa and China, which exceeded 120%.

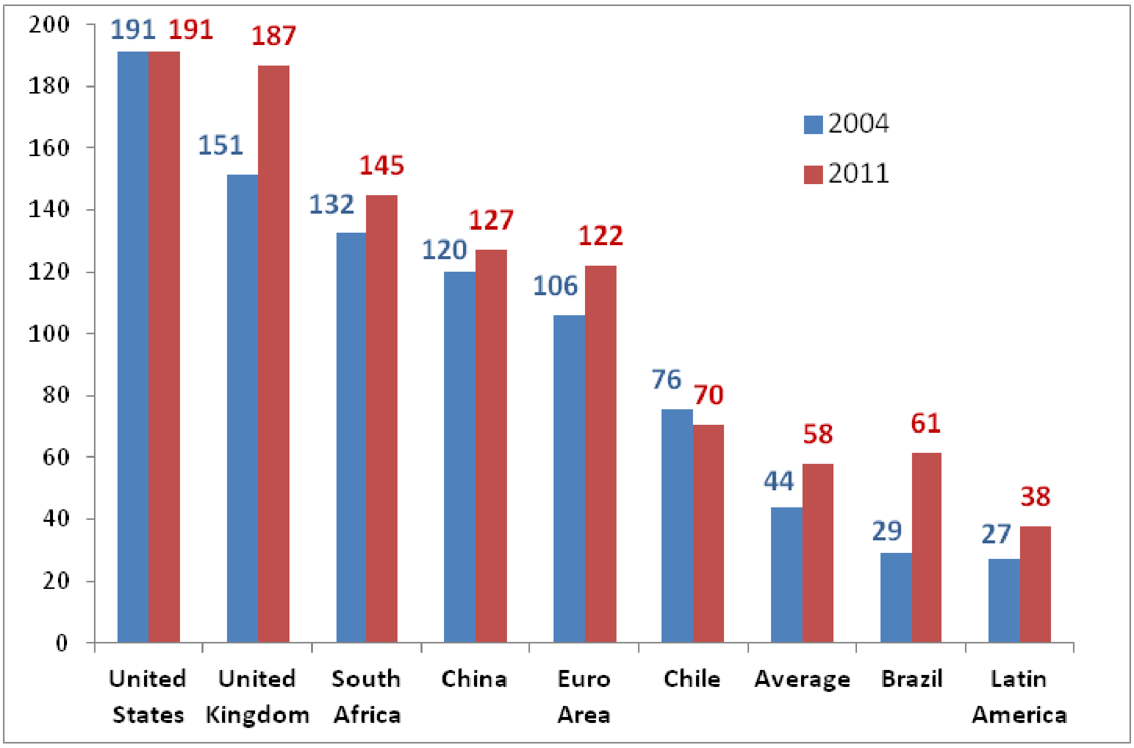
[2] They are: Banco do Brasil (BB), a commercial bank with a very important role in financing agriculture; Caixa Economica Federal (CEF), a a commercial bank with an very important role in financing housing; and Banco Nacional do Desenvolvimento Econômico e Social (BNDES), a development bank with a important role in long term financing for industry and infrastructure.

Growth in the Brazilian financial system was also different from the experience of other leading countries. Figure 1 (below) shows that the level of domestic credit to GDP more than doubled between 2004 and 2011. Throughout this period, credit to the private sector in Brazil grew by 15% per year in real terms.

This scenario points to structural changes in the Brazilian credit market in the last few years. Scarcity is no longer a dominant phenomenon, although there are still some supply constraints in specific segments. Volatility has disappeared. The rapid expansion of bank lending in recent years was sustained by strong decompression in the demand of households. Household debt not only initiated the expansionary credit cycle but grew quickly and steadily. The indebtedness of Brazilian families would not budge even during the severe impact of the global financial crisis on the Brazilian economy between late 2008 and early 2009.

As a result, one can see in Figure 2 (following page) that the ratio of credit to households[3] compared with GDP increased from 5.8% to 15.9% between 2004 and 2013. The same phenomenon can be seen in the housing market. Despite still being a very small portion of the market, around 1.5% of the GDP by 2007, loans for properties grew in leaps and bounds. Since then, it has increased fivefold, reaching 7.9% of GDP at the end of 2013.

Figure 1: Domestic Credit to Private Sector (in % of GDP)

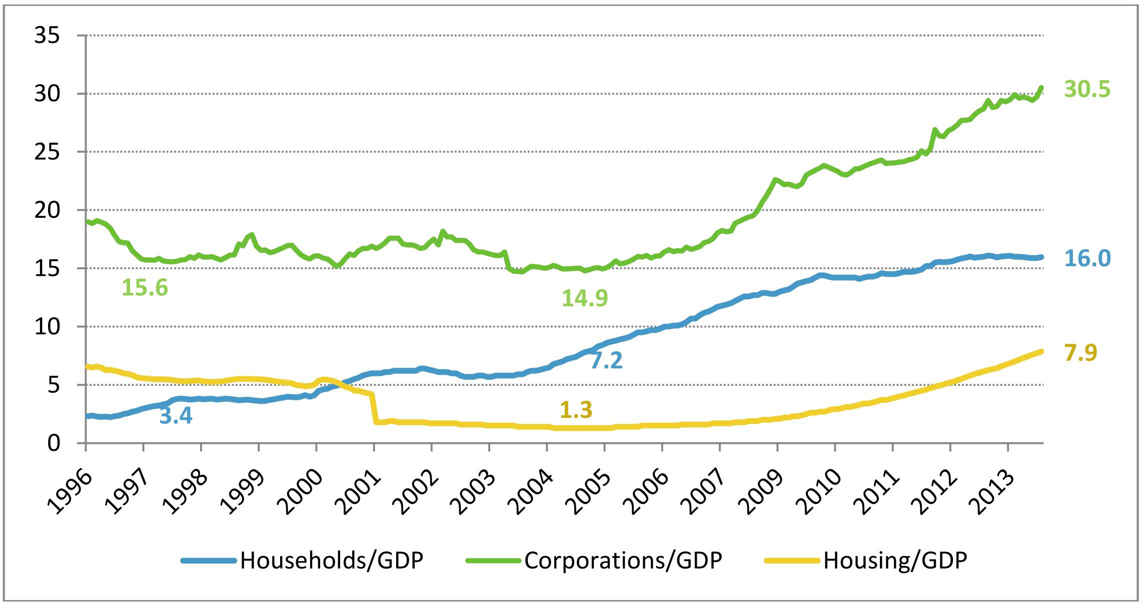


Source: World Bank (2013). Prepared by the authors.

[3] Housing is not included in the Banco Central data for households, but most of those loans are made to families.

These figures show that, until 2004, the demand for credit for households and for housing in Brazil was repressed by the macroeconomic environment and, in particular, by the high interest rates. This was the main reason why the percentage of bank loans to GDP was so low. Since then, there has been an intense process of diffusion of financial products for families, many of whom were accessing bank credit for the first time. As real wages increased and the unemployment rate reached very low levels, consumers become more confident about increasing their debts. At the same time, the Central Bank cut interest rates, which made installments more affordable for families. Institutional innovations like payroll loans also helped to decrease the risk aversion of banks. This rapid growth would not have been achieved if the banks had not fully recovered from the years of economic crisis of the 1980s and 1990s and if the new regulatory framework was not robust enough to avoid the deterioration of credit standards or the start of financial bubbles.

Figure 2: Outstanding Bank Loans for Corporations, Households and Housing (in %)



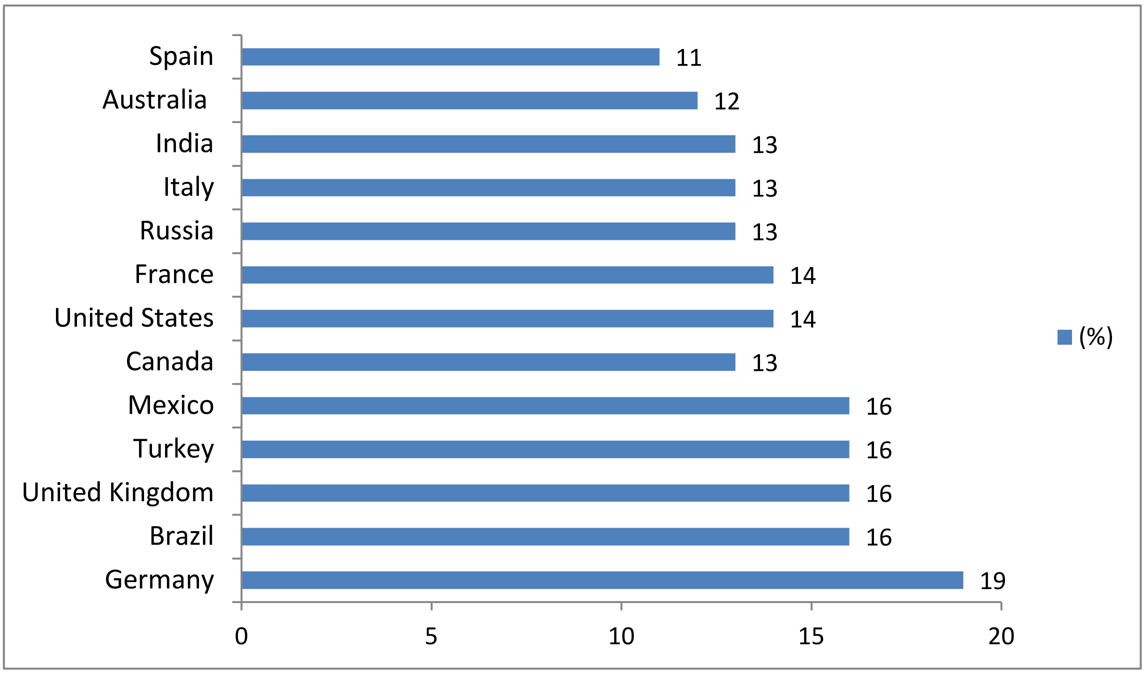
Source: Banco Central do Brasil (2014b). Prepared by the authors.

Corporate loans also grew after 2004, but at a slower pace. There was no strong "diffusion of new financial products" as in the household segment. This is why the growth cycle for corporate loans started later, in 2006. The total corporate loans increased from 15.4% of the GDP in January 2006 to a peak of 26.9% in June 2013.

The growth in corporate loans was not driven by a sharp decline in interest rates, as was the case in the household sector; the reduction in the average rates charged to businesses was less intense. In contrast, the average maturity of the loans increased sharply, starting from 172 days in January 2004 and reaching 432 days by December 2012 (Banco Central do Brasil 2014b).

In a break from the Brazilian experience of the past and of developed countries in the late 2000s, the rapid expansion of the credit system in Brazil after 2004 has not increased financial fragility. The changes in the regulatory framework implemented after 1994 created a robust system, with a modern regulatory framework and institutions that were prepared to face internal and external shocks. This can be illustrated by Figure 3 which presents the so-called Basel Ratio, i.e. the ratio between the level of regulatory capital maintained by banks and their asset portfolios. The higher the ratio, the lower the degree of leverage of the banking institutions. Brazil in 2012 ranked second-highest among a list of selected countries.

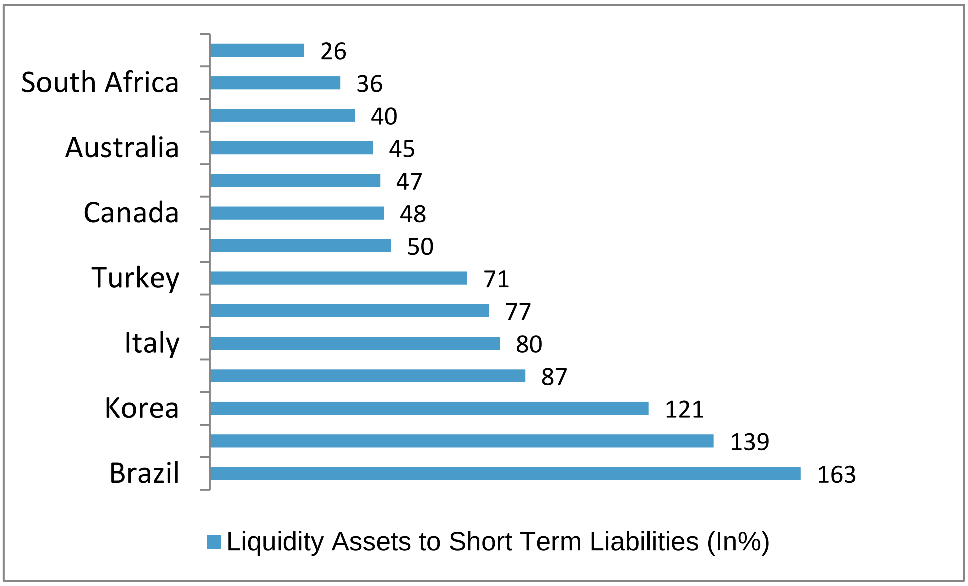
Figure 3: Basel Ratio in Selected Countries in 2012



Source: Banco Central do Brasil. 2013b. Prepared by the authors.

Figure 4 (following page) shows the conservative nature of Brazil's regulatory environment for banks compared with their international competitors. Brazilian institutions have the highest ratio between liquid assets and short-term liabilities in the world. In sum, the Brazilian banking system maintains one of the highest BIS ratios in the world and has, on average, a portfolio of liquid assets 1.6 times larger than its short-term liabilities.

Figure 4: Bank Liquidity Index in 2012



Source: Banco Central do Brasil (2013b). Prepared by the authors.

2.2 The crisis of 2008 and the role of the Development Bank (BNDES)

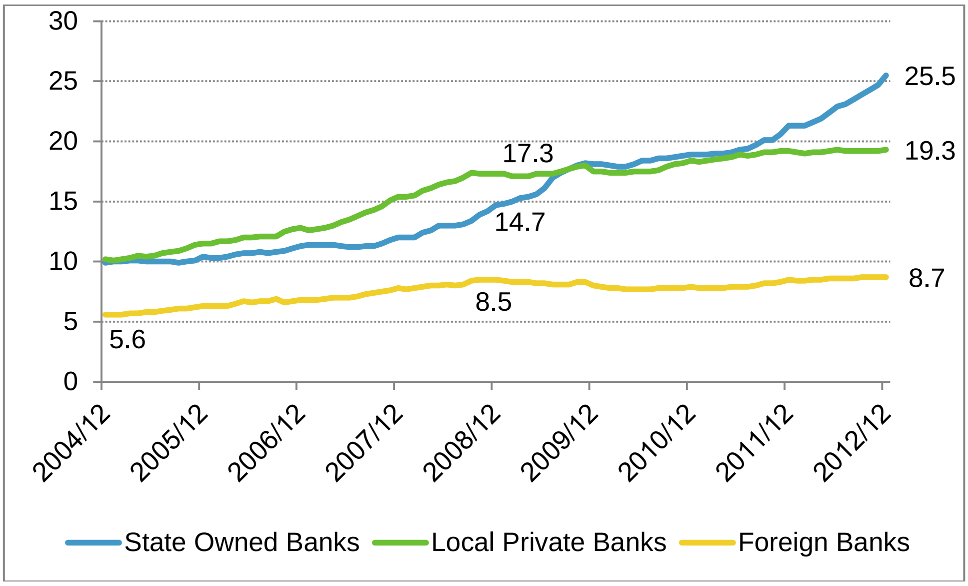
The crisis of 2008 had a strong impact on the Brazilian credit market. The panic following the collapse of Lehman Brothers and the sudden freeze within the international financial system triggered a sharp reversal in the growth of credit, particularly to businesses. At the end of 2009, the rate of expansion of the corporate loan market reached almost zero. Some companies in particular sectors, such as sugar and ethanol, pulp and paper, and beef were hardly affected.

The main problems were related to the long speculative positions that some companies had taken on the exchange and the derivative markets. Due to the sharp devaluation of the Brazilian currency, no bank knew for sure how much the loss of their clients would amount to and what impact that would have on the balance sheet of the banks. Liquidity in the interbank market dried up and the Central Bank had to intervene to save the smaller banks from a severe liquidity shortage. Export credit lines became scarce and had to be substituted by new lines from the Central Bank and the Development Bank (BNDES).

There was no overall shortage of liquidity in the corporate sector as there was in major developed markets. The experience accumulated by Brazilian companies over two decades of economic instability made them increase their cash disposal in the 12 months before the failure of Lehman Brothers in order to cope with any turbulence if the subprime crisis deepened (Torres Filho and Macahyba 2012).

Along with the high liquidity preference of the companies, the state-owned banks also played an important role in managing the impact of the international crisis. As can be seen in Figure 5 (following page), from the supply point of view the rapid growth of the credit market from 2004 to 2008 was led by local private banks. They were sufficiently liquid and capitalized to match the demand. The state-owned banks, meanwhile, lagged behind; they were financially healthy but too slow in introducing new financial products to compete with the private sector.

Figure 5: Outstanding Bank Loans by Ownership of Commercial Banks (in % of GDP)



Source: Banco Central do Brasil (2014b). Prepared by the authors.

After Lehman Brothers' bankruptcy, the situation changed. Private banks became more cautious and decided to curb the rate of expansion of their loans. Actually, the rate of growth of non-earmarked credit fell from 46.5% per annum in October 2008 to just 1.0% at the end of 2009 (Banco Central 2014b). In the beginning, this was led by uncertainty related to the derivative and credit operations of some large export companies.

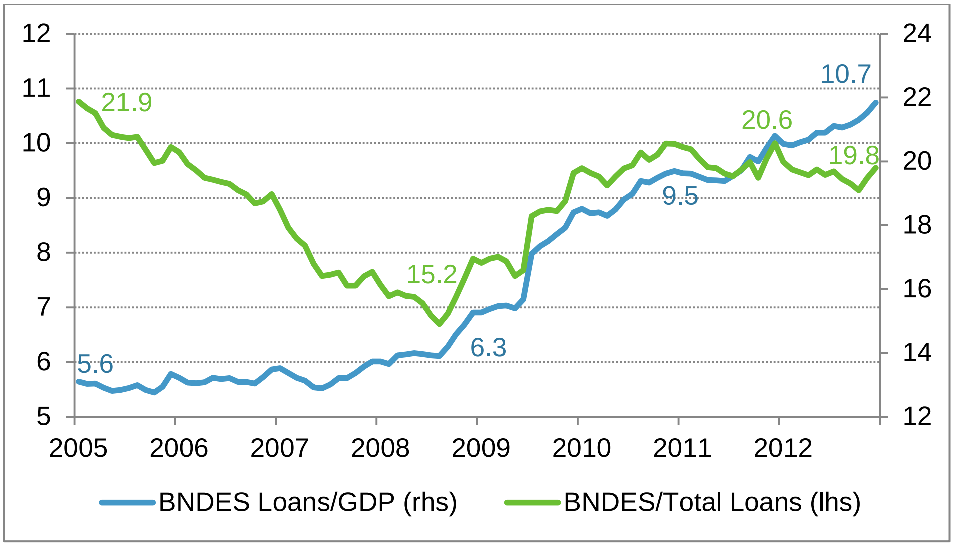
Households were also affected. Banks limited new loans for the acquisition of durable consumer goods, increasing down payments and cutting the length of the operations. As a consequence, the demand for automobiles, for example, collapsed by the end of 2008. In order to avoid a recession in the industrial sector and a massive loss of jobs, the government decided to step in and Banco do Brasil, a state-owned bank, expanded its loans to compensate for the retreat of its private competitor. At the same time, BNDES increased its disbursements, guaranteeing the flow of funds to long-term projects. These measures helped in stabilizing the level of domestic demand in the industrial sector, which was already suffering from a severe contraction of exports. As a consequence, private banks lost to state-owned competitors most of the market share they had won after 2004.

BNDES took a leading role in the growth of the corporate credit market after the Lehman shock. Long-term bank lending to companies in local currency has always been dominated by the development bank. According to Torres and Macahyba (2012), in

2009 the development bank accounted for more than two-thirds of all loans over 5 years in Brazil. In December 2012, its market share reached 20% of total bank loans (Figure 6 below).

This participation, however, had not been stable over time. For example, BNDES's share in the total credit fell sharply between late 2004 and mid-2008, a period of rapid growth in the credit market. It dropped from 21.9% at the beginning of 2005 to 15.2% at the end of the first half of 2008. BNDES's loss of market share was not due to competitive pressure from other banks. It was mainly a consequence of the slower pace of demand to finance productive investments while household and housing credit were booming. The funds that are managed by the development bank are earmarked for the acquisition or export of machinery and equipment for domestic production, for the construction of new plants, or for infrastructure works. Thus, the development bank didn't take part in the boom in household and housing credit.

Figure 6: BNDES Loans to Total Loans and to GDP (in %)

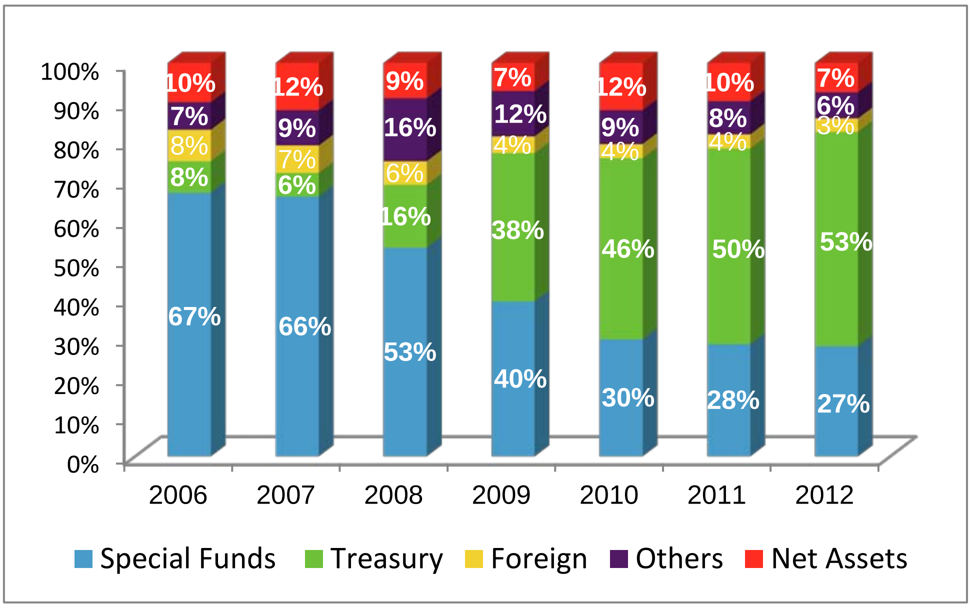


Source: Banco Central do Brasil (2014b). Prepared by the authors.

Another factor that affected the growth of credit from BNDES in recent years was its role in the countercyclical policies of the government after the crisis of 2008. BNDES helped to sustain the supply of funds for investment, offsetting the credit crunch from the domestic private banks and the international market. As can be seen in Figure 6, the participation of BNDES in the total bank credit increased rapidly, from 14.9% in August 2008 to 20.3% in the same month of 2011. In this period, the total of its loans to GDP jumped from 6.1% to almost 9.3%.

As can be seen in Figure 7 (following page), parafiscal funds (PF), such as PIS–Pasep and the Workers' Assistance Fund (FAT), were until 2006 the main sources of funds for BNDES. Both supply loans to the development bank on a concessional basis; very long periods and with interest rates lower than the Central Bank rate (Selic), which sets the term structure of the rates in the voluntary market. New funds for PFs are supplied by compulsory contributions from corporations, which are very stable. Parafiscal funds accounted for 66% of the liabilities of BNDES until 2007.

Figure 7: BNDES's Main Sources of Funds (in %)



Source: BNDES (2014). Prepared by the authors.

In the last quarter of 2008, BNDES needed large amounts of money in a very short period of time in order to be able to play a relevant countercyclical role in the credit market. Due to the inelasticity of supply of PFs, the National Treasury had to step in and issue large volumes of debt in order to give massive new loans to the development bank.

BNDES could have issued bonds to be sold to private investors, but this market was not large and deep enough to supply the large amounts needed at the appropriate time. The Central Bank could have been a possible buyer for those bonds, but that would have had a negative impact on monetary policy and in the expectations of the financial market. The public debt was the only source of finance that, after the 2008 crisis, was large and deep enough to supply the large amount of money needed by the development bank.[4] Due to this strategy, as early as 2010 the National Treasury became BNDES's main supplier of funds, replacing parafiscal funds. From 2007 to 2010, loans from the federal government increased from 6% to 46% of the total sources of the bank. In 2012, they reached 53%. In the meantime, the share of PFs decreased to 28%.[5]

[4] Another possible way to finance BNDES needs in 2008 was to increase taxation or compulsory funding, but those measures would have had a negative impact on the economy

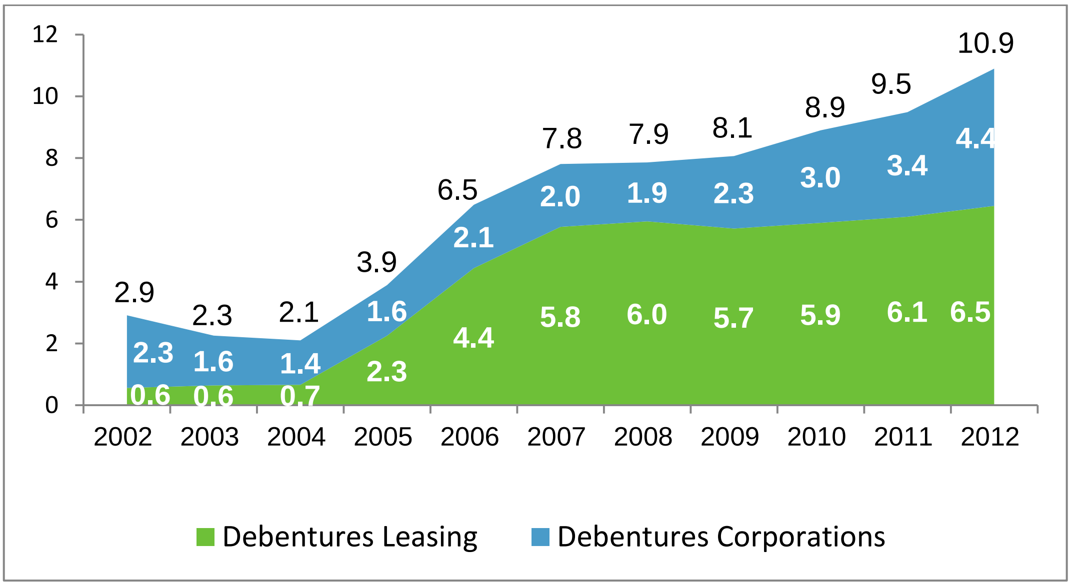
[5] Other sources of funds for BNDES have always accounted for a relatively small part of its budget. External funds have supplied less than 10% of the total funding. Most of these loans are very stable and are lent by multilateral agencies or export credit agencies. In 2012, foreign loans had dropped to 3% of

The decision to fund BNDES by means of loans from the Treasury was a response to structural limitations of the private bond market. In 2008, the public debt market was large and deep enough to provide the National Treasury huge amounts of money in a short period of time. On the other hand, the private bond market was still incipient and insufficiently deep to absorb large emissions, such as would be needed by BNDES after 2008.

As the development bank is 100% state-owned, there was no legal impediment to direct loans from the Treasury. This mechanism had already existed since the 1970s. The difference was that it was not used on a regular basis and the amounts of the loans involved were much smaller in the past.

The private bond market is still too small to be an important supplier of the long-term financing needs of Brazil. Despite fast growth after 2004, its size compared with GDP was 10.9% in 2012. As can be seen in Figure 8, until 2008 most of these bonds were issued by banks, by means of their leasing subsidiaries.[6] This was a way for banks to avoid paying the fee to the Credit Guarantee Fund and making compulsory deposits at the Central Bank. Since 2009, this arbitrage has no longer been relevant. Banks were required to hold compulsory deposits with the Central Bank for the repurchase of corporate bonds issued by leasing companies, while issuances of long-term Financial Notes by banks were exempted.

Figure 8: Volume of Corporate Bonds Outstanding (in % of GDP)



Source: ANBIMA. Prepared by the authors.

the total liabilities. The same applies to bonds (corporate bonds) in the local market. In this case, participation is even lower.

[6] Under Brazilian law, banks are not entitled to issue corporate bonds. They can, however, issue Financial Notes, which are a similar financial instrument under regulation of the Central Bank.

Therefore, from 2008 onwards, the expansion of the market was driven by non-financial corporations. The stock of those “corporate bonds” increased from 1.9% in 2008 to 4.4% of the GDP in 2012. However, this expansion was again largely driven by tax arbitrage. While bank loans have to pay financial operations tax (IOF), corporate bonds are exempted. This difference makes it less costly to issue corporate bonds for large volumes of credit instead of a bank loan, if the company can access the capital market.

Most of these corporate bonds are issued with a firm guarantee of placement by the bank that is structuring the deal. The corporate bonds are then bought by this same bank as a treasury operation or for placement in the mutual funds that it manages. According to Lemos F. (2013), in August 2013 banks held 79% of all corporate bonds in their portfolios.

Therefore, the Brazilian private bond market has different characteristics from that of other countries. The banks are the main source of demand for these assets, rather than institutional investors such as pension funds and insurance companies. The large presence of banks within the origination, distribution, and acquisition of corporate bonds is the reason why the terms and conditions of those assets resemble those of a bank loan. It also explains why over 90% of the corporate bonds issued between 2005 and 2012 were indexed to the Central Bank basic rate.

In short, the rapid expansion of the debenture market from 2004 onwards resulted in substantial gains in terms of market scale and infrastructure. However, this process was not followed by a substantial change in the structure of the market. Most of the bonds issued are bank loans that circulate in the capital market in order to reduce the taxation involved in explicit bank loans.

3. Changes in the Financial Architecture and Organizational Structure

The changes in the institutional framework in the financial market after 1994 focused on strengthening the role of the regulatory agencies and on the coordination among them. The example of the Central Bank is very illustrative. The same law that created the new currency – the real – also changed the composition of the National Monetary Council (CMN). Until June 1994, the CMN had twenty members, with seven of them representatives of the private sector. Since then, it has shrunk to three members; the President of the Central Bank, the Minister of Finance, and the Minister of Planning.

Between July 1994 and December 1995, the CMN enacted 154 resolutions that changed the landscape of the financial market. The creation of the Money and Credit Council (COMOC) and the Committee of the Surveillance and Regulation of Financial Markets, Capital Markets, Insurance, Pension Plans and Capitalization (COREMEC) had the objective of harmonizing the actions of the Ministry of Finance, the Central Bank, and the National Treasury. It also aimed to set common guidelines for those responsible for the regulation and supervision of major financial market participants – financial institutions, issuers of securities, portfolio managers, pension funds, and insurance companies.

Interviewees confirmed that stabilization made evident the serious distortions during the period of high inflation. They also highlighted that it was clear to decision makers that it was important to follow international standards of good management and public administration. The World Bank, IMF, BIS, and IOSCO, along with other international institutions, were important in helping to formulate the general principles, but also had an important role in financing the training of Brazilian governmental officials, who would later be the protagonists of the reform processes. This resulted in major improvements in the legal and regulatory framework in the case of public debt management, as well as shaping the market infrastructure and the organizational structure of the public sector. Particularly important was the clear definition of responsibilities between fiscal and monetary policies' management.

Against this background, the next section describes the two major transformations that helped to build the modern architecture and organizational structure of the Brazilian financial market: i) the restructuring of the banking system, in its various dimensions; and ii) the process of change in the profile of the federal public debt, which led the way to the elimination of foreign-currency-indexed securities and the reduction of the participation of liabilities linked to the Selic rate.

3.1 An Overall View and Chronology of the Bank System Reform

The building of the modern architecture of the Brazilian financial system began in tandem with the Real Plan. The Real was first introduced in February 1994, as a unit of account, under the name of *Unidade Real de Valor* (URV; Real Value Unit) and became full money – the Real – five months later in July.

At that time, relaxation of capital controls over outflows as well as inflows had already started, along with the final stages of the renegotiation of the external debt. According to Goldfajn (2005), the liberalization process occurred without major changes in the overall legislation. Each new liberalizing rule was inserted at the margin of the existing legal framework.

The first step of the financial regulatory reform was the accession of Brazil to the Basel Accord. According to this new regulation, banks would be required to maintain a relation between their Net Worth and Total Assets weighted by risk factors of at least 8%, identical with that recommended by the Bank of International Settlements (BIS). In November 1997 this minimum was changed to 11%.

At the same time, the minimum capital threshold for the functioning of all institutions authorized to operate by the Central Bank of Brazil was raised This second measure meant an increase of over 60% of the minimum capital required for opening or operating a bank in Brazil. For investment banks, it was 37%. Because of this requirement, many small banks voluntarily closed down their operations or changed their business activities and some non-bank institutions left the market.

The second step was to restructure the banking system as many banks were negatively affected by the loss of floating gains related to inflation. Those revenue streams accounted on average for nearly 40% of the revenues of these institutions in the first four years of the 1990s. Table 1 provides evidence of the close correlation between the performance of financial institutions and the evolution of price levels in the first half of the 1990s.

Table 1: The Financial Sector in the National Accounts (1990-1995)

Participation of Financial Institutions (% GDP)						
Year	1990	1991	1992	1993	1994	1995
Banking Institutions	11.4	8.77	10.11	12.54	10.43	6.24
Other Institutions	1.38	1.76	2.02	3.07	1.94	0.7
Total	12.78	10.53	12.13	15.61	12.37	6.94
Floating Revenues	4.00	3.90	4.00	4.20	2.00	0.00
Implicit Deflator of GDP (%)	2,596	421	988	2,087	2,312	75

Sources: ANDIMA/IBGE (1997). Prepared by the authors.

Thus, while in 1993 the participation of financial institutions in the GDP reached 15.6%, two years later this percentage had dropped to 6.9%. A significant part of this contraction can be explained by the elimination of inflationary revenue.

In short, after inflation came under control, it was clear that the financial system was too big for the new size of the market. Therefore, the main legacy of monetary stability was to expose the dysfunctionality of the existing institutional arrangement and to create the conditions for the authorities to establish reform, the implementation of which would have been unfeasible in a context of uncontrolled inflation.

In this scenario, the Central Bank created two different regulations to deal with the banks under stress: PROER,[7] which focused on private banks and PROES,[8] which aimed to deal with the banks owned by local state governments. Both had an extremely important role in preventing bank runs or systemic crises caused by the imbalances of financial institutions of various sizes.

PROER consisted of a series of initiatives to promote administrative, operational, and corporate restructuring of private institutions that were financially fragile. Troubled institutions were split into two: "good banks", consisting of assets and liabilities of good quality, and "bad banks", which held assets of dubious quality and liabilities established with the Central Bank, employees, the public sector in general, etc.

The control of the good banks was transferred to healthy institutions. The bad banks were liquidated by the Central Bank and a trustee appointed to manage the mismatch between the liabilities and the assets of the liquidated part. The shareholders and board members lost their assets and were banned from having any role in the financial market.

Upon acquisition, the government fixed a "toll" that was used to repay the public costs related to the restructuring process. In all situations, the intervention of the Central Bank had the main objective of protecting the depositors and safeguarding the payment system, avoiding contagion to other healthy institutions leading to the stoppage of the functioning of the financial system. Foreign banks were allowed to buy some of the "good banks"; for instance, Banco Santander from Spain and HSBC from the United Kingdom took this opportunity to enter the Brazilian market.

PROES had the same goals as PROER. Its aim was to protect the depositors of banks owned by sub-national governments and to avoid systemic crisis or the collapse of payment systems. The main difference between them was that PROES was also part of a broader initiative to reorganize the accounts of sub-national governments and their financial relations with federal government, particularly the Central Bank. Some banks were already in a fragile situation before the Real Plan as a consequence of political interference by state governors in their administration. According to Maia (1999), PROES also had the political target of reducing the role of state governments in the banking system, as "a major problem in Brazil had been the extraction by these governments of credit from their "own" banks, thus undermining the independence of credit assessment".

Two of the federal-owned banks, Banco do Brasil and CEF, also had to be rescued by the federal government after the Real Plan.[9] However, most of the problems in the

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[7] PROER - Programa de Estímulo à Reestruturação e ao Fortalecimento do Sistema Financeiro Nacional

[8] PROES - Programa de Incentivo à Redução da Presença do Estado na Atividade Bancária

[9] BNDES was in a healthier financial situation and didn't have to be rescued by the Treasury.

books of those two banks were related to losses due to financial operations under federal earmarked credit programs in agriculture and housing. As compensation for their losses, these banks were capitalized by the Treasury (Vidotto 2005).

The same kind of adjustment happened among non-bank institutions. They were heavily dependent on the intermediation of public securities. To the extent that the spreads of these operations were becoming smaller, a significant number of brokers and dealers had to close their doors. In 2004, almost half of the institutions existing in 1994 had disappeared (Table 2).

Table 2: Number of Financial Institutions in Operation after the Real Plan

Years	1994	1995	1996	1997	1998	1999	2000
Commercial Banks	36	37	40	38	30	24	26
Multiple Banks	210	205	191	179	173	170	164
Brokers	280	271	255	237	228	194	192
Dealers	367	323	281	235	207	186	169
Total	893	836	767	689	638	574	551

Source: Banco Central do Brasil. Prepared by the authors.

To complete the new regulatory framework of the financial system, two other measures were also taken in order to isolate the Central Bank from liquidity problems or failure of financial institutions. The first one was the creation of the Deposit Insurance Fund (FGC; Fundo Garantidor de Créditos) in 1995 as a private organization. The FGC receives 0.3% per annum from all insured deposits and guaranties any balance up to R$20.000. The Fund is managed by the financial institutions and controlled by the large banks, which are the main contributors. The second measure was to transfer responsibility for the payment system from the Central Bank to the commercial banks.

Before the new Brazilian payment system, SPB, started operating in 2002, institutions registered throughout the day thousands of transfers of resources and payments from their own portfolio or on behalf of their clients. The settlement of these transactions, however, was completed only at the end of the day by means of transferring the balances held by banks in the reserve accounts at the Central Bank.

If an institution did not have the resources to cover all its transactions, the Central Bank could provide funds, taking good assets as collateral (rediscount window), such as federal securities. The other alternative was to liquidate the defaulting institution and reprocess all its transactions. Thus, the occurrence of a payment failure of a large institution could possibly trigger a chain of defaults in other institutions resulting from the reversion of thousands of transactions directly or indirectly related to the defaulting institution.

In the situations in which an institution was in fact insolvent, the Central Bank, in practice, renegotiated with the counterparties all the operations that had been traded throughout the day in order to minimize the size of the deficit in the banking book and at the same time to avoid the occurrence of a systemic crisis. Ultimately, the Central Bank ensured the course of operations, assuming the burden of any remaining losses after the results of the intervention process.

The introduction of the new SPB aimed to eliminate this risk, transferring it to the market participants, i.e. the financial institutions themselves and the entities responsible for providing payments and settlement services. Furthermore, the new framework would enable the Brazilian financial system to approach international best practices, particularly the recommendations developed by the Bank of International Settlements (BIS) after the crisis of 1987.

At that time, it became clear to the international regulators that the process of devaluation of asset prices in the crisis would reach a larger number of agents only as a result of the inadequacy of payment systems. The response of central banks was the creation of the CPSS (Committee on Payment and Settlement Systems) in the BIS structure. Since then, the Committee has produced several studies. Many of them influenced decisively the redesign of the payment system in Brazil (BIS and CPSS, 2001a and 2001b).

As mentioned, the main objective of the new SPB was to withdraw the settlement risk from the Central Bank. The reform adopted the concept of finality, i.e. the rule that after their registration on a system pre-certified by the Central Bank, the payment orders are irrevocable, whether related to the liquidation of a financial transaction or just a transfer of resources between systems or institutions.

Another cornerstone was the stipulation that operations with financial assets must be held in entities acting as central counterparties, should have risk management systems operating in real-time, and loss-sharing rules in the case of default of a counterparty.

Finally, dozens of rules were issued in order to give legal support to the systems, especially those that have guarantee deposits and margins. In this case, a specific law was issued, which ensures that the resources deposited in chambers and services to guarantee are protected if the participant is subjected to a special regime for extrajudicial recovery or even liquidation.

The new SPB increased the stability of the Brazilian financial system. The problems involving the derivative market in 2008/2009 were the first stress test for the new infrastructure.

3.2 Restructuring the Treasury Bonds Market

As a response to the impact of the external crises after the Real Plan - Asian (1997), Russian (1998), and Argentine (2001) – the managers of public debt had to shorten the emissions and increase the supply of bonds indexed to the Selic and exchange rates.

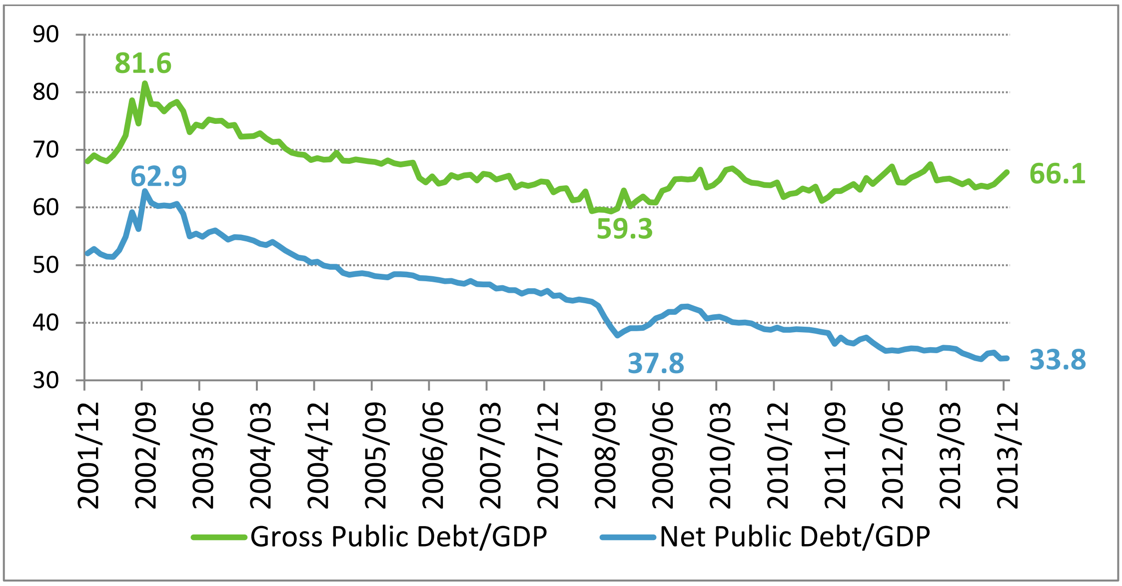
This set of shocks caused a delay in the implementation of the Programme for Improving Debt Management, which the Central Bank and the National Treasury had announced in November 1999. Among its "21 steps" it included goals such as decreasing the number of maturities, creating fixed issuing dates, increasing the fixed share, and making some changes in registering and trading operating procedures, among other innovations.

The programme also introduced a set of actions to increase transparency in order to give predictability to the public debt trends, following the international recommendations suggesting the existence of a close relationship between transparency and liquidity in the debt markets (Knight, 2006). In this area, the Treasury started to disclose a schedule of emissions for each month and created a monthly publication with information on liquidity, prices, volumes, etc. These initiatives were essential to public bond dealers because they increased the predictability of short-term debt tendencies.

Many of the 21 measures announced in 1999 were put into practice throughout the 2000s. Their main result is the existence of a long-term structure of the interest rate for government bonds, up to 8 years of duration for nominal bonds and up to 38 years for inflation-indexed bonds.

As a consequence, federal domestic debt experienced an intense process of transformation in the 2000s, as evidenced by its reduction compared with GDP. Between September 2002 and December 2011, gross government debt shrank from 81.2% to 63.6%, while the net debt fell from 62.9% to 36.7% (Figure 9). The widening gap between these two indicators is mainly due to the large loans from the Treasury to BNDES.

Figure 9: Public Debt (in % of GDP)



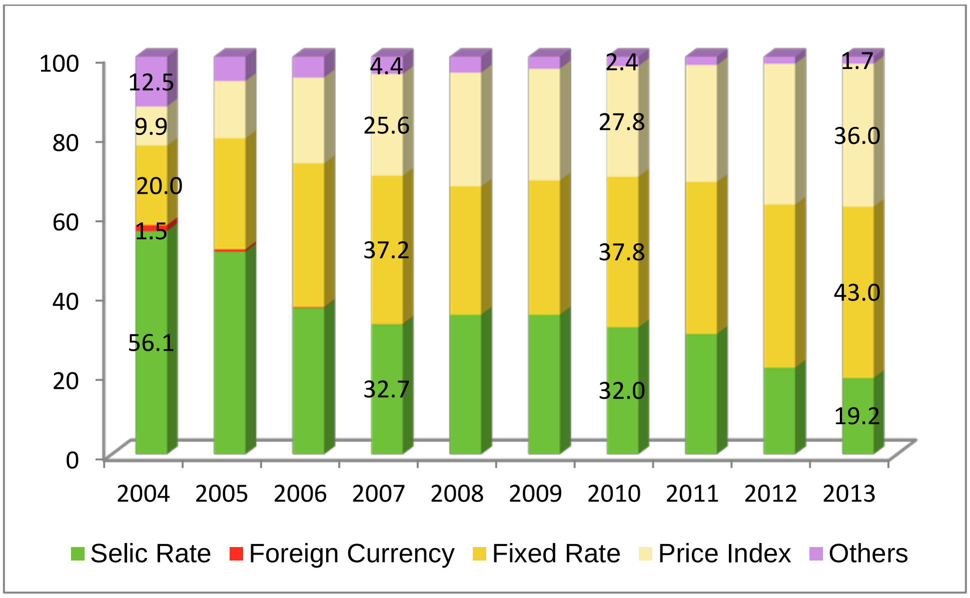
Source: Banco Central do Brasil (2013b). Prepared by the authors.

The reduction of the relation between total public debt and GDP was followed by an improvement in the costs and maturity of their funding. This trend meant the elimination of the debt indexed to the exchange rate. The share of bonds indexed to the Selic rate reduced from 63.9% in 2002 to 30.3% in 2011 (Figure 10, below). Due to this new profile, public debt stock became less sensitive to changes in interest and in exchange rates. This afforded the government more flexibility in managing economic policy in general, and increased the efficiency of monetary policy in particular.

It is worth noting that the interviews with professionals from the National Treasury revealed that the enhancements in the process of managing public debt were preceded by significant changes in the functional organization of the agency as well as in the division of responsibilities between the Central Bank and the National Treasury. In this respect, the new Fiscal Responsibility Law was essential. The law prohibited the issuance of securities by the Central Bank of Brazil.

Authority (repurchase and final operations) began to be made exclusively with National Treasury bonds, integrating the impacts of daily liquidity operations on the global strategy of debt management policies. Another important institutional change occurred in 2005. From that year, the management of the external public debt ceased to be held by the Central Bank and became the responsibility of the Treasury.

Figure 10: Treasury Bonds by Indexation (in % of GDP)



Source: Tesouro Nacional (2014). Prepared by the authors.

As of 2002, the liquidity management operations conducted by the professionals interviewed also emphasized that modernization of the administrative and governance structures was essential to this process, with the creation of three areas with clearly separated tasks: back, middle, and front office. The execution of this process was supported by funds from the World Bank, and involved technical training of the professionals who would lead the change, as well as the exchange of experiences with multilateral agencies (IMF and World Bank 2001; World Bank 2007).

3.3 The Impact of Financial Reform

Important characteristics of the Brazilian banking system are that it is spread out across most of the country, has both relevant public and private agents and local and foreign banks, is tightly regulated, and is highly concentrated. Credit has until recently been scarce, expensive, and short term. Tight regulations plus concentration give little incentive for price competition. As seen in section 2, the banking system is moving away from scarcity, and credit has been growing rapidly as a proportion of GDP. The size of banking credit relative to GDP in Brazil can no longer be considered small.

Macroeconomic factors are a necessary but insufficient condition to explain the recent growth of banking credit. Brazil experienced golden years during the 2004–2007 period, with accelerating growth and international reserves, appreciation of the currency, low inflation, a booming job market, and successive fiscal surpluses. Also relevant is the fact that banking credit has been increasingly allocated to families, not only companies. Loans to households have been resilient since the financial crisis, tripling in size in relation to GDP, from 7.2% of GDP in 2005 to 15.9% in 2013, while credit to corporations increased to 26.8% of GDP in 2013, from 17.9% in 2005 (Figure 2, page 11).

This situation reveals some particularly important lessons. First, demand matters. Ten million formal jobs were created in the 2003–2011 period, bringing new consumers to the market. Second, financial innovation was key. For instance, banks created loans tied to the payroll of public employees (acting, in effect, as a garnish of the salary by financial institutions) keeping bank spreads low. Third, better rules for collateral unlocked residential loans – foreclosure regulations are now more transparent and banks offer more credit as a consequence of improved collateral for property loans. The improved efficiency of the credit system is then a result of better regulation and improved macroeconomic factors, with many families accessing credit for the first time. Fifth, lower interest rates helped to reduce monthly installments.

However, in contrast to the United States, no asset bubble was created, since there are no second mortgages, the rate of indebtedness is not high, and consumers cannot make new loans based on their increasing property value. Additionally, the Brazilian Central Bank imposes one of the highest reserve requirements in the world, which contributes to making credit relatively scarce and expensive. For regular deposits, the rate is 55% (with no remuneration for 43%, while 12% is remunerated through the base interest rate Selic), while for savings accounts it is 20% (but remunerated at a marginal spread over what depositors receive, which is fixed at around 6% per year). Because the required reserves are very high, the Brazilian Central Bank was able to inject liquidity into the system during the financial crisis, first by lowering the requirements for regular deposits, and then by selectively liberating some reserves as long as they were used to make loans. In total, the Central Bank was able to inject U$35 billion into the banking system without resorting to any other costly policy changes.

Barth et al. (2006) present comparative international characteristics of the banking industry, and rank countries regarding certain characteristics. The Brazilian banking industry ranks high in profitability and the amount of non-performing loans, but low in terms of bank assets to GDP and high in market concentration. Particularly relevant is the percentage of loans that are owned by state-owned banks, which is the fourth highest among the 47 countries studied. Table 3, below, shows some important characteristics of the Brazilian banking industry, divided into the role of the Central Bank, regulation and structure, and conduct and performance of the industry, with data updated to 2012. As we can see, most of the banks are universal banks, the market is concentrated, and there are few restrictions in terms of market access, with bank ownership of non-financial firms the only real restriction to bank activities. Banks were still profitable in 2012, but the ROE is much lower than that reported by Barth (2004), who estimated it at over 10%, while in 2012 the figure was closer to 4%. Lower interest rates can explain most of that, since they were over 20% in real terms in 2004, while closer to 4% in 2012.

How can we correlate the characteristics of the banking system, as explored above, with the response to the financial crisis? We know that the Brazilian banking system was resilient enough to withstand the crisis and emerge from it relatively unscathed. It is also true that credit has grown steadily since the crisis. We know that some non-financial companies were severely affected, even more so than financial institutions, during the height of the crisis, with at least two large companies, Sadia and Aracruz, almost facing bankruptcy; both were soon acquired by rivals.

Table 3: Characteristics of the Brazilian Commercial Banking Industry

Role of the Central Bank	Regulation of the Banking Industry	Structure, Conduct, and Performance (2012)
• Single supervisor • Banking supervisory authority • Responsibility for the banking industry, but NOT the securities or insurance industry • Low degree of supervisory independence • Number of professional bank supervisors per institution: 4	• Permitted activities: securities and insurance • Restricted activities: real estate and bank ownership of non-financial firms • Unrestricted activities: non-financial firm ownership of banks	• Most banks universal • 162 commercial banks • Bank assets/GDP: 128% • Government-owned: 33% • Foreign-owned: 15.6% • Five largest banks: 80% • ROA: 0.5% • ROE: 3.8% • Total equity: US$350 bn • Number of banks with losses: 53 • Loans/GDP: 37.0% • Deposits/GDP: 45.5%

Source: Barth et al. (2006) for the left and centre columns, and the Central Bank of Brazil (BCB 2013) for the right hand column, elaborated by the authors.

The global economy is still feeling the effects of the financial crisis that began in 2007. Economies are affected in two main ways, either through financial linkages or through credit and trade channels. Relative to other countries, Brazil was able to navigate through the turmoil without major losses in macroeconomic terms, but many companies posted heavy losses due to hedging and other issues. The purpose of the following section is to understand the institutional mechanisms and policy responses that allowed the country to withstand the major effects of the crisis, and how these affected non-financial companies.

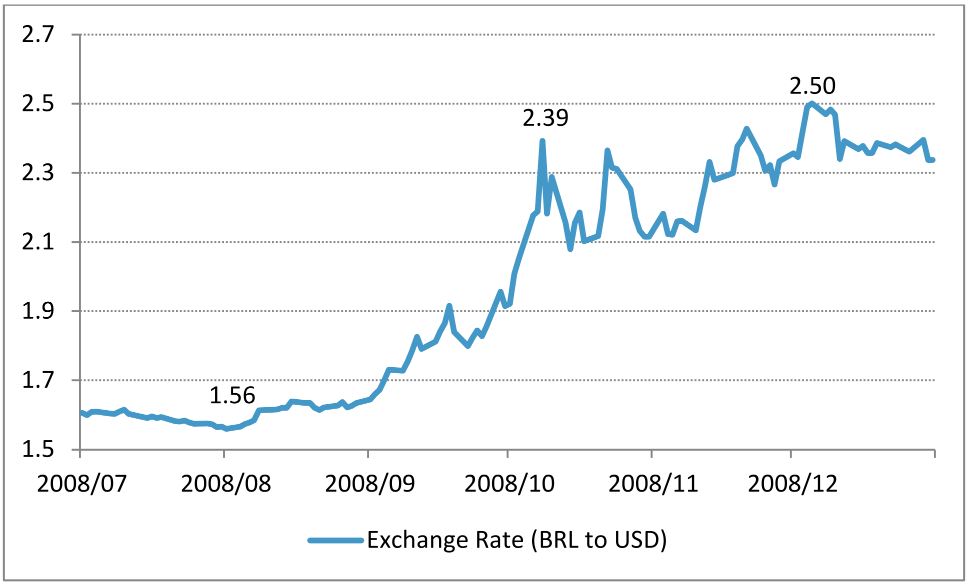
4. The Financial Crisis of 2008 and the Brazilian Response

4.1 The Resilience of the Brazilian Financial System

The best way to determine the chronology of the crisis and its effects on the Brazilian economy is to look at the financial market and economic indicators. Since the former are predictive and the latter responsive, we can see that even though economic activity was picking up in the months before the crisis, there were signs that international markets' upheaval was already signaling problems to the Brazilian economy.

Below we can see the evolution in the exchange rate of the Brazilian currency in 2008. Just before Lehman Brothers' collapse, the real was still hovering around R$1.7 per dollar. The devaluation was quick and lasted until the end of 2008. In subsequent years, the currency gradually fell to around the pre-crisis level, climbing back to more than R$2 per U$1 in 2012. (Figure 11)

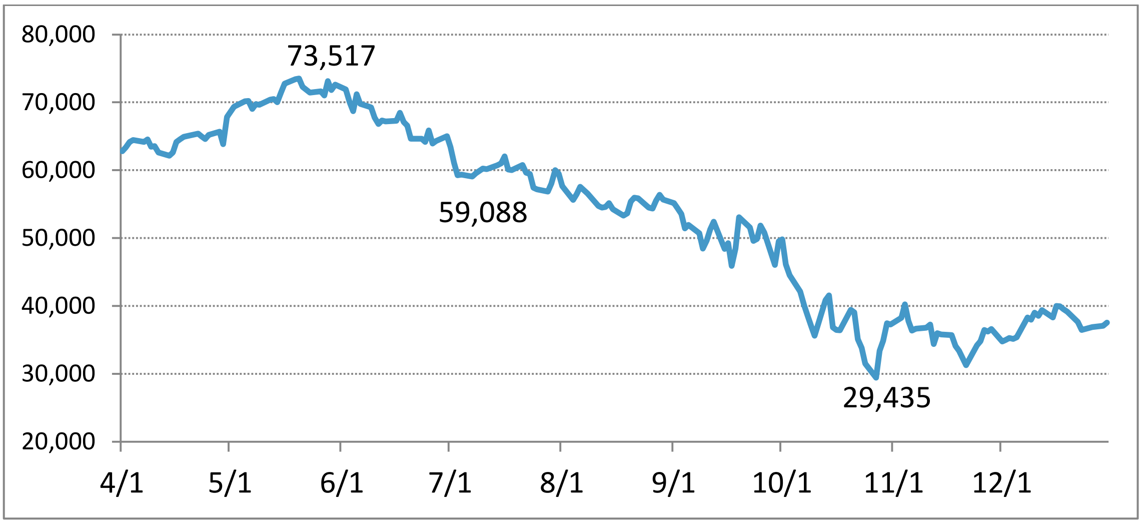
Figure 11: Exchange Rate: Brazilian Reais to US dollar



Source: Banco Central do Brasil (2013b). Prepared by the Authors

The Stock Exchange Market, in contrast to the forex market, showed signs of exhaustion before the events of September 2008. The historical highest level of the BOVESPA Index was reached in June 2008, above 73,000 points. It achieved fewer than 60,000 in July and finished the year with 37,500 points.

Figure 12: BOVESPA Index (IBOVESPA) in 2008



Source: BOVESPA

The crisis has devastated the financial systems of many countries around the world, with bailouts and credit freezes that are still being felt more than half a decade later. Even though the stock market fell by almost 50%, and capital fled the country, the Brazilian banking system, by comparison, has experienced very little distress from the crisis. The credit squeeze was short-lived and credit grew steadily in the 2008–2013 period. The main characteristics of the financial system that helped the Brazilian financial system withstand the crisis were:

- Concentration
- High capital requirements
- Lack of internationalization
- Low credit/GDP ratio
- Tight regulation
- Rapid policy response
- The use of state-owned banks

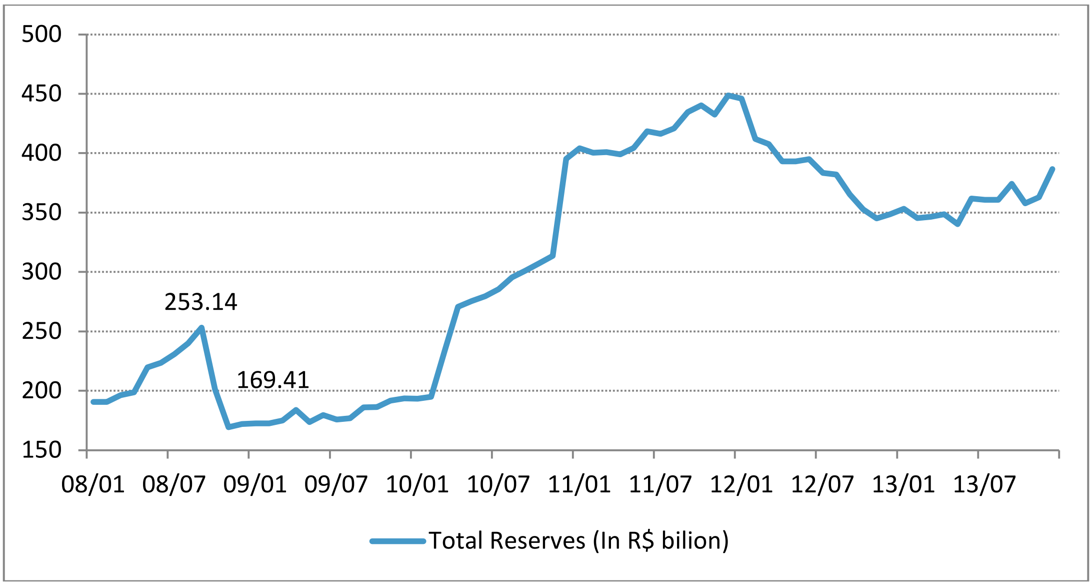
There are four main characteristics of the financial crisis of 2008 and previous crises (Claessens et al. 2010): unsustainable asset price increases; excessive debt burdens due to a credit boom; a build-up of marginal loans and systemic risk; and failure of regulation and supervision. None of these four necessary conditions were present in the Brazilian economy, and that is the main reason that the country was uncontaminated through financial linkages.

The main cornerstone of the Central Bank regulation after the PROER and PROES programmes in the 1990s has been excessive preoccupation with the stability of financial institutions. Even the Brazilian Central Bank itself admits that it is a conservative institution regarding the supervision of the financial system (BCB 2013a: 5). In fact, the reserve requirements in Brazil are among the highest in the world, with a nominal rate of 45%, while in the US the highest nominal rate is 10%. Moreover, since the banking system is concentrated and has a low degree of internationalization, it was not exposed to toxic asset trades; banks' balance sheets are tightly monitored by the Brazilian Central Bank. Furthermore, the banking system was not exposed to mortgage risks, since real estate credit accounts for a very low percentage of the total credit in Brazil (in 2013 it reached its historical maximum of 7.5% of GDP). Because of its insularity and these characteristics, Brazilian banks were able to avoid the direct impact of the crisis.

However, Brazil experienced indirect effects through the credit squeeze and the change in risk perception prevalent in the international markets following the bankruptcy of Lehman Brothers. This was particularly relevant to medium and large-sized companies, but it also affected financial firms.

Given the large size of the reserve requirements, the Central Bank was able to increase liquidity swiftly by lowering the reserve requirements, which peaked at 75% in 1999 and were 50% in 2008. Figure 13 shows the evolution of the total reserve requirements on the balance sheet of the Central Bank from 2008 to 2013.

Figure 13: Reserve Requirements held by the Brazilian Central Bank (R$ billion)



Source: Banco Central do Brasil (2013b). Prepared by the authors

We can see two movements in the graph. One is the policy response of the Central Bank days after the collapse of Lehman Brothers. The instant lowering of reserve requirements injected more than R$70 billion into the system (more than U$35 billion at the nominal exchange rate at the time). After 2010, the credit in the system increased rapidly, as did the total reserves held by the Brazilian Central Bank.

The Central Bank enacted the following changes in response to the deepening of the crisis following Lehman Brothers' collapse (Sobreira and de Paula 2010): lowering the reserve ratio of demand deposits from 50% to 42%; decreasing the reserve ratio of time deposits from 100% to 30%; and decreasing (40%) the reserve ratio of time deposits of the largest banks that acquired the credit operations of the smallest banks.

These changes were made in two steps. First, the Central Bank lowered the reserve requirements of demand and time deposits. However, the liquidity increase was not enough for the whole system, because the large banks were hoarding resources. The Brazilian Central Bank then changed the condition on which it lowered the required reserves, and related additional liquidity to asset purchases and loans to small banks. This prevented some of the capital build-up and problems for smaller banks, and allowed a quicker response in economic activity. There was a brief period in which credit in the local currency froze, but the main effect on the Brazilian financial system was produced by a liquidity crunch in the foreign-exchange market.

There is very little doubt that one of the main mechanisms that allowed the crisis to spread from the mortgage market in the US to its banking system and then to the rest of the world was the vulnerable position (in terms of capitalization) of the major banks in the US and Europe. We agree with the analysis of *The Economist*: "One of the most remarkable features of the financial crisis of 2008 was the razor-thin capitalization of many of the world's largest banks. In theory, the banking system had entered the crisis with comfortably thick cushions. New rules known as Basel 2 had insisted that banks have minimum capital ratios of 8%. When the crunch came, however, the actual loss-absorbing capital available to many big banks was less than 2% of their total assets. In other words, they could run up losses of no more than $2 for every $100 invested without going bust, instead of the $8 the regulators had presumed" (*The Economist* 2014).

Given the structure of the Brazilian financial system, banks were able to withstand a credit shock without major losses, even improving the banking depth in later years (De La Torre, Feyen, and Ize 2013). Even though the Brazilian financial system was in the process of convergence with the rest of the world (Bruno, De Bonis, and Silvestrini 2012), the Central Bank always maintained tighter requirements than elsewhere.

There are three main areas in which the structure of the Brazilian banking industry helped withstand the crisis:

1 – Previous experiences and the building of institutions, especially after the PROER

2 – The choice of tight regulation over market efficiency

3 – The quick and intelligent response of the Central Bank

We covered the institutional development of the Brazilian financial system earlier, but it is important to reiterate that without a solid institutional framework the relevance of the events surrounding the financial crisis might have exerted a much deeper impact on the Brazilian economy. More importantly, after PROER and PROES, the Brazilian regulators made the conscious choice of regulation over efficiency. In normal times, this may block credit growth, but the stability of the system passed the test of the financial crisis without major hurdles. Chang et al. (2008) showed that market concentration lowers the probability of non-performing loans in Brazil, another indicator that the results of the tight regulation, in this case market concentration, helped in the time of crisis.

4.2 The Case of Small Banks

Even though the Brazilian banking system as a whole was able to withstand the crisis without turning a credit crunch into a full-blown financial crisis, the freezing of international markets and the flight to safety had a major impact on smaller banks. In the case of the Brazilian banking system, the flight to safety was capital moving from small to large institutions. Since the market is concentrated, market agents consider the large banks as much more solid than the rest of the system, which means that depositors and investors chose to flee from small banks towards the safety of large institutions. They are considered “too big to fail”. Small banks are relevant to niche markets, and this flight to safety could turn into a systemic crisis if left unchecked.

During the period prior to the crisis, smaller banks, much like those in other countries, took advantage of the increased liquidity in international markets to increase their capital base and pursue new opportunities. In particular, 2007 saw eleven small and medium-sized banks raising R$6.2 billion (almost U$4 billion at the nominal exchange rate of the time) through IPOs and secondary offers. Moreover, smaller banks are less liquid because they attract fewer demand deposits (5% to 8% compared with 22% in large banks), and were thus more vulnerable to changes in liquidity (Mesquita and Torós 2010). In normal times, big banks provide liquidity to small banks, by means of loans or acquisition of part of their portfolios. During the crisis, the big banks stopped rolling their loans to smaller banks.

At the peak of the crisis, small and medium-sized banks were forced to access special discount windows made available to financial institutions by the Central Bank; while in the week prior to Lehman Brothers’ collapse only 3 banks accessed these lines, the number jumped to 41 in the week after it (Mesquita and Torós 2010). The Central Bank acted swiftly to solve the small bank issue. Coupled with automatic credit lines, it acted to free the reserve requirements for large banks, conditional on them providing loans to small banks. This helped unfreeze the interbank lending market, which aided the diffusion of any direct effects of the financial crisis on the banking system in Brazil.

Given the lack of a direct connection between smaller banks and international markets, and the lack of trading in toxic assets, no bank in Brazil failed and had to be rescued because of the crisis. Short-term liquidity measures had to be provided, and the credit squeeze lowered profits and changed the business models of many banks, but there was nothing close to a systemic crisis in the Brazilian banking sector.

4.3 The Impact of the Foreign-Exchange Credit Crunch

Financial and non-financial companies experienced a credit crunch in foreign exchange. The liquidity freeze in international markets led to capital outflows, a rapid depreciation in the exchange rate, a decline in the supply of credit products for exporters (export secured loans, for instance), and lower rates of rolling debts in foreign currency. Export secured loans declined by 30%, while debts in a foreign currency could no longer be rolled over; the rollover rate was 167% in January 2008, but only 22% in November 2008 (Mesquita and Torós 2010), showing that companies were raising debt in early 2008 but repaying most of the outstanding debt later in the year, after the crisis hit.

There are two significant consequences of the credit squeeze and the change in the international scenario for non-financial companies: liquidity issues and huge problems with derivatives trading.

The first case is straightforward: companies with negative short-term cash flows and negative working capital requirements suddenly saw their short-term borrowing capacity vanish. One such example was Petrobras, one of the 50 largest public companies in the world. The company experienced problems in financing its short-term needs and had to rely on extemporaneous lines of credit from state-owned banks. In November 2008, Caixa Econômica Federal[10] provided an emergency loan of R$2.02 billion (over U$900 million at the exchange rate of the time) to Petrobras.[11] Some months later, it was BNDES's turn to provide the company with a R$25 billion long-term loan, with financial support of the National Treasury.

It was in this context that Brazilian state-owned banks, especially BNDES, acted to prevent the collapse of credit to non-financial companies. Another important government action following the crisis was the increased activity of state-owned banks. BNDES, in particular, rapidly increased its loan portfolio. In fact, the bank's disbursements doubled from September 2008 to December 2010, from roughly R$70 billion in 2008 to R$140 billion in 2010 (Puga and Borça Jr 2011). The bank had a direct role in the management of some of the effects of the crisis on the financial system and its role as a credit provider in the subsequent periods cannot be understated.

There was a marked change in liquidity for non-financial companies after the crisis. The 2005–2008 period was one of increased international liquidity for Brazilian companies, helped by the golden years of 2004–2007 and the investment grade rating by all the major rating agencies. It was the first time in decades that Brazilian companies could really access international markets and the credit-to-GDP ratio began climbing steadily. Credit was growing sharply. In September 2008, credit to individuals was growing at 17.9% on an annual basis, while for companies the figure was 45% (Almeida 2011).

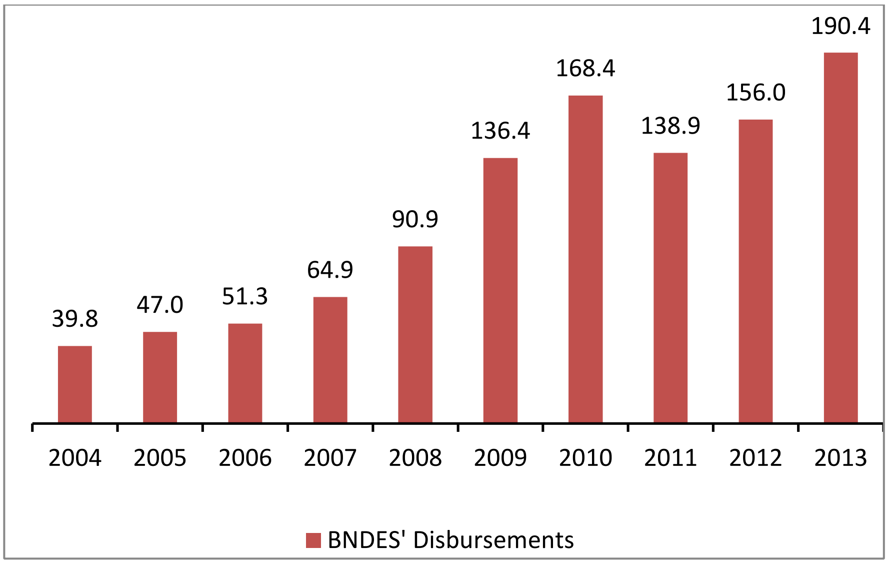
[10] Caixa Econômica Federal (CEF) leads the housing loans market in Brazil and is one of the three large federal state owned banks, along with Banco do Brasil and BNDES.

[11] Folha de São Paulo, 28 November 2008. http://www1.folha.uol.com.br/fsp/dinheiro/fi2811200806.htm.

This favourable scenario was one of the determinants of the high growth of the golden years, and the country was poised to achieve 7% growth in 2008, just before the height of the crisis.

The Brazilian Government decided to use BNDES as a buffer for the corporate credit crunch resulting from the crisis. To try to re-establish the financing conditions for economic activity, BNDES started to expand its loan portfolio. The Brazilian Treasury provided funds for this credit expansion. Figure 7 (page 16) shows the composition of BNDES funding before and after the crisis and Figure 14 shows the evolution of disbursements by BNDES after 2004. As we can see, it expands almost fourfold in the 2006–2013 period.

Figure 14: BNDES Disbursements 2004-2013 (In R$ billion)



Source: BNDES (2014b). Prepared by the authors

The funding rises from an average of 6% of GDP in the 2000–2007 period to almost 10.7% by the end of 2012 (Figure 6). We can safely argue that BNDES played an important role as part of a countercyclical response to the credit squeeze following the crisis. The government also used a series of interventions in the foreign-exchange market to provide liquidity for market agents. These interventions included foreign-exchange swaps, the direct sale of foreign-currency reserves, and even a special swap contract with the Federal Reserve. This allowed most market agents to enjoy access to foreign exchange, even in a situation in which the local currency devalued by over 50% in 60 days.

We now have a situation in which large banks were barely affected, some specific policies had to be put forward for small banks, agents had access to foreign currency, and BNDES and other state-owned agents stepped up to provide short- and long-term credit to companies. However, another important issue affected companies: the rapid devaluation of the real exposed companies that had leveraged positions in derivatives, mostly exporting companies.

4.4 Derivatives and Institutional Changes

Many non-financial companies around the world posted heavy losses in derivatives trading during the financial crisis that started in 2007. Dodd (2009) estimates that for 12 countries, including Poland and economies of Asia and Latin America, derivatives trading possibly affected 50,000 firms, with losses totaling roughly $530 billion. Kamil, Sutton, and Walker (2009) present a small subsample of companies in Mexico (6 companies) with total losses of US$4.7 billion (with an average loss of 23% of the total assets) and 3 companies in Brazil with total losses of US$5.5 billion (and an average loss of 46% of the total assets).

In most countries, there is no duty to report risk management strategies, and most companies with losses are not listed companies. In addition, many losses are rolled over a number of periods or negotiated with banks, or the information is never made public.

Zeidan (2014) analyzed the relationship between corporate governance and derivative losses. His sample contained companies with losses that began in 2008 for Indian companies and ended in March 2009 for some Chinese companies. There were 49 companies from 10 different countries with losses that combined to make a total of US$18.9 billion.

There is one simple explanation for these losses: non-financial companies were hedging their financial positions – mainly currency exposure – and hence posted only book losses, with a counterpart gain in revenue from the hedged positions. However, many companies filed for bankruptcy; stocks plunged; some companies sued or were sued by the banks that sold the derivatives contracts; the accounting rules changed (in Brazil, India, and China); and even the Chinese Government's State-owned Assets Supervision and Administration Commission (SASAC) participated in trying to allow Chinese state-owned companies involved in derivatives losses to walk away from contracts with international banks (Reuters 2009). The more plausible explanations are that companies purposefully engaged in speculative positions and/or made mistakes in designing hedging strategies involving derivatives to offset the foreign-exchange exposure.

Zeidan and Rodrigues (2013) analysed the case of Aracruz, one of the companies in the sample of Zeidan (2014) and the largest pulp producer in the world. The authors estimated that before 2008, the company incurred at most U$1.4 billion in hedged positions, in line with the values of its optimal hedge ratio. However, in 2008, the total spiked to U$6.3 billion, and that was for the end-of-year data, after the company realized losses in derivatives trading that impacted on the liabilities. Immediately before the crisis, the "hedging" position of the company was almost U$12 billion, which shows that the company was actually speculating with derivatives.

The situation of derivatives for non-financial companies posed an important question for market regulators. Are some non-financial companies too big to fail? There is anecdotal evidence that in some countries, companies looked for a government bailout. In the case of Brazil, the capital markets alone were not able to provide a solution; in both major cases – Aracruz and Sadia – the companies were acquired by competitors, but with financing coordinated by different institutions. We interviewed senior executives at BNDES to try to understand the institutional response to the losses in non-financial companies. The resulting narrative shows that initially the problems with derivatives and foreign-exchange contracts were not known outside the companies, not even by some of the large shareholders.

Once it became known that the amounts involving counterparty risks concerning not only Sadia and Aracruz but many more companies could be very large, the freezing of the credit market in Brazil ensued. It was at this moment that BNDES's actions proved relevant in providing liquidity to companies. BNDES was assigned by the government as the institution that should coordinate the activities of monitoring and developing responses to the problems of non-financial institutions. At first, BNDES hosted meetings with the affected financial institutions, counterparties to the contracts with non-financial firms. Thousands of companies, from large multinational companies to small retail shops, were offered and purchased exotic derivatives based on foreign exchange (in the case of Aracruz, as Zeidan and Rodrigues (2013) pointed out, the main "culprit" was the Sell Target Forward, a combination of puts and exchange-rate forwards).

In the end, the coordinated response had the purpose of providing liquidity-restructuring contracts to preserve companies that were operationally sound and had an important role in the economy. For instance, Aracruz was the largest and most productive pulp producer in the world, and letting it become bankrupt would disrupt the whole chain of suppliers in the Brazilian economy. However, the implicit bailout of non-financial companies was conducted in a way that punished shareholders first (shares dropped by at least 75% in the case of Aracruz and Sadia) and managers second. There was no sign of cronyism, either for listed or for non-listed companies.

In fact, for the sugar industry, BNDES assigned different banks to cover sets of companies. In the beginning, cooperation was difficult to achieve because of rivalry among the banks and market uncertainties; the rapid devaluation of the Brazilian currency inflated the nominal gains of the banks but increased the probability of default by non-financial companies. As the foreign currency market began to stabilize, the banks became more cooperative. Moreover, any plan for a particular company had to involve new equity of new shareholders and/or new financing by the participating banks. The members of the board were dismissed and some were fined by the Securities Commission (CVM; Comissão de Valores Mobiliários). There was no unconditional bailout.

Final Remarks: The Brazilian Financial System as an Ex-Post Institutional Model

The current architecture and organization of the Brazilian financial system is the result of multiple reforms taken between 1994 and 2002. The financial reforms were regarded as an important component of the institution building efforts towards achieving a low-inflation economy in the long term. They focused on the elimination, once and for all, of the main sources of financial instability of the past as well the integration of the domestic market into the global financial system, providing confidence for foreigners to invest in Brazil.

The necessary conditions for the reforms were: the success of the stabilization plan of 1994 (Plano Real); positive evolution of the political framework that supported the reforms; strengthening of the bureaucratic apparatus of regulatory and supervisory agencies; and the existence of international benchmarks (BIS, IMF, and World Bank).

On the domestic front, reforms were concentrated in three main areas. The first was eliminating the role of sub-national governments in the financial market. As a consequence, these administrations lost control over their banks, which were privatized[12]. Their debts with the financial institutions were bought by the federal government, in exchange for extending maturities and lowering interest rates, but also for limiting the right of those states to issue new debts. They also had to balance their budgets under the new fiscal regime implemented by the Fiscal Responsibility Law, which was enacted in 2000.

The second area was the private financial system. The aim of these reforms was to create a very stable banking system which would have to fulfil its role as main supplier of credit without threatening fiscal and monetary policy. The financial system would also have to be sufficiently robust to adjust to major external shocks. Therefore, all fragile institutions, which were heavily dependent on inflationary revenues, disappeared in a short period of time. The remaining banks had to follow financial standards which were more conservative than those fixed by the international market under the Basel Accord. They also had to provide full information to regulatory agencies on a real-time basis. The introduction of the private payment system in the early 2000s aimed to transfer from the Central Bank to market participants any remaining losses in the bank´s clearing system.

The third initiative was to modernize the public debt market. The goal here was the reduction of the relation between total public debt and GDP, and the improvement of its costs, maturity and profile. The diversification of existing bonds was reduced. Foreign currency indexation was avoided, in order to cut the main link between external and fiscal accounts. Average maturity of the bonds was extended. Liquidity mechanisms were improved. In situations of stress, the Treasury usually creates bonds with longer maturities to provide some relief for long term investors. It also undertook

[12] The local state-owned Banks which remain are small and operate under tight regulation of the Central Bank.

a set of actions to increase transparency in order to give predictability to the public debt trends, following international recommendations suggesting the existence of a close relationship between transparency and liquidity in debt markets.

Foreign direct investment was more than welcome in the capital markets to buy assets denominated in local currency. Nowadays, foreigners own almost 20% of the public debt and are the main investors of treasury bonds of long maturities. As a result, FDI portfolio investment of non-residents has financed most of Brazil's external liabilities since then and helped to increase the international reserves. Those funds are channeled through the domestic financial market and are denominated in local currency (real) Treasury bonds and shares of private companies. This means that when capital accounts are under stress, foreigners share the risk of exchange rate devaluation with Brazilians. At the same time, the contamination of foreign interest rates as well as the exchange rate of the fiscal accounts became rather limited. In this new environment, the state has more room to play an active countercyclical role and help the private sector out of the crisis, without compromising fiscal and monetary balances.

From the domestic point of view, the change in the external front demanded the modernization of capital markets but also the liberalization of capital accounts. According to Goldfajn and Minella (2005),

> "the liberalization was a gradual process of establishing new rules on capital inflows and outflows. The result of the liberalization process was (by 2005): (i) reduction or elimination of taxes on foreign capital financial transactions as well as of minimum maturity requirements on loans; (ii) elimination of quantitative restrictions on investments by nonresidents in financial and capital markets securities either issued domestically or abroad; (iii) permission for residents to issue securities abroad, including debt, without prior approval by the Central Bank; (iv) more freedom for residents to invest in FDI and portfolio abroad; and finally (v) introduction of currency convertibility initially through the mechanism of "international transfers in *reais*," whereby residents could transfer their resources abroad through the use of nonresident accounts".

Therefore, these reforms created a heavily regulated financial market with large entry barriers and concentration in a few banks. Minimum capital and liquidity requirements are set at levels much higher than international standards. The profit margins of these institutions are very high and there is a low incentive for innovation. Interest rates are set at a very high level by the Central Bank, which limits demand for credit by families as well as the development of the private bond market. There is thorough integration of the domestic financial market with the global system on the liability side, but, conversely, this is very limited on the asset side.

The market is open to international institutions. Among the six largest commercial banks, two are owned by foreign banks, two are state-owned and two are controlled by local private investors. The long term loan market is led by state-owned banks, particularly by BNDES, which alone holds 20% of the local loan market, despite being an investment bank only. All three state-owned banks manage large special funds from the government, and the interest rates and maturities of their earmarked credits are set independently from Central Bank monetary policy as well as the average conditions of non-earmarked credit market. This allows the government to have an important role in the origination of credit, which was particularly important as a countercyclical tool after the international crisis of 2008.

Credit assessment for loans is very conservative in private as well as state-owned banks and is closely monitored by the Central Bank. Federal government has an important role in the policy allocation of earmarked credit but not on the decision making process for specific loans.

Financial inclusion and the access of low and middle income families to banking services was not an important issue for the reforms of the 1990s. Until 1994, instability, high inflation and high interest rates were a natural barrier of entry to such families. The credit outstanding for families, including housing, was less than 7% of GDP as late as 2003. There was no political intention to stimulate the access of these families to the credit system until financial stabilization was completed and the market was ready to grow. From that point of view, stability was a pre-condition to financial inclusion.

The majority of the characteristics above are a choice based on trade-offs in terms of building the architecture and organization of financial systems. This series of choices are at the forefront of the discussion about structuring supervisory and regulatory aspects of financial markets (Eichengreen and Dincer 2011). The Brazilian banking system is heavily regulated and driven towards market concentration, with resulting high profit margins and small incentives for price competition and product innovation. The market is inefficient for small depositors, but open and sophisticated for large domestic investors, as well as foreign and institutional investors. The state-owned banks and regulatory action are geared towards government-led capital allocation. The end result is a series of trade-offs, most importantly one that imposes stability and financial repression. The Brazilian financial system is clearly designed to be, above all else, stable. For instance, the market is driven to concentration by the Central Bank, which in turn sees market concentration as decreasing systemic risk.

There are two sets of lessons for Africa from the Brazilian experience. The first set comprises reforms that are clearly beneficial and do not involve significant trade-offs in terms of their implementation. The pre-reform institutional environment is relevant. The reforms in Brazil were made possible because of institutional support. Governance in Africa is improving faster than in the past – the Ibrahim Index of African Governance shows evolution for 46 of the 52 countries analyzed in 2013, but it is still low in absolute terms. Moreover, given trends in capital flows, reforms should strengthen the capability of markets to absorb the impact of volatile capital inflows and outflows. The era of closed financial systems is in the past and countries need to adapt to larger capital movements. International benchmarks are important; following international standards is akin to buying institutional credibility. Furthermore, developing modern market microstructures and a liquid public debt market is relevant to the stability of the system.

The remaining set of reform lessons relates to a series of trade-offs. For instance, should African countries follow the Brazilian experience by choosing system stability and financial repression over innovation? We know that financial sophistication is relevant to development, but by choosing tight regulation, the Brazilian Central Bank sent signals that growth would come mostly from the real economy, while credit growth and efficient capital allocation would be goals secondary to concerns about financial markets' stability.

In addition, even though state-owned banks are important in the Brazilian context, the size of the Brazilian economy is conducive to large banks that can play an important role in the financial system. Moreover, building efficient state-owned banks is expensive and time-consuming, but we need to note that it was through the coordinated efforts of BNDES and other state-owned banks that the Brazilian government was able to conduct a rapid response to the freezing of credit markets following the 2008 financial crisis. The capacity of state-owned banks to originate financial operations reduced and shortened the negative impact on the rest of the economy of the freezing of loans from private financial institutions, but there is no counterfactual to show that this could not be achieved through different channels.

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Glossary of Abbreviations

ANBIMA	Brazilian Financial and Capital Markets Association
ANDIMA	National Association of Open Market Institutions Association
BCB	Banco Central do Brasil (Brazilian Central Bank)
BIS	Bank for International Settlement
BNDES	Brazilian Development Bank
BOVESPA	São Paulo´s Stock, Commodities and Futures Exchange
CETIP	Centre for Custody and Financial Settlement of Securities
CMN	National Monetary Council
COMOC	Money and Credit Council
COREMOC	Committee of the Surveillance and Regulation of Financial Markets, Capital Markets, Insurance, Pension Plans and Capitalization Money and Credit Council
DI	Inter-financial Deposit Rate
DPGE	Term Deposit with Special Guarantee from the FGC (Brazil)
FGC	Credit Guarantee Fund (Brazil)
IMF	International Monetary Fund
PF	Parafiscal Funds
Proer	Programme of Incentives for the Restructuring and Strengthening of the National Financial System
Proes	Programme of Incentives for Restructuring of State’s Public Financial System
SCR	Central Bank Credit Information System (Brazil)
Selic	Special Settlement and Custody System
Selic Rate	Central Bank short term interest rate
SPB	Brazilian Payment System