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Brazil: Reserve Requirements, GFC¹

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Abstract

After the collapse of Lehman Brothers in September 2008, deposits began to accumulate at large Brazilian banks, representing a flight to safety away from small and medium-sized banks. While total deposits in the Brazilian financial system grew by 13% from August 2008 to January 2009, the total deposits held by small and medium-sized banks declined by 23% and 11%, respectively. Because of high statutory reserve requirements and legal disincentives to lend directly to financial institutions, the Central Bank of Brazil (BCB) used reserve requirements as its primary tool for providing liquidity to incentivize large banks to provide credit to smaller banks, starting in October 2008. In October 2008, the BCB lowered reserve requirements for all banks. It also increased eligibility thresholds, which released some smaller banks from holding required reserves, provided voluntary deductions for large banks that lent to smaller banks, and effectively mandated that large banks spread liquidity to smaller banks. The BCB maintained these policies throughout the crisis and did not begin raising reserve requirements until 2010. The BCB estimated that these actions released BRL 116 billion (USD 71 billion) of reserves into the system, or 4% of GDP. Most of the impact was from increases in the deductions that banks could take from their requirements, rather than from the headline cuts in reserve requirement ratios.

Keywords: Brazil, GFC, liquidity rules, reserve ratio, reserve requirements

¹ This case study is part of the Yale Program on Financial Stability (YPFS) selection of New Bagehot Project modules considering the adjustment of reserve requirements. Cases are available from the *Journal of Financial Crises* at <https://elischolar.library.yale.edu/journal-of-financial-crises/>.

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Overview

In the leadup to the Global Financial Crisis (GFC), Brazil stood out for setting high and complex reserve requirements, as a leftover of 1990s stabilization policy (OECD 2009). The Central Bank of Brazil (BCB) had three different types of requirements: ordinary requirements that paid low or no interest, extraordinary requirements that banks held in cash with the central bank at the target interest rate, and a government bond-holding requirement against time deposits.³ The statutory reserve requirements were quite high—the highest effective rate was 53%, applied to demand deposits, which included 45% in ordinary reserves and 8% in extraordinary cash reserves. However, the BCB operated a system of deductions that freed many small banks from holding any required reserves at all (Robitaille 2011).

When the GFC worsened after the collapse of Lehman Brothers in September 2008, deposits in the Brazilian financial system began to accumulate among the largest banks. Rather than a systemic leakage of deposits out of Brazil, this represented a “flight to safety” from small and medium-sized banks to large banks. From August 2008 to January 2009, total deposits grew 20% in large banks but fell 23% and 11% in small and medium-sized banks, respectively (Mesquita and Torós 2010).

In response to this movement, the Central Bank of Brazil (BCB) lowered many of its reserve requirements as its “main liquidity provision tool,” owing to the relatively high levels of required reserves and legal disincentives to provide direct loans (Robitaille 2011, 30). The BCB also increased the eligibility deductions to allow some banks to avoid holding required reserves. These actions took place between September and December 2008.

Key Terms

Purpose of Adjusting Reserve Requirement (RR): to counteract the significant decline in liquidity of the financial system and to induce deposits from large to smaller banks

Range of RR Ratio (RRR) Peak-to-Trough	53.0%–42.0% (demand deposits)
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	30.0%–20.0% (savings deposits)
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	8.0%–9.0% (time deposits)
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RRR Increase Period	Not applicable
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RRR Decrease Period	September–December 2008
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Legal Authority	Article 10(3) of Law 4575
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Interest/Remuneration on Reserves	Selic (policy) rate, on two of the three categories of reserve assets
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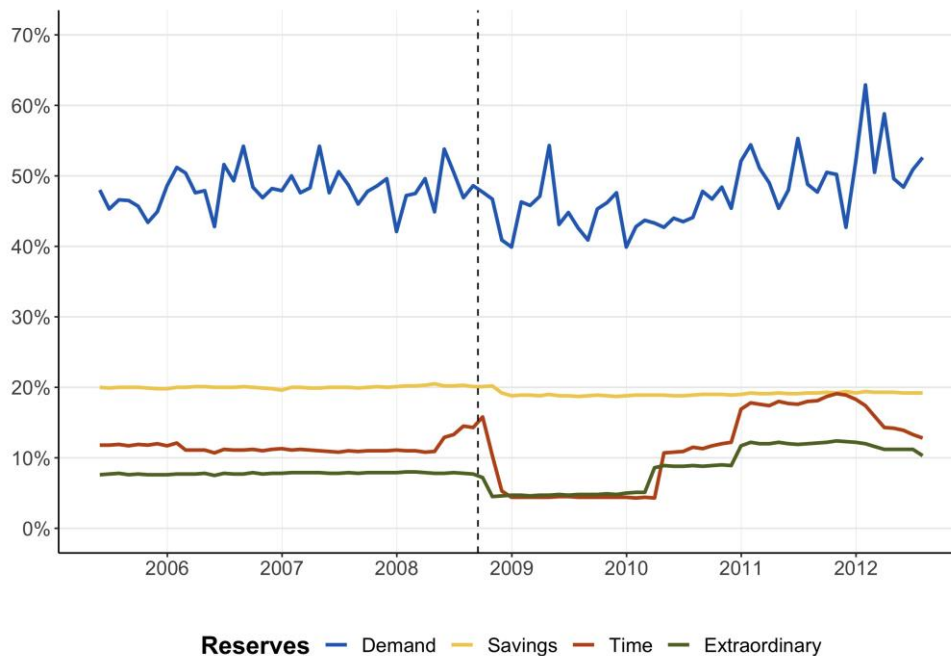
Notable Features	Most of the reserve impact was from increases in the deductions banks could take, rather than the headline RRR ratios Many inducements to move funds from large to smaller banks
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Outcomes	BRL 116 billion– BRL 145 billion (USD 71 billion– USD 88 billion) in reserves released
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³ Most of the reserves held for the ordinary reserve requirement backed demand deposits and paid no interest. Required reserves that backed savings deposits paid interest well below market rates (Robitaille 2011, 62).

The BCB's goal was to release reserves from large banks and build them at smaller banks. The BCB required large banks to purchase loan portfolios of small and medium-sized banks by forcing large banks to shift their reserves on time deposits from remunerated government bond holdings to unremunerated cash (BCB 2008g). The BCB also employed other strategies to release reserves from large banks, such as a deduction for prepaying contributions to the deposit insurance fund that purchased loan portfolios, a deduction for foreign-exchange swap purchases, and a deduction for (effectively) making loans to the government development bank, BNDES.

See Figure 1 for a depiction of effective reserve requirement ratios in the Brazilian banking system, with declines at the end of 2008, most notably on time deposits. In this instance, effective reserve requirement ratios represent the actual level of required reserves held by banks post-deductions. However, effective ratios still remained quite high compared to that of most countries. Figure 2 summarizes the three types of reserve requirements applied to the three types of deposits in 2008, along with the relevant deductible.

Figure 1: Effective Reserve Requirement Ratios (%)

Note: The reserve requirements for demand, savings, and time deposits in the figure include both ordinary requirements on demand and savings deposits and the government bond-holding requirement on all three types of deposits. The extraordinary requirement is an additional requirement that the BCB required banks to hold in cash (Robitaille 2011). For more details, see Key Design Decision No. 12, Changes in Reserve Requirements. The dotted line represents the failure of Lehman Brothers on September 15, 2008, after which the BCB began to adjust reserve requirements to promote liquidity.

Source: Cavalcanti and Vonbun 2013.

Figure 2: Overview of Reserve Requirements**Reserve requirements: Mid-January 2008**

Type of Reserve	Demand Deposits	Savings Deposits	Time Deposits	Deductible (BRL)
Ordinary (unremunerated cash account)	45	20	0	44 million on demand deposits, no deductible for savings deposits
Extraordinary (remunerated cash account)	8	10	8	100 million (applied to the sum)
Government bond holdings	0	0	15	300 million

Reserve requirements: End-December 2008

Type of Reserve	Demand Deposits	Savings Deposits	Time Deposits	Deductible (BRL)
Ordinary (unremunerated cash account)	42	20	9	44 million on demand deposits, no deductible for savings deposits
Extraordinary (remunerated cash account)	0	0	0	None
Government bond holdings	5	10	10	2 billion

Source: Robitaille 2011.

Summary Evaluation

In a section on the BCB's website explaining how it responded to the GFC, the BCB writes that:

the existence of comfortable levels of required reserves allowed the BCB to inject liquidity rapidly into the Brazilian banking system, contributing to a normalization of credit conditions in the economy. (BCB n.d.b, author's translation)

Prior to the GFC, banks held more than 250 billion reais (USD 153 billion)⁴ in required reserves at the BCB. By August 2009, required reserves would have totaled 295 billion reais

⁴ USD 1 = BRL 1.64 on September 1, 2008, according to Yahoo Finance.

(BRL) under precrisis rules, according to BCB estimates. However, banks held only BRL 179 billion at that point, which implies that the measures taken by the BCB helped release BRL 116 billion in reserves, or 4% of GDP. In particular, the changes to the extraordinary cash reserve requirement released BRL 42 billion, and the adjustments to the reserve requirements applied to time deposits released BRL 62 billion (Mesquita and Torós 2010).

The Organisation for Economic Co-operation and Development (OECD) estimated the BCB's measures released BRL 145 billion in liquidity, ultimately concluding that most of the reserves released into the system resulted from increases in the deductions that banks could take from their requirements, rather than from the headline cuts in reserve requirement ratios. The OECD calculated different breakdowns of liquidity released by the BCB. See Figure 3 for estimates relating to reserve requirement policy.

Figure 3: Estimated Liquidity Released by Reserve Requirement Adjustments

Reserve Requirement Adjustment	Estimate (BRL)
Shift from remunerated government bond reserve holdings to unremunerated cash unless loan portfolios purchased	40.0 billion
Deductible increases	32.0 billion
Deduction of loan portfolio purchases (voluntary)	27.0 billion
Deduction of foreign-exchange swap purchases from required reserves	19.0 billion
Extraordinary requirement lowered for demand and time deposits from 8% to 5%	15.5 billion
Prepay contributions to deposit insurance fund for 60 months	5.5 billion
Demand deposits reserve requirement held in unremunerated cash lowered from 45% to 42%	3.5 billion
Rural savings deposits reserve requirement held in unremunerated cash lowered from 20% to 15%	2.5 billion

Source: OECD 2009.

In calculating its estimates, the OECD noted that the BCB allowed banks to deduct purchases of foreign-exchange swaps from their required reserves—which the OECD estimated would release BRL 19 billion of reserves—accounting for part of the difference in estimates made by the OECD and Mesquita and Torós (OECD 2009).

According to the OECD in 2009, “the impact of the liquidity-boosting measures on longer-term credit creation is still unclear, but recent trends are encouraging” (OECD 2009, 26). One of the issues limiting the effectiveness of lowering reserve requirements was the increase in excess reserves placed at the BCB by banks. However, the OECD recommended that the BCB

eliminate its high reserve requirements, as they tend to raise the costs of intermediation. The OECD noted that reserve requirement policies had served as “useful instruments to manage liquidity in periods of financial stress” (OECD 2009, 60).

Robitaille (2011, 36) states that, in general, the reserve requirement policy implemented by the BCB during the GFC “does not appear to have been as successful as has been asserted” at circulating liquidity from large banks to small and medium-sized banks. The author instead claims that

direct and indirect assistance from government-owned or government-supported entities played a more crucial role in alleviating funding pressures at that time. (Robitaille 2011)

Context: Brazil 2008–2009	
GDP (SAAR, nominal GDP in LCU converted to USD)	\$1.7 trillion in 2008
	\$1.7 trillion in 2009
GDP per capita (SAAR, nominal GDP in LCU converted to USD)	\$8,831 in 2008
	\$8,598 in 2009
Sovereign credit rating (five-year senior debt)	2008
	Moody's: Ba1
	S&P: BBB+
	Fitch: BBB-
	2009
	Moody's: Baa3
S&P: BBB+	
Fitch: BBB-	
Size of banking system	\$1.4 trillion in 2008
	\$1.4 trillion in 2009
Size of banking system as a % of GDP	81.3% in 2008
	84.3% in 2009
Size of banking system as a % of financial system	91.2% in 2008
	86.5% in 2009
Five-bank concentration of banking system	65.9% in 2008
	76.3% in 2009
Foreign involvement in banking system	22% in 2008
	18% in 2009
Existence of deposit insurance	Yes in 2008
	Yes in 2009
<i>Sources: Bloomberg; World Bank Global Financial Development Database; World Bank Deposit Insurance Dataset.</i>	

Key Design Decisions

1. Purpose: The BCB adjusted reserve requirements to provide liquidity to the banking system, especially for small and medium-sized banks.

In the aftermath of the failure of Lehman Brothers in September 2008, capital flows to emerging markets collapsed, causing funding pressure for Brazilian banks. During the week of October 6, 2008, between BRL 30 billion and BRL 40 billion in deposits moved from small and medium-sized banks to large banks that depositors viewed as safer (Romero and Ribeiro 2009). This represented 5.5% to 7.5% of total time deposits at the end of September (Robitaille 2011).

According to the BCB's description of its actions during the GFC,

the adopted measures by the government and the Central Bank of Brazil to mitigate the effects of the domestic banking system crisis were aimed, principally, to counteract the significant decrease in liquidity of the financial markets (BCB n.d.b, author's translation).

The BCB's approach to liquidity provision followed three main principles during the GFC, according to a discussion paper that two BCB deputy governors published after the crisis: 1) keep inflation converging to the target rate, 2) minimize the exposure of the BCB to the private sector, and 3) avoid rewarding and encouraging moral hazard by private sector actors. The deputy governors say that the GFC did not result in deposits leaving Brazil in a systematic manner but rather led to a concentration of deposits among a few large institutions. From August 2008 to January 2009, total deposits grew by 20% for large banks while small and medium-sized banks' deposits declined by 23% and 11%, respectively (Mesquita and Torós 2010).⁵ Through its reserve requirement policy changes, the BCB attempted to reverse this accumulation of deposits among the largest banks of Brazil.

2. Part of a Package: Reserve requirements were the main tool available to the BCB for liquidity provision, as financial institutions were reluctant to borrow from the BCB because of the perception of significant public oversight and stigma.

Prior to the GFC, Brazilian banks began to draw on a type of funding that they called termed repo but which functioned effectively as time deposits. These transactions allowed banks to avoid time deposit reserve requirements. In early 2008, the BCB announced that it would set high reserve requirements for termed repos, effectively tightening reserve requirements. However, the BCB delayed the implementation of this policy during the GFC. The delay in effect loosened reserve requirements during the crisis (Robitaille 2011).

In an attempt to provide liquidity to smaller financial institutions, the Brazilian deposit insurance fund (FGC) purchased loan portfolios of smaller banks (OECD 2009). At the start of the crisis, the FGC had only two full-time employees and only BRL 2.5 billion in lending

⁵ Total overall deposits in the system grew by 13% during this period.

capacity. Therefore, the BCB allowed banks to prepay up to 60 months of their required contributions to the FGC and deduct that from their unremunerated cash reserves held on demand deposits. According to Robitaille (2011), the FGC received BRL 5.4 billion in prepayments, implying an equivalent release of BRL 5.4 billion in reserves.

To enhance liquidity in foreign-exchange markets, the BCB also allowed banks to deduct purchases of foreign-exchange swaps from their required reserves, which the OECD estimated would release BRL 19 billion of reserves (OECD 2009).

Although banks could also turn to the discount window, doing so posed a stigma problem. The BCB itself described approaching the discount window prior to 1996 as “tantamount to being almost insolvent for a financial institution” (BCB 1999, 78). Since 1996, the BCB made several changes to the discount window to destigmatize it, through easing terms and widening eligibility. The BCB also improved the discount window’s legal and operational frameworks during the GFC to make it a more appealing source of liquidity for banks. Nonetheless, the discount window was unused during the GFC (Mesquita and Torós 2010).

3. Legal Authority: The BCB had significant flexibility in setting reserve requirements according to the law that established the framework.

Law 4595 of 1964, which established the framework of the Brazilian financial system, granted the BCB the ability to establish reserve requirements (Robitaille 2011). Law 7730 of 1989, amending Law 4595, allowed the BCB to vary reserve requirements based on geographic regions, “the priorities attributed to the investments,” and type of financial institution (Morris 1964, sec. 10). Law 7730 specifically permits the BCB to lower reserve requirements on funds that are reinvested in agricultural financing with favorable terms (Casa Civil 1964).

Law 7730 permits the BCB to apply up to a 100% reserve requirement on demand deposits and up to 60% on other financial instruments. The law also states that the BCB can decide for the reserves to be held in cash or government debt and allows the BCB to determine if the reserves are remunerated or not (Casa Civil 1964).

At the time the government passed these laws, the BCB used reserve requirements as its main method of providing liquidity to the financial system. BCB officials said political pressure and scrutiny from the National Congress and the public discouraged its use of traditional lender-of-last-resort policy. The BCB, at the time, was not a formally independent institution, and officials at the BCB were liable for their actions for up to five years upon leaving office. Robitaille (2011, 29) found multiple examples of central bank officials facing investigations and public criticism prior to the GFC, stating that “the threat of legal action continues to be taken seriously.”

In the wake of a banking crisis in the late 1990s, the Brazilian National Congress passed a Fiscal Responsibility Law in 2000 that imposed limits on the BCB’s ability to lend to the financial sector (Robitaille 2011). This legislation barred the BCB from using public money to “rescue” financial institutions, unless the National Congress passed “specific laws” authorizing it (Congresso Nacional 2000, art. 28). This legislation allowed the BCB to provide

“discount window operations and loans with maturities with less than 360 days to financial institutions” (Congresso Nacional 2000, art. 28). However, despite this carve-out for the discount window, the BCB remained hesitant to use it. Therefore, changing reserve requirements became the main tool for liquidity provision during the GFC.

4. Administration: The BCB administered all changes to the RRR.

The BCB administered changes to the RRR.

5. Governance: The National Monetary Council sets reserve requirements, although the BCB uses its agenda-setting role to drive decision-making.

According to Law 4595, the National Monetary Council (CMN) had the authority to set reserve requirements. The CMN had the following members at the time: the Minister of State for Finance; the Minister of State for Planning, Budget and Management; and the President of the BCB (Casa Civil 1964). The BCB is the Secretariat of the CMN and establishes its agenda, which gives the central bank significant influence over its decisions (Costa de Moura and Bandeira 2017).

According to the Romero and Ribeiro (2009) oral history of the crisis, on October 10, 2008, two senior BCB officials—the Deputy Governor for Monetary Policy and the head of banking operations—worked together to determine which reserve requirements to change and how those tweaks would benefit individual banks. Work at the BCB continued around the clock throughout the weekend, with the BCB announcing on Monday, October 13 that it would change reserve requirements to release BRL 100 billion in reserves (Romero and Ribeiro 2009). Research did not determine external oversight of reserve requirement policy.

No Brazilian agency had an explicit financial stability mandate, but the BCB acted on a *de facto* mandate to monitor financial stability. As the Secretariat of the CMN, the BCB “heavily influences the design and structure of macroprudential policy,” as well as designed many of the policy instruments (Costa de Moura and Bandeira 2017, 78). Specifically, staffers at the BCB stated that “the BCB and CMN are jointly responsible for the management of macroprudential instruments including . . . reserve requirement ratios” (Costa de Moura and Bandeira 2017, 78).

6. Communication: The BCB announced changes in reserve requirements through public circulars.

The BCB announced changes to the reserve requirements through public circulars.

The day before the BCB announced a reserve requirement change on October 13, 2008, the President of the BCB met with the heads of the major banks in Brazil to request that they continue to use the interbank market, especially for small and medium-sized banks (Romero and Ribeiro 2009).

7. Assets Qualifying as Reserves: The BCB required banks to hold reserves in unremunerated cash, remunerated cash, and remunerated government bonds.

The BCB's reserve requirements had to be fulfilled by three categories of assets: unremunerated cash (ordinary reserves), remunerated cash (extraordinary reserves), and government bond holdings. Article 10(3) of Law 4595 gave the BCB the authority to require reserves to take the form of cash and government securities (Casa Civil 1964). The two categories of cash reserves were kept at the BCB in reserve accounts (Robitaille 2011).

According to Robitaille (2011, 18), there did not appear to be many limitations on what constituted "government bond holdings," so long as they were marketable. This included fixed-rate, floating-rate, and consumer price index-chained government securities.

8. Reservable Liabilities: The BCB applied various RRRs to time, demand, and savings deposits.

As noted in Key Design Decision No. 12, Changes in Reserve Requirements, the BCB applied different ratios to different deposit types, with relatively high rates applied to demand and savings deposits (45.0% and 20.0%, respectively). Partly for this reason, time deposits have been the most important source of domestic funding for Brazilian banks since the 1990s (Robitaille 2011).⁶

9. Computation: The BCB used a half-lagged or lagged measure, depending on deposit type, to average the RRR across a maintenance period of one to two weeks.

The BCB based reserve requirements on the average levels of liabilities over a maintenance period; it did not implement a marginal reserve requirement during the crisis. The BCB maintenance period was one to two weeks and the BCB used a half-lagged to lagged accounting measure, both depending on the type of deposit. In a lagged system, the maintenance period does not overlap with the calculation period, while the two periods overlap under a half-lagged system. The lagged system allows banks to know for certain the level of required reserves ahead of time but delays the implementation of changes to reserve requirements by a week or two (Montoro and Moreno 2011; Robitaille 2011).

10. Eligible Institutions: All banks are required to hold reserves; during the crisis, the BCB expanded the existing deductions for small and medium-sized banks.

Although the BCB set high statutory reserve ratios prior to the GFC, deductions allowed small and medium-size banks to maintain much lower effective reserve ratios.

For the ordinary reserve requirement on demand deposits, banks could deduct BRL 44 million from their reserve requirement prior to the GFC. In effect, banks with less than BRL

⁶ The BCB required banks to lend 27% of demand deposits to the agriculture sector and 65% of savings deposits to the housing sector (Robitaille 2011, 17).

98 million in demand deposits did not have to hold required reserves. The BCB did not change this deductible during the GFC (Robitaille 2011).

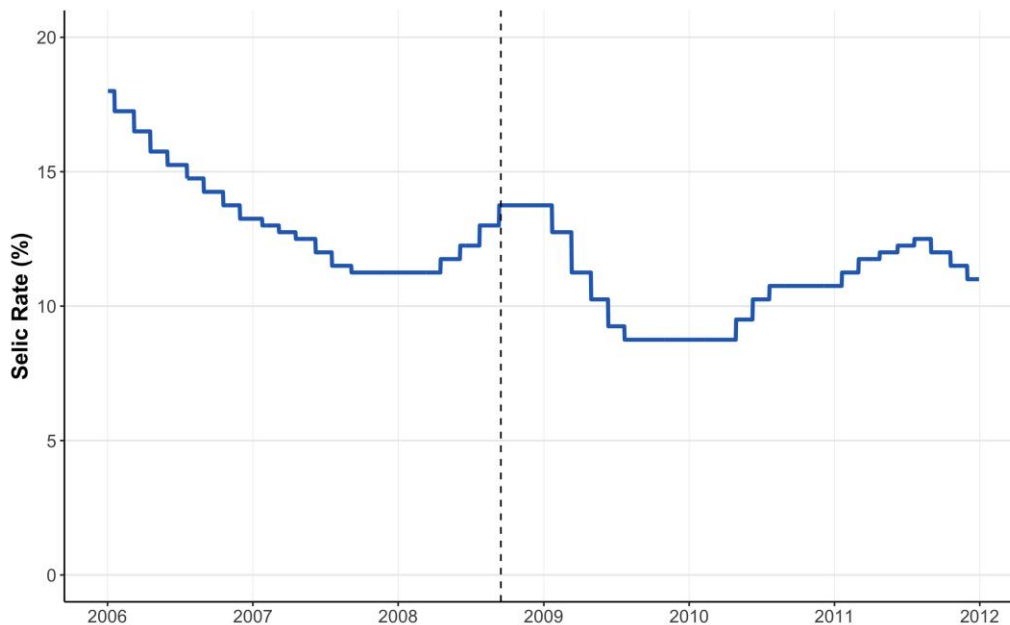
For the extraordinary reserve requirement, banks could deduct BRL 100 million from the sum of reserves held on time, demand, and savings deposits prior to the GFC (Robitaille 2011). In effect, banks were exempt from the extraordinary reserve requirement if their ordinary reserves on time, demand, and savings deposits were less than BRL 100 million. The BCB raised this deductible to BRL 300 million on September 24 (BCB 2008a), BRL 700 million on October 8 (BCB 2008c), and BRL 1 billion on October 13 (BCB 2008d). See Figure 7 for an overview of these changes.

For the government bonds held in reserve against time deposits, banks could deduct BRL 300 million prior to the GFC. The BCB raised this deductible to BRL 700 million on October 8 (BCB 2008c) and BRL 2 billion on October 13 (BCB 2008d). See Figure 8 for an overview of these changes.

According to Robitaille (2011), only 41 out of 101 Brazilian banks held required reserves in December 2007. The remaining banks were smaller than the eligibility thresholds established by the deductibles.

11. Timing: The BCB adhered to a separation principle in which it did not change the target policy rate, the Selic, during the reserve requirement adjustments.

The BCB adhered to a “separation principle,” in which it used separate tools to implement monetary policy and liquidity provision (Mesquita and Torós 2010). As can be seen in Figure 4, the BCB raised the Selic rate, the target policy rate, in the leadup to the collapse of Lehman Brothers in September 2008. However, after Lehman failed, the BCB eased reserve requirements to provide liquidity to the financial system. The BCB held the Selic rate constant during that period and only lowered it in 2009 after it stopped adjusting reserve requirements.

Figure 4: Selic Rate (% , daily)

Note: Dotted line represents the collapse of Lehman Brothers on September 15, 2008.

Source: BCB n.d.a.

12. Changes in Reserve Requirements: The BCB made changes to the three types of reserve requirements to promote liquidity flows from larger banks to smaller and medium-sized banks.

The BCB had three types of reserve requirements: ordinary requirements that paid low or no interest, extraordinary requirements that banks held in cash with the central bank at the target interest rate, and a government bond-holding requirement against time deposits (Robitaille 2011). Each of these categories will be discussed individually. See Figure 5 for an overview of the reserve requirements prior to the GFC.

Figure 5: Reserve Requirements in Mid-January 2008 (%)

Type of Reserve	Demand Deposits	Savings Deposits	Time Deposits	Deductible (BRL)
Unremunerated cash account	45	20	0	44 million on demand and no deductible for savings deposits
Remunerated cash account	8	10	8	100 million (applied to the sum)
Government bond holdings	0	0	15	300 million

Source: Robitaille 2011.

Ordinary Reserve Requirement

The BCB maintained high reserve ratios that had to be kept as unremunerated reserves. Pre-crisis, eligible institutions had to hold ordinary reserves to cover 45% of their demand deposits and 20% of their savings deposits (Robitaille 2011). On October 14, 2008, the BCB lowered the rate on demand deposits to 42% (BCB 2008f). This released about BRL 3.5 billion in reserves (OECD 2009). The BCB did not change this ratio for the remainder of the crisis period. The BCB never made a change to the reserve requirement for savings deposits during the crisis period.⁷

The BCB also introduced a quasi-statutory reserve requirement on time deposits, which is discussed in Key Design Decision No. 14, Other Restrictions. In effect, the BCB forced eligible institutions to move their time deposit reserves from government bonds to unremunerated reserves unless they provided liquidity to smaller banks in the financial system (Robitaille 2011). See Figure 6 for an overview of the changes applied to the unremunerated reserve requirement set by the BCB.

⁷ However, the BCB did decrease the requirement for savings deposits of rural banks to 15% on October 30 (Cavalcanti and Vonbun 2013). The OECD estimated that this released BRL 2.5 billion (OECD 2009).

Figure 6: Reserve Requirement Changes to Unremunerated Reserves in 2008

Date Announced	Date Effective	Demand Deposits	Savings Deposits	Time Deposits	Deductible (BRL)
Pre-crisis		45	20	0	44 million on deposits
October 14	October 29	42	-	-	-
October 24	October 24	-	-	-	-
October 30	November 14	-	-	10.5	-
December 19	January 5	-	-	9	-

Note: Red text indicates quasi-statutory ratios due to the other conditions applied by the BCB. A hyphen represents no change from the previous circular.

Source: Robitaille 2011.

Extraordinary Reserve Requirement

Prior to the GFC, the BCB also had an extraordinary reserve requirement. It required eligible institutions to hold cash reserves with the central bank to cover 8% of demand deposits, 10% of savings deposits, and 8% of time deposits. On October 8, 2008, the BCB lowered the requirements for both demand and time deposits to 5% (BCB 2008c). This released an estimated BRL 15.5 billion in reserves (OECD 2009). Also, on November 13, the BCB required banks to hold their reserves for the extraordinary requirement against all three types of deposits in government bonds rather than cash with the central bank (BCB 2008h). According to Robitaille (2011), banks preferred to hold government bonds rather than cash because the BCB allowed them the intra-day discretion to deviate from the requirement in order to manage liquidity. See Figure 7 for an overview of the changes applied to the extraordinary cash requirement, as well as Figure 1 for a graphical representation.

Figure 7: Reserve Requirement Changes to the Extraordinary Cash Requirement in 2008

Date Announced	Date Effective	Demand Deposits	Savings Deposits	Time Deposits	Deductible (BRL) <i>applied to the sum of deposits</i>
Pre-crisis		8	10	8	100 million
September 24	September 29	-	-	-	300 million
October 8	October 10	-	-	-	700 million
October 8	October 13	5	-	5	-
October 13	October 13	-	-	-	1,000 million
November 13	December 1	0	0	0	None

Note: A hyphen represents no change from the previous circular.

Source: Robitaille 2011.

Government Bond Holding Requirement

Prior to the crisis, the BCB required eligible institutions to hold government bonds backing 15% of their time deposits (Robitaille 2011). On October 30, 2008, this effectively dropped to 4.5% when the BCB forced banks to shift their reserves from remunerated government bonds to unremunerated cash reserves (BCB 2008g). This increased to a quasi-statutory ratio of 6% on December 19, 2008, as the BCB allowed banks to keep a greater amount of time deposit reserves in government bond holdings (BCB 2008i). The details of this action are discussed in more detail in Key Design Decision No. 14, Other Restrictions. As mentioned previously, the BCB shifted the cash holding component of the extraordinary requirement to government bond holdings on November 13, 2008. See Figure 8 for an overview of the changes applied to the government bond holding requirement.

Figure 8: Reserve Requirement Changes to Government Bond Holding Requirement in 2008

Date Announced	Date Effective	Demand Deposits	Savings Deposits	Time Deposits	Deductible (BRL)
Pre-crisis		0	0	15	300 million
October 8	October 10	-	-	-	700 million
October 13	October 17	-	-	-	2,000 million
October 30	November 14	-	-	4.5	-
November 13	December 1	5	10	9.5	-
December 19	January 16	-	-	10	-

Note: Red text indicates quasi-statutory ratios due to the other conditions applied by the BCB. A hyphen represents no change from the previous circular.

Source: Robitaille 2011.

According to Montoro and Moreno (2011), Brazil did not apply any reserve requirements to non-BRL assets.

13. Changes in Interest/Remuneration: The BCB remunerated some required reserves, and the BCB considered lowering remuneration if large banks did not spread liquidity to smaller banks.

Ordinary reserves paid low or no interest. Extraordinary cash reserves and government bond holdings earned the Selic rate, the BCB's target policy rate.

Most ordinary cash that banks held as required reserves backed demand deposits and paid no interest. Required reserves that backed savings deposits did pay interest, albeit at a rate much lower than the Selic rate, considered well below market rates (Robitaille 2011).

The BCB also considered reducing the rate of remuneration on extraordinary cash reserves but ultimately did not do so, according to a newspaper article on October 20, 2008. President Lula criticized banks that placed surplus funds overnight with the BCB to receive interest rather than circulating the funds to other banks in the financial system. As noted in Key Design Decision No. 14, Other Restrictions, the BCB created a voluntary deduction to encourage banks to leave their surplus funds with other banks (D'Amorim 2008).

14. Other Restrictions: The BCB implemented both voluntary and mandatory deductions to encourage large banks to spread their liquidity throughout the Brazilian financial system.

The BCB attempted to alleviate funding pressures on small and medium-sized banks by extending reserve requirement deductions. On October 2, 2008, the BCB allowed banks to deduct up to 40% of their government bond holding requirement against time deposits through the purchase of loan portfolios from small and medium-sized banks, institutions with less than BRL 2.5 billion in Tier 1 capital (88 out of 103 banks) (BCB 2008b). On October 13, the BCB increased this deduction to 70% and expanded eligibility to banks with less than BRL 7 billion in Tier 1 capital (97 out of 103 banks) (BCB 2008e). This policy effectively incentivized the largest six banks to deduct loan portfolio purchases from the remaining 97 banks. With this deduction, the BCB attempted to voluntarily shift reserves from large banks to smaller banks. The OECD estimated this released BRL 27 billion in reserves (OECD 2009).

However, the speed of loan portfolio purchases seemingly did not satisfy the BCB or President Lula (Robitaille 2011). The BCB announced on October 30, 2008, that banks had to shift 70% of their government bond holding requirement, which was remunerated, to unremunerated cash reserves unless they extended credit to smaller banks. This announcement in effect removed the voluntary aspect of the scheme through a negative cost incentive (BCB 2008g). As a result, it created a quasi-statutory reserve requirement for time deposits on unremunerated reserves at 10.5%, that is, 70% of the 15% government-bond holding requirement on time deposits, for banks that did not extend credit to smaller banks; they could hold the remaining 4.5% in government bonds (Robitaille 2011). There had previously not been a reserve requirement applied to time reserves that had to be held in unremunerated reserves (Robitaille 2011). The BCB decreased this shift to 60% on December 19, lowering the quasi-statutory ratio to 9% (BCB 2008i).

The BCB allowed the large banks to place funds with smaller banks in unsecured overnight interbank deposits, known as CDIs, to count as loan portfolio purchases. This freed up the purchasing banks from inspecting and assessing complicated loan portfolios. Additionally, the Circular regarding CDIs did not establish a minimum term, allowing large banks to continuously roll over the CDIs. Therefore, this essentially served as a loan (Robitaille 2011).

The BCB created another deduction on November 25 that banks could use to lessen the unremunerated reserve requirements on time deposits. Large banks could deduct purchased CDIs from BNDES from their reserve requirements, the government development bank, in effect lending to the government. The BNDES then channeled these funds to the non-financial sector. BNDES could issue up to BRL 6 billion of CDIs with maturities from 6 to 18 months. Within a year, the interbank liabilities of BNDES increased from 0 to BRL 5.4 billion (Robitaille 2011).

15. Impact on Monetary Policy Transmission: The BCB did not specify the impacts of reserve requirement policy on monetary policy.

The BCB followed the “separation principle,” in which it used separate tools for monetary policy and liquidity provision.

16. Duration: In its public statements, the BCB did not include an end date for its reserve requirement during the GFC.

The BCB did not preannounce end dates for the reserve requirement changes it made during the GFC. The changes were not permanent, as the BCB later raised reserve requirements and deductions after the GFC.

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