Stateless Money? Cryptocurrency and Digital Banking in Brazil

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Introduction

The world financial crisis of the late 2000s was for some the dawn of a new era in which state currency monopolies and intermediation by large banks would be replaced by peer-to-peer payment systems and privately-issued digital currencies following strict rules of supply growth. Rather than "trust" big government and banks to manage our money and secure transactions, cryptocurrencies would allow us to "trust the code" and the "mathematical structure" of blockchain technologies (Andolfatto and Martin 2021).

In Brazil, as elsewhere, this neoliberal techno-utopia has not arisen. Though their use as speculative assets has increased, cryptocurrencies have not become a popular means of payment. The use of electronic money, on the other hand, issued by novel corporate entities called payment institutions, is now commonplace.

Unlike cryptocurrencies, digital banking and electronic money in Brazil rest on a solid legal framework designed to incorporate them into the payments system. Though not required to provide branch services, digital banks enjoy most of the privileges bestowed upon traditional banks. Most importantly, they maintain accounts at the central bank through which they may operate on the interbank lending market, settle balances with other banks, and obtain loans directly from the central bank. This eliminates the possibility of 19th century-style runs on these institutions, and makes it possible for customers to use their "payment accounts" in the same manner as a traditional checking account. In short, digital banks have become privileged members of Brazil's state-led "pay community" (Knapp 1934), and this is why they have flourished.

This article is organized into four sections. The first reviews basic concepts of money and banking, focusing on the Brazilian case. The second contrasts the legal status of cryptocurrencies in Brazil with that of electronic money, and outlines the key legislative reforms with regard to digital banking. The third section analyzes the relative size of Brazil's digital banks and their impact on financial inclusion and lending conditions. The final section concludes the article.

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State Money and Bank Money

Textbooks define money as anything "generally accepted" for paying debts and acquiring goods and services (Mishkin 2013). This is in accord with everyday use, but does not explain how something attains this status of general acceptability. Innes (1913), as is well known, suggested an alternative: money is credit. Whether in the form of funds stored in a checking account, or coins issued by a medieval state, money is a liability of its issuer and is accepted as a means of payment by those who wish to acquire claims on this issuer, above all those who are in its debt.

Modern monetary systems—Brazil is no exception—rely on a hierarchy of debt in which the nonbank public uses central bank-issued paper money (cash) and bank deposits (bank money) to pay debt and buy goods and services, and banks use central bank reserves to clear debts among themselves (Bell 2001). The nonbank public uses cash and bank money as a means of payment because members of this group are indebted to government and the banks, and need to obtain these forms of money to pay taxes as well as the interest and principal on their bank loans (Sakaguchi 2020, 976). Banks are indebted to other banks, including the central bank, and need to obtain central bank money to settle balances and pay off debts to each other.

The use of bank deposits as a means of payment relies on an institutional structure that transforms bank liabilities into a form of state money, or what Knapp (1924) called "accessory state money". The process today is so automatic that it is useful to examine how this was achieved in the past. Since their origins in medieval Europe, modern banks have operated in more or less the same way: they take in deposits and offer their customers accounts denominated in units of the state's currency, against which they provide payment services and bank credit, and pledge to convert their liabilities into what 19th century banking law called "lawful money", or, in Brazil, *moeda corrente*, meaning state-issued coins or paper money, or the banknotes of an official government bank such as the Bank of England or the Banco do Brasil (Usher 1934; Pacheco 1979).

For a 19th century bank to achieve broad circulation of its banknotes[2], its customers and, most of all, other banks, had to be confident that it could honor this pledge. A bank that could not do so was in a position comparable to that of coal mining companies then operating in the United States, who also issued their own currencies and used them to pay

[2] Essentially a bank deposit in paper form, commonly used as a means of payment in this period.

workers (compelled to shop at company stores), but could not use them as a means of payment far beyond the limits of the mining district, much less issue them to people in the form of loans. The general public was not in debt to the mining company, and thus had no need for its money.

Conversion into state money was a recurring problem for 19th century banks, and in Brazil it was partially resolved by laws declaring the notes of chartered banks acceptable in payments made to the central government. This reduced the demand for conversion for banks granted this privilege, permitting an expansion of their lending and profits. Banks whose notes were not accepted for tax purposes did exist, but they were constrained in their ability to offer bank credit, and their notes, called *vales*, were not widely-used as a means of payment (Pacheco 1979, 322-3).

The basic difference between 19th century monetary systems and those of today is the enormous strengthening of ties between banks and the state. No one in Brazil today has to wonder whether bank deposits will be accepted as a means of payment, or accepted only at a discount relative to face value, as was common in the past. When someone makes a payment in bank money, or pays income taxes, the transaction, from the individual's perspective, is complete as soon as the bank deducts its checking account. Final settlement, however, takes place within the Brazilian Central electronic Bank's Reserve Transfer System, where the central bank deducts the reserve account of the paying customer's bank and credits the reserve account of the other bank, or, in the case of federal tax payments, the central bank account of the Brazilian Treasury.

Whether or not a bank has sufficient reserves to settle its balances is its own problem, not the customer's, and, in any case, an elaborate institutional structure is in place to ensure depository institutions can always obtain the reserves they need, either on the interbank market (known in Brazil as the *Selic* market), or directly from the central bank. The central bank fixes the price at which banks borrow from one another, and offers various lending facilities—including zero-interest intraday loans—to ensure banks have sufficient funds in their accounts (Rezende 2009; Dalto et. al. 2020)[3]. Since it can always satisfy the demand for reserves by issuing its own liabilities, the central bank is able to guarantee bank transactions will be settled in central bank money, and this is why a

[3] A summary (in Portuguese) of the Brazilian Central Bank's operations can be found at www.bcb.gov.br/content/estabilidadefinanceira/estabilidade_docs/Tutorial_Internet_STR.pdf. Accessed December 10, 2022.

transfer of bank deposits made by a given person A in payment of a debt to person B is never refused by person B's bank. The latter knows it will receive a credit in its reserve account equal to the value of the transfer of deposits from A to B, and thus can immediately credit its customer's checking account by the same amount.

It should be clear from the remarks above that the profitability of institutions managing deposits for the nonbank public depends on the central bank not competing with them, as it could simply by offering every adult citizen a central bank account, perhaps with pre-established overdraft or loan facilities contingent on, say, the citizen's needs, age, or income. Modern banking is often described as an institution that channels scarce resources from savers to borrowers, but it is more accurately described as a public utility that has been largely outsourced to the private sector. We return to this in the Conclusion.

Cryptocurrencies, Electronic Money and Digital Banking in Brazil

Cryptocurrencies like bitcoin are strange candidates for money because the funds stored in bitcoin wallets do not represent a credit or a claim against anyone or anything. Furthermore, though Brazilian residents are allowed to buy and sell cryptocurrencies, the latter are not governed by any specific laws or legislation. This has facilitated their use as instruments of tax evasion, but also made it impossible for them to be used as money, much less a form of "stateless" money (Amick 2021).

Brazilians use cryptocurrencies as speculative assets and as a way to invest in American dollars while avoiding taxes and bank fees, but very rarely as a means of acquiring goods and services (Chainalysis 2021). It is otherwise with electronic money, used by well over 60 million people[4] and accounting for over 25% of transactions on some online platforms (Transfeera 2021).

We define "electronic money" as the funds stored in payment accounts maintained by Brazilian payment institutions, which are nonbank entities (comparable to "electronic money institutions" in Europe) instituted in 2013 providing basic banking services for individuals and business customers[5]. The term "digital bank" will refer to independent

[4] The payment institution Nubank alone has over 50 million active customers, defined as customers who generate revenue for the institution on a monthly basis.

[5] This definition is consistent with the legal definition in Brazil of an "issuer of electronic money", and allows us to distinguish between the balances held in payment institutions and the balances held in checking accounts with traditional banks, all of which now offer a complete array of digital services. See Brazilian Central Bank Circular (BCB Circular) 3683, November 4, 2013.

payment institutions and online banks, by which we mean institutions not affiliated with banking conglomerates existing prior to the reforms outlined here[6].

The building of a legal framework for digital banking began in the late 2000s, and by 2016 was largely complete. In 2009, the Brazilian Central Bank (BCB), following trends in the United States and Europe, extended eligibility for the opening of central bank accounts (called "settlement accounts" in the case of nonbanks) to all institutions requiring central bank authorization to operate[7]. This transformed eligible nonbanks, as payment institutions would later become, into direct participants in the BCB's Reserve Transfer System (see the first section). Subsequent legislation granted settlement account holders access to central bank lending facilities (intraday and overnight repo) under the same conditions as reserve account holders, and allowed them to participate directly in the *Selic*, Brazil's equivalent of the fed funds market[8].

Laws passed in 2013 provided the first legal definition of payment institutions in Brazil, authorizing them to open payment accounts for customers, issue debit cards, and provide exclusively digital services[9]. Placed under the regulatory authority of the BCB, payment institutions were permitted to open settlement accounts at the central bank, and those choosing to do so were granted access to the country's main wire transfer and payment networks. Subsequent legislation allowed payment institutions to issue credit cards and process several types of payments, such as utility bills, that previously had to go through commercial bank networks[10].

As a consequence, payment institutions were able offer almost all of the payment services offered by incumbent banks, settling payments through the BCB's electronic Reserves Transfer System in exactly the same way as the latter. Operationally, there is no difference between an electronic payment made with funds in a payment account and a similar payment made with a checking account, and thus no difference between "electronic money" and a bank deposit, apart from the legal status of their issuers.

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[6] The term "digital bank" is not defined in Brazilian law and is used loosely in Brazil to refer to firms providing banking services exclusively through the use of smartphones or other online platforms.
[7] BCB Circular 3438, March 2, 2009.
[8] See BCB Circulars 3557 (September 1, 2011), 3511 (November 5, 2010), and 3587 (March 26, 2012). Also see National Monetary Council Resolution (Resolução do Conselho Monetário Nacional) 4002, August 25, 2011.
[9] Federal Law 12865, October 9, 2013 (Lei Nº 12.865, 9 de Outubro de 2010). Also see BCB Circular 3681, November 4, 2013.
[10] BCB Circulars 3680 and 3682, November 4, 2013.

Payment institutions in Brazil are not regarded as financial institutions, and thus cannot offer loans directly to customers (though they may do so through affiliates). Through 2015, the only option available to payment institutions intending to compete with traditional banks on loan markets was to apply for status as commercial banks or finance companies, which, given regulatory conditions at the time, meant they would have to offer in-person services. This changed in 2016, when the BCB authorized the opening and closing of checking accounts by exclusively electronic (online) means, leading to the formation of Brazil's first exclusively online retail banks. These institutions are true commercial banks, the only difference relative to incumbents being they do not have branches and do not offer any kind of in-person services.

The final step in the digitalization of Brazil's payment system was the introduction of Pix, an instantaneous payments system launched in October 2020 by the central bank. Commercial banks and payment institutions with over 500,000 clients are obligated to offer Pix to clients, and are not allowed to charge for this service. By mid-2021, Pix had become the dominant network for bank transfers in Brazil[11]. Digital banks are major players in the system, participating, according to one estimate, in up to 50% of all transactions (Transfeera 2021).

Final settlement within Pix takes place through "instantaneous payment accounts" held by participant institutions at the central bank. Positive balances in these accounts earn the Selic rate, and all participants have equal access to a central bank lending facility created specifically for this system[12].

Assets, Interest Rates, and Financial Inclusion

We turn to a brief analysis of the relative size of digital banks in Brazil today, their effect on interest rates and bank spreads, and their impact on financial inclusion.

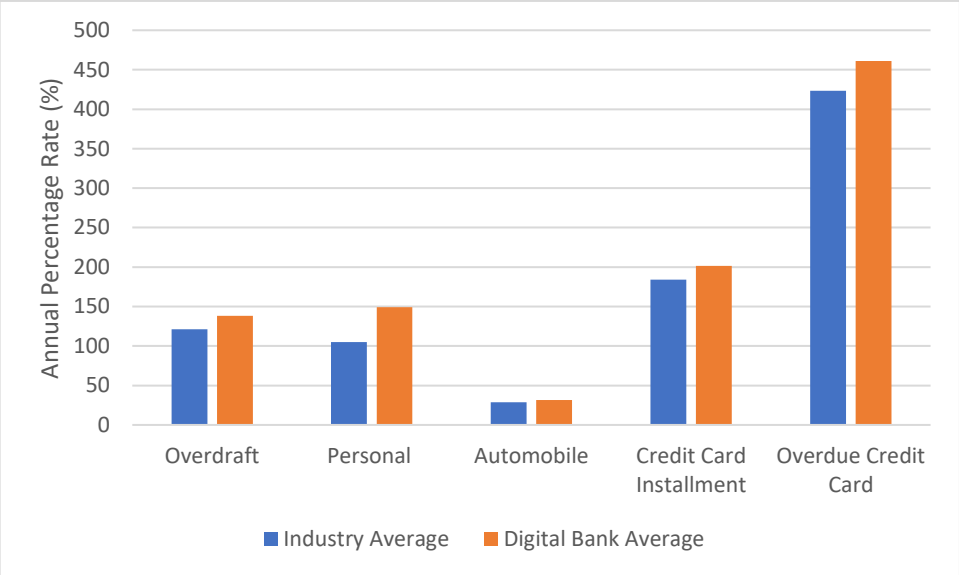
Notwithstanding the growth in their customer base, independent digital banks remain minor players in Brazilian banking, controlling, in mid-2022, roughly 3% of total financial assets and 4% of deposits. Their share of bank credit has risen substantially, but remains small. The digital banks' share of loans to individuals increased from 2% in 2018

[11] Information on bank transactions can be found at www. bcb.gov.br/estatisticas/spbadendos.
[12] BCB Resolution 175, December 15, 2021.

to around 3% in 2021, while their share of corporate loans increased from 0,2% to just under 1%[13].

For most types of bank loans, interest rates charged by digital banks are at or above the industry average (Figure 1), the one exception, as of mid-2022, being personal loans to individuals with formal private sector job contracts.

Figure 1: Selected Interest Rates: Digital Banks vs. Industry Average



Source: Banco Central do Brasil, available at www.bcb.gov.br/estatisticas/txjuros. Interest rates are average annual rates based on information provided by financial institutions through July 2022.

There is little evidence, furthermore, to suggest digital banking has significantly reduced interest rate spreads. According to central bank estimates, bank spreads fell steadily between 2016 and 2020, in accord with their well-documented positive correlation with the central bank's target rate (Marchetti 2022), and are now back to the levels of early 2016[14].

The digital banks also do not appear to have had a dramatic impact on financial inclusion. Access to banking services has improved steadily in Brazil in recent years, but

[13] Information on assets, loans, and deposits are author's estimates based on information provided by the Brazilian Central Bank, available at www3.bcb.gov.br/ifdata/. Estimates are based on the holdings of the following corporations, which account for the vast majority of assets held by independent payment institutions and online banks in Brazil: Nubank, Banco Inter, Banco C6, Banco BMG, Stone, Pagseguro, Banco Original, Mercado Pago, BancoSeguro, Picpay, and Agibank

[14] Estimates provided by the Brazilian Central Bank. Available at https://dadosabertos.bcb.gov.br/dataset/20783-spread-medio-das-operacoes-de-credito---total. Accessed December 10, 2022.

evidence suggests economic growth and government policies targeting low-income Brazilians were more important factors than the business models of digital banks.

The most rapid growth over the past decade in the number of active users of bank accounts[15] took place between 2010 and 2014 (after which Brazil entered a deep recession) and in 2020[16]. The spike in 2020 was not the result of previously unbanked individuals opening accounts at privately-owned digital banks, but of increased social spending during the Covid pandemic combined with a digital banking drive led by the Caixa Econômica Federal, a state-owned commercial bank responsible for social welfare payments. In 2020 alone, this bank opened up 107 million digital savings accounts for welfare recipients, increasing the number of banked adults in Brazil by 38 million (Falleti 2021).

Conclusion

In the wake of the 2007-8 financial crisis, cryptocurrency enthusiasts called for replacing big government and banks with privately-issued digital currencies and electronic peer-to-peer payment systems. What has actually unfolded, in the case of Brazil, is something more banal: legal reforms, spurred by improvements in digital technologies, have increased the number of banking service providers, and in the process created a new form of money very similar to a traditional bank deposit, and equally reliant on central bank support to function as a means of payment. Even in the digital era, money is a creature of the state.

This is not to say our monetary systems are perfect or immutable. Mainstream economists describe modern banking as an institution that channels scarce resources from savers to borrowers (Mankiw 2011, p. 156), but it is more accurately described, in Brazil and elsewhere, as a public utility that has been outsourced to private interests. As with schools and health care, this is only justifiable if it can be proven that profit-oriented firms perform these services better than the public sector. This is highly questionable in the case of money and credit. Hence the attractiveness of central bank digital currencies, which have yet to be introduced in Brazil. These digital representations of central bank money would grant ordinary Brazilians the right to open a bank account directly with the

[15] Checking, savings, or payment accounts.
[16] Author's estimates based on information provided by the Brazilian Central Bank. Available at https://www.bcb.gov.br/acessoinformacao/ccsestatisticas. Accessed December 10, 2022.

central bank. A radical approach to this new form of state money would include the right to central bank loans, based on a person's needs or other appropriate criteria. Some would consider this impractical, but comparable privileges have long been granted to Brazilian banks and large industrial and agribusiness firms. This would benefit workers and low-income Brazilians to a far greater extent than cryptocurrencies or the recent reforms concerning digital banking.

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