

# STR

Sistema de Transferência  
de Reservas  
(Reserves Transfer System)

**Annual Report**  
**2018**

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de Reservas  
(Reserves Transfer System)

## Annual Report 2018

Prepared by  
Banco Central do Brasil (BCB)  
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# Introduction

## About this report and its structure

This is the second English version of the annual report for STR – *Sistema de Transferência de Reservas* (Reserves Transfer System), and comprises the last five years (2014 to 2018), with an emphasis on the last year.

The report presents data on the management and operation of STR and is suitable for the overall public interested in details about STR and its relevance to the SPB – *Sistema de Pagamentos Brasileiro* (Brazilian Payments System).

“Chapter 1 – STR participation” focuses on the participants of STR.

“Chapter 2 – Funds transfers” provides information on the number of transactions and values settled, as well as their evolution over the years. It also provides an in-depth analysis on the settlement of TED – *Transferência Eletrônica Disponível* (Electronic Funds Transfer), the most popular payment instrument for interbank credit transfers in Brazil. Moreover, it presents the evolution of BCB Intraday Repo, a zero-cost liquidity mechanism offered by BCB – Banco Central do Brasil (Central Bank of Brazil).

“Chapter 3 – STR performance” discloses information on STR availability to its participants and on its cost recovery.

“Chapter 4 – STR evolution” presents the current and future improvements to the services offered by STR.

“Chapter 5 – Instant payments settlement infrastructure” provides an overview of the financial market infrastructure which will be owned and operated by BCB for the settlement of instant payment transactions in Brazil.

## Reserves Transfer System

The STR<sup>1</sup> is the real-time gross settlement (RTGS) system for funds transfers in Brazil. It is the backbone of the Brazilian financial system, as it settles transactions in the monetary, foreign exchange and capital markets among institutions that hold accounts at BCB. In addition to these financial flows, the financial market infrastructures' operations are also settled through the STR.

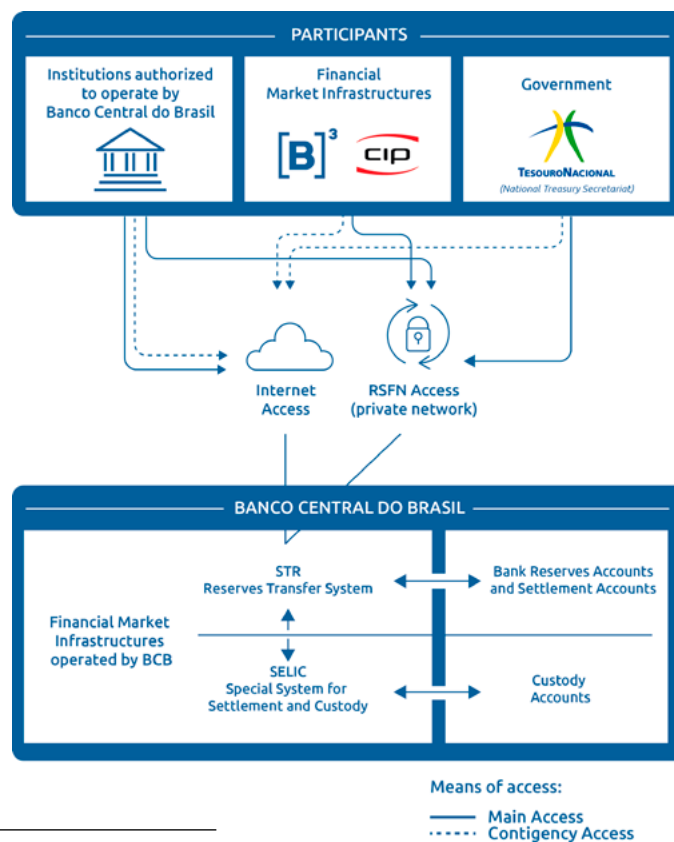
Its main characteristics are:

- Direct participants can issue funds transfer orders on their own behalf or on behalf of a third party (an order is always issued by the account holder);
- Overdraft is not allowed;
- Funds transfers are final (finality), that is, irrevocable and unconditional.

The STR is managed and operated by the Department of Banking Operations and Payments System (Deban), while the IT provider is the Department of Information Technology (Deinf).

Figure 1 shows an overview of the STR structure, with its two means of access: via RSFN – *Rede do Sistema Financeiro Nacional* (National Financial System Network)<sup>2</sup> and over the Internet, using the STR-Web application<sup>3</sup> provided by BCB.

**Figure 1 – STR Structure**



1 Refer to: <http://www.bcb.gov.br/Pom/Spb/Ing/InterbankFundsTransfer/ISTR.asp>.

2 Available in Portuguese only, at: <https://www.bcb.gov.br/estabilidadefinanceira/comunicacaodados>.

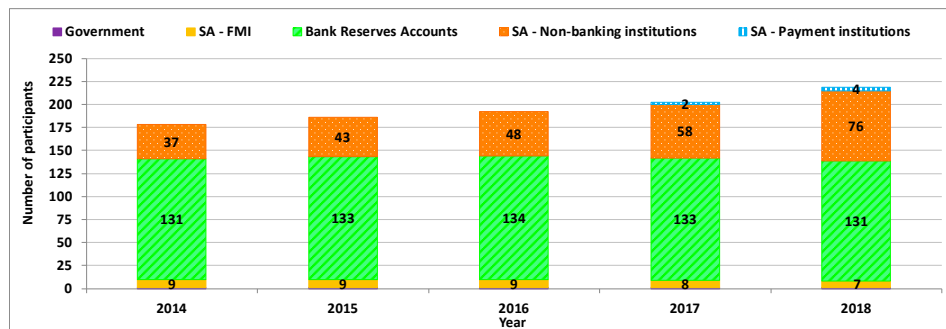
3 More info available at: <http://www.bcb.gov.br/pom/spb/ing/GuideforOpeningReserves.pdf>.

# 1

## STR Participation

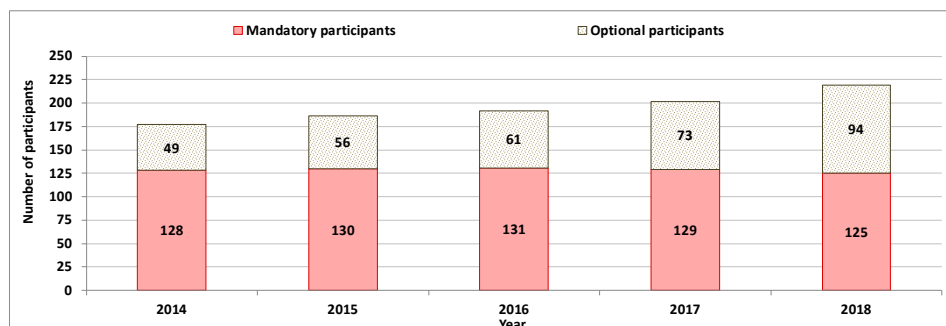
There are different types of accounts in STR<sup>4</sup>. In a nutshell, the Bank Reserves Accounts are held by banking institutions; the Settlement Accounts (SA) are held by non-banking institutions, payment institutions and Financial Market Infrastructures (clearing and settlement service providers); and the Government Single Account is held by National Treasury.

Chart 1 shows the quantitative trend by accounts' type:



It is worth noting the continuous increase of SAs held by non-banking institutions, representing 35% of all accounts in 2018, the closing of one FMI's SA (the assets clearing house operated by B3 S.A. – Brasil, Bolsa e Balcão) and the opening of two more SAs held by payment institutions on that same year.

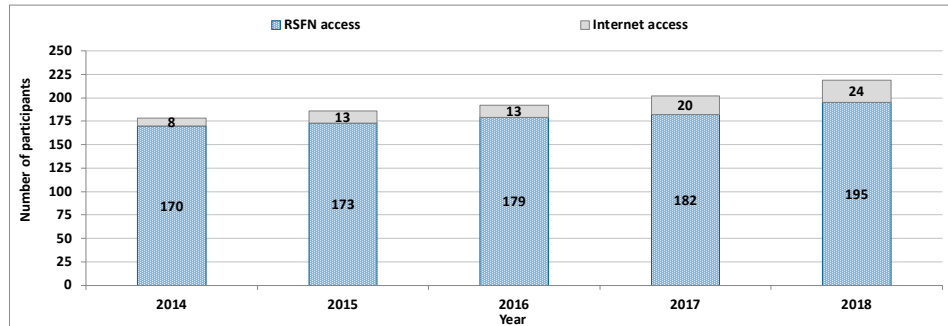
Chart 2 exhibits the number of mandatory and optional participants in STR:



4 See BCB Account Types in the Glossary.

The number of optional participants has been growing steadily, particularly in 2018, when it reached 43% of the total number of participants, whereas the number of mandatory participants has remained relatively stable.

Chart 3 presents the usage trend of the two means of access to STR:



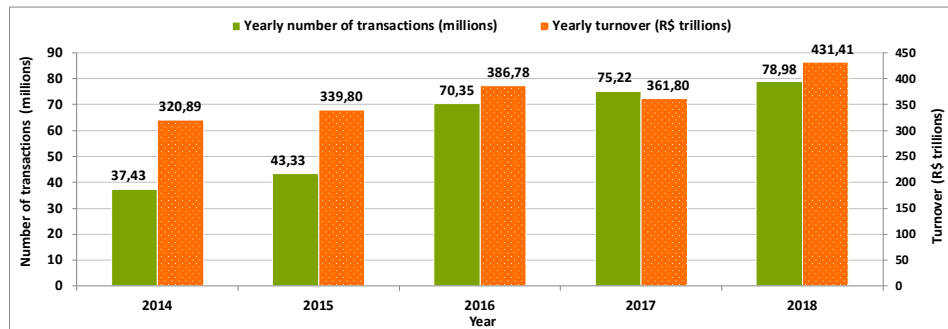
RSFN is the main access to STR, used by 89% of the institutions holding accounts in 2018. The access via Internet, also available as a contingency for RSFN users, was the main mean of access for twenty four participants in 2018, all of them non-banking institutions holding SAs.

# 2

## Funds Transfers

### STR volumes trend

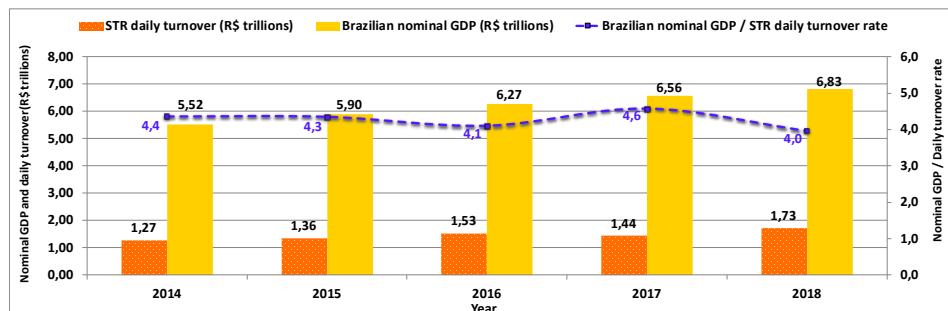
Chart 4 shows the yearly number of transactions and turnover in STR for the past 5 years:



The data outlines a continuous growth in the number of transactions, due to the consolidation of TED as an interbank funds transfer instrument.

The higher turnover in 2018 is explained by a greater demand of repurchase agreements by participants (R\$ 50.7 trillion more in comparison to 2017), followed by an increase in intraday usage of reserve requirements (R\$ 13.3 trillion more in comparison to 2017) and in TEDs on behalf of clients settled through STR (R\$ 1.9 trillion more in comparison to 2017).

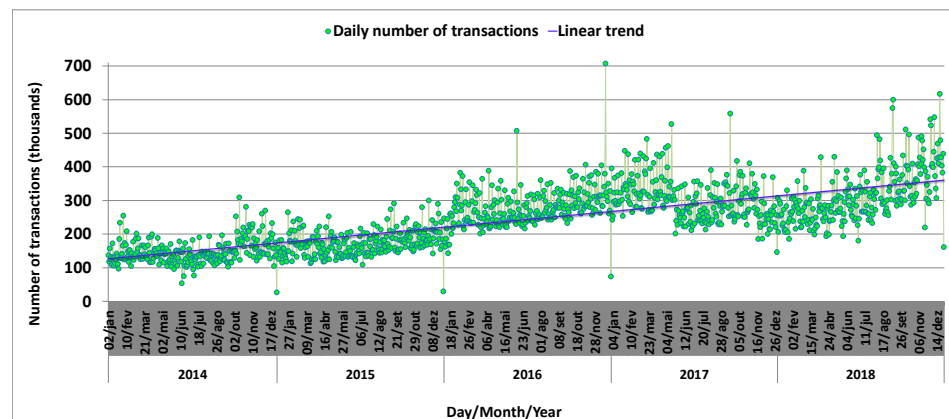
Chart 5 compares the average daily turnover for STR and the nominal Brazilian Annual GDP:



It is worth mentioning that, in 2018, the STR settled the equivalent of the nominal Annual GDP<sup>56</sup> every 4 days of operation.

## STR transactions distribution

Chart 6 shows STR daily number of transactions from January 1, 2014, to December 31, 2018, as well as its linear trend line:



- The following can be highlighted for the period: lower number of transactions on December 24 and on the last working day of the year, dates on which STR has reduced operating hours, from 6:30 a.m. to 1 p.m. (the standard operating hours are from 6:30 a.m. to 6:30 p.m., local time in Brasília).
- Peak number of transactions occurring on November 30 and December 20 (or the previous working day, in case those are not working days), due to the payment of the first and second installments of the year-end bonus by employers.

The increase observed from January 2016 was due to the end of TED minimal value agreed among STR participant institutions<sup>7</sup>.

The decrease observed from May 2017 was due to a migration of retail payments related to credit/debit cards from STR to another payments system (refer to “TED settlement on payments systems in Brazil”, page 10). Finally, another reduction in November 2017 was due to the migration of transactions to the new SLC – *Serviço de Liquidação de Cartões* (Cards Settlement Service)<sup>8</sup>.

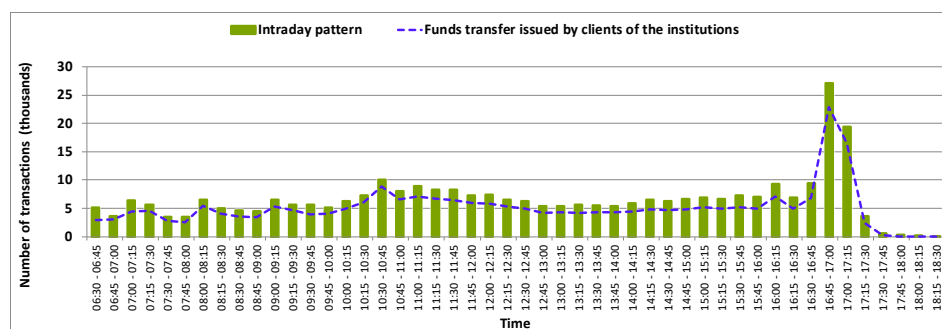
5 Nominal GDP is calculated at current prices, not discounting inflation effects.

6 2018 Nominal GDP based on the current information available, which could be reviewed.

7 TED minimal value: R\$5,000.00 from 22<sup>nd</sup> of April 2002; R\$3,000.00 from 21<sup>st</sup> of May 2010; R\$2,000.00 from 23<sup>rd</sup> of November 2012; R\$1,000.00 from 22<sup>nd</sup> of March 2013; R\$750.00 from 7<sup>th</sup> of July 2014; R\$500.00 from 16<sup>th</sup> of January 2015; R\$250.00 from 3<sup>rd</sup> of July 2015; and R\$0.01 from 15<sup>th</sup> of January 2016.

8 Information about SLC – centralized settlement infrastructure for cards is available in Portuguese at: <https://www.bcb.gov.br/acessoinformacao/faqliquidacaocentralizada>.

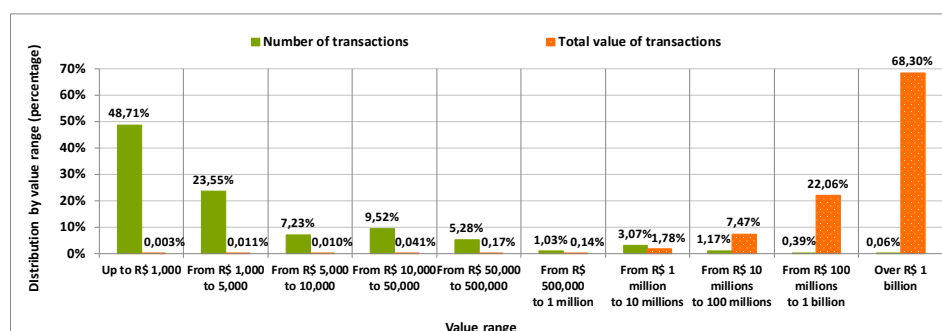
Chart 7 presents the STR average intraday transactions distribution:



The STR intraday pattern is represented by the green bars, whereas the dashed line represents TEDs issued by clients of the institutions. Therefore, most of the intraday pattern can be explained by the transactions on behalf of clients.

The peak between 4:45 p.m. and 5:15 p.m. is due to the rerouting of client transactions due to the closing time of another payments system (refer to “TED settlement on payments systems in Brazil”, page 10).

Chart 8 shows the distribution of transactions by ten value ranges in 2018:



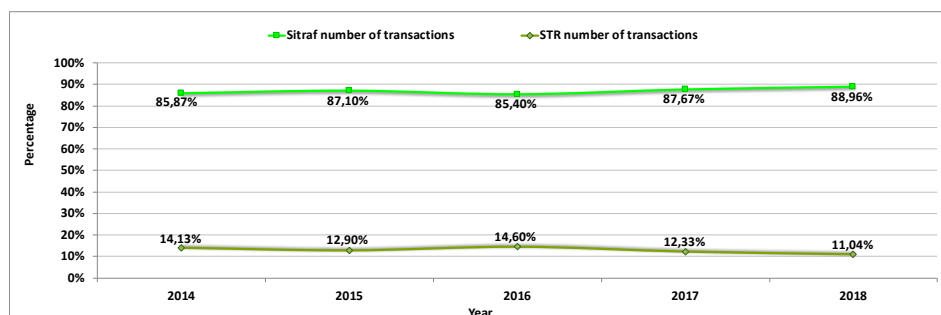
This chart highlights the inverse relationship between number of messages and its values.

## TED settlement on payments systems in Brazil

The payments system in which a TED will be settled is chosen by the sending institution, either STR (operated by BCB) or Sitraf (operated by a private FMI), with the following exceptions that demand settlement in STR:

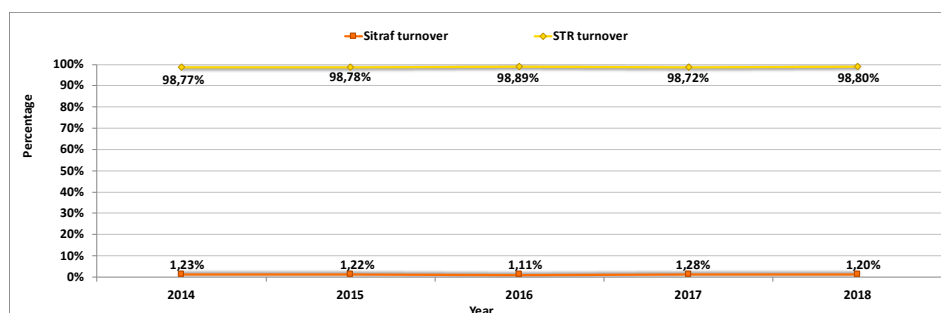
- Issued on its (institution) own behalf;
- For investment in capital or financial markets, whenever the issuer or the recipient holds a Bank Reserves Accounts or a Settlement Account at BCB;
- Value of R\$1 million or more; or
- For tax collection or government payments.

Chart 9 shows the percentage distribution of the number of funds transfer orders settled by STR and by Sitraf:



On average, Sitraf settled 87% of the transactions (2.10 billion transactions over five years), and STR settled 13% (305.31 million transactions during the same timeframe).

Chart 10 presents the percentage distribution of the values settled in each system:



In average, STR settled 98.79% of the values (total of R\$ 1.840 trillion, in five years), in comparison to 1.21% of the values in Sitraf (around R\$ 23 trillion), highlighting the STR role to offer settlement in central bank money for large-value funds transfers in Brazil.

## BCB intraday repo

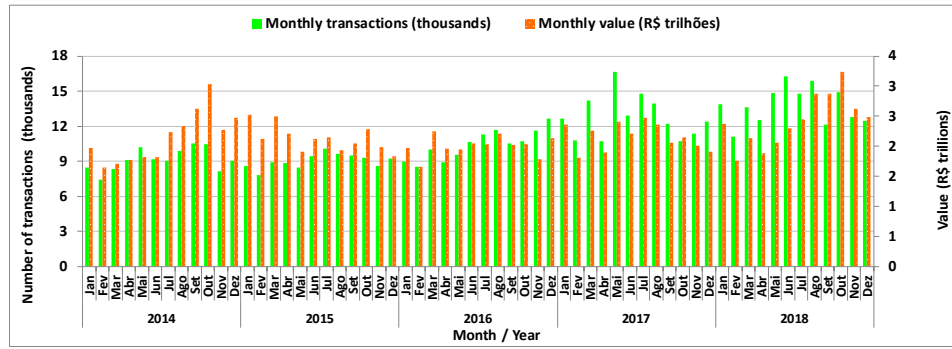
Many RTGS systems offer some form of intraday credit to their participants in order to keep a regular flow of payments, even if there is a temporary gap between payments made and received during the day.

In Brazil, this liquidity provision is offered through free of charge intraday repo transactions, collateralised by Domestic Federal Securities issued by the National Treasury and registered in the Special System for Settlement and Custody (Selic<sup>9</sup>).

All financial institutions that hold an account at BCB have access to the BCB intraday repo, but FMIs, payment institutions, leasing companies and foreign exchange brokers do not.

9 Available at: <http://www.bcb.gov.br/en/#!/n/FEDSECURITIES>.

Chart 11 shows the monthly evolution of the number and value of BCB intraday repo:



# 3

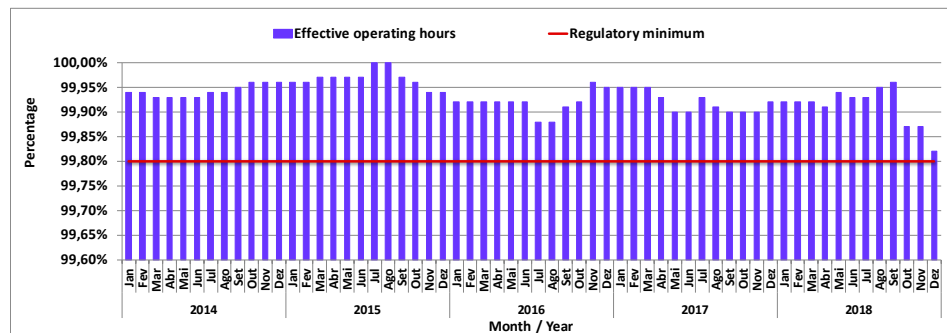
## STR Performance

### STR availability index

The STR availability index is a metric that represents the time the system was operational in the last twelve months in relation to the time it should have been operational, considering the regular operating hours.

The same regulation also establishes that systemically important FMIs<sup>10</sup>, such as STR, must have an availability index of at least 99.80%.

Chart 12 shows a month-by-month comparison between STR availability index and the regulatory minimum:



The STR availability index remained above the regulatory minimum throughout the reporting period, reaching 99.82% in December 2018.

In addition to the availability index, BCB also monitors the performance of STR, since the joint analysis of these two metrics better evaluates the continuous and effective operation of the system.

### STR cost recovery

In order to recover its costs, STR charges fees from its participants, according to STR regulation. Fees are divided in two categories:

- Variable: per settled transfer order, per information provided, or per usage of the contingency service;

<sup>10</sup> Those FMIs (such as STR) that, according to BCB's evaluation, may pose a risk to the soundness or the normal functioning of the National Financial System.

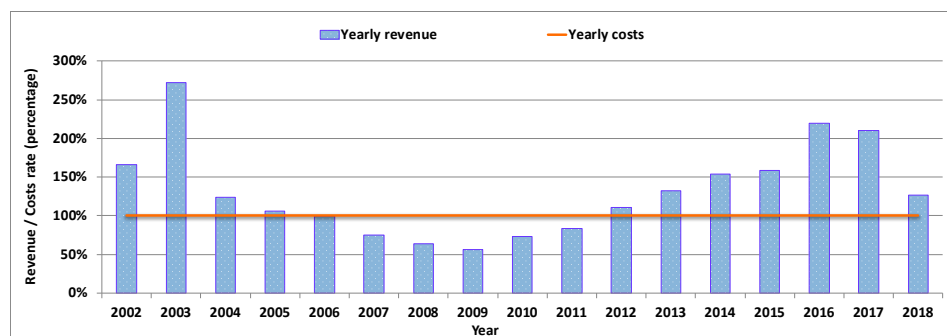
- Fixed: monthly fee for the usage of the STR-Web internet application as main access to STR<sup>11</sup>.

Expenses, in turn, are divided in three categories:

- Investment: for updates, improvements or renewal;
- Management, operation and monitoring;
- Technology: software, hardware and human resources involved.

BCB performs a systematic monitoring of revenues and costs of STR, to ensure that its cost recovery objectives are effective. Considering the current operational results and future projections, BCB adjusts the fees charged, making its evaluation public through technical notes about STR fees<sup>12</sup>.

Chart 13 illustrates the STR revenues versus costs, in percentage, since its go-live in 2002:



In addition, Chart 14 presents the accumulated operational result for STR:

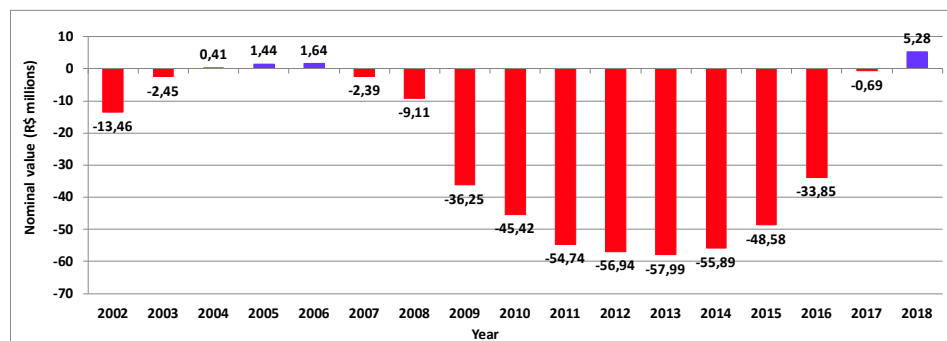


Chart 14 shows that STR has reverted the accumulated loss prevailing since 2007.

11 The table of fees is available in Portuguese only, at: <https://www.bcb.gov.br/content/estabilidadefinanceira/especialnor/CartaCircular3930.pdf>.

12 The technical notes about STR fees are available in Portuguese only, at: <https://www.bcb.gov.br/estabilidadefinanceira/spbpublicacoes>.

# 4

## STR Evolution

### STR technological infrastructure update

STR is currently undergoing a major change on its IT infrastructure (which involves modernizing its platform and architecture). The project is aligned with BCB's strategic goal<sup>13</sup> to maintain the soundness, efficiency, and proper functioning of the National Financial System and of the infrastructure of the financial market.

The new STR infrastructure went live in May 2018, and tests have shown a 6 times increase in the throughput, with an adequate expansion capacity to deal with the increasing demand, without breaking the SLA (Service Level Agreement).

The go-live of the remaining STR services should occur throughout 2019, concluding the project of technological update of STR.

### STR-Web application update

The STR-Web application was introduced in 2009, allowing participants to connect to STR over the internet (refer to Chart 3 in this report).

BCB will conduct a survey with participants of STR in 2019 to identify possible improvements.

### Business Continuity

Seeking a better resilience of the SPB, BCB supports FMIs and other participants initiatives to enhance business continuity and minimize the risk of an interruption of critical processes.

A working group (WG) was created in 2015, on the scope of the SPB Forum<sup>14</sup>, to discuss and present measures to mitigate the impacts in case of STR's unavailability. The WG was coordinated by BCB and was composed of representatives from FMIs,

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13 Available at: <http://www.bcb.gov.br/Pre/Sobre/ingl/PEstrategico-i.asp>

14 The SPB Forum has the objective of structuring a direct and permanent communication channel among BCB and the entities involved in the Brazilian Payment System. Available in Portuguese only, at <https://www.bcb.gov.br/estabilidadefinanceira/forumspb>.

the National Treasury, and other STR participants, and concluded its mandate on June 30<sup>th</sup>, 2016.

BCB continues to work on the implementation of the risk mitigation measures proposed, particularly the STR Operational Crisis Committee and its Communication Plan.

# 5

## Instant Payments Settlement Infrastructure

In December 2018, BCB published the Communiqué n.32927<sup>15</sup>, which presents the guidelines for the Brazilian instant payments ecosystem.

The centralized settlement infrastructure (set of rules and IT infrastructure for processing and settlement of instant payment transactions among participating institutions) will be owned and operated by BCB, and will be available 24/7/365.

The centralized settlement infrastructure will be autonomous in relation to STR, although STR participants will be able to move funds between them.

The development of the centralized settlement infrastructure is scheduled to begin in the first half of 2019.

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<sup>15</sup> Available in Portuguese at: <https://www.bcb.gov.br/content/estabilidadefinanceira/especialnor/Comunicado32927.pdf>.

# Glossary

## BCB Account Types

- Bank Reserves Accounts:
  - ◆ Mandatory holding by Commercial banks, Universal banks with commercial bank activities and Savings banks; and
  - ◆ Optional holding by Development banks, Investment banks, Foreign exchange banks and Universal banks without commercial bank activities.
- Settlement Accounts (SA):
  - ◆ Mandatory holding by systemically important FMI (clearing and settlement service providers);
  - ◆ Optional holding by non-systemically important FMI (clearing and settlement service providers), non-banking institutions authorized to operate by BCB and payment institutions.
- Government Unique Account: National Treasury.

## Acronyms in alphabetical order

BCB	<i>Banco Central do Brasil</i> (Central Bank of Brazil)
FMI	Financial Market Infrastructure
GDP	Gross Domestic Product
RSFN	National Financial System Network
RTGS	Real-Time Gross Settlement
Sitraf	RTGS system operated by a private FMI
SPB	Brazilian Payments System
STR	BCB's RTGS system
TED	Payment instrument for interbank credit transfers