THE SOUNDNESS OF THE BRAZILIAN BANKING SYSTEM

Introduction

Throughout 2008 the international crisis has aggravated and in the second half of that year several financial institutions in Europe and in the US have shown to be in a very fragile situation. Immediately, many eyes have turned into the emerging markets and their financial institutions and often raised a question: Were they in similar condition?

This article[1] aims at showing that the Brazilian banking system is sound, well regulated and is in a better position to cope with the current crisis when compared with other economies. The first section of this report presents a brief description of the international crisis and the effects over Brazilian financial institutions. The second shows an overview of the Brazilian banking system demonstrating the soundness of risk indicators in relation to other countries. Finally, the last part presents the results of stress tests and sensitivity analyses conducted by the Central Bank (CB).

The international crisis

There is almost an international consensus that the financial instability could only take place due to a large calm period of low interest rates and expressive international growth, what took financial markets to a series of innovations aiming at maintaining and even improving the expected returns. These innovations involved, as one might wonder, a consequent increase in risk.

At the same time, regulation and supervision have not followed the rhythm of these financial innovations. Financial supervisors acted with little coordination, even within the same country. There were some largely unregulated institutions with cross-border operations, providing a host of financial services connected to the regulated financial system.

In Brazil, back in May 2007, before the most serious reflections of the crisis became evident, some changes in capital requirements for market risk were introduced aiming at taking into account the risk of cross-border operations inside financial conglomerates. The procedures for calculating the FX exposure, particularly the treatment given to contrary FX exposure (long and short), domestically and abroad, by institutions of the same conglomerate, that used to be compensated, was changed.

The sharp phase of the crisis generated a credit crunch and this was the main issue in Brazil. In perspective, the Brazilian GDP growth in the past 4 years has been led by

[1] The source for all data in this document is the Financial Stability Report published by the Central Bank, unless otherwise stated. Portuguese version at http://www.bcb.gov.br/?RELESTAB. English version at http://www.bcb.gov.br/?FINANCSTAB.

domestic and external credit, higher levels of real wages, increasing consumer confidence, rising investments and falling unemployment. Suddenly, domestic confidence dropped sharply in September 2008 and credit was still being channeled, though at much more restrictive conditions due to global deleveraging and sharp increase in risk aversion. International credit lines for domestic banks and companies have shrunk which affected the domestic demand for dollars and put pressure on the FX rate[2]. Companies started to look for credit domestically, pressuring liquidity in the domestic financial system. Especially for small and middle sized institutions the credit crunch represented a great challenge.

The Central Bank and the National Monetary Council (NMC) promptly have taken actions aiming at reestablishing credit lines for foreign trade and at recomposing liquidity for small-sized financial institutions in US Dollars and in Brazilian Reais (BRL). The main measures were:

- Selling US Dollars in the spot market, partially combined with repurchase agreements in the future market;
- FX swap auctions, closing positions of reverse swaps;
- Reduction in reserve requirements of financial institutions, coupled with measures focused on channeling liquidity from the largest to smaller institutions;
- Authorization for the Central Bank to provide liquidity to financial institutions receiving private securities as guarantees;
- Authorization for the Central Bank to make loans in foreign currency against guarantees in the same currency;
- Public Banks were allowed to buy other financial institutions, boosting the competition with the private sector for the acquisition of smaller banks suffering from lack of liquidity;
- Creation of the Time Deposit with Special Guarantee (DPGE), which had secured up to BRL 20 million by the Credit Guaranteed Fund (FGC).

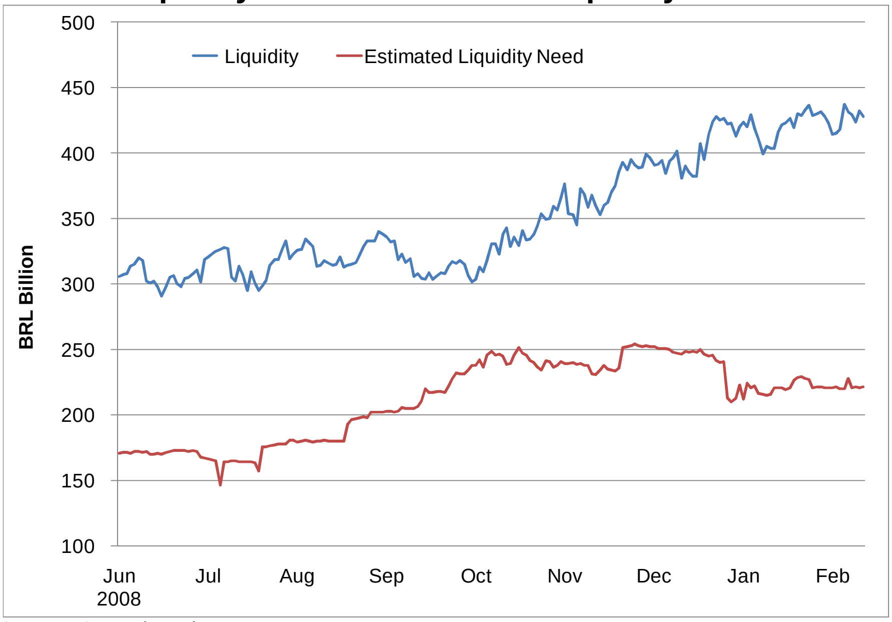
By close daily monitoring, the Central Bank assessed that, in the second half of 2008, despite all oscillations observed, the Total Liquidity (TL) of the financial system was

[2] From the macroeconomic perspective, this no longer represents a risk or an imbalance as the government has been a net creditor in the external market since May-06. In other words, Brazil has more assets than liabilities denominated in foreign currency.

above the Estimated Liquidity Need in Stress Situations (ELN)[3] what shows its capacity to support liquidity stress situations.

After July 2008, as an effect of the reserve requirements release and the migration of funds from mutual funds to certificate of deposits (CDBs) the TL started an ascending trend that led to a difference between TL and ELN larger than in June 2008.

Liquidity Index X Estimated Liquidity Need



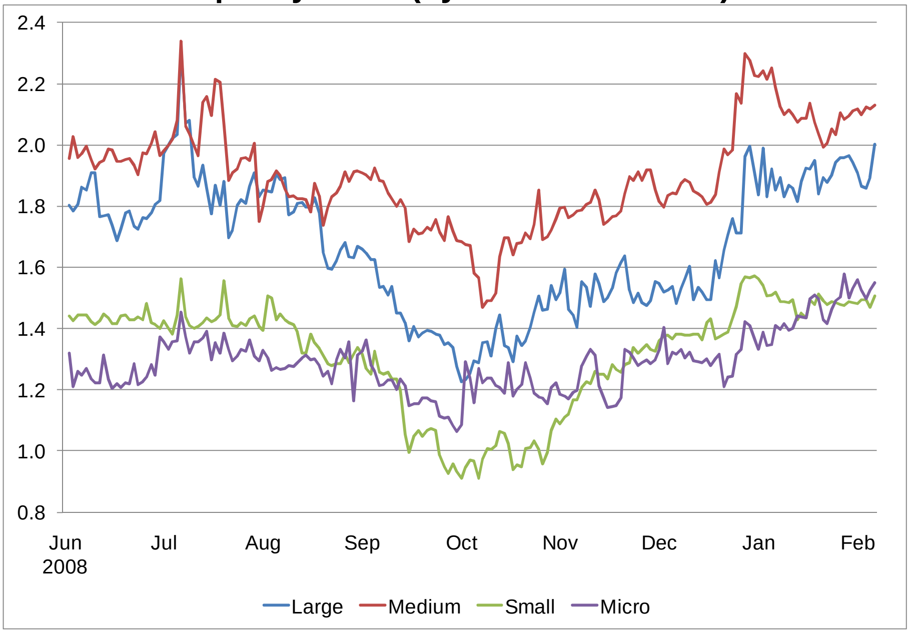
Source: Central Bank

Until the beginning of September 2008, all institutions presented a reduction in the Liquidity Index (LI)[4] basically due to the increase in the Estimated Liquidity Need in Stress Situations. Even that, only smaller institutions temporarily presented a LI inferior to 1.

The measures taken by the Central Bank and by the National Monetary Council to counteract the effects of the crisis were proved to be successful in providing liquidity. From January 2009 on, the system started to operate on liquidity levels similar or even superior to those observed previously to the crisis.

[3] It represents the liquidity level that every conglomerate/institutions would need to support stress situations.
[4] It is the Total Liquidity/ELN ratio. The Total Liquidity is defined as the sum of all Liquid Assets Daily Monitored and Other Liquid Assets.

Liquidity Index (by institution´s size)

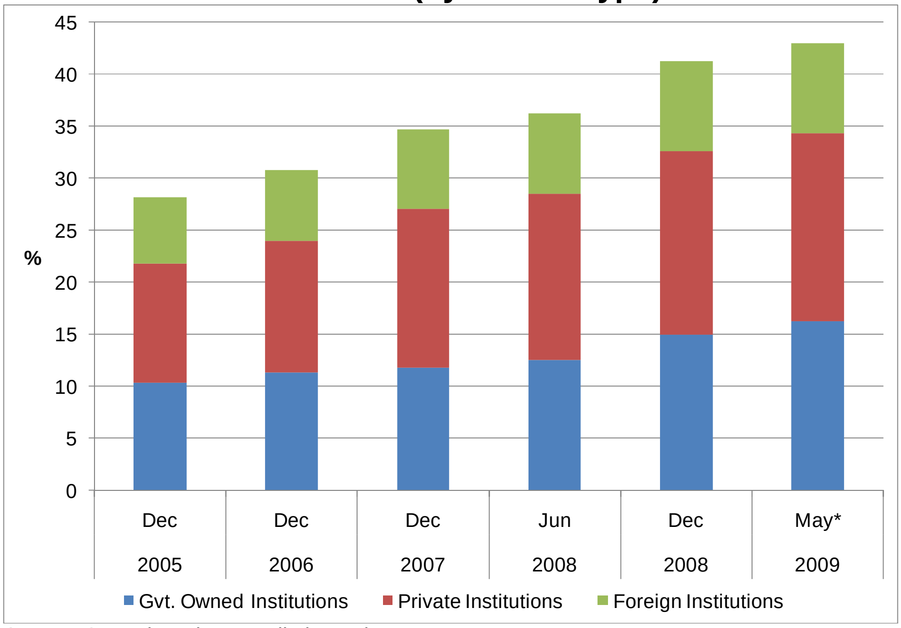


Source: Central Bank

The graph above shows that the LI dropped moderately into the uncomfortable zone (below 1), only in the case of the smaller institutions that were not representative in the overall credit supply. Additionally, the "danger" zone occurred only in a short period of time.

In stressful and very uncertain periods like the one observed in the second half of 2008, it was really important to onset measures to avoid further volatility into the financial sector. As a result of the measures taken, overall credit as percentage of GDP did not derail, reaching 41.3% in the end of 2008 compared with 34.8% in 2007 and only 24% in 2004. Other indicators showing the overall health of the financial system will be shown later on.

Credit/GDP (by control type)



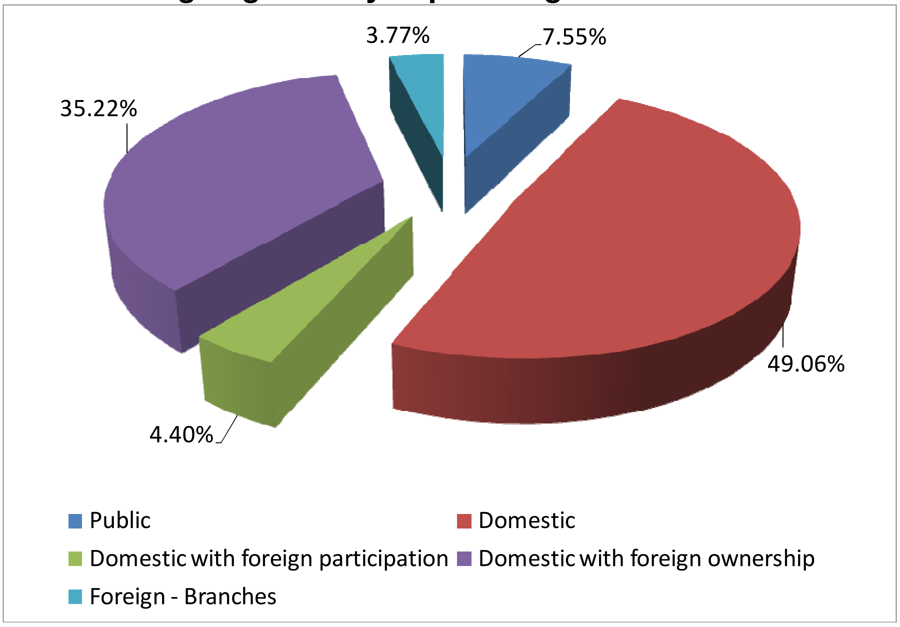
Source: Central Bank. * Preliminary data

The Brazilian Banking System

The banking system in Brazil is basically composed of domestic institutions (49.06%) and domestic with foreign ownership (35.22%). Public banks account for less than 8% of total assets. It is important to highlight that the Brazilian credit resiliency is supported by a particular credit mix, unfolded in diverse primarily domestic financing sources, funded by local-currency deposits, domestic fixed income corporate securities and low mortgage securities exposure (less than 5% of GDP)[5]. The financing scheme in most business sectors are different from those in developed countries as the public sector plays a relative larger role in Brazil under comparison.

[5] According to Global Property Guide.

Banking segment by capital origin – December/08



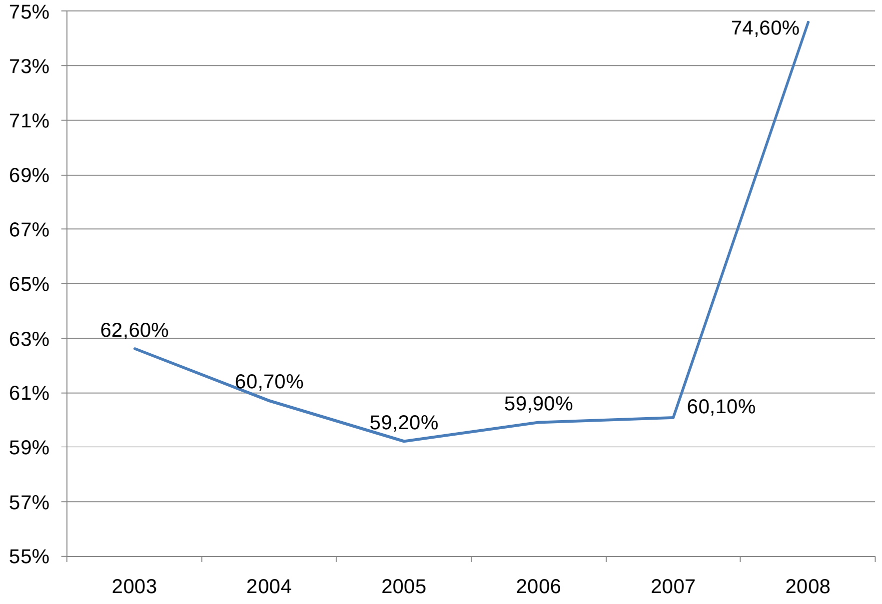
Source: Central Bank

The participation of the top 5 banks in total assets grew from 58.6% in June 2008 to 74.6% in December 2008, mainly due to the incorporation of ABN by Santander and the merger of Itaú with Unibanco, both in the second half of 2008. Despite of that, the banking system became more concentrated, growing to 74.6% from 69.7% between June and December of 2008 in the adjusted index that excludes these events.

It is interesting to notice that even within the crisis no strategic changes in the institutions were taken[6]. All decisions about mergers and acquisitions that occurred in the second half of 2008 were originated by events that started before the crisis. It is also important to mention that there was no government interference in these decisions. This is one of the most striking differences from what was observed abroad, especially in the USA and in the UK.

[6] See Central Bank's Financial Stability Report –page 11.

Participation of the top 5 banks in total assets



Source: Central Bank

The profitability of the market is relatively high when compared to other countries. The reduction in 2008 was mainly due to poor results in the second half of the last year as the following table shows, as consequence of some extraordinary events, such as the negative FX result in consequence of the currency devaluation that affected over-hedged positions[7], the higher levels of provisions required by a new Central Bank resolution and the consideration of all amortization expenses of the Itaú-Unibanco merger goodwill.

[7] The approximate losses related to the misusage of FX-rate derivatives by a few companies reached USD 25 bn, according to the BIS (Bank for International Settlements).

In 2008 it is possible to observe a reduction in Return on Assets and in Return on Equity but to a still high level when one takes into consideration the great turbulence faced in the period and especially when compared internationally.

Return on Assets (%)

	2003	2004	2005	2006	2007	2008
Argentina	-3.0	-0.5	0.9	1.9	1.5	1.6
Australia[1]	1.6	1.1	1.0	1.0	1.0	0.9
Brazil[2]	1.6	1.9	2.2	2.1	2.4	1.9
Canada	0.7	0.8	0.7	1.0	0.9	1.3
Chile	1.3	1.2	1.3	1.3	1.1	1.2
China[3]	0.3	0.5	0.6	0.7	1.0	...
Colombia	1.9	2.7	2.7	2.5	2.4	2.4
India[4]	1.0	0.8	0.9	0.7	0.9	1.0
Mexico[5]	4	1.6	1.8	2.7	3.1	2.7
Peru	1.1	1.2	2.2	2.2	2.5	2.5
Russia[6]	2.6	2.9	3.2	3.2	3.0	1.6
South Africa	0.8	1.3	1.2	1.4	1.4	1.8
Spain	0.9	0.9	0.9	1.0	1.1	1.0
United States[7]	1.4	1.3	1.3	1.3	0.8	0.3

1/ Gross profits until 2003
2/ Central Bank data
3/ 2007 figure is net income to end-of-period assets.
4/ For the end of the fiscal year
5/ Before tax
6/ Not annualized.
7/ All FDIC-insured institutions.
Source: Global Financial Stability Report

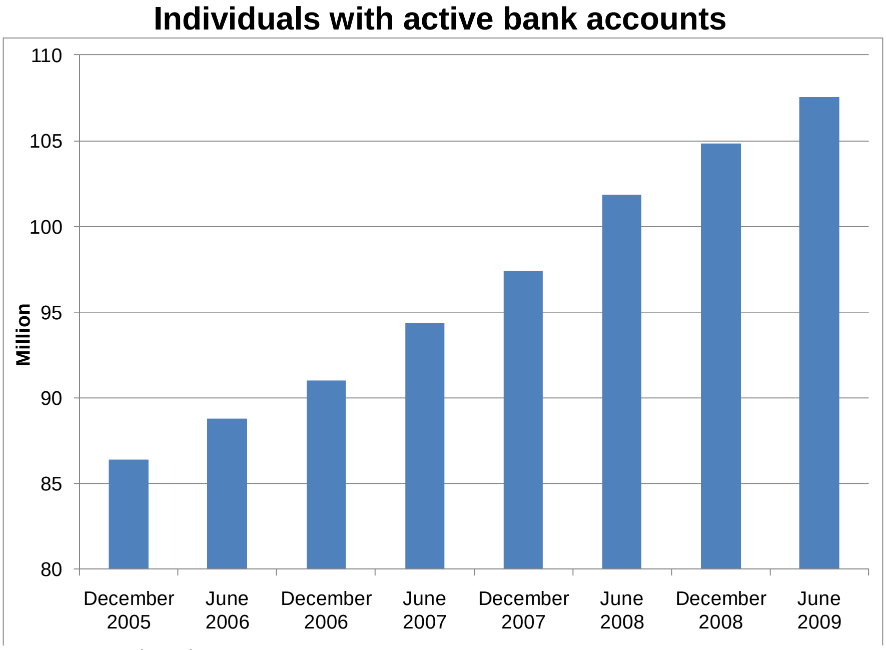
Return on Equity

	2003	2004	2005	2006	2007	2008
Argentina	-22.7	-4.2	7.0	14.3	11.0	13.5
Australia[1]	24.2	16.0	14.7	16.8	18.1	17.0
Brazil[2]	21.1	22.1	29.5	27.3	28.9	20.4
Canada	14.7	16.7	14.9	20.9	16.1	28.9
Chile	16.7	16.7	17.9	18.6	16.2	18.9
China[3]	...	13.7	15.1	14.8	19.9	...
Colombia	17.1	23.0	22.1	20.2	19.5	20.0
India[4]	18.8	20.8	13.3	12.7	13.2	12.5
Mexico[1, 5]	16.1	17.2	24.4	26.2	19.9	12.8
Peru	10.7	11.6	22.2	23.9	27.9	30.6
Russia[6]	17.8	20.3	24.2	26.3	22.7	12.1
South Africa	11.6	16.2	15.2	18.3	18.1	17.5
Spain	13.9	14.7	16.8	19.6	19.7	16.8
United States[7]	15.0	13.2	12.7	12.3	7.8	3.3

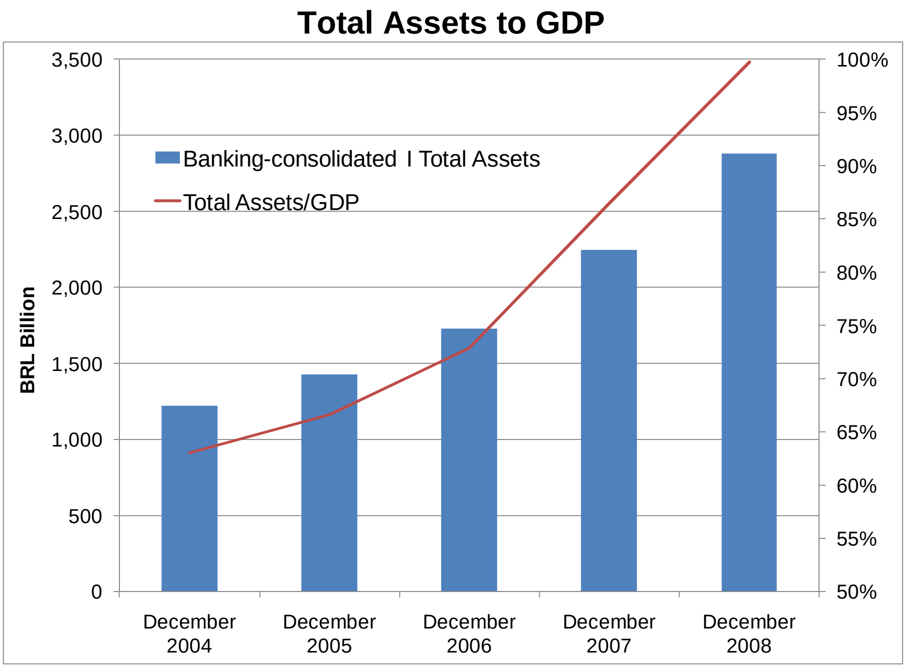
1/ Gross profits until 2003
2/ Before tax.
3/ Commercial banks.
4/ 2007 figure is net income to end-of-period equity.
4/ For the end of the fiscal year
5/ Not annualized.
6/ All FDIC-insured institutions.
Source: Global Financial Stability Report

The relation of Assets to GDP has been consistently growing in the past few years, what can be seen as an increase in the banking coverage[8] in Brazil. It is important to notice that there were some specific events in 2008 related to currency devaluation, transfer of resources from mutual funds to CDBs among others that impacted the Assets to GDP ratio.

[8] Defined as the number of people that have an account in at least one bank.



Source: Central Bank



Source: Central Bank

Regulation

The Brazilian regulation system aims at achieving financial stability. There have been specific requirements looking for controlling risk in financial institutions for many years.

Since 1998 internal controls, limits for client exposure, loss provisions, credit risk capital in active operations, among others, are required and continuously checked by the Central Bank. Nowadays, the regulation requires specific structures in each financial institution to manage credit, market and operational risks. Beyond that, there are specific capital requirements for each one of these risks, according to the Basel II simplified pattern approach.

Regarding this, it is worth to mention that Brazil is involved in implementing the Basel II Accord and, within its scope, it measures and establishes capital requirements standards for financial institutions.

Some aspects of the national financial regulation system are particularly conservative, what helped to protect the Brazilian banking system of the main problems observed in developed countries in the crisis. This is due to some hyperinflationary periods Brazil went through until 1994, when financial institutions developed very close monitoring processes to check and balance their positions under a very unstable environment. This expertise spilled over their activities and provided increased control over their balance sheets that paid off. In addition, the Brazilian banking system already lived hard days back in the early 90's, where a large scale privatization program was implemented and many banks were intervened by the monetary authority.

Still, one can highlight:

- Minimum Basel Ratio (BR) of 11%, higher than the 8% suggested in the Basel Accord. In reality, Brazilian institutions are way above this level and also with low leverage levels (about six times its capital);
- All the limits and requirements are applied in consolidated terms, including off-balance exposures. This means that no exotic assets or special investment vehicles are left off the run as it was seen overseas;
- Fund exposures are weighted according to their subjacent assets, for all risk factors;
- OTC derivatives contracted by financial institutions are necessarily registered in institutions authorized by the Central Bank, such as Cetip and BM&FBOVESPA;
- CVM[9] instruction # 475 (Dec-08) obliged public companies to disclose information about financial instruments, including derivatives, as well as sensibility analysis of these instruments;

[9] CVM is the Brazilian Securities and Exchange Commission

- The loss provision in active operations also takes into consideration the expected loss, and not only the eventual delay in payment;
- The monitoring of liquidity and market risk by the Central Bank is intensive as it is daily updated;
- Reserves must cover all debt payments past due 60 days;
- Central Bank registers all credit operations above BRL 5,000 (90% of the cases);
- Central Bank conducts stress tests and issue ratings for the banks.

Other general characteristics are also important in explaining the relative resistance of the Brazilian banking system to the international crisis. First, the financial regulation in Brazil is infra-legal (National Monetary Council's resolutions and Central Bank's norms) which allows to keep the regulation updated with financial innovations, international standards and conjuncture changes. Second, the regulation applies to every financial institution. Differently from other countries, there are no important players outside the Central Bank supervision. This is another important aspect in the Brazilian banking supervision.

It is also worth to mention that the Brazilian securitization market was proportionally small in comparison to the credit volume in the country (less than 10%), what made that the intersection between these two markets have not brought damage and loss dissemination. Despite late developments, Brazil still has a way to go when it comes to financial innovation and capital market diversity and deepness.

The Basel Ratio in Brazil is 17.5%, well above the 8% recommended by the Basel Accord and the 11% minimum defined in Brazilian legislation. Brazil is also on a strong position when compared to its peers.

Bank Regulatory Capital to Risk-Weighted Assets (%)

	2003	2004	2005	2006	2007	2008
Argentina	14.5	14.0	15.3	16.8	16.9	16.8
Australia	10.0	10.4	10.4	10.4	10.2	10.9
Brazil[1]	19	18.5	17.4	17.8	17.3	17.5
Canada	13.4	13.3	12.9	12.5	12.1	12.7
Chile	14.1	13.6	13.0	12.5	12.2	12.1
China	-5.9	-4.7	2.5	4.9	8.4	8.2
Colombia	13.0	14.2	14.7	13.1	13.6	13.4
India[2]	12.7	12.9	12.8	12.3	12.3	13.0
Mexico[3]	14.4	14.1	14.5	16.3	15.9	15.3
Peru	13.3	14.0	12.0	12.5	11.7	11.8
Russia	19.1	17.0	16.0	14.9	15.5	14.5
South Africa	12.4	14.0	12.7	12.3	12.8	12.5
Spain	12.6	12.3	12.0	11.9	11.4	11.3
United States[4]	13.0	13.2	12.9	13.0	12.8	12.5

1/ Central Bank
2/ For the end of the fiscal year
3/ Commercial banks.
4/ All FDIC-insured institutions.
Source: Global Financial Stability Report

Although nonperforming loans to total loans ratio is at the similar level as in other countries (2.9%) the bank provisions to nonperforming loans are considerably higher than international standards (185.5%).

Bank Nonperforming Loans to Total Loans (%)

	2003	2004	2005	2006	2007	2008
Argentina	17.7	10.7	5.2	3.4	2.7	2.5
Australia[1]	0.3	0.2	0.2	0.2	0.2	0.5
Brazil	4.1	2.9	3.5	3.5	3.0	2.9
Canada	1.2	0.7	0.5	0.4	0.7	1.1
Chile	1.6	1.2	0.9	0.8	0.8	0.9
China[2]	20.4	12.8	9.8	7.5	6.7	2.5
Colombia	6.8	3.3	2.7	2.6	3.3	4.0
India[3]	8.8	7.2	5.2	3.3	2.5	2.3
Mexico[4]	3.2	2.5	1.8	2.0	2.7	2.5
Peru[5]	14.8	9.5	6.3	4.1	2.7	2.2
Russia	5.0	3.8	3.2	2.6	2.5	2.5
South Africa[6]	2.4	1.8	1.5	1.1	1.4	2.6
Spain[7]	1.0	0.8	0.8	0.7	0.9	3.2
United States[8]	1.1	0.8	0.7	0.8	1.4	2.3

/1 Impaired assets to total assets. Figures exclude loans in arrears that are covered by collateral.
/2 Major commercial banks (state-owned commercial banks and joint stock commercial banks).
/3 For the end of the fiscal year
/4 Commercial banks.
/5 Nonperforming loans include restructured and refinanced loans.
/6 Break in the series in 2008. With the implementation of Basel II in January 2008
/7 Doubtful exposures to other resident sectors over total lending to other resident sectors.
/8 All FDIC-insured institutions.
Source: Global Financial Stability Report

It is important to notice that in 2008, while in some countries Bank Provisions to Nonperforming Loans were reduced, the opposite occurred in Brazil.

Bank Provisions to Nonperforming Loans (%)

	2003	2004	2005	2006	2007	2008
Argentina	79.2	102.9	124.5	129.9	129.6	130.9
Australia	131.8	182.9	203.0	202.5	183.7	87.2
Brazil[1]	179.3	201.6	176.6	171.4	175.3	185.5
Canada	43.5	47.7	49.3	55.3	42.1	34.7
Chile	130.9	165.5	177.6	198.5	210.4	181.6
China[1]	19.7	14.2	24.8	34.3	39.2	115.3
Colombia	98.1	149.7	166.9	153.6	134.5	115.3
India[2]	46.4	56.6	60.3	58.9	56.1	52.6
Mexico	167.1	201.8	232.1	207.4	169.2	184.0
Peru	67.1	68.7	80.3	100.3	131.6	146.7
Russia[3]	118.0	139.5	156.3	159.3	144.0	140.0
South Africa	54.2	61.3	64.3	...	...	...
Spain[4]	263.8	322.1	255.5	272.2	214.6	71.9
United States[5]	140.4	168.1	155.0	135.0	93.1	84.7

/1 Source Central Bank
2/ Major commercial banks. Break in 2008
3/ For the end of the fiscal year
4/ Change in definition in 2004
5/ Allowances and provisions to doubtful exposures.
6/ All FDIC-insured institutions.
Source: Global Financial Stability Report

The distribution of credit operations in the Brazilian banking system, according to the risk classification attributed by financial institutions shows that, by December 2008, 92% of the credit operations were in low risk levels, 24% in AA and 68.1% distributed from A to C[10].

Credit Score

Risk Level	2007		2008	
	June	December	June	December
AA	24.8	25.1	25.3	24.0
A	39.8	40.6	40.2	39.9
B	17.5	17.6	18.0	19.2
C	9.2	8.7	8.9	9.0
D	2.5	2.4	2.5	2.6
E	1.3	1.3	1.1	1.1
F	0.9	0.7	0.8	0.8
G	0.7	0.6	0.6	0.6
H	3.2	2.9	2.7	3.0

Source: Central Bank

[10] Financial institutions shall classify credit operations according to risk levels AA, A, B, C, D, E, F, G and H. The classification is defined in National Monetary Council Resolution 2.682.

In broad terms the Brazilian banking system is well regulated and operates with low risk levels and higher profitability than its peers. Basel Ratio is far above the minimum legally required, Bank Provisions for Nonperforming Loans accounts for more than 185% and 92% of credit operations are classified in low risk levels.

Stress Tests

The Capital Stress Tests aims at evaluating the solvency of each institution in several scenarios. The analysis verifies the impact of interest rate and exchange rate (market risk) oscillations and the Credit Scores of credit operations (credit risk) over the Basel Ratio (BR) reduction. The tests were conducted on 114 institutions that were part of the banking consolidate I and II[11].

In the scenario of an increase in the credit risk[12] the BR of the institutions would be reduced in 2.8 p.p.. The BR would still be above the 8% suggested by the Basel Accord and also above the Brazilian minimum of 11% and no institution would be insolvent, although 12 would become noncompliant with the minimum requirement.

Credit Risk Stress

Type	Basel Ratio (%)		Relevance (ATA)	
	Original	Stressed	Noncompliant	Insolvent
Foreign	20.5	18.8	5.1	
Private Domestic	16.9	14.2	0.1	
Public	16.9	12.9		
Total	17.8	15	5.2	

Source: Central Bank

The analysis shows that in a stressed scenario, where interest rates were stressed according to the highest historical variation of the interest rate term structure, the BR of the institutions would be reduced in 4.2 p.p... One institution would become insolvent (which represents 0.1% of the Adjusted Total Assets – ATA) and 31 would be noncompliant. The reduction of interest rates, by its turn would reduce the BR in 2.1 p.p... In this scenario no institution would become insolvent and 13 would be noncompliant.

[11] For more information see http://www4.bcb.gov.br/top50/ingl/esc_met-i.asp.
[12] The credit score was reduced in two notches for every credit operation.

Increase/reduction in interest rates

Type	Basel Ratio (%)		Relevance (ATA)	
	Original	Stressed	Noncompliant	Insolvent
Increase				
Foreign	20.5	14.1	6.4	0.1
Private Domestic	16.9	13	18.6	
Public	16.9	14.4	14.1	
Total	17.8	13.6	39	0.1
Decrease				
Foreign	20.5	14.5	2	
Private Domestic	16.9	15.3	3.1	
Public	16.9	18.3	0.7	
Total	17.8	15.7	5.7	

Source: Central Bank

Considering the basic scenario of BRL 2.34/US$ and stress scenarios of BRL 3.44/US$ and BRL 2.06/US$, an eventual increase in the exchange rate would reduce the BR in 0.6 p.p. and the reduction of the exchange rate would not reduce the BR of the institutions.

Increase/reduction in exchange rates

Type	Basel Ratio (%)		Relevance (ATA)	
	Original	Stressed	Noncompliant	Insolvent
Increase				
Foreign	20.5	20.2		
Private Domestic	16.9	16	0.03	
Public	16.9	16.8		
Total	17.8	17.2	0.03	
Decrease				
Foreign	20.5	20.5		
Private Domestic	16.9	17	0.03	
Public	16.9	17		
Total	17.8	17.8		

Source: Central Bank

The combination of the three shocks would reduce the BR of the institutions in 7.1 p.p., from 17.8% to 10.7%. In this extreme scenario the BR would be only 0.3 p.p. below the minimum of 11% but still above the 8% suggested by the Basel Accord. Eight institutions would be insolvent and 43 would be noncompliant, what represents 14.4% and 40.2% of ATA of the universe analyzed.

Increase of credit risk, interest rate and exchange rate

Type	Basel Ratio (%)		Relevance (ATA)	
	Original	Stressed	Noncompliant	Insolvent
Foreign	20.5	12.6	6.9	0.4
Private Domestic	16.9	10	19.1	0.01
Public	16.9	10.2	14.2	14.1
Total	17.8	10.7	40.2	14.4

Source: Central Bank

The results of the stress tests showed that the institutions are resistant to individual variations in the risk factors analyzed and that only in extreme situations, far superior to historical levels, some institutions would become noncompliant to the Brazilian minimum capital requirement. Moreover, only the scenario that combines interest rate stress, exchange rate stress and increase in credit risk made the universe analyzed to present a Basel Ratio lower than 11%, reaching 10.7%, still superior to the usual benchmark of 8% suggested by the Basel Accord.

Final Remarks

The international crisis main effect over the Brazilian economy was the drought of credit lines, mostly to smaller institutions, what was rapidly mitigated by the National Monetary Council's and Central Bank's actions and now credit level is higher than in the pre-crisis period.

It is easy to notice that the prudent regulation over the Brazilian banking system is one of the main reasons why Brazil has not suffered the effects of the international crisis as other countries did. The financial institutions work with relatively low risk levels and even in an extreme situation that consider extreme shocks in exchange rates, interest rates and an increase in credit risk at the same time, the Banking System as whole could not be considered in danger.

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