Easing reserve requirements, bank lending and financial stability in Brazil[☆]

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Abstract

The unfolding of the U.S. subprime crisis resulted in Brazil in a severe liquidity squeeze, especially on the small and medium size banks. In order to ensure threatened stability of the National Financial System, the Central Bank of Brazil took several steps aimed at easing reserve requirements to increase liquidity and, in the sequel, incentives for large banks to direct part of these resources to smaller banks. Incentive measures basically consisted of purchasing credit portfolios and interbank deposits. It was found that there has been such transfer of credit portfolios, which at that time relieved the liquidity squeeze and avoided a potential systemic risk.

However, regarding the credit market, the restoration of normalcy could only be checked if there was a resumption of new loans. Accordingly, the objective of this work is to test whether the release of reserve requirements resulted in the increase in new loans and in the credit volume. The methodology used was the differences-in-differences with panel data, considering the large banks such as treatment group, since, given the progressive structure of reserve requirements in Brazil, were those banks that received the most significant share of resources released. The results of the empirical tests show that banks have increased their issues of new loans in the post-crisis period.

Keywords: bank lending, reserve requirements, differences-in-differences, panel data, anti-crisis measures
JEL: C23, E44, E51, E52, E58, G01, G21

1. Introduction

One of the main and most immediate consequences of the 2008 international financial crisis in Brazil was a lack of credit due to the suspension of external sources and the changing expectations of borrowers and credit providers in the domestic market. Moreover, the uncertainty over future directions of internal and external economy led to a crisis of confidence which affected mainly the predictions of the National Financial

[☆]The views expressed here are solely the responsibility of the authors and do not necessarily reflect those of the Banco Central do Brasil.

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System (SFN), after all the source of the turmoil was exactly on the financial sector. This uncertainty reflected predominantly on smaller institutions, causing a shortage of liquidity and further reducing the new loans issues[1].

Given the potential systemic risk due to lack of liquidity, the Central Bank of Brazil (BCB) decided in October 2008 for the release of part of the reserve requirements on deposits to meet the needs of smaller banks. It happens that, due to the typical high concentration of the banking system and the progressive structure of reserve requirements in Brazil, most of these reserves is bound to larger banks, which have suffered relatively minor liquidity constraints. Then, in the set of measures adopted, large banks was linked to direct part of those resources to smaller banks, mainly through the purchase of their credit portfolios or investment in interbank deposits.

Reserve requirements on bank deposits have historically played an important role for the stability of the National Financial System (SFN) in Brazil. The reserve requirements were used intensively for monetary tightening in the introduction of the Real Plan as of July 1994, the Asian crisis in 1997, the crisis of September 2001 and the pre-election crisis in 2002. Many studies have confirmed the effects of reserve requirements on the credit supply of Brazilian banks ([2], [3], [4] and [5]).

However, more recently, the reserve requirements have been used in the opposite direction, loosening during financial crises, as in the event of the intervention of Banco Santos in November 2004 and measures to combat the unfolding of the subprime crisis in U.S. housing market and disruption of Lehman Brothers in October 2008. Nevertheless, due to the severity of the subprime crisis, the loosening of reserve requirements in October 2008 was accompanied by a series of incentives. Basically, the incentive was the release of the inflows of large banks, for directing the purchase of credit portfolios or for investing in interbank deposits from smaller banks.

Table 1 shows the evolution of credit balances received due to the business or acquired from individual member of the SFN (loan sales). It appears that there was indeed a relative increase in sales of credit portfolio to the big banks from October 2008 on, from about 70% to approximately 80%.

On the other hand, the effectiveness of purchasing of credit portfolios would be insufficient to assure the return of normalcy in the market for bank credit. In parallel, it is important to note the resumption of the new loans. Thus, this study seeks to test whether the number of measures related to the loosening of reserve requirements took effect on the lending of large banks from October 2008 on. For this test we used the technique of differences-in-differences, considering the large banks as the treatment group, since, given the progressive structure of reserve requirements, these banks had a significant portion of the release of reserve requirements. Test results show that large banks have significantly increased their new loans in post-crisis period.

In March 2009, came into effect a measure that established the special guarantee of Credit Guarantee Fund (FGC) on time deposits of up to R$[2] 20 million per depositor. In addition, this study performed another test to see if this latest move was enough to stimulate smaller banks' lending. It used the same technique of differences-in-differences, now taking smaller banks such as treatment group, whereas, in principle, this measure would affect far less large banks, which have not suffered the same crisis of confidence

[1] For a more detailed description of the post-crisis financial system behaviour, see, e.g., [1].

[2] R$ stands for the Brazilian currency *real*.

Table 1: Credit portfolios bought from members of the SFN, registered in Credit Information System (SCR).

Month	Total (1)[a]	Large banks[b] (2)[a]	(2)/(1)
mar/08	24.4	16.6	67.9%
apr	24.3	16.4	67.8%
may	24.4	16.6	68.0%
jun	24.9	16.8	67.3%
jul	25.5	17.3	67.6%
aug	26.4	18.4	69.6%
sep	26.0	18.3	70.5%
oct	30.4	22.2	73.1%
nov	30.3	22.9	75.4%
dec	38.0	30.4	79.8%
jan/09	38.2	30.0	78.6%
feb	36.7	28.7	78.2%
mar	40.2	32.3	80.4%
apr	37.9	30.2	79.7%
may	38.4	30.6	79.7%
jun	40.5	32.3	79.8%

[a] (1) and (2) in R$ billion.

[b] Banco do Brasil+Nossa Caixa, Bradesco, Itaú, Unibanco, ABN, Santander, Caixa Econômica Federal, Votorantim and HSBC.

among the small ones. The results show some evidence of resumption of lending of smaller banks benefitted from the measure of additional guarantee to deposits.

2. Brazilian reserve requirements structure

In general, reserve requirements are set as a proportion of bank deposits. Typically, it is defined a rate and a basis of calculation for its incidence. The amount to be deposited at the Central Bank may be in public securities or in currency, interest-bearing or not.

In Brazil, basically, there are reserve requirements on demand, time and savings deposits. In the computation of these requirements there may be deductions on the calculation basis and on the actual amount to be required. These deductions create a structure of progression in these deposits; banks with more deposits collect proportionally more.

From October 2008 on, larger banks had an incentive to release some of their reserves in the case of targeting these resources to the purchase of credit portfolio and the investment in interbank deposits from smaller banks.

3. Data description

This study is focused on two time periods related to two sets of anti-crisis actions taken by the Brazilian monetary authority, in order to assess the outcome of these measures. The first period is from March 2008 to February 2009 and corresponds to studying the effects of loosening of reserve requirements in October 2008. The second period is from November 2008 to June 2009 and corresponds to studying the effects of increased guarantees on deposits in March 2009.

It was sought to evaluate the difference between large and small banks with regard to the reaction to the anti-crisis measures taken, considering their behaviour in the credit market. Thus, the analysis is on the monthly credit balances and new loans of the members of Brazilian banking system, obtained from *Circular* 2957 of BCB, split by corporations (PJ[3]) and individuals (PF[4]) - figures 1 to 4. In order to separate the groups of large and small banks, it was considered the reference equity (PR) criterion, also used in anti-crisis measures to differentiate the size of banks. The large banks group corresponds to banks with PR greater than R$ 5 billion and the group of small banks to those with PR less than R$ 5 billion.

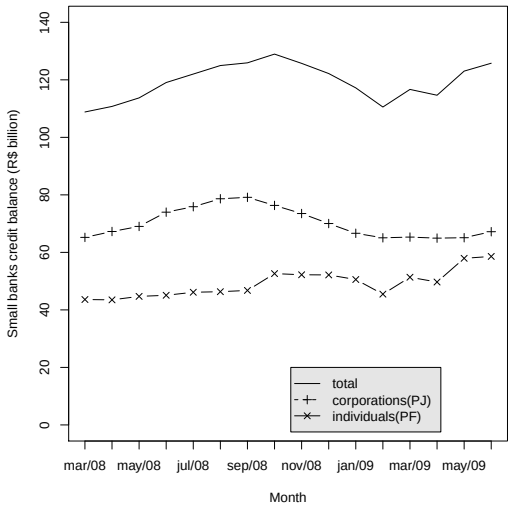

Figure 1: Small banks credit balance.

As controls of the macroeconomic conditions, it was used the IBGE's[5] monthly index of industrial output and the Brazilian interest rate target Selic (fig. 7). As microeconomic controls, it was used an aggregate bank deposits called *deposit*, to control the main source of funds for the credit, and an indicator of liquid assets available to banks, called *liquid asset*, to control the possible alternative destinations of such resources. The *deposit* (fig.

[3]PJ stands for *Pessoa Jurídica*, which means *Legal Entity* in Portuguese.
[4]PF stands for *Pessoa Física*, which means *Natural Person* in Portuguese.
[5]Brazilian Institute of Geography and Statistics.

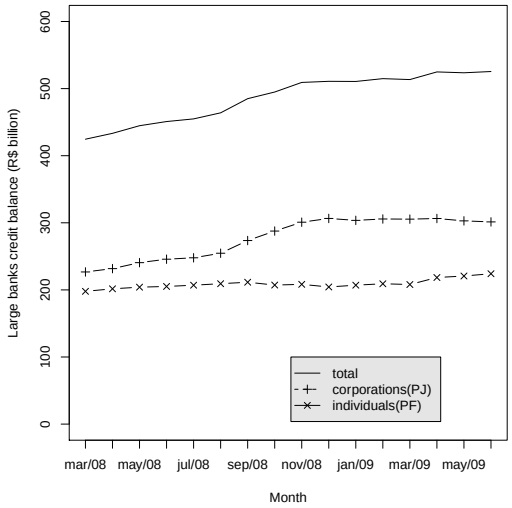

Figure 2: Large banks credit balance.

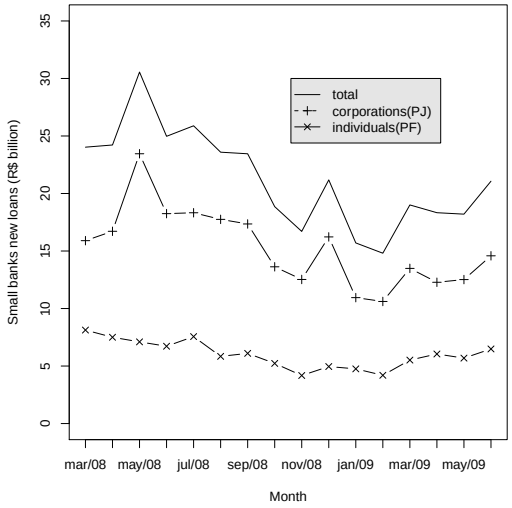

Figure 3: Small banks new loans.

5) is the sum of demand, time, savings and interbank deposits, and *liquid asset* (fig. 6) is the sum of the balances of the following bank accounts : free securities, investment in interbank deposits and in repurchase operations.

The main anti-crisis measures taken in October 2008 was the release of part of the amount of reserve requirements to ease liquidity problems, especially of smaller banks,

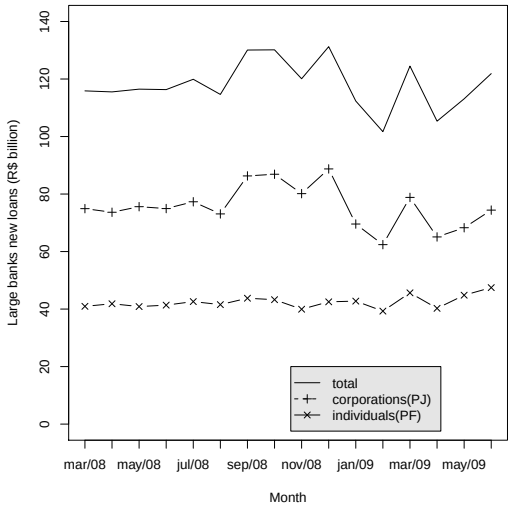

Figure 4: Large banks new loans.

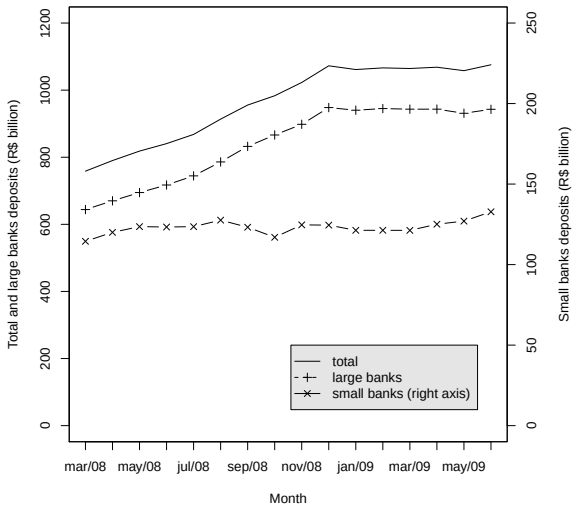

Figure 5: Banks deposits.

and to maintain the functioning of credit markets[6]. Figure 8 shows the total amount of reserve requirements informed on banks' balance sheets[7] and the corresponding series

[6] *Circulares* of BCB: 3407, 3408, 3410, 3411, 3414, 3417, 3421 and 3427 (for time deposits); 3413 and 3416 (for demand deposits); 3405, 3408, 3410, 3419 and 3426 (for additional reserve requirements).

[7] Addition of the balance of the accounts 1342000-0, 1422800-5, 1423310-0, 1423399-7 and 1423500-5

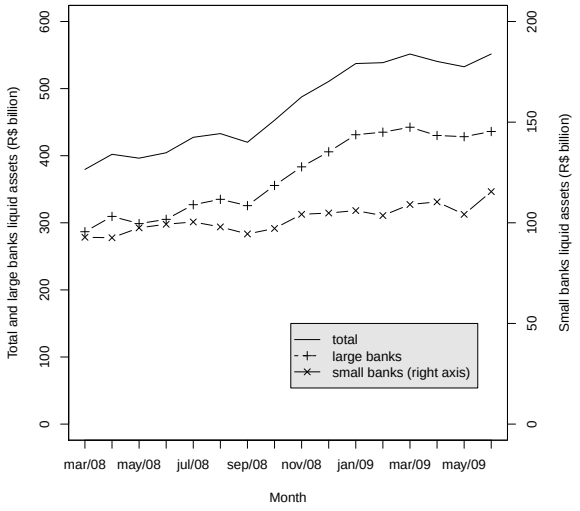

Figure 6: Banks liquid assets.

referring to groups of small and large banks considered. There was a decrease in the total volume of reserve requirements, approximately R$ 80 billion in end-month data, between September and November 2008. Of this amount, about R$ 6 billion were from smaller banks. That is, the large banks, which during the crisis also presented less liquidity problems compared to the small ones, had about R$ 74 billion for the expected adjustment of the liquidity and maintenance of credit in subsequent periods. One condition imposed by the measures taken was just tying the release of part of reserve requirements to the acquisition of existing loan portfolios of smaller banks, which occurred as shown in the Introduction (table 1). Another condition linked the release of reserve requirements to the investment in interbank deposits of the large banks in the small ones, which actually occurred and can be seen in figure 9. That confirms there was an increase of the net interbank transactions (the difference between the investment in interbank deposits and interbank deposits received) in large banks and a decline in small banks, between October and November 2008.

In the graph of figure 10 it can be noticed the behaviour of net repurchase operations with banks (difference between resales to settle and the repurchases to settle, i.e., between the investment and the obtaining of resources from these operations). Small banks present a seemingly stationary series around zero throughout the period considered, which is indicative of the use of repurchase operations as a classical instrument of liquidity management. Meanwhile, large banks had an increase in the level of net repurchase operations, i.e., an increase of investments regarding withdrawals. This increase, together with the observed increase in *liquid asset* (fig. 6), is an indication that the big banks increased their level of liquidity in the period after the crisis and the measures of October 2008.

from Accounting Plan of National Financial System Institutions (Cosif).

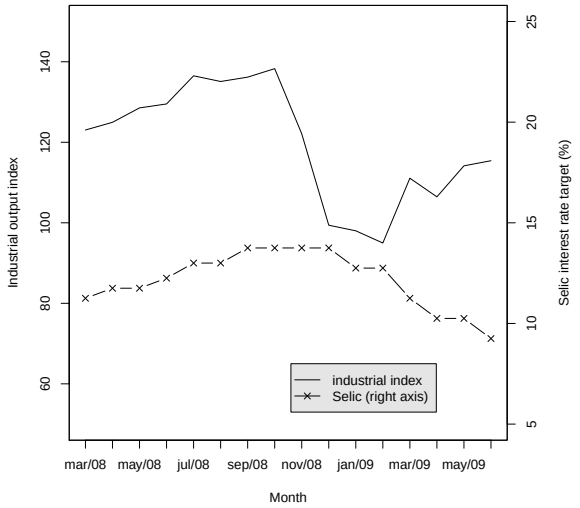

Figure 7: IBGE's Industrial Output Index (jan/2002 = 100) and Brazilian interest rate target Selic.

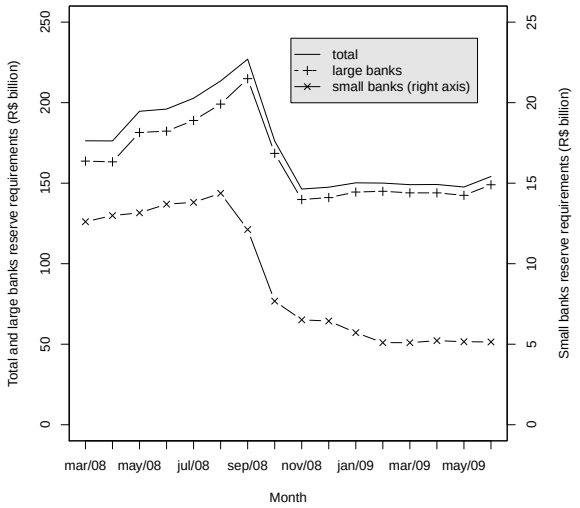

Figure 8: Banks reserve requirements.

The above graphs illustrate the behaviour of variables in this study in a way aggregated by groups of banks considered, large or small. It is noteworthy that the econometric analysis was done with panel data in which the group of large banks has 10 individuals and the group of small banks has 121 individuals. It was tested statistically that the analysis of panel data is significantly better than the aggregate data per group (pooling),

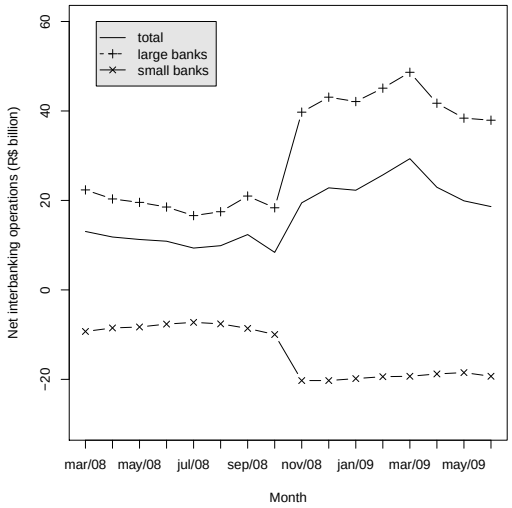

Figure 9: Net interbanking operations.

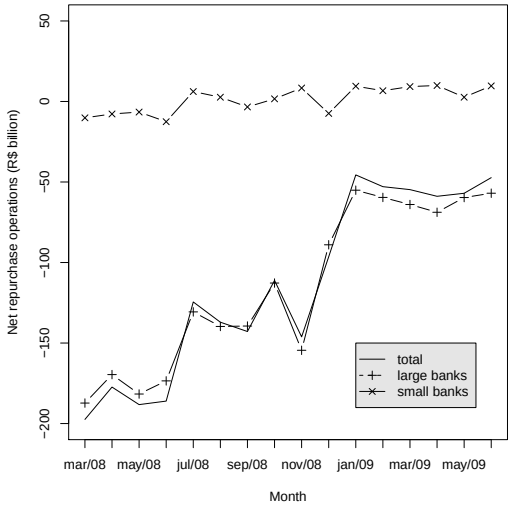

Figure 10: Net repurchases operations of the banking system.

as presented in the graphs. Thus, although the graphs have been used as a guide for this study, and show clearly the behaviour of some variables, the econometric analysis used (differences-in-differences with panel data) revealed subtler significant relationships of the variables of credit with the group and time dummies used, together with their interactions. These results allow to statistically identifying the effects of the anti-crisis

measures in the subsequent behaviour of banks in the credit market.

4. Empirical strategy and estimation results

In order to test the effects of the loosening of reserve requirements as of October 2008 were taken as pre-treatment period the months of March 2008 to September 2008 and the period from November 2008 to February 2009 as the post-treatment. During this period, it was possible to identify two treatment groups, the group of public banks (*PublicBank*) and the group of large banks (*LargeBank*). In this study, these tests will be referenced as *October 2008 Tests*.

To test the effects of increased deposit insurance since March 2009[8] were assumed as banks under treatment those with reference equity (PR) up to R$ 5 billion, as pre-treatment period the months of November 2008 to February 2009 and as the post-treatment period the period from April 2009 to June 2009. During this period, the banks with PR up to R$ 5 billion (*SmallBank*) were identified as the treatment group. In this study, these tests will be called *March 2009 Tests*.

The variables of interest are the new loans (*NewLoan*) and the credit balance (*CreditBalance*) of bank loan portfolios, divided into individuals (PF) and corporations (PJ). Thus, the effects were tested separately on Credit Balances to PF, Credit Balances to PJ, New Loans to PF and New Loans to PJ, derived from treatment measures in October 2008 and as of March 2009. In the following regressions the variables *CreditBalance*, *NewLoan*, *Deposits*, *LiquidAssets* and *SelicTarget* are adjusted by a Brazilian consumer price index (IPCA).

In the *October 2008 Tests*, were estimated the coefficients α, β, γ and λ of equation:

$$\begin{aligned}
&\log(CreditBalance_{i,t} \text{ or } NewLoan_{i,t}) = \\
&\alpha_1 \log(IndustrialOutput_t) + \alpha_2 \log(Deposit_{i,t}) \\
&+ \alpha_3 \log(LiquidAsset_{i,t}) + \alpha_4 SelicTarget_t \\
&+ \gamma_1 LargeBank_i + \gamma_2 PublicBank_i \\
&+ \gamma_3 Nov08_t + \gamma_4 Dec08_t + \gamma_5 Jan09_t + \gamma_6 Feb09_t \\
&+ \beta_1 LargeBank_i * Nov08_t + \beta_2 LargeBank_i * Dec08_t \\
&+ \beta_3 LargeBank_i * Jan09_t + \beta_4 LargeBank_i * Feb09_t \\
&+ \lambda_1 PublicBank_i * Nov08_t + \lambda_2 PublicBank_i * Dec08_t \\
&+ \lambda_3 PublicBank_i * Jan09_t + \lambda_4 PublicBank_i * Feb09_t \\
&+ FixedEffect_i + Constant + Residue_{i,t}. \qquad (1)
\end{aligned}$$

t indicates the month, from March 2008 to February 2009, and i indicates the individual banks.

[8] Resolutions 3962, 3717 and 3729 of the National Monetary Council (CMN) establish and govern the capture of time deposits, with special guarantee provided by the FGC. These measures ensure application of a deposit of up to R$ 20 million per depositor, however, the guarantee of the institution is limited to R$ 5 billion. This device serves as an incentive to direct deposit for smaller institutions, those with the total of deposits up to the limit of R$ 5 billion.

The regression results[9] of New Loans to PF in the *October 2008 Tests* show positive effects of treatment on public banks (*PublicBank*) with the coefficients λ_1 to λ_4 significant at 1%. The coefficients β_1 to β_4 significant at 1% denote positive effects of treatment for larger banks (*LargeBank*). It is noteworthy that the positive effect of treatment on public banks and large banks was achieved even with the evidence of negative effects on lending to PF captured in the γ_3 coefficient of time dummy for the month of November 2008.

The regression results of New Loans to PJ in the *October 2008 Tests* show positive effects of treatment on public banks with the coefficients λ_1 to λ_4 significant at 1%. The β_3 and β_4 coefficients significant at 1% and β_1 at 5% denote positive effects of treatment for larger banks. As was the case in the PF segment, the positive effect of treatment on public banks and large banks was obtained even with evidence of significant negative effects on lending to PJ, the estimated coefficients γ_3, γ_5 and γ_6 of dummies time, respectively, for the months of November 2008, January and February 2009.

Additionally, the regression results of Total New Loans (PJ plus PF) in the *October 2008 Tests* show similar evidences as found in the results of New Loans to PJ and New Loans to PF.

The regression results of Credit Balances to PJ in the *October 2008 Tests* show positive effects of treatment on public banks, with coefficients λ_2 to λ_4 significant at 1% and λ_1 at 5%. The coefficients β_2, β_3 and β_4 significant at 1% denote positive effect of treatment on the larger banks.

In *October 2008 Tests*, deposits presented a positive and significant effect in the regressions, except for Credit Balances to PJ which was not significant. That indicates that in general banks have such deposits as a determinant funding source.

In *March 2009 Tests*, were estimated the coefficients α, β and γ of the equation:

$$\begin{aligned}
&\log(CreditBalance_{i,t} \text{ or } NewLoan_{i,t}) = \\
&\alpha_1 \log(IndustrialOutput_t) + \alpha_2 \log(Deposit_{i,t}) \\
&+ \alpha_3 \log(LiquidAsset_{i,t}) + \alpha_4 SelicTarget_t \\
&+ \gamma_1 SmallBank_i \\
&+ \gamma_2 Apr09_t + \gamma_3 May09_t + \gamma_4 Jun09_t \\
&+ \beta_1 SmallBank_i * Apr09_t \\
&+ \beta_2 SmallBank_i * May09_t \\
&+ \beta_3 SmallBank_i * Jun09_t \\
&+ FixedEffect_i + Constant + Residue_{i,t}. \qquad (2)
\end{aligned}$$

t indicates the month, from November 2008 to June 2009, and i indicates the individual banks.

The regression results of New Loans to PF confirm the treatment effect and present the coefficients β_2 and β_3 positive and significant respectively at 5% and 10%. This

[9] All analysis results are based on estimates of equations 1 and 2 and their variations. The regressions were performed in *Stata* econometric package, from a fixed effects model with panel data using OLS estimation and option *vce (robust)* to address possible problems of heteroscedasticity and serial correlation. The results of estimates with more details are given in the Appendix.

evidence shows that the smaller banks (*SmallBank*), those of PR up to R$ 5 billion, took over the new loans to individuals. However, α_3 is negative and significant at 1%, which indicates that the increase in liquid assets of small banks had a significant effect in reducing the extension of credit to individuals in the period considered in the test.

The regression results of Credit Balances to PF in the *March 2009 Tests* show negative effects of treatment on the banks of PR up to R$ 5 billion, with coefficients β_1, β_2 and β_3 significant at 10%. The regression results of Credit Balances to PJ also have negative effects of treatment with the coefficient β_1 significant at 1%. These findings raise the need to focus on smaller banks, for it is possible that the resumption of the lending were not enough to offset the amount of loan sales to large banks. It is worthy to note the positive effect of the level of deposits on credit balances and new loans to corporations, and also on total credit balances and total new loans, denoted by the coefficient α_2 positive and significant at 1%, which may indicate a measure of success of the special deposits guarantee of March 2009.

In order to assess the behaviour of the banking system liquidity and to have some kind of robustness result, it was performed regressions, similar to (1) and (2), with *LiquidAssets* as the dependent variable. The results are found in the tables A.4 and A.5 in the Appendix. It is noticed that the coefficient of *Credit Balance* present consistently negative sign, which indicates a trade-off between credit and liquidity for the two periods analysed.

The regression results of Liquid Assets in the *October 2008 Tests* (table A.4) present significant, at 1%, positive coefficients to the time dummies from November 2008 to February 2009 and to the large bank dummies as of January and February 2009, which indicates that the whole banking system raised its liquidity level after the crisis and the anticrisis measure of October 2008, but large banks had an extra raise.

The regression results of Liquid Assets in the *March 2009 Tests* (table A.5) present significant positive coefficients to the time dummies from April to June 2009, but the coefficients of the interaction of these time dummies with small and large banks dummies are not statiscally different from zero, which indicates that the measures of March 2009 improved the liquidity of the banking system as a whole. Another success indicator of the March 2009 measures is the positive significant coefficients of the regressor *Deposits*[10], once those measures were exactly an extension of deposits guarantees.

5. Conclusions

The findings in this work showed that the loosening of reserve requirements on bank deposits in Brazil had a key role in the stability of SFN and in the monetary policy in the post breaking of the Lehman Brothers bank. Incentive measures for directing part of the resources of the reserve requirements of large banks, to purchase credit portfolios and for use in interbank deposits from smaller banks, improved liquidity and ensured the stability of the financial system, removing a potential systemic risk. And the release of part of the reserve requirements allowed for public banks and big banks to play a larger role in resumption of new loans after October 2008. But only after the issue of the special guarantee measure of FGC for investment of deposit up to R$ 20 million in March 2009,

[10]Not significant in the Liquid Assets regression in the *October 2008 Tests*.

were resumed the new loans issues by the smaller banks, despite of the concerns on the needs to raise the liquidity level of these institutions.

Aknowledgements

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Appendix A. Tables of the regressions results

Table A.2: Regressions *Credit Balances* and *New Loans* as of October 2008.

Dependent variable:	log(*CreditBalance*)			log(*NewLoan*)		
	PJ	PF	Total	PJ	PF	Total
Independent variables						
Constant	**7.17*****	**7.72****	5.37	13.94	9.86	8.49
	[0.02]	[0.04]	[0.11]	[0.17]	[0.32]	[0.33]
log(*IndustrialProduction*)	0.89	0.71	**1.22***	−2.31	−0.71	−1.13
	[0.21]	[0.34]	[0.08]	[0.34]	[0.77]	[0.59]
log(*Deposits*)	**0.05***	0.10	**0.12****	**0.28****	**0.26***	**0.33*****
	[0.05]	[0.21]	[0.03]	[0.00]	[0.08]	[0.00]
log(*LiquidAssets*)	−0.03	**−0.09*****	**−0.05*****	0.03	−0.05	0.04
	[0.19]	[0.00]	[0.01]	[0.54]	[0.41]	[0.26]
SelicTargetRate	0.03	0.02	0.02	0.17	−0.05	0.07
	[0.42]	[0.67]	[0.53]	[0.23]	[0.71]	[0.55]
*Nov*2008	0.07	**0.18***	**0.17***	**−0.88****	**−0.85****	**−0.81*****
	[0.48]	[0.08]	[0.08]	[0.01]	[0.01]	[0.01]
*Dec*2008	0.20	0.31	**0.39***	−1.06	−0.87	−0.82
	[0.40]	[0.23]	[0.10]	[0.20]	[0.28]	[0.25]
*Jan*2009	0.19	0.35	**0.35***	**−1.42****	−0.97	**−1.08***
	[0.38]	[0.13]	[0.10]	[0.05]	[0.17]	[0.08]
*Feb*2009	0.20	0.36	**0.39***	**−1.43***	−0.98	−1.03
	[0.39]	[0.15]	[0.09]	[0.07]	[0.21]	[0.14]
LargeBank $*$ *Nov*2008	0.17	−0.05	0.01	**0.34****	**0.55*****	**0.38*****
	[0.12]	[0.60]	[0.88]	[0.02]	[0.00]	[0.01]
LargeBank $*$ *Dec*2008	**0.27*****	0.00	0.09	0.22	**0.54*****	**0.31****
	[0.00]	[0.99]	[0.26]	[0.17]	[0.00]	[0.02]
LargeBank $*$ *Jan*2009	**0.29*****	0.00	0.14	**0.45*****	**0.63*****	**0.48*****
	[0.00]	[0.99]	[0.12]	[0.00]	[0.00]	[0.00]
LargeBank $*$ *Feb*2009	**0.30*****	0.02	**0.14***	**0.36*****	**0.59*****	**0.38*****
	[0.00]	[0.86]	[0.09]	[0.01]	[0.00]	[0.00]
PublicBank $*$ *Nov*2009	**0.13****	−0.05	0.03	**0.47*****	**0.69*****	**0.55*****
	[0.03]	[0.29]	[0.46]	[0.00]	[0.00]	[0.00]
PublicBank $*$ *Dec*2009	**0.20*****	−0.05	0.06	**0.38*****	**0.69*****	**0.49*****
	[0.00]	[0.45]	[0.18]	[0.00]	[0.00]	[0.00]
PublicBank $*$ *Jan*2009	**0.28*****	−0.05	**0.14*****	**0.55*****	**0.67*****	**0.59*****
	[0.00]	[0.43]	[0.01]	[0.00]	[0.00]	[0.00]
PublicBank $*$ *Feb*2009	**0.29*****	−0.03	**0.15*****	**0.29*****	**0.61*****	**0.38*****
	[0.00]	[0.64]	[0.00]	[0.01]	[0.00]	[0.00]
R^2*between*	0.51	0.28	0.70	0.60	0.56	0.67
Observations	1022	970	1081	938	861	1016

Source: Central Bank of Brazil.

Note: *, ** e *** show significant coefficients at 10%, 5% and 1%, respectively.

P-values between brackets, below the coefficients.

Table A.3: Regressions *Credit Balances* and *New Loans* as of March 2009.

Dependent variable:	$\log(CreditBalance)$			$\log(NewLoan)$		
	PJ	PF	Total	PJ	PF	Total
Independent variables						
$Constant$	$\mathbf{7.06}^{***}$	$\mathbf{12.2}^{***}$	$\mathbf{8.77}^{***}$	-1.91	$\mathbf{12.5}^{***}$	1.05
	[0.00]	[0.00]	[0.00]	[0.65]	[0.00]	[0.76]
$\log(IndustrialProduction)$	0.11	0.06	0.06	$\mathbf{-0.13}^{**}$	-0.52	$\mathbf{-1.03}^{*}$
	[0.52]	[0.85]	[0.76]	[0.03]	[0.29]	[0.07]
$\log(Deposits)$	$\mathbf{0.26}^{***}$	-0.01	$\mathbf{0.25}^{***}$	$\mathbf{0.55}^{***}$	0.09	$\mathbf{0.56}^{***}$
	[0.00]	[0.95]	[0.00]	[0.00]	[0.39]	[0.00]
$\log(LiquidAssets)$	-0.04	-0.02	$\mathbf{-0.07}^{**}$	0.03	$\mathbf{-0.17}^{***}$	-0.04
	[0.20]	[0.50]	[0.04]	[0.66]	[0.01]	[0.42]
$SelicTargetRate$	0.03	-0.02	0.04	$\mathbf{0.51}^{***}$	0.07	$\mathbf{0.32}^{***}$
	[0.42]	[0.78]	[0.28]	[0.00]	[0.46]	[0.00]
$Apr2009$	0.11	0.05	0.18	$\mathbf{1.28}^{***}$	0.34	$\mathbf{0.89}^{***}$
	[0.25]	[0.80]	[0.11]	[0.00]	[0.26]	[0.01]
$May2009$	0.10	0.06	0.18	$\mathbf{1.55}^{***}$	0.46	$\mathbf{1.08}^{***}$
	[0.36]	[0.77]	[0.13]	[0.00]	[0.13]	[0.00]
$Jun2009$	0.11	0.06	0.23	$\mathbf{2.07}^{***}$	0.60	$\mathbf{1.46}^{***}$
	[0.40]	[0.83]	[0.15]	[0.00]	[0.14]	[0.00]
$SmallBank * Abr2009$	$\mathbf{-0.12}^{***}$	$\mathbf{-0.09}^{*}$	$\mathbf{-0.10}^{**}$	0.21	0.24	0.21
	[0.01]	[0.06]	[0.01]	[0.24]	[0.11]	[0.16]
$SmallBank * May2009$	-0.05	$\mathbf{-0.09}^{*}$	$\mathbf{-0.07}^{*}$	0.19	$\mathbf{0.23}^{**}$	$\mathbf{0.19}^{*}$
	[0.21]	[0.08]	[0.09]	[0.11]	[0.05]	[0.06]
$SmallBank * Jun2009$	-0.01	$\mathbf{-0.14}^{*}$	-0.04	0.09	$\mathbf{0.22}^{*}$	0.17
	[0.82]	[0.09]	[0.39]	[0.44]	[0.06]	[0.11]
$R^2between$	0.67	0.43	0.73	0.62	0.09	0.66
$Observations$	648	604	687	596	520	645

Source: Central Bank of Brazil.

Note: *, ** e *** show significant coefficients at 10%, 5% and 1%, respectively.

P-values between brackets, below the coefficients.

Table A.4: Regression *Liquid Assets* as of October 2008.

Dependent variable:	$\log(LiquidAssets)$		$\log(LiquidAssets)$
Independent variables			
$Constant$	6.16		5.60
	[0.29]		[0.35]
$\log(IndustrialProduction)$	$\mathbf{3.22}^{**}$		$\mathbf{3.69}^{**}$
	[0.03]		[0.02]
$\log(Deposits)$	0.08		0.04
	[0.25]		[0.70]
$\log(CreditBalance)$	$\mathbf{-0.12}^{***}$	$\log(CreditBalancePJ)$	-0.04
	[0.01]		[0.66]
		$\log(CreditBalancePF)$	$\mathbf{-0.16}^{***}$
			[0.00]
$SelicTargetRate$	$\mathbf{-0.17}^{**}$		$\mathbf{-0.18}^{**}$
	[0.03]		[0.03]
$Nov2008$	$\mathbf{0.61}^{***}$		$\mathbf{0.64}^{***}$
	[0.00]		[0.00]
$Dec2008$	$\mathbf{1.35}^{***}$		$\mathbf{1.47}^{***}$
	[0.01]		[0.00]
$Jan2009$	$\mathbf{1.16}^{***}$		$\mathbf{1.32}^{***}$
	[0.01]		[0.00]
$Feb2009$	$\mathbf{1.21}^{***}$		$\mathbf{1.35}^{***}$
	[0.01]		[0.01]
$LargeBank * Nov2008$	0.13		$\mathbf{0.16}^{*}$
	[0.12]		[0.10]
$LargeBank * Dec2008$	0.15		0.16
	[0.13]		[0.12]
$LargeBank * Jan2009$	$\mathbf{0.28}^{***}$		$\mathbf{0.26}^{***}$
	[0.00]		[0.01]
$LargeBank * Feb2009$	$\mathbf{0.32}^{***}$		$\mathbf{0.33}^{***}$
	[0.00]		[0.00]
$PublicBank * Nov2009$	-0.06		-0.05
	[0.29]		[0.48]
$PublicBank * Dec2009$	$\mathbf{-0.19}^{**}$		-0.14
	[0.03]		[0.12]
$PublicBank * Jan2009$	-0.11		-0.10
	[0.16]		[0.24]
$PublicBank * Feb2009$	-0.09		-0.05
	[0.31]		[0.58]
$R^2between$	0.07		0.34
$Observations$	1081		911

Source: Central Bank of Brazil.

Note: *, ** e *** show significant coefficients at 10%, 5% and 1%, respectively.

P-values between brackets, below the coefficients.

Table A.5: Regression *Liquid Assets* as of March 2009.

Dependent variable:	$\log(LiquidAssets)$		$\log(LiquidAssets)$
Independent variables		Independent variables	
$Constant$	**17.0*****		**17.0*****
	[0.00]		[0.00]
$\log(IndustrialProduction)$	-0.24		-0.24
	[0.33]		[0.33]
$\log(Deposits)$	**0.29*****		**0.29*****
	[0.00]		[0.00]
$\log(CreditBalance)$	**$-$0.23*****		**$-$0.23*****
	[0.00]		[0.00]
$SelicTargetRate$	0.07		0.07
	[0.18]		[0.18]
$Apr2009$	**0.33****		**0.30***
	[0.04]		[0.06]
$May2009$	**0.36****		**0.35****
	[0.03]		[0.05]
$Jun2009$	**0.45****		**0.44***
	[0.04]		[0.07]
$SmallBank * Apr2009$	-0.02	$LargeBank * Apr2009$	0.02
	[0.60]		[0.61]
$SmallBank * May2009$	-0.01	$LargeBank * May2009$	0.01
	[0.89]		[0.89]
$SmallBank * Jun2009$	0.00	$LargeBank * Jun2009$	0.00
	[0.96]		[0.96]
$R^2between$	0.30		0.30
$Observations$	687		687

Source: Central Bank of Brazil.

Note: *, ** e *** show significant coefficients at 10%, 5% and 1%, respectively.

P-values between brackets, below the coefficients.