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The Nature of Government Finance in Brazil

Abstract: The aim of this paper is to focus on the institutional process by which the Brazilian government spends, borrows, and collects taxes. I am going to evaluate the conventional view that taxes finance government spending, that bond sales are financing operations, and that the Brazilian federal government is operationally constrained. This view arises from a misunderstanding of both treasury and central bank operations. Balance sheets are used to show the reserve effects of the treasury and central bank operations and to explain the cooperation between the central bank and the treasury. It concludes that logically taxes and bonds can not finance government spending and that a sovereign government that issues its own non convertible currency can not become insolvent.

Keywords: fiscal policy, monetary operations, monetary policy, government liabilities

The new Brazilian payment system was launched in April 2002 by the BCB.¹ The concept of the new payment system was based upon the guidelines established by the Core Principles for Systemically Important Payment Systems Report and the Recommendations for Securities Settlement Systems, both of which were published by the Bank for International Settlements (BIS). The Sistema de Transferencia de

Felipe Rezende is a Ph.D. candidate in economics at the University of Missouri–Kansas City. Many sincere thanks go to Professors L. Randall Wray, Stephanie A. Kelton, John Henry, and Warren Mosler for their valuable comments and suggestions. The author thanks Flavia Dantas for valuable discussions and suggestions. Any remaining shortcomings and errors are solely the responsibility of the author. Recent drafts of the paper were presented at the Fiftieth Western Social Science Association Annual Conference, Denver, April 23–26, 2008, and at the Tenth International Post Keynesian Conference, University of Missouri–Kansas City, June 29–July 1, 2008.

Reservas (Reserves Transfer System) is a real-time gross settlement system (RTGS) for interbank funds transfer in which all payments, including clearinghouses netting results, are settled in reserve accounts.

The Reserves Transfer System is operated by the BCB, and any fund transfer among financial institutions' reserve accounts depends on a sufficient balance of funds in the account of the institution sending payment orders. Because payment orders are processed and settled transaction by transaction on a real-time basis subject to the availability of sufficient funds, to keep the payments system functioning smoothly, the central bank provides intraday borrowed reserves on demand at no cost. The settlement process is made using central bank money.

The Special System of Liquidation and Custody (SELIC), which is also operated by the central bank, is the central depository for securities issued by the federal government and is used for settling federal government securities. It settles transactions under a real-time delivery versus payment model (DVP Model 1: delivery versus payment with simultaneous settlement of securities and funds on a gross basis) according to the BIS classification.

An institution that maintains a reserve account at the central bank and systemically important settlement systems has to become a Reserves Transfer System participant. The national treasury is a participating institution, because the Reserves Transfer System settles and processes payment orders related to the government tax collection and the disbursement of government payments.

The national treasury's operating account kept at the central bank is used to account for the flows of funds from the fiscal and social security budgets. Those resources are deposited at the BCB, which is by law (per Brazil's federal constitution the only depository of the national treasury balances.² To sum up, reserve accounts are used for clearing between banks and clearinghouses (net settlement transfers from private clearinghouses) and also among banks, the national treasury, and the central bank.

To understand the nature of government spending and taxing, we have to understand the debiting and crediting of bank accounts. It is important to understand what bank reserves are, where they are kept, how accounting entries are made, and what the implications are of a debit to bank reserves positions and a credit to bank reserves positions. When the government spends, the national treasury authorizes the BCB to debit funds from its operating account, which in turn credits the bank reserve account of Banco do Brasil (a state-owned commercial bank).

The latter, then, makes payments to creditors, increasing demand deposits and bank reserves.³ In this context, the national treasury is the fiscal arm of the government, whereas the central bank is its financial arm. In Brazil, high-powered money (HPM) is issued solely by the central bank and is held as currency by the public, and reserves are held by the banking system. It is a government's IOU in the form of either cash or checking account balances at the central bank.⁴

In Brazil, taxes are collected throughout the calendar year and entered into the national treasury's operating account, which is kept at the central bank in three

different ways: Tax receipts that are administered by the Secretaria da Receita Federal (Brazilian Tax Authority) are collected using certificates of collection; tax receipts that are administered by the social security system are collected using social security certificates of collection through the authorized banking network; and tax receipts that are directly collected use Union Tax collection documents kept in the treasury's reference account held at the Banco do Brasil.

It has two days to transfer the credit to the treasury's operating account kept at the central bank. When taxes are collected using certificates of collection, the funds collected should be transferred within one day to the national treasury's operating account kept at the central bank. Banks can hold these funds for just one more day, but, in this case, they must pay interest (the SELIC overnight interest rate) to the national treasury. The point is that payment of taxes reduces bank reserves.

On the other hand, when the Brazilian government spends, it does so by crediting bank accounts. This procedure occurs when a government institution sends payment orders to the Integrated System of Federal Government Financial Administration (SIAFI), which contains the information required for the funds to be deposited in the creditor's account, that is, it issues a bank order in favor of the creditor. The effective expenditure will occur the day following the issue of the bank order by the government administration. This rule allows policymakers to forecast the daily flow of government expenditures and its impact on the money market.

The Reserve Effects of the Treasury Operations and the Reserve Accounting Entries

In this section, I aim to demonstrate how the Brazilian government spends operationally, that is, how the national treasury spends and how it collects taxes.⁵ I will also evaluate the impact of government spending, taxing, and bond sales on aggregate bank reserves and the significance of the resulting reserve effects.

As argued in the previous section, the national treasury keeps an account at the BCB. When the treasury spends to buy goods, services, and assets and to make transfer payments, its account at the BCB is debited. The national treasury's balance kept at the central bank is an asset of the national treasury, and it is a liability, as an account kept in the name of the national treasury, of the central bank. In short, it is a balance owed to the treasury that is nothing but accounting information.⁶

To demonstrate how the Brazilian federal government spends, one can use T-accounts to reflect changes in balance sheets. Let us consider the case in which the government must collect taxes (in response to a tax liability) before it can spend⁷ (see Appendix Figure A1). Note that the banking system was initially at an equilibrium level of reserves in which banks held all the reserves that were required or desired before this operation. Note that government spending injects reserves into the banking system. On the other hand, when citizens pay their taxes, bank reserves are destroyed.

In this case, when a citizen pays taxes he or she writes a check to the government,

for example, of 100 reals (R\$100). The liabilities of the taxpayer then go down by R\$100. At the same time, he or she draws down his or her assets by R\$100 from their demand deposit at a commercial bank. As balance sheets necessarily balance, the taxpayer's assets go down by R\$100 and his or her liabilities (taxes owed to the government) go down by R\$100. The national treasury receives the tax payment of R\$100 in its account at the central bank.

The national treasury's balance is credited R\$100 at the central bank, and in the offsetting entry, the reserves from the taxpayer's commercial bank are reduced by R\$100 as well. As the government received a tax payment, the reserve balance of the taxpayer's bank was reduced, that is, bank reserves were destroyed.⁸ At the same time, the taxpayer's bank deposit was debited. In short, the payment of taxes, all things being equal, leads to a net decline of bank reserves balances; the banking system as a whole is losing reserves (Bell 2000; Bell and Wray 2002–3; Mosler 1995, 1997–98; Wray 1998).

Let us now present the case in which the government must first borrow (sell bonds) before it can spend.⁹ (See Appendix Figure A2.) If the public purchases a newly issued government bond, an individual simply exchanges one asset for another of equivalent value by drawing against a checking account at a commercial bank to pay for the bond.

Note that the final position is precisely the same as before, that is, government spending injects reserves into the banking system. It spends by crediting bank accounts. When the government is spending, the banking system gains reserves, and when taxes are paid to the government, HPM is eliminated. When taxes are paid, the central bank debits the private bank's account and credits the national treasury's account kept at the central bank.¹⁰ By the same token, when the federal government runs a deficit, it generates excess reserves in the banking system.¹¹

The increase in government spending leads to an injection of bank reserves so that when the government increases its expenditures, the banking system as a whole gains reserves. To sum up, when the government taxes more than it spends, the banking system loses reserves. On the other hand, when the government spends more than it taxes (runs a deficit) the net effect is an injection of bank reserves. It should be clear that neither taxes nor bonds "finance" government spending. (See, for instance, Bell 2000; Mosler 1995, 1997–98; Wray 1998, 2003b, 2003–4.)

Figure 1 shows the national treasury daily balance since the beginning of 2007. Notice that at the beginning of each month the treasury usually runs a surplus, that is, government taxes more than it spends. Conversely, in some periods of time, usually when civil servants are paid, tax receipts are less than government spending. In this case, there are excess reserves or a net injection of reserves during that period of time, all things being equal.¹²

Now, if it were possible somehow to coordinate government spending and taxing on a daily basis, there would be no net effect on bank reserves balances. It means that the government would be able to match exactly the increases of reserves and the losses of reserves so that the balance of bank reserves would not be disturbed.¹³

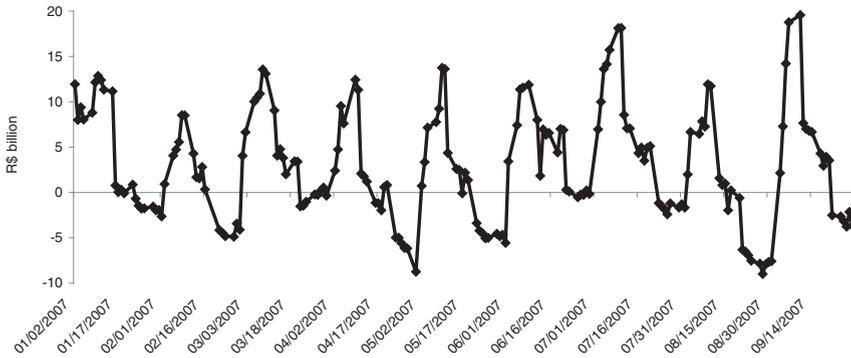


Figure 1. National Treasury Daily Balance

Depending on where we are in the calendar year, there is a net injection or a net loss of reserves. Another important point is that the national treasury daily balance is not balanced, that is, government disbursements and tax collections are not perfectly offset daily. Because the national treasury balance at the central bank is one of the most important operating factors that affect bank reserves balances, I aim to show in the next section the strategies developed by the central bank to offset the so-called operating factors.

Strategies Developed for Minimizing the Reserve Effects

In Brazil, since the adoption of the inflation targeting framework for monetary policy in June of 1999, the National Monetary Council (CMN) has set the annual inflation target (measured by the Índice Nacional de Preços ao Consumidor Amplo [IPCA] Brazil’s consumer price index), and the central bank has been responsible for achieving the inflation target set by the National Monetary Council (CMN). To achieve its monetary policy objectives, the Monetary Policy Committee (COPOM) in its meetings sets the target for the overnight SELIC rate.¹⁴ Daily open market operations are undertaken to maintain the overnight interest rate close to the target.¹⁵

The central bank has three basic instruments to influence the bank reserves market: open market operations, the discount window, and reserve requirements.¹⁶ Open market operations are undertaken by the central bank using federal government debt securities. The factors that affect the total amount of reserves are bond sales/purchases made by the central bank or by the treasury; foreign exchange operations; government spending (treasury); tax collection; and currency (coins and paper notes) held by the public.¹⁷ The central bank will try to accommodate supply and demand of reserves to avoid wide fluctuations in the overnight interest rate.¹⁸

As demonstrated below, banks’ reserve balances are directly affected when there is a net injection of reserves in the banking system. If banks had held the

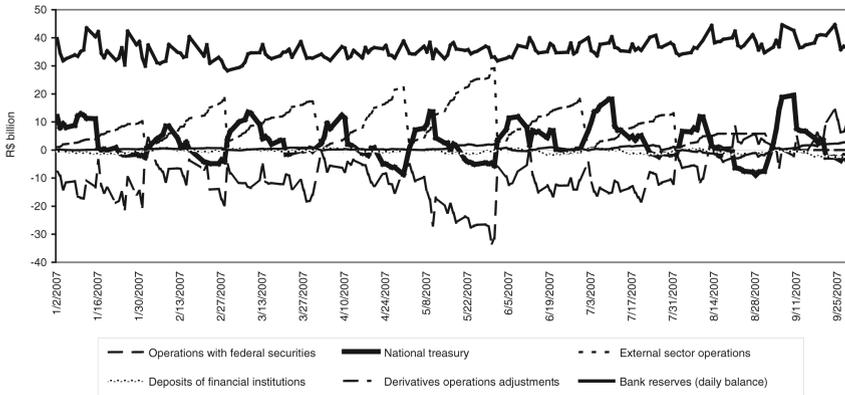


Figure 2. Daily Balance of Operating Factors

reserves that were desired/required before these net injections, then they would have excess reserves. Because excess bank reserves do not pay interest, banks are not going to refuse to buy bonds, because they prefer interest-earning alternatives to non-interest-earning excess reserves.

If banks refuse to buy bonds, it means simply that they have all the reserves required or desired. In fact, bond sales simply exchange one asset for another. If the government decides to pay interest on reserves balances instead of selling bonds, nothing is changed because, functionally, bonds are reserves that earn interest; there is no difference between the two. I will discuss this in more detail in the following section.

Figure 2 shows the daily balances of operating factors from the beginning of 2007 to the third quarter of 2007. During this period, bank reserves averaged around R\$36 billion daily. The national treasury receipts and expenditures do not perfectly offset one another and, in fact, they can differ by more than R\$10 billion, which would represent, all things being equal, a one-day increase in banking reserves of up to R\$46 billion. Such a sharp increment is likely to result in a zero bidding condition in the market for bank reserves, thereby putting downward pressure on the overnight nominal interest rate.

Bank reserves are also affected mainly by the central bank's purchase of foreign currency in the domestic market to increase the level of international reserves. The problem is that when there are aggregate excess reserves in the banking system, all banks want to lend them, thus resulting in a zero bid condition in the money market (see for instance Forstater and Mosler, 2005). Note that such wide fluctuations mean that the central bank has a lot of work to do to minimize the daily operating factors that have an impact on banks' reserve balances.

On a daily basis, the central bank forecasts the market demand for bank reserves by monitoring the main factors that influence the monetary base and the bank reserves market. To hit the target overnight interest rate, the BCB drains reserves

by offering interest-bearing treasury security alternatives to non-interest-bearing reserves, mainly through open market operations. Open market operations (as well as assets and foreign currency sales) have the advantage of immediately affecting the quantity of excess reserves, thereby offsetting daily operating factors that influence bank reserves positions and maintaining the overnight interest rate close to the target (see Wray 1998, 2006c).

As Figure 3 shows, open market operations are meant to maintain the overnight nominal interest rate close to the interest rate target. As Mosler points out, “As long as the Fed has a mandate to maintain a target fed funds rate, the size of its purchases and sales of government debt are not discretionary. [Indeed,] open market operations act as buffers around the target fed funds rate” (1995).

In addition, “As overdrafts in reserve accounts are prohibited in Brazil, cash flow deficiencies are financed either through the market or with the BCB. Both charge penalty rates, except for intraday rediscount operations with the BCB” (World Bank 2004: 86). In short, intraday overdrafts in bank reserves balances are not allowed even during trading hours.¹⁹

In Brazil, since the introduction of the real-time gross settlement payment system, which is in constant need of reserves to process payment transactions, the central bank has allowed the use of reserve requirements during the operating day for payment and settlement purposes. Therefore, only balances at the end of day are used to satisfy reserve requirements.

The BCB provides unlimited intraday lending at no cost (against eligible collateral, such as government securities with a haircut) to banks holding reserve accounts. If the intraday repurchase agreement (repo) is not repaid, it turns into overnight repo automatically, that is, the SELIC rate plus 600 basis points per year (see Figure 4).

Since May 2002, open market operations have involved the sale or purchase of the national treasury’s securities because, in compliance with the Fiscal Responsibility Law, the central bank has ceased to issue new securities, and the national treasury is the sole issuer of federal securities. In this context, the central bank undertakes only secondary market operations for policy purposes.²⁰ The intervention of the central bank in the money market is reflected mainly by variations in the account balances of repos and reverse repos.

Note that the central bank operations are limited by its portfolio (a self-imposed constraint); that is, as it tries to drain reserves from the banking system by selling government securities, at some point the central bank will run out of treasury bonds so that it will ask the treasury to sell extra (new issues of) treasury bills. The operational effect of new issues of securities by the treasury and open market sales is to drain reserves. Thus the central bank needs to coordinate its operations with the treasury.

Open market operations are undertaken to offset the daily effects on bank reserve positions.²¹ The central bank sells and buys bonds as needed to keep the overnight SELIC rate close to the target. Modern central bank operations are about pricing; the central bank sets the price of funds (the overnight interest rate target) and lets

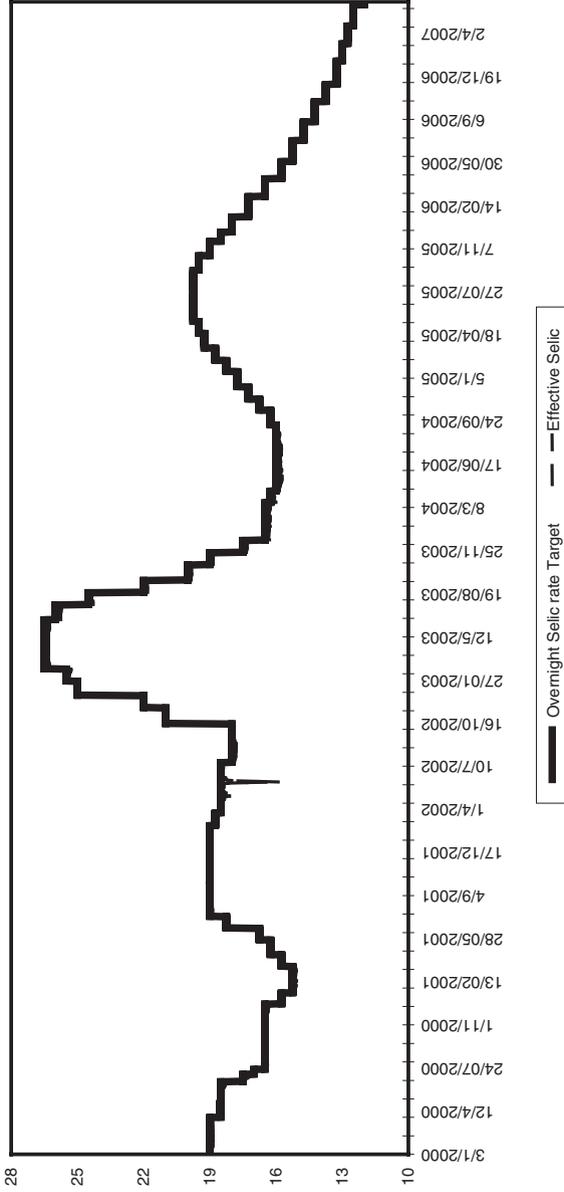


Figure 3. Overnight Nominal Interest Rate (% p.y.)

Operational types

- *repurchase agreements*: Securities eligible for repurchase agreements in the context of a liquidity facility are federal government securities and other credits or credit rights. The purchase price is defined according to BCB criteria, considering, inter alia, the present and market values, the credit risk, the maturity date, the liquidity, and the nominal volatility of the security. Only federal securities are accepted for intraday and overnight repos.
- *rediscounts*: Eligible assets are securities and credit rights that have been discounted at the financial institution.

Maturities and costs

- intraday at no cost
- overnight at the SELIC rate plus 600 basis points
- up to 15 working days, extendable up to 45 working days, at the SELIC rate plus 400 basis points
- up to 90 days, extendable up to 180 days, at the SELIC rate plus 200 basis points.

Figure 4. BCB's Credit Facilities: Operational Types, Maturities, and Costs

the quantity adjust. It is a pricing rule and not a quantity rule. As long as the central bank sets an overnight interest target, it does not have a choice in implementing monetary policy in this scenario. It drains and adds reserves as needed to hit the overnight interest rate target. The central bank cannot be independent of the national treasury as long as it wants to hit its overnight nominal interest rate target.²²

The coordination between the national treasury and the BCB helps to minimize the reserve effects of government taxing and spending. It does not provide finance so that the government can spend. As a matter of logic, the federal government is not spending tax revenue, because taxes are collected by debiting bank accounts. It means that bank reserves are destroyed; the state is eliminating its own IOUs. Government spending in excess of tax revenue injects extra reserves into the banking system, putting downward pressure on the overnight interest rate.

Throughout the day, the overnight SELIC rate can move away from the target, but if it looks like the overnight SELIC interest rate is lower than the target, the central bank undertakes open market operations as the main tool for overnight interest rate adjustment. Hence, the central bank drains excess reserves by selling bonds and offering banks interest-bearing alternatives to be as close as possible to the nominal interest rate target. Selling securities is merely an interest rate maintenance operation; it is not a "finance" operation. Thus the government publicly held debt can be seen as an interest rate maintenance account (Mosler 1995, 1997–98; Wray 1998, 2003a, 2006c).

As demonstrated in the previous section, whenever a payment is made to the national treasury, the bank reserve account of the institution on which the payment is drawn is debited, and the national treasury account kept at the BCB is credited.

This transaction drains reserve balances from the banking system. The *operational* effect of bond sales undertaken by the government (either the national treasury or the central bank) is to drain reserves from the banking system.

In fact, it is a “monetary policy” operation rather than a “financing” operation. In the absence of daily open market operations, the overnight interest rate would fall to zero.²³ By contrast, the conventional view suggests that when the government is running budget deficits, it is borrowing from the nongovernmental sector, thereby pushing up the overnight nominal interest rate.²⁴ It should be clear that the Brazilian government is not financially constrained operationally—neither revenue constrained nor reserve constrained (Bell 2000; Bell and Wray 2002–3; Mosler 1995; Wray 1998).

To sum up, taxes and bond sales do not “finance” Brazilian government spending. As demonstrated in this section, because the net injection of reserves will put downward pressure on the overnight SELIC interest rate, to minimize these effects the central bank engages mainly in open market operations to maintain the overnight interest rate close to the target (Bell 2000; Bell and Wray 2002–3; Wray 1998).

Hence, open market operations are used to achieve the overnight interest rate target; it is just an interest rate maintenance operation. Functionally, the national treasury’s public bond sales and the central bank’s open market operations are actually both part of the monetary policy strategy. The central bank also uses reserve requirements to absorb excess reserves. However, as I demonstrate in the following section, some required reserves, such as on demand deposits, do not earn interest, necessarily reducing banks profitability.

The Role of Reserve Requirements

In Brazil, the central bank adopts both remunerated and nonremunerated required reserves. Required reserves on demand deposits are not remunerated. Required reserves on time and savings deposits are remunerated. Financial institutions may be required to meet reserve requirements in cash or in federal public securities. Since August 2002, the central bank has implemented the so-called additional reserve requirements on demand, time, and savings deposits.

The actual reserve requirements ratios are 45 percent on demand deposits kept in cash at the central bank;²⁵ 15 percent on time deposits in which banks obtain the reserve requirement by deducting R\$30 million of its time deposits and then applying the corresponding percentage (15 percent), which is satisfied by holding treasury securities; and 20 percent on savings deposits that can be satisfied with currency (that, in this case, pays interest) or with securities.

For the additional reserve requirements, the ratios are 8 percent on demand deposits, 8 percent on time deposits, and 10 percent on savings deposits. There is a deduction of R\$100 million applied to the amount calculated (demand resources, time deposits, and saving deposits). Additional reserve requirements constitute an interest-bearing (the SELIC interest rate) account.²⁶

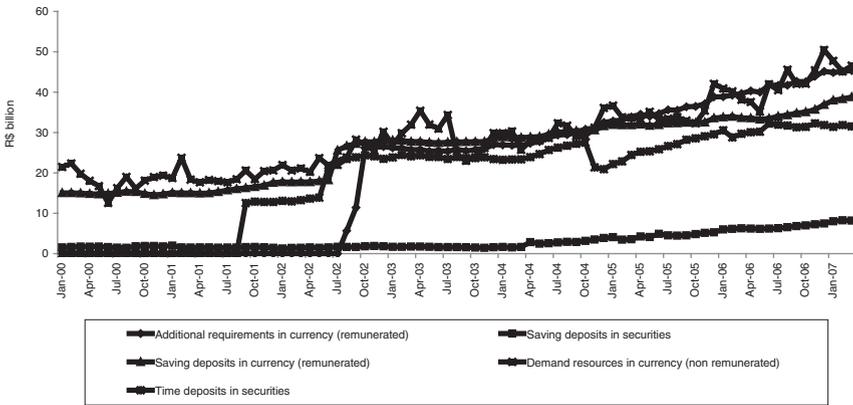


Figure 5. Reserve Requirement Balances

The calculation period for demand deposits is composed of two consecutive weeks, starting on Monday of the first week and ending on Friday of the second week. Also, for the calculation period, there is a one-week lag between groups A and B. The settlement period starts on Wednesday of the second week of the calculation period and goes to Tuesday of the following week.

Note that the settlement period is also of two consecutive weeks, and it overlaps with the last three days of the calculation period. During the settlement period, the daily required reserves balances that must be held in a non-interest-bearing account cannot be lower than 80 percent of the average balance daily required. If daily balances of required reserves are overdrawn by more than 20 percent, the cost of this deficiency is the overnight interest rate plus 1,400 basis points.

Note that, as Figure 5 indicates, since the adoption (September 2001) of reserve requirements on time deposits and the additional reserve requirements as a remunerated balance (August 2002), there has been a sharp increase in the reserve requirements that are remunerated (interest-bearing balances). BCB officials see the role of reserve requirements according to the conventional view of reserve balances.

The argument is that excess reserves allow the expansion of a bank’s balance sheet. It suggests that reserve requirements affect the money creation ability of the banking system. Presumably, increasing reserve requirements should affect the money creation of the banking system. However, in the real world, banks extend loans based on profit opportunities and on their clients’ creditworthiness. In the real world, banks create an asset (the loan), and at the same time they create a liability (deposits).²⁷ If banks are short on reserves, they can borrow as needed from the central bank (penalty rates may apply) or from the money market.

Given high reserve requirements on demand deposits and considering that they are not remunerated, banks must economize on deposits or keep them as low as possible because non-interest-bearing requirements impose a cost on banks and they can encourage substitution to other forms of liquidity for bank deposits.²⁸

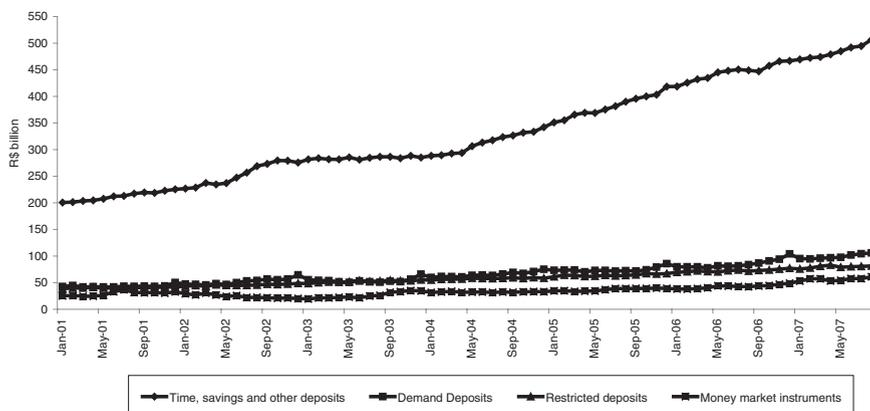


Figure 6. Deposit Money Banks Analytical Accounts

Not surprisingly, as Figure 6 shows, banks started to encourage their clients to use time and savings deposits because they constitute interest-bearing balances as opposed to demand deposits, which are non-interest-bearing balances (the exception is the case of additional requirements in which, as said above, 8 percent are remunerated). These changes have been the result of banks' reactions to profit opportunities in the money market (see Wray 1990 for a similar analysis).

Finally, Figure 7 shows the evolution of interest-bearing balances as opposed to non-interest-bearing balances. As of January 2000, the total of balances that were remunerated corresponded to 50 percent of the total balances (both remunerated and nonremunerated). On the other hand, as of January 2007 the total of balances that were remunerated corresponded to 75 percent of the total balances. It corresponds to a situation in which the central bank decides to pay interest on different types of reserve balances (demand, time, and savings deposits).

In fact, it would be easier for the central bank to adopt the following procedure. To keep the overnight interest rate close to its target, the BCB could adopt the framework that is used in Canada in which there is an explicit operating band for the overnight rate that constitutes an upper limit and a lower limit for the desired target for the nominal overnight rate. Thus, this band allows the overnight interest rate to fluctuate within a range of fifty basis points (above or below the nominal overnight rate target; see Fullwiler 2005 for a detailed analysis).

The central bank can successfully maintain the overnight rate within its announced operating target band without relying on reserve requirements.²⁹ At the end of the day, the central bank would automatically pay the overnight interest on reserves held by banks. This operating range would be set by the rate charged on overdrafts (that is, the upper limit) and by the rate paid on surpluses (the lower limit) of the participants with the central bank. Under this scheme, the central bank can influence the overnight interest rate in a simple and transparent manner.

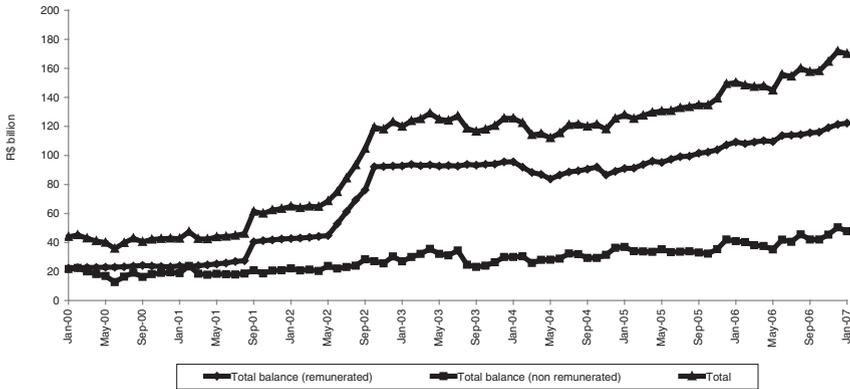


Figure 7. Reserves Requirement Balances Interest Bearing, Noninterest Bearing and Total Balances

As Sellon and Weiner argue, “The experience of Canada, the United Kingdom, and New Zealand shows that monetary policy can be conducted without the use of reserve requirements” (1997: 22). To put it another way, as reserve requirements constitute a tax on banks, the central bank can eliminate reserve requirements and pay interest on positive balances (it can be fifty basis points below the overnight interest rate). This would serve as a lower limit for the overnight interest rate because banks would not accept a lower rate on positive balances (Fullwiler 2005; Sellon and Weiner 1997; see also Lavoie and Seccareccia 2006 for a detailed analysis of the Canadian system).

Coordinating taxes and government spending to try to manage the reserve effects of these two operations gives the illusion that the government must somehow match tax receipts with government expenditures. It fosters the misleading idea that taxes are needed to finance government spending and that the treasury and the central bank are coordinated to satisfy fiscal policy needs. It supports the conventional view that taxes finance government spending because, otherwise, why would the government work so hard to make sure that tax receipts come in to offset government spending?

But, as I have argued, the national treasury and the central bank are coordinated for practical reasons: to minimize the effects on bank reserve positions. Government spends by crediting bank accounts and collects taxes by debiting them.³⁰ As it is impossible for the national treasury to accurately forecast its receipts and expenditures on a daily basis, the central bank and the national treasury work closely to minimize the operating factors that affect bank reserves balances.

Because, in Brazil, tax payments are deposited directly into the national treasury account kept at the central bank, there are potentially large daily fluctuations in the bank reserves market. This can lead to wide swings in the net reserve positions and disruptions to the overnight nominal interest rate, all things being equal. To

minimize the frequency and the size of interventions made by the central bank to hit its overnight interest target, it needs to simply start paying interest on reserve balances, as described above.

Because, in Brazil, the most important monetary tool that has been used is the central bank's open market operations, it has to intervene frequently to keep the overnight rate close to the target. All these machinations help to foster the belief that taxes and bonds are needed to ensure that the national treasury will have enough receipts to pay its bills on a daily basis by coordinating flows and outflows. However, as I have demonstrated, the national treasury does not need to issue bonds to meet fiscal policy needs. In other words, "The federal government does not need to have its own IOU returned before it can spend; rather the nongovernment sector needs the government IOU before it can pay taxes" (Wray 1998: 116).

A sovereign government operating under a nonconvertible currency does not really "borrow." Government deficits allow positive net savings by the nongovernment sector. When the government runs a deficit, it is spending more than it taxes, thereby allowing positive net savings in the form of government liabilities. Government deficits increase savings in a particular form: either reserves or government bonds. Note that this saving is in the safest and most liquid asset one can have.

If a budget deficit is associated with a rising overnight interest rate, it is not because deficits are pushing the interest rate up; it is because the central bank reacts to a budget deficit by raising the overnight nominal interest rate target. In the real world, when the government runs a deficit, the central bank raises the interest rate because it believes that deficits are inflationary. To offset the expansionary stimulus that comes from a budget deficit, the central bank raises the overnight interest rate to try to slow down the economy. This is a policy response, and there is nothing automatic about it (see Fullwiler 2006, 2008; Wray 1998, 2003a, 2006a, 2006b, 2006c).³¹

Under a floating exchange rate (nonconvertible currency) system, the government promises only to deliver its own currency. The government spends, issuing its own liability. It is merely a promise to pay. What backs the government's liability is that, like any liability, it must reflux back to the issuer and it is redeemable by the mechanism of taxation (Wray 1998, 2006a, 2006d; Wray and Sardoní 2007). "In reality, government cannot really 'spend' tax receipts which are just reductions of its outstanding liabilities" (Wray 2006a: 7).

Only money issues denominated in the state unit of account will be used to retire the tax liability, that is, the government must accept its own IOU back in payment.³² As Wray points out, "The state has first exerted its sovereignty by imposing a tax liability on the private sector—which, ultimately, is the reason that the nongovernment sector will accept government liabilities as payment for the goods and services government buys" (Wray 2002: 32).

Thus, it is meaningless to discuss debt or fiscal sustainability and federal government solvency.³³ Note that with the introduction of the Brazilian Fiscal Responsibility Law, there are "borrowing" limits and other constraints, but these are

all self-imposed. The federal budget deficits do not burden either the government or taxpayers; rather federal government deficits allow the nongovernment sector to net save in the form of the government's IOUs.

These government IOUs will be serviced in the same way that government spends on anything, that is, by crediting bank accounts. In the absence of self-imposed constraints, the government's ability to credit bank accounts is unlimited; operationally, it is not inherently revenue constrained. Thus, a sovereign government that issues its own nonconvertible currency cannot become insolvent. There is no burden at all, such as presumed budget constraints, involved in a budget deficit run by a country with a sovereign currency that adopts a floating exchange rate system (see Bell 2000; Bell and Wray 2000; Mosler 1995; Wray 1998, 2003c, 2006a, 2006b, 2006d for detailed analyses).

Conclusion

The rules of the game under which the Brazilian federal government is operating are mostly self-imposed. The rules of the game are completely different or should be completely different with a nonconvertible currency. Within this monetary framework, it does not make sense to balance the government budget because a sovereign government cannot become insolvent on its own currency. Self-imposed constraints on government spending should be removed. The government spends by crediting bank accounts, and when taxes are paid, reserves are eliminated.

The sale and purchase of government securities (by either the Treasury or the central bank) functionally drains and adds reserves. Taxes and bonds *do not* finance government expenditures. The central bank sets the overnight interest rate target and engages in open market operations to hit its target. Other self-imposed constraints, such as reserve requirements, should also be removed. The central bank can hit the overnight interest rate target in a simple and transparent manner by paying interest on reserve balances, thus eliminating the need for government bonds. The coordination between the central bank and the treasury should be simplified because operations between them are just accounting information.

The study of the Brazilian experience contributes to the understanding of the new paradigm shift of sovereignty and policy independence. Once policy makers fully grasp how the monetary system works, many new possibilities will open up for domestic policy to achieve full employment and price stability.

Notes

1. The aim of the new Brazilian payment system is the reduction of systemic risk and the improvement of the market infrastructure toward the adoption of best practices following the international recommendations, including BIS/CPSS (Bank for International Settlements/Committee on Payments and Settlement Systems) and IOSCO (International Organization of Securities Commissions). The Reserves Transfer System also requires that banks maintain positive reserve balances at the central bank at all times, significantly reducing credit

risk. A realtime gross settlement system (Sistema de Transferência de Reservas; STR) and a national messaging system (Rede do Sistema Financeiro Nacional; RSFN) support the functioning of the new infrastructure. (See World Bank 2004 for a detailed analysis and BCB, 2006, *Brazilian Payment System*.)

2. “The financial resources of the Brazilian Federal Government must be deposited in the Bank in an interest-bearing demand deposit account that pays interest equivalent to the average yield of the Brazilian Federal government debt securities that the Bank holds in its portfolio, excluding market-to-market adjustments. In 2007, the aforementioned yield was 12.65% (15.07% in 2006)” (BCB 2007a: 40).

3. For more details, see Instrução Normativa, no. 4, July 31, 1998, STN, D.O., August 3, 1998 (available at www.tesouro.fazenda.gov.br/legislacao/download/contabilidade/IN_STN4_98.doc) and Instrução Normativa STN, no. 04, August 3, 2004 (available at www.tesouro.fazenda.gov.br/legislacao/download/programacao).

4. There are self-imposed constraints that mandate that the national treasury cannot spend without having funds in its account or that prohibit the creation of permanent spending without a corresponding increase in permanent revenue or a reduction in other permanent spending commitments. These constraints on government spending are necessarily self-imposed. When all is said and done, when tax payments are made, HPM is destroyed, that is, the central bank debits bank reserve accounts and credits the national treasury operating account.

5. See Bell (2000), Wray (1998), and Mosler (1995) for a detailed analysis of the nature of government finance in the United States and Bougrine and Seccareccia (2002) for a detailed analysis of the Canadian system.

6. Thus, operations between the treasury and the central bank have no impact on banking system reserves. In fact, the national treasury’s balance “accounts” for taxes collected, funds borrowed, etc. This balance kept at the central bank is not part of any monetary aggregate. Only the balance that the commercial bank has at the central bank is part of the monetary base (Bell and Wray 2002–3).

7. In Wray’s example, the government buys a bomb equivalent in value to the tax liability. In the above example, the treasury purchases goods or services or makes transfer payments of equivalent value. As Wray emphasizes: “Logic dictates that imposition of tax liabilities must come before there is a demand for the government’s currency . . . here we are simply assuming that a tax system, a floating currency, markets and prices denominated in the currency, and a hierarchical monetary system (with HPM at the top) already exist” (Wray 2003–4: 314).

8. It follows that government tax receipts do not provide funds for government expenditures. As Bell demonstrates: “In order to get its hands on the proceeds from taxation and bond sales, the government must destroy what it has collected. Clearly, government spending cannot be financed by money that is destroyed when received in payment to the state” (Bell 2000: 615).

9. When the national treasury spends, it draws down its balance at the central bank. For instance, when the treasury makes a payment of R\$100, the person who receives this will get a deposit of equivalent value in a commercial bank. This commercial bank now increases the value it owes to one of its clients by R\$100 and, as balance sheets necessarily balance, if the right-hand side went up by R\$100, the left-hand side must also increase by R\$100. The offsetting entry is that the commercial bank gets a balance of R\$100 in its account at the central bank, that is, bank reserves have increased by R\$100 as well.

10. Note that “when the treasury moves its deposit from the private bank to the central bank, the central bank must debit the private bank’s reserves. However, the private bank does not have (excess) reserves to be debited; hence, the central bank must provide an ‘overdraft’ of loaned reserves. Once the treasury deficit spends, the bank’s reserves are credited, allowing it to retire the overdraft” (Wray 2003–4: 317).

11. As Wray emphasizes: “We have assumed that required (or desired) reserve ratios on the newly created demand deposits are zero, but nothing of significance is changed if we allow for positive reserve holdings. The government would simply sell fewer bonds since fewer reserves would have to be drained” (Wray 2003–4: 315).

12. As Bell argues: “It is impossible to perfectly balance (in timing and amount) the government’s receipts with its expenditures. The best the Treasury and the Fed can do is to compare estimates of anticipated changes in the Treasury’s account at the Fed. . . . Errors due to excessive or insufficient tax and loan calls are the norm. . . . When the Treasury is unable to correct these errors on its own, the Federal Reserve may have to offset changes in the Treasury’s closing balance” (Bell 2000: 616).

13. As Wray points out: “Daily operations of the treasury would almost always generate either net credits or net debits even if the budget were balanced over the course of the year for the simple reason that tax payments on any given day would differ from government spending on that day” (Wray 2007: 11).

14. The SELIC interest rate is the average interest rate on overnight interbank loans collateralized by government bonds that are registered with and traded on the Special System of Liquidation and Custody (SELIC). It is the overnight interest rate for repo operations that use government debt as collateral.

15. “Financial transactions performed throughout the financial system converge to the market of bank reserves. The BCB uses its instruments to influence the market of reserves and, by this means, the level of the basic short-term interest rates. More specifically, the operational objective of the BCB is to keep the trajectory of the SELIC rate, an overnight market-based interest rate, as close as possible to the target established by the COPOM” (World Bank 2004: 85–86).

16. The market of bank reserves is the market of first resort in which banks try to rid themselves of the excess reserves on a daily basis. If the banking system is flushed with bank reserves, it means that there are too many banks willing to lend them and too few willing to borrow. The bank reserves market is the arena in which banks with extra reserves lend them out to banks demanding reserves. When there are aggregate excess reserves, banks will lend them on the bank reserves market, mostly on an overnight basis; and they will be borrowing if they are short of reserves. Note that if “there is an aggregate excess of bank reserves, inter-banking lending cannot eliminate the excess reserves. Only the government can drain these through bond sales [and] if it refuses, overnight rates would immediately fall toward zero” (Wray 1998: 103).

17. When the central bank purchases dollars, it does so by crediting the account of the seller of the foreign currency asset that is increasing reserve balances. Conversely, when the central bank sells dollars, it debits the account of the buyer so that reserve balances decrease. The effects of these transactions on reserve balances are “sterilized,” or offset, by open market operations.

18. The demand for reserves is given mainly by reserve requirements and by payment needs (to settle transactions). Bank excess reserves represent a loss equivalent of the opportunity cost of holding them. In addition, the management of bank reserves must also consider which level of reserves is the optimum level for reserve requirements and transactions needs. The relevant component of the demand for reserves is the level of reserve requirements defined by the central bank. Thus, banks will manage this on their reserve account, because the central bank applies a penalty rate given by the overnight SELIC rate plus 1,400 basis points per year. As noted by Mosler (1995), “Reserve requirements . . . are a means by which the Federal Reserve controls the price of funds which bank lends.” To sum up, we could call this the opportunity cost of excess reserves and say that this rate reflects the supply and demand in the money market. Note that saying “Reserves balances only settle payments or meet reserve requirements means that the demand for them is insensitive to changes in the federal funds rate” (Fullwiler 2005: 545).

19. Intraday credit lines, such as repurchase agreements (repos and reverse repos) were developed in the SELIC to enhance the access to reserves in the secondary market. (See *Brazilian Payment System* [BCB 2006] for maturity and costs.)

20. For this purpose the BCB “projects and monitors bank’s liquidity needs in two ways. First, the BCB’s Open Market Operations Department (Demab) prepares daily and monthly forecasts for the main factors that influence the monetary base and the bank reserves market. Basically, these factors are: cash deposits and withdrawals from the banking system by the public; Federal Government tax receipts and expenditures, bank reserve requirements, the issuance and redemption of government (national treasury and/or the BCB) securities; foreign exchange operations (purchase and sale of foreign currency) undertaken by the BCB. Second, the BCB monitors daily liquidity conditions by consulting 52 financial institutions on an ongoing basis” (BCB 2007c).

21. For instance, the open market operations desk announces an electronic auction (the so-called go-around auctions) in which primary dealers bid on securities. According to Figueiredo et al., “Participation in auctions is restricted to financial institutions keeping an account in the SELIC, which is an electronic book-entry system that controls the custody and registers all operations regarding domestic government securities. The two parties (buyer and seller) must input every transaction in the SELIC and the system makes a two-sided matching of their commands. The seller’s position in securities and the buyer’s position in bank reserves are checked. The transaction is settled in a DVP (Delivery versus Payment) basis, if and only if securities and cash are immediately available” (Figueiredo et al., Fachada, Goldenstein 2002: 84).

22. Furthermore, since February 2003, “the BCB can also interfere in the money market by performing, at its discretion, the so-called operações de nivelamento whereby the BCB’s open-market operations desk announces to all market participants that it is ready to take or offer unrestricted amounts of reserves through overnight repurchase or reverse repurchase agreements at specified penalty rates. These operations target those banks that have not been able to level their reserve positions in the market during the day and, when made available by the BCB, are often performed at the end of the day, when the secondary market of reserves is about to close” (World Bank 2004: 87–88). Note that, “The operações de nivelamento should not be confused with the informal auctions (go-arounds) that the open-market operations desk performs as part of the BCB’s overall monetary policy management to offset liquidity fluctuations generated by central bank cash flow” (World Bank 2004: 87).

23. Note that I “do not deny that government’s ability to sell government bonds (in other words, to substitute interest-earning bonds for non-interest earning HPM) might be somewhat interest rate sensitive. At a low interest rate, many of those with HPM might prefer to remain fully liquid; at a high interest rate, most might prefer to hold government bonds over HPM.” I can deny “that the government deficit places upward pressure on interest rates” (Wray 2001: 19).

24. This is based on a sort of loanable funds argument. As the government is borrowing the savings, the private firms are competing with the government and this is pushing all the interest rates up. This argument completely misunderstands the nature of government finance. In the real world, “unless [the] government drains excess reserves that can result from deficit spending, the overnight rate will be driven toward zero. This is because excess HPM will always flow first to banks [and] banks with excess reserves offer them in the fed funds market, but find no bidders—hence the fed funds rate will be quickly driven toward zero . . . this [was] how the Bank of Japan [kept] the overnight rate at zero in the presence of huge government deficits: all it [needed] to do [was] to keep some excess reserves in the system” (Wray 2001: 19).

25. Required reserves on demand deposits are calculated taking into account the average (demand deposits) daily balances by deducting R\$44 million of the bank’s demand deposits; it then applies the corresponding 45 percent (institutions with required reserves [RR] under R\$10 million are exempt).

26. See the following BCB current regulations on the rates, deductions, and reserve re-

quirements: (1) on demand deposits, see Circular 3274; (2) on time deposits, see Circulars 3091 and 3127; and (3) on additional reserve requirements (demand deposits, time deposits, and savings account deposits), see Circular 3157.

27. The basic circuit model shows the private money creation by banks to finance the production process (See Graziani 1990, Praguez 2002, and Praguez and Seccareccia 2000). For the “horizontalist” approach, see Moore (1988), Lavoie (1984), and Fullwiler (2008).

28. In Brazil, reserve requirements have been used by the central bank as a tool to constrain credit expansion, and thus it is seen as an alternative to help stabilize prices. However, reserve requirements place no significant constraint on lending. Banks extend loans and create deposits. To hit the overnight interest rate, the central bank must accommodate the extra demand of bank reserves as long as banks are willing to pay the prevailing price. It means that central bank behavior is not discretionary and reserve requirements play almost no role in constraining banks’ ability to extend loans and create deposits. In fact, nonremunerated reserve requirements are a cost that contributes to the level of bank spreads. Thus the elimination of reserve requirements can help reduce bank spreads and interest rates charged on loans.

29. The central bank would pay interest on excess reserves balances (see Fullwiler 2005). As noticed by Mosler, “The Interest Rate Maintenance Account (IRMA) . . . could consist entirely of overnight deposits by member banks of the Fed, and the Fed could support the fed funds rate by paying interest on all excess reserves” (Mosler 1995). The central bank could create a band corridor in which the overnight interest rate would fluctuate. As Sellon and Weiner emphasized, in Canada “clearing institutions with a settlement balance deficiency at the end of the day [would] be able to finance this deficiency by obtaining a collateralized overdraft at the Bank Rate. The Bank Rate will serve as the upper end of the operating range for the overnight rate since institutions would be unlikely to pay more than the Bank Rate to secure additional settlement balances. Similarly, the Bank will pay interest on positive balances held at the end of the day at a rate 50 basis points below the Bank Rate. This rate paid on settlement balances will serve as the lower end of the operating range since institutions would not accept a lower rate on positive balances in the market” (Sellon and Weiner 1997: 12).

30. As Wray points out: “The government does not ‘need’ to ‘borrow’ its own HPM in order to deficit spend. This becomes obvious if one recognizes that government bond sales are logically impossible unless a) there already exist some accumulated HPM with which the public can buy the government bonds, or b) government lends HPM used by the public to buy the government bonds, or c) government creates some other mechanism to ensure that sales of bonds to the public do not lead to a debit of bank reserves of HPM. Therefore, government bond sales cannot really ‘finance’ government deficits” Wray (2001: 18).

31. In addition, the conventional view argues that taxes are necessary to pay for government spending and that bond sales are a borrowing operation. This view emphasizes that government spending must be financed by tax revenues, borrowing, or printing money. As I have demonstrated, the government budget constraint notion is not an operational constraint on government spending. Neither taxes nor bonds finance government spending. The purpose of taxes is, first, to create a demand for the government’s money and, second, to remove extra income that the public is using that can cause inflation. The purpose of bond sales is to allow the central bank to reach its overnight interest rate target. Bond sales are part of monetary policy.

32. See Wray (1998, 2006a) for detailed analyses.

33. On fiscal rules, debt sustainability, government solvency, and the Fiscal Responsibility Law, see Goldfajn and Guardia (2003), Garcia (2002).

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Appendix

National Treasury		Non-Bank Private Sector	
Assets	Liabilities	Assets	Liabilities
+ Tax Liability	+ Net Worth		- Net Worth + Tax Liability

Taxes are paid and the Treasury Moves Deposit to Central Bank Account

National Treasury		Central Bank	
Assets	Liabilities	Assets	Liabilities
+ Balance at the Central Bank - Tax Liability		+ Loaned Res	+ Balance owed to the Treasury + Reserves - Reserves

Banks		Non-Bank Private Sector	
Assets	Liabilities	Assets	Liabilities
+ Reserves - Reserves	+ Borrowed Res - Deposits	- Deposits	- Tax Liability

Treasury spends by crediting bank accounts

National Treasury		Central Bank	
Assets	Liabilities	Assets	Liabilities
+ Goods - Balance at the Central Bank			+ Reserves - Balance owed to the Treasury

Banks		Non-Bank Private Sector	
Assets	Liabilities	Assets	Liabilities
+ Reserves	+ Deposits	+ Deposits - Goods	

Figure A1. **Government Must Collect Taxes Before It Can Spend**

Source: Wray 2003–4.

National Treasury		Banks	
Assets	Liabilities	Assets	Liabilities
+ Balance at the private Bank	+ Bonds	+ Bonds	+ Balance owed to the Treasury

Treasury Moves Deposit to Central Bank Account

National Treasury		Central Bank	
Assets	Liabilities	Assets	Liabilities
- Balance at the private Bank + Balance at the Central Bank		+ Loaned Res	+ Balance owed to the Treasury

Banks	
Assets	Liabilities
	+ Borrowed Res - Balance owed to the Treasury

Treasury spends by crediting bank accounts

National Treasury		Central Bank	
Assets	Liabilities	Assets	Liabilities
- Balance at the Central Bank + Goods		- Loaned Res	- Balance owed to the Treasury

Banks		Non-Bank Private Sector	
Assets	Liabilities	Assets	Liabilities
	- Borrowed Res + Deposits	+ Deposits - Goods	

Final Position

National Treasury		Banks		Non-Bank Private Sector	
Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
+ Goods	+ Bonds	+ Bonds	+ Deposits	+ Deposits	- Goods

Figure A2. **Government Must Borrow Before It Can Spend**

Source: Wray 2003–4.

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