



Ninth IFC Conference on “Are post-crisis statistical initiatives completed?”

Basel, 30-31 August 2018

## Credit statistics as a tool for assessing the effectiveness of policies aimed at reducing credit cost <sup>1</sup>

Marcia Fiorindo, Monica Une, Juliano Cavalheiro and Fernando Rocha,  
Central Bank of Brazil

---

<sup>1</sup> This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

# Credit Statistics as a Tool for Assessing the Effectiveness of Policies Aimed at Reducing Credit Cost

Marcia Fiorindo, Monica Une, Juliano Cavalheiro and Fernando Rocha<sup>1</sup>

## Abstract

In 2016, the Banco Central do Brasil (BCB) established a policy agenda, based on four pillars, to address structural issues of the domestic financial system. Identifying and overcoming the systems’ shortcomings would bring long-lasting benefits to society. Lower Cost of Credit is one of these four pillars, and includes policies aiming at: reducing the cost of credit to the borrower; increasing competitiveness and flexibility in the credit market; and fostering more efficient credit allocation. New credit statistics that have been developed by the BCB are instrumental in assessing the success of these policies.

Keywords: credit statistics, interest rates,

## Contents

- Introduction .....2
- Overview of Credit Markets in Brazil .....2
- BC+ Agenda .....3
- Measuring the Cost of Credit in Brazil.....3
  - Statistics of New Operations’ Interest Rates .....4
  - Average Cost of Outstanding Loans (ICC) .....5
  - Interest Rates and ICC Excluding Revolving Credit .....7
  - Credit Cards Revolving Credit Operations.....8
  - Internal Rate of Return and the ICC .....9
  - New Banking Spread Decomposition..... 10
- Other Improvements in Credit Statistics from the BC+ Agenda..... 12

---

<sup>1</sup> Respectively, Head of Division (and corresponding author, [marcia.fiorindo@bcb.gov.br](mailto:marcia.fiorindo@bcb.gov.br)), Coordinator and Advisor at the Monetary and Credit Statistics Division (Dimob) of the Department of Statistics (DSTAT) and Head of DSTAT of the Banco Central do Brasil. The authors wish to thank Renato Baldini Júnior for revising the preliminary version of this paper.

## Introduction

The objective of this paper is to present some recent challenges to the production of credit statistics by the Banco Central do Brasil (BCB), associated to the policy need for a more comprehensive evaluation of the cost of credit in Brazil, as well as the statistics developed for this purpose.

Interest rates practiced in the Brazilian credit market are historically high. For several years, the BCB has conducted efforts to understand this issue better, with important analytical results.<sup>2</sup> In order to deepen the knowledge and, in this regard, to contribute to the reduction of the cost of credit, the BCB implemented a set of short, medium and long-term actions, included in the BC+ Agenda. Among these actions is the creation of a set of complementary statistics for the measurement of the cost of credit in Brazil, which includes methodological revisions and compilation improvements of pre-existing statistics and the development of new statistics.

In order to analyze the efforts referred to in this introduction, this article begins with a panorama of the credit market in Brazil (Section 1) and continues with a brief description of the BC+ Agenda (Section 2) and a detailed presentation of the statistics being compiled in the BCB for the measurement of the cost of credit (Section 3). In the end, Section 4 summarizes the new challenges that can already be envisaged for the production of statistics for this purpose.

## Overview of Credit Markets in Brazil

Credit markets in Brazil registered strong growth in the decade from the mid-2000s to the recession of 2014-16. As percentage of GDP, total credit outstanding went from 24%, as of March 2004, to 53.7% in December 2015. After a contraction in both credit supply and demand caused by the recession and the gradual economic recovery, the amount of banking credit in the Brazilian economy stabilized around 46.6% of GDP in the first half of 2018.

Besides economic growth and inflation stabilization in the first period, institutional advances, especially those related to the strengthening of credit operations guarantees, have boosted the expansion of credit supply, in an environment of soundness of the financial system. In this context, the real estate credit market was particularly developed. Its share of GDP increased from about 2% in 2008 to around 9.5% ten years later. Other credit segments that expanded strongly were vehicle financing and payroll loans. The growth of these lines of credit justified the greater expansion of the market of credit to households, compared to the market of credit to corporations. Currently (June 2018), loans to households correspond to 54% of the total SFN portfolio (38% in December 2003).

The creation of longer-term instruments – such as financial bills – backed by credit agreements – like mortgage and agribusiness bills – improved funding conditions for credit. Fund raising through these securities increased significantly since 2010, further stimulated by tax exemptions and compulsory deposits.

Credit markets in Brazil are characterized by significant participation of directed lending operations, which comprise rural and real estate loans and financing with funds from the National Development Bank (BNDES). In such operations, the source of funds or the interest rate is determined by specific legislation that has the purpose of fomenting economic sectors or activities, by providing resources at subsidized costs and longer terms. In June 2018, directed lending accounted for 47.6% of total credit volume in Brazil.

---

<sup>2</sup> See, for instance, the series of annual Reports on Banking Economics and Credit (only in Portuguese) at <https://www.bcb.gov.br/?SPREAD>.

## BC+ Agenda

**On December 2016, the BCB launched a policy agenda named BC+, aimed at addressing structural issues of the domestic financial system.** The BC+ agenda listed short-, medium- and long-term actions to be implemented by the BCB, the National Monetary Council (CMN), or by new legislation divided in four pillars: financial citizenship, modern legislation, financial system efficiency, and lower cost of credit.

**The high cost of banking credit in Brazil is a complex subject with many contributing causes, from subsidies in important amounts of banking credit, to competition issues and high administrative cost to banking intermediation. The Lower Cost of Credit pillar in the BC+ agenda gather actions aimed at reducing these cost to the borrower, reducing delinquency rates, fostering competitiveness and flexibility in credit operations, stimulating a more efficient credit allocation and revising reserve requirement rules.**

One important aspect of improving the efficient allocation of banking credit in Brazil is to reduce the subsidies in credit operations. To achieve this objective, a new legislation was approved so the interest rates on BNDES funding and its credit operations are now defined accordingly to real market interest rates (treasury securities yields), inflation and a spread. Previously, these interest rates were fixed by administrative decisions. The same rationale was applied to the full set of credit operations with public funding (rural sector, development funds, etc.).

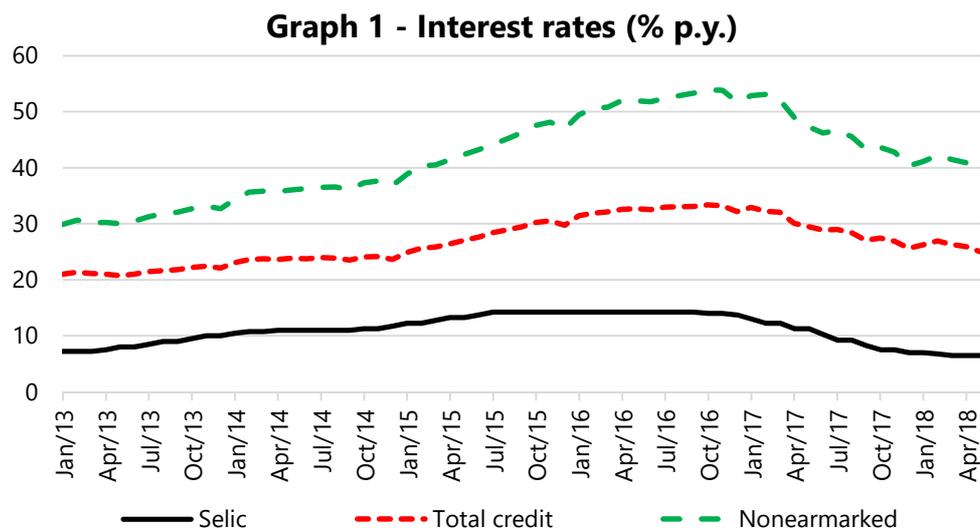
Reducing the high levels of reserve requirements in Brazil contributes to reducing the costs of financial intermediation. In this sense, the BCB has both reduced the levels of reserve requirements (for example, from 40% to 25% for sight deposits), by around USD12.4 billion, or 10.4% in the second quarter of this year, and also simplified its rules. This is an ongoing action. Competition in the banking sector is also likely to be fostered by some of the actions of the BC+ agenda. A new legislation to reinforce credit bureaus in Brazil is being discussed in Congress. Regarding collateral in credit operations, a legislation was approved for registering electronically financial assets received as collateral. In addition, a new regulation now rules the functioning of covered bonds market, aligned to international best practices, and the consolidation of this instrument is expected to create alternative sources of funding to the real estate credit market.

Looking at credit market segments, the BC+ agenda addresses market infrastructure issues in credit cards, which are likely to reduce costs and to improve competition. The initial impacts of these measures pointed to a significant reduction in credit card operation interest rates. The agenda also fosters research to better understand the composition of average banking spreads in Brazil and its causes.

**All those measures demand good quality credit statistics as a tool to evaluate the effective impact of the agenda on the credit markets, both in the aggregate and in specific instruments or modalities. As such, the implementation of the BC+ agenda pushed forward a revision of available credit statistics, to complement the information set available for both policymakers, market analysts, financial institutions and society as a whole.**

## Measuring the Cost of Credit in Brazil

The cost of credit in Brazil remains high. Graph 1 presents the Brazilian monetary policy rate (Selic) and the average interest rates for the total banking credit and for the non-earmarked credit. As expected, banking rates move accordingly to the basic rate, but with a significant spread. As the Selic rate reached its minimum historical levels, the policy issue remains over the possibilities of more significant declines in banking rates. Those difficulties involve structural issues to be addressed by the BC+ agenda, such as high cost of revolving operations, but they also stimulate the development of a new set of credit statistics, as shown in the next items of this paper.



For the interest rate statistics, the characteristics of the banking credit markets represents a tradeoff, as it includes widely diversified operations in terms of maturities, interest rates, risks and collateral coverage. On one hand, the statistics try to synthetize this cost in a (single or a small number of) consolidated measure(s) but, on the other hand, there is the need to expand available information about the average cost of credit.

### Statistics of new operations' interest rates

**The BCB disseminates monthly statistics on the Brazilian credit market<sup>3</sup> with a one-month lag, including outstanding amounts, new operations, interest rates, spreads, maturities and non-performing loans.** All these statistics are compiled based on daily information sent by the financial institutions, segmented by type of agreed charge (line of credit) and portfolio modality. The statistics of interest rates refer to the total effective cost of a banking loan to the final borrower, thus including the interest rates itself and tax and operating charges.<sup>4</sup>

**The traditional measure of interest rates in Brazil considers the weighted average of interest rates of the new operations contracted in the reference month.** Based on these data, the BCB compiles and disseminates the consolidated interest rates for each type of credit, as well as the rates of the large segments of this market (total, households, corporate, non-earmarked and direct resources).

**These interest rates try to express the "price" of the credit contracted at the margin (i.e., in the last month)** and fluctuate according to various conditions, such as the current monetary policy and the relations between the banking sector and the real sector of the economy, reflecting the agents' financial conditions and the consumer decisions and investment. Consolidated rates may also vary due to the composition effect, due to changes in the share of each institution in the modality's lending, as well as changes in the representativeness of the outstanding amounts of each modality in the total portfolio.

Besides the aggregated interest rates, the BCB also publishes each financial institution interest rate by line of credit<sup>5</sup> on a daily basis, based on a moving average of the last five business days data, aiming to bring more transparency to clients and to stimulate competition.

<sup>3</sup> Press Release – Monetary and Credit Statistics (<https://www.bcb.gov.br/ingles/notecon2-i.asp>) and Time Series Management System (SGS, <https://www3.bcb.gov.br/sgspub/localizarseries/localizarSeries.do?method=prepararTelaLocalizarSeries>),

<sup>4</sup> Operating charges: credit opening fees, insurances etc.

<sup>5</sup> Only in Portuguese at <https://www.bcb.gov.br/pt-br/#!/c/txjuros/>.

Along with the statistics of the borrowers cost (interest rates), the BCB compiles statistics of the banks' funding costs and, thus, statistics on the banking lending spreads.

The BC+ agenda highlighted a gap in the then available set of interest rates statistics. Besides interest rates on the new monthly credit operations, there was a need for compiling an average interest rate that would represent the total outstanding credit. The objective was to capture the cost for households and corporations on a monthly basis due to credit operations contracted over time. This resulted in the Average Cost of Outstanding Loans indicator (ICC), published by the BCB since April 2017, with a time series beginning in January 2013.

## Average Cost of Outstanding Loans (ICC)<sup>6</sup>

**The first new credit cost statistic created by the BC+ agenda was the ICC. The ICC represents the average cost of all credit operations with amounts outstanding in the domestic financial system – from the borrower's perspective –, regardless of the credit operations' reference month. Therefore, it represents how much interest borrowers would pay, considering all the operations contracted in the past yet with instalments to be paid, as well as the new operations of the reference month. From the point of view of the financial system, it is an estimate of how much revenue the financial institutions would receive from their credit operations (assuming zero delinquency rate).**

From the above definition, one can conclude that the ICC is relevant mostly in terms of the financial system totals or by credit modalities – and not by each financial institution total portfolio, which would not be comparable. Different institutions have different time distributions of their lending, mainly – but not only – due to the different composition of their portfolios, in terms of credit modalities.

In macroeconomic terms, the ICC aims to capture the different durations of credit operations and their effects on the rates borrowers pay each month. In longer-term contracts, such as real estate financing, for example, current interest rates tend to show a different evolution from that observed in the credit portfolio as a whole when changes in the monetary cycle occur. Conversely, this ability is limited when applied to revolving modalities because these operations balances are constantly restored, bringing the ICC too close to the lending rates of each month.

This aspect is better illustrated by comparing extremely different credit modalities in terms of maturities, amounts outstanding and monthly new operations. Let us consider real estate and revolving credit card loans to households. As the typical maturity of revolving credit card loans is less than two months, its amounts outstanding are R\$35.1 billion, and monthly new operations, R\$15.3 billion. For real estate, with maturity of 131 months, the values are R\$576.1 billion and R\$7.6 billion. The share of credit card loans in the traditional interest rate statistics therefore is the double of the real estate loans, as are the amounts of new operations. As for the ICC, the weight of real estate loans is significantly higher, as is the total amount outstanding.

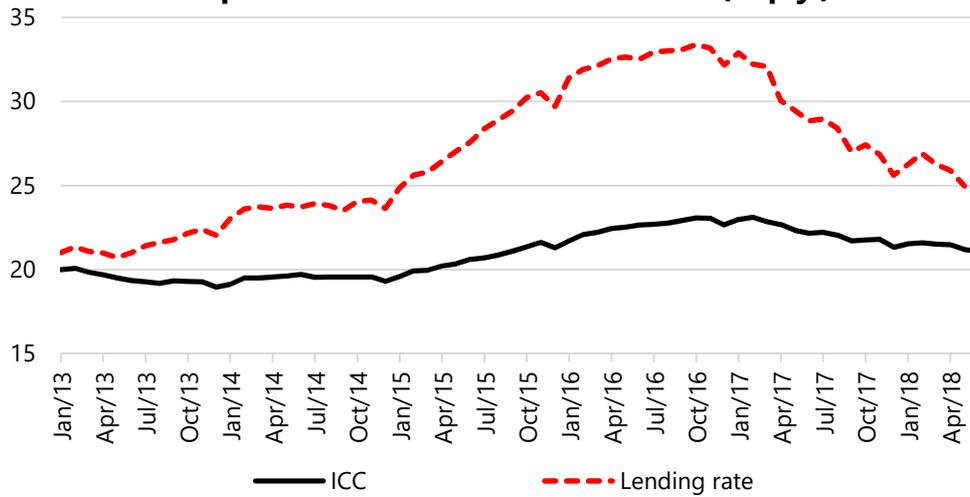
The ICC's calculation takes into account the portfolio composition at the credit modality level, according to the contractual settlement dates and their respective interest rates<sup>7</sup>. The ICC for a credit modality, in a given reference month, corresponds to the average interest rate of the contracts that have outstanding amounts, weighted by the share of the amounts of the different vintage loans. In turn, the ICC of a portfolio composed of two or more modalities corresponds to the average of the ICCs of each modality, weighted by their respective outstanding amounts.

---

<sup>6</sup> BCB Technical Note 45 (only in Portuguese) presents further details on ICC methodology. Available at <https://www.bcb.gov.br/conteudo/depec/NotasTécnicas/2018nt45custocred.pdf>.

<sup>7</sup> In addition to the aggregated credit statistics, the ICC compilation also uses as data source the data available in the BCB's Central Credit Risk System (SCR). The latter are provided to the BCB in a very disaggregated and detailed manner, on individual contracts level, with monthly frequency.

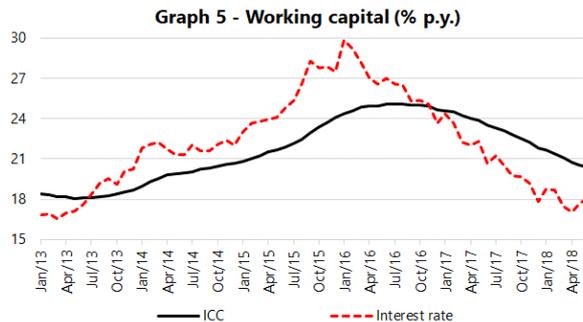
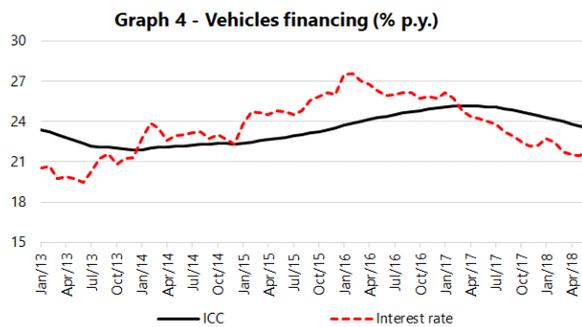
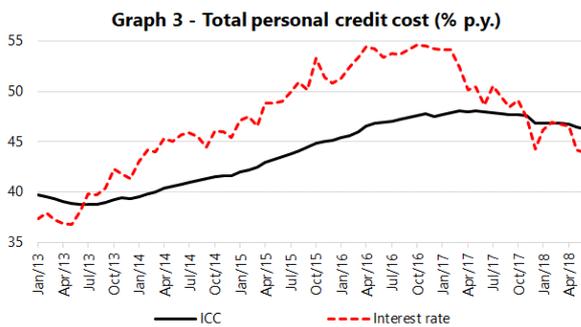
**Graph 2 - Credit cost for total credit (% p.y.)**



The statistics of ICC spread was also developed. Similarly to the spread of the new operations' interest rates, the ICC spread is the difference between the lending rate (the ICC itself) and the funding rate of the ICC. The latter is equal to the average of the funding rates that were estimated for each of the vintage loans, weighted by their respective shares in the remaining outstanding amounts of the portfolio.

As can be seen in the above graph 2, at the margin, the ICC is much more stable than the interest rate, which is more heavily affected by factors like current trading conditions, seasonal factors or to the composition effect. In addition, the cost of total portfolio reflects monetary policy cycles more slowly, because it is compounded by the effect of past contracts in the current portfolio, which were contracted sometimes at different point in the monetary cycle as compared to the current Selic rate.

In addition to the ICC for total credit and its spread, ICC by credit modality was developed and published as of April 2018. The graphs below show examples of ICC and the interest rate trends for the main credit modalities.

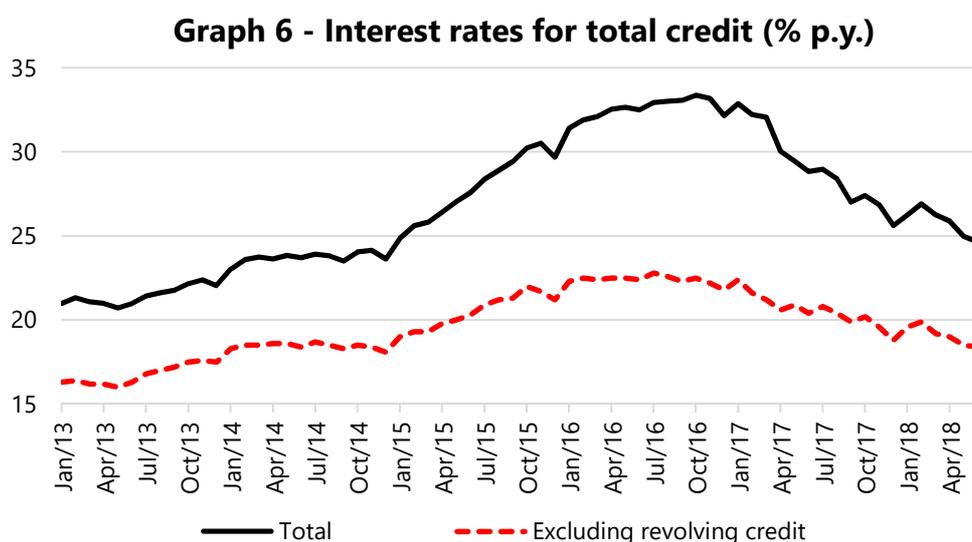


## Interest rates and ICC excluding revolving credit

**In addition to the ICC and interest rates for the total credit aggregates, it became increasingly relevant to compile and disseminate cost of credit statistics, excluding revolving credit operations.** The revolving operations include the overdraft facility, credit card (revolving and on-demand) and guaranteed account (the latter, for corporates only). The main feature of revolving lines of credit is the complete absence of guarantees and the automatic and periodic renewal of the availability of resources, which are pre-approved. **Although not holding a significant share of the total credit outstanding<sup>8</sup> and usually having a duration from less than one month to two months – after which time they are renewed – these modalities have very high rates and contribute significantly to the high average cost of credit operations as a whole.**

In this respect, the compilation of a separate set of statistics for interest rates excluding revolving credit is relevant. It allows timely and clear monitoring of the pass through of monetary policy decisions through the credit channel, by removing the effects of operations that can be contracted and settled through months, at very high rates, and which often represent more a financial imbalance of the borrower than a consumption decision. Therefore, the reduction of the cost of the revolving credit modality is more closely related to actions towards financial education.

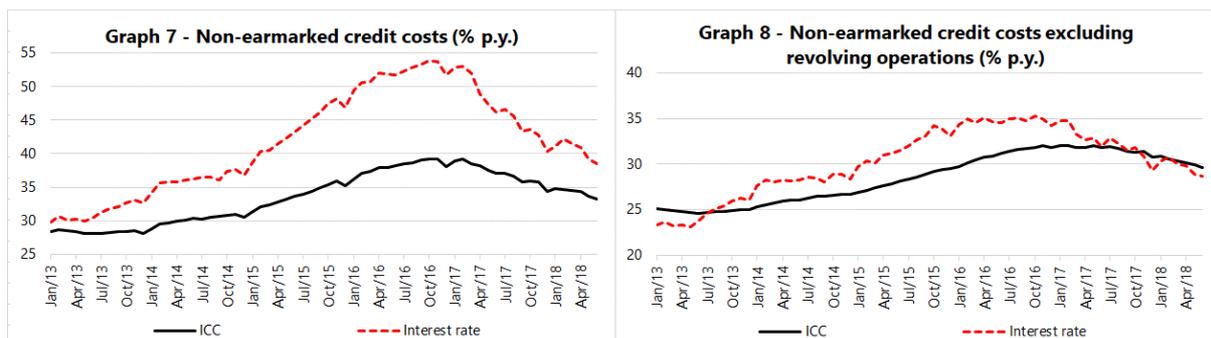
Graph 6 shows the trajectories of the interest rates, considering and excluding the revolving credit.



The interest rate excluding revolving credit shows, as expected, a more stable behavior when compared to the total rate. For example, from December 2015 to March 2017, the total rate rises 2.4 p.p., while the non-revolving rate remains stable. As of April 2017, a specific regulation for revolving credit card, detailed in item below, begins to apply and total rates fall considerably, capturing the effect of the new measure. The interest rate excluding revolving credit registers a downward movement, but follows the monetary policy easing that occurs in the period.

**Moreover, the interest rate without the effect of the revolving credit presents a more coherent trajectory with the evolution of the ICC.** Due to the changes of the monetary policy cycles and the larger gap between these changes and the ICC, the interest rate curve and the ICC curve are expected to cross over each other in some periods. This can only be verified when using the consolidated interest rate excluding the revolving modalities. Graphs 7 and 8 presents interest rates and the ICC with and without revolving credit for the non-earmarket credit and illustrate this difference.

<sup>8</sup> Total revolving credit outstanding currently accounts for around 8% of total credit provided by the domestic financial system.



Changes in monetary policy tend to be translated more immediately into the interest rate, which in the case of the ICC occurs gradually, and with a certain lag, as it reflects the effect of past lending over time. The crossings of the above curves visually evidence these differences. At the beginning of 2013, when the ICC series began, the Selic began the upward cycle and the interest rate rose more rapidly, exceeding the ICC curve, which remained below contracted rates during the entire upward cycle and also at the beginning of the downward cycle, albeit on an upward trajectory. As of the end of 2016 – the beginning of the cycle of monetary policy easing –, the lending rate falls faster, while the ICC still reflects the operations contracted in the previous upward cycle. In this regard, the curves cross again at the end of 2017, when the lending rate sits below the ICC.

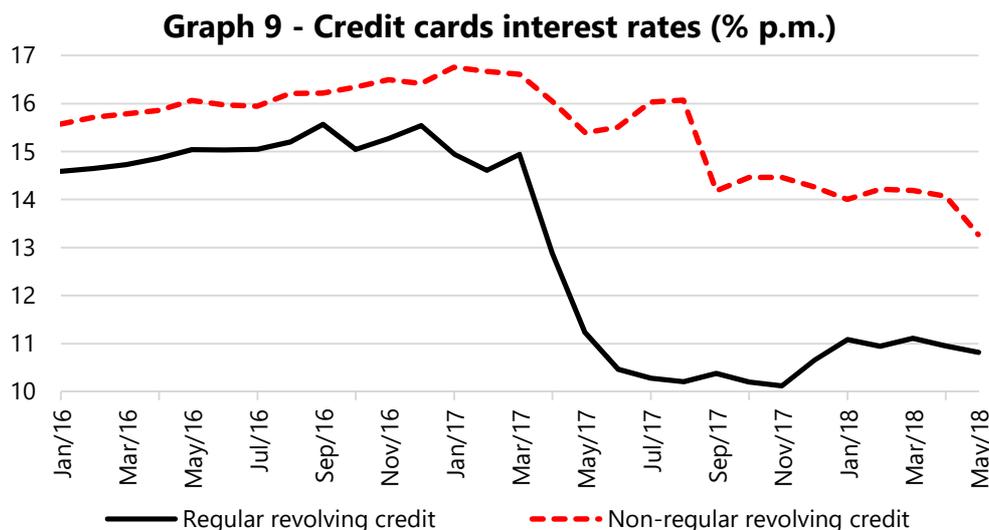
The cost of credit excluding revolving credit were calculated and disseminated in a historical series for interest rates, ICC, and respective spreads, thus completing the set of macroeconomic credit cost statistics that are used to evaluate the effects of actions on the Lower Credit Cost pillar of the BC+ agenda. It is worth noting that these new statistics are all produced from data already existing in the BCB's databases, regularly provided by financial institutions, and did not require any additional cost to information providers. The immediate availability of the data and its level of granularity allows the timely monitoring of the actions of the policy makers, whether macro or microeconomic issues.

### Credit cards revolving credit operations

**Regarding credit cards operations, one specific measure of the BC+ agenda had a direct impact on available statistics implying the need for more disaggregate series.** Resolution 4,549 – which entered into force in April 2017 – limited revolving financing of the credit card bill to around 30 days, restricting the use of this condition for an indefinite period. After this period, the financial institution is obliged to offer other line of credit in more advantage conditions to the borrower. The new rule favors the reduction of delinquency rates in these operations and, consequently, the reduction of provisioning, risks and interest rates, which were the highest of the Brazilian credit market.

In order to follow up on this measure, new statistical series were necessary, with segmentation by on-time and overdue revolving credit cards operations, which had different interest rates. The BCB requested the banks to send these decomposed series monthly, by outstanding amounts, new operations and interest rates. This was a necessary tool to monitor whether the new rule had the expected effect, which was to reduce interest rates, especially in the group of regular borrowers (the ones paying at least the minimum amount of 15% of the credit card bill), as well as to access the shift of balances from the revolving credit to cheaper lines of credit.

Graph 9 shows the evolution of interest rate indicators for regular and non-regular borrowers. Due to the new rules on revolving credit terms from April 2017 on, rates were significantly reduced, especially in the regular segment, which registered a drop from 14.9% per month in March to 10.7% p.m. in December 2017. There was also a reduction in the cost of credit for non-regular borrowers, (from 16.6% p.m. to 14.3% p.m. in the same period). The additional disclosure by the BCB of such data by each individual financial institutions is an important instrument to stimulate competition in the market.



### Internal rate of return and the ICC

The Brazilian credit market is composed of a wide variety of operations and finance institutions, reflecting a significant range of modalities and lines of credit (types of costs), each with its interest rate and contracting period. In this context, summarizing in a single indicator the average interest rate of the financial system becomes a challenge. Therefore, the calculation of the consolidated rate and of large segments of this market also reflects the methodologies of weighting and capitalization of the indexes, as we have shown in this paper for the cases of interest rates of new operations and the ICC.

**In financial terms, the average interest rate of total credit operations should correspond to the Internal Rate of Return (IRR).** This rate, at a given moment, equates future cash inflows and outflows from the operations contracted. That is, it is the rate that makes the net present value of a cash flow from a credit operation equals to zero.

**The credit databases currently available in the BCB do not provide access to the payments and receipts flows of each single transaction. The alternative to calculate the IRR of the outstanding amount of credit operations at each reference period is the calculation of an average interest rate in each period.** This average rate of the credit portfolio may be calculated according to two criteria, which differ in the order of composition (or weighting) and of annualization of the rates.

The first criterion involves aggregation of the interest rates expressed on a monthly basis ("**monthlyzation**"). Firstly, the amount of interest due on each line of credit is calculated in a given month, which depends on the remaining balance of all past operations due in the reference month – or at a later date – and the respective interest rates. The total amount of such interest, when divided by the credit outstanding at the reference date, results in an average monthly interest rate which is then annualized. The average rate obtained this way corresponds to the ICC.

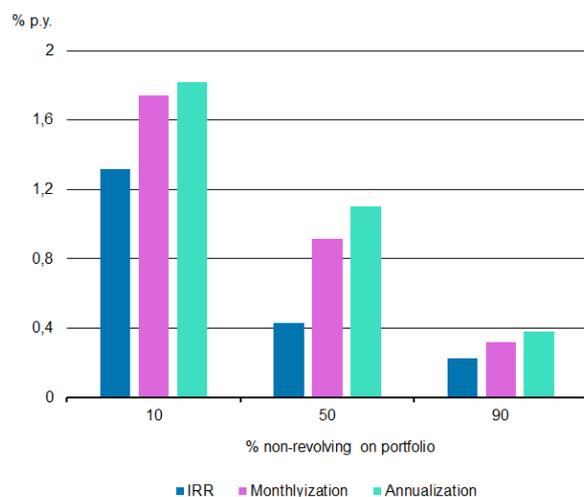
The interest rates aggregation can also be done directly from rates expressed as percentages per year ("**annualization**"). In this case, after obtaining the average interest rate of the remaining balances for a given modality, that rate is expressed on an annual basis. It is only after this procedure that these rates are weighted by the respective balances in the reference month<sup>9</sup>.

<sup>9</sup> This is the annualization and weighting order adopted to calculate the interest rates of the new operations published monthly by the BCB.

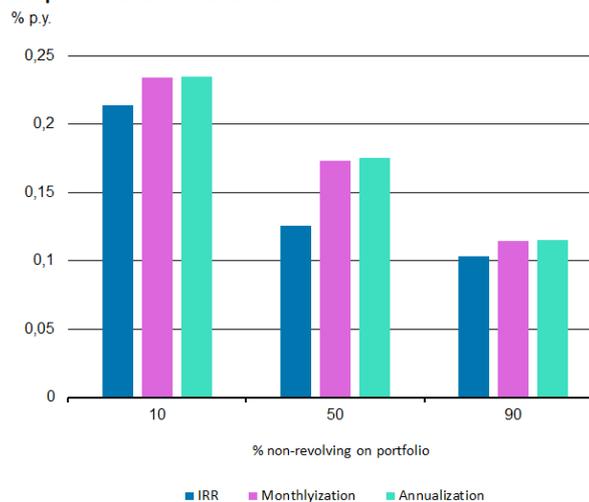
Simple simulations were used for the purposes of comparing these two forms of calculation with the theoretical calculation of the IRR,<sup>10</sup> considering only two credit modalities: revolving (one-month period) and non-revolving (twelve months), with uniform cash flow and portfolio with stable proportions for the two modalities after the twelve month period. These proportions corresponded to three scenarios: 10% non-revolving, balanced portfolio (50% for each modality) and 90% non-revolving (similar to the actual situation in Brazilian credit markets).

The two graphs below show the comparative results of aggregate portfolio rates with the IRR. The differences of the two exercises are in the rates used for revolving and non-revolving credit. The first figure shows a scenario of much higher rates<sup>11</sup>.

**Graph 10 - First simulation**



**Graph 11 - Second simulation**



In all scenarios, the IRR is the lowest rate, and the rate consolidated by annualization, the highest, since the aggregation of rates already expressed on an annual basis enhances the effect on the average of the highest rates on the revolving credit. The rate obtained by monthlyzation gives intermediate numbers. In the third scenario – a portfolio with a non-revolving 90% share, which is the closest to reality –, the two forms of aggregation are closer to the IRR.

Although the IRR is conceptually the most appropriate methodology to express an average rate, operationally, it is not feasible to calculate it by the BCB. The exercise seems to show, in principle, that the rate obtained by monthlyzation, which is equivalent to the ICC, is a good approximation to the financial system credit portfolio IRR. In fact, the IRR corresponds to the return obtained by financial institutions, which is the counterpart for the cost incurred by households and corporations in its credit operations. **Nevertheless, further research on this matter is still necessary to reach the best operational proxy for an IRR to the Brazilian credit market borrowing costs.**

## New banking spread decomposition

**The BC+ agenda also pushed for a new methodology to calculate the composition of banking lending spreads, so that a more comprehensive and up-to-date overview of the structural causes of its high level can be obtained.** The previous update of the methodology was made in 2008 and, since that time, important changes occurred in the financial system and credit markets, whether in

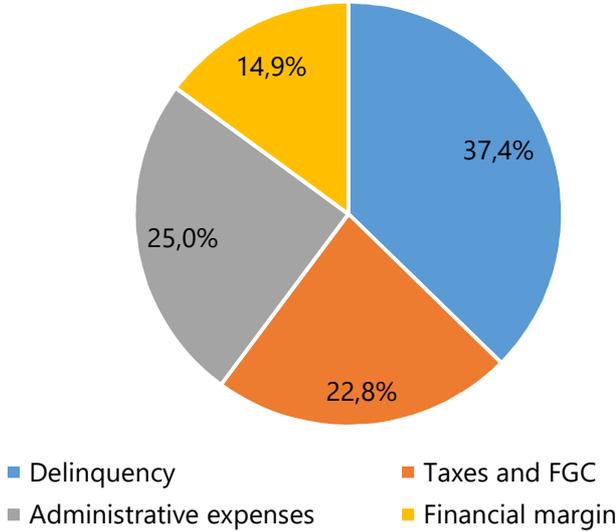
<sup>10</sup> See box 4, “Internal Rate of Return and ICC”, of the 2018 Report of Banking Economy (Relatório de Economia Bancária), available only in Portuguese at [https://www.bcb.gov.br/pec/depep/spread/REB\\_2017.pdf](https://www.bcb.gov.br/pec/depep/spread/REB_2017.pdf).

<sup>11</sup> In the first figure, 200% p.a. for revolving credit and 20% p.a. for non-revolving. In the second figure, 25% p.a. for revolving and 10% for non-revolving.

funding aspects and new products, or in the better coverage, timing and periodicity of the information provided by the financial institutions to the BCB.

In June 2018, the BCB published the results of the new methodology for estimating the components of banking spreads – shown in graph 12<sup>12</sup> –, with average data from 2015 to 2017.

**Graph 12 - ICC spread components**



As the graph indicates, the delinquency rate is the main determinant of the cost of the ultimate credit. Considering average values between 2015 and 2017, delinquency accounts for more than a third of the spread, followed by administrative expenses (25.0%), taxes and FGC<sup>13</sup> (22.8%) and, lastly, financial margin (14.9%).

Among the methodological updates in the spread decomposition, the rate paid by borrowers became the ICC and no longer the interest rate for the new operations contracted in the reference month. The ICC represents what effectively financial institutions would receive each month for their active credit operations.

Another relevant change is that the new methodology considers banking services as a product itself, assuming financial institutions allocate their resources proportionally to the average profitability of their main products: services provision, credit operations and treasury services. As a result, service revenues ceased to be deducted from administrative expenses and there was a significant increase in this cost factor in the spread calculation. Applying the new cost allocation procedure over the previous methodology – other things equal – one obtains an average participation of administrative costs of 23.98% for the years 2011 to 2016, as opposed to the 3.78% previously obtained. This change is compatible with the evolution of the financial system and the scope of its operations today.

Moreover, in the new methodology, the component "financial margin" corresponds to the spread of the ICC less the amounts of delinquency, administrative expenses and taxes and FGC, besides incorporating other factors not computed in the estimates. In view of the aforementioned significant increase in the share of administrative costs in the current methodology, the levels of the financial margin were negatively impacted compared to the net margin established in the previous versions.

<sup>12</sup> The new methodology is described in the 2018 Report of Banking Economy, box 5: "Methodology of decomposition of the cost of credit and the spread"; and the results, in chapter 3: "Decomposition of the cost of credit and the spread".

<sup>13</sup> Customers and financial institutions pay taxes on credit operations. Borrowers pay on the contract date, while financial institutions pay taxes over the profit of their operations, besides other contributions. In addition, financial institutions contribute on a monthly basis to the Credit Guarantee Fund (FGC), to allow the coverage of deposits and other public investments in the event of insolvency of any financial institution.

## Other Improvements in Credit Statistics from the BC+ Agenda

**Macroeconomic statistics needs to be proactive in identifying possible gaps in its databases in order to anticipate the demands of policy makers and users in general.** The BC+ agenda has been adopting a set of new measures aimed at reducing credit cost that may stress the need for creating new databases and new statistics. As recent potential examples can be mentioned credit FinTechs regulation<sup>14</sup>, the use of a kind of covered bonds (Letras Imobiliarias Garantidas, LIG)<sup>15</sup> for funding of specific credit operations and the electronic register of receivables as guarantees in operations with corporations.

The guidelines of the BC+ Agenda also aim to improve conditions for small-sized companies to access credit. Since April 2018, the BCB has been releasing monthly series of credit statistics by company size, including the total credit, default rates (percentage of operations overdue for more than 90 days) and balance classified at the highest risk levels. As at May 2018, data accumulated in 12 months indicate that while large companies' portfolio grew 9%, the portfolio of micro, small and medium sized companies decreased by 21%. The absence of satisfactory guarantee mechanisms is among the difficulties that hinders the expansion of less costly credit supply to smaller companies.

**Policy measures need to be constantly evaluated based on evidence, so they can be adjusted if necessary to try to achieve its planned results. Statistics plays an important role in providing the tools for a quantitative evaluation of policies, as the Brazilian case of the BC+ agenda and recent developments in credit statistics presented in this paper tried to illustrate.**

---

<sup>14</sup> FinTechs authorized by the BCB are now able to lend directly to its borrowers without the need of a partner bank, a movement towards more competition in the credit markets. These credit operations must be reported to the BCB.

<sup>15</sup> LIGs are similar to European Covered Bonds, which are debt securities issued by a bank or mortgage institution and collateralised against a pool of assets that, in case of failure of the issuer, can cover claims at any point of time. They are subject to specific legislation to protect bond holders and used as a source of long-term and more stable funding for real estate lending.



Ninth IFC Conference on "Are post-crisis statistical initiatives completed?"

Basel, 30-31 August 2018

## Credit statistics as a tool for assessing the effectiveness of policies aimed at reducing credit cost <sup>1</sup>

Marcia Fiorindo, Monica Une, Juliano Cavalheiro and Fernando Rocha,  
Central Bank of Brazil

---

<sup>1</sup> This presentation was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

**9<sup>th</sup> Biennial IFC Conference:  
Are Post-Crisis Statistical Initiatives Complete?**

**Credit Statistics as a Tool for Assessing  
the Effectiveness of Policies Aimed at  
Reducing Credit Cost**

---

Fernando Alberto Rocha  
Department of Statistics (DSTAT)  
Banco Central do Brasil (BCB)

Session 4.B – Data for policy assessment  
BIS, Basel, 30 August 2018

# Introduction

- Interest rates in the Brazilian credit market are historically high.
- BCB launched the **BC+ Agenda** in December 2016 among other, to contribute to the reduction of the cost of credit and to deepen the knowledge on Brazilian credit market.
- BC+ Agenda implied some **challenges to the production of credit statistics**, associated to the policy need for a more comprehensive evaluation of the cost of credit in Brazil.
- These challenges include the **creation of a set of complementary statistics for the measurement of the cost of credit**, including:
  - methodological revisions and compilation improvements of pre-existing statistics and
  - the development of new statistics.



## BC+ Agenda

- BC+ Agenda is aimed at addressing structural issues of the domestic financial system by a combination of new legislation, regulatory measures and research about the credit market.
- The Agenda is structured in four pillars:
  - Financial citizenship,
  - Modern legislation,
  - Financial system efficiency, and
  - **Lower cost of credit.**



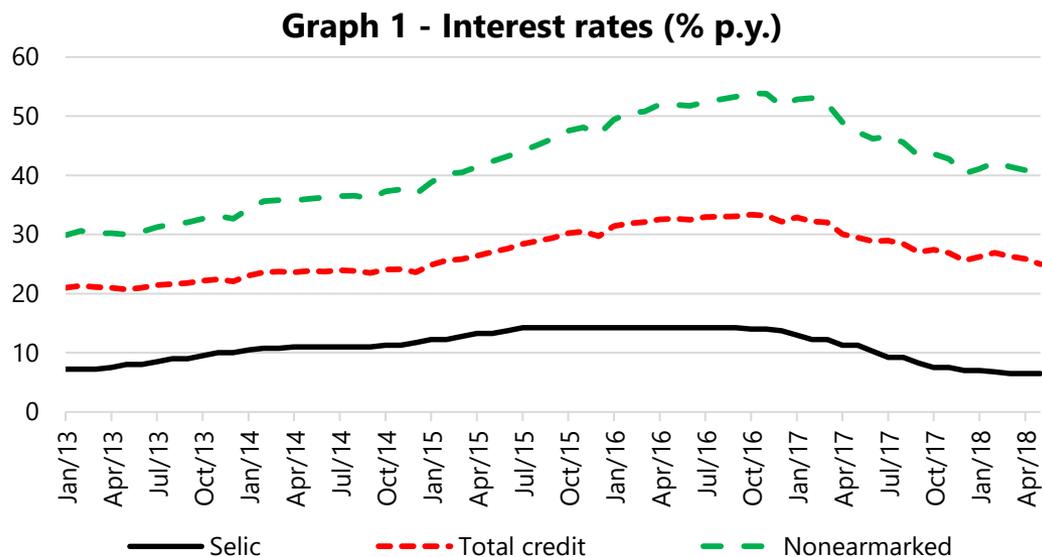
## BC+ Agenda: Lower Cost of Credit

- High cost of credit in Brazil is a complex subject with many contributing causes, from subsidies in banking credit, to competition issues and high administrative cost to banking intermediation.
- BC+ Agenda tries to address all these subjects related to the costs of credit:
  - **Subsidies:** revision of the interest rates on directed lending, aligning them to market rates.
  - **Reserve requirements:** reduction of the high levels and simplification of rules.
  - **Competition:** new legislation for credit bureaus and electronic registering of financial assets (as collateral); improving covered bonds markets; revising the structure of credit card market; etc.



## BC+ Agenda: Impact on Credit Statistics

- All those measures demand **good quality credit statistics as a tool to evaluate its effective impact**, both in the aggregate and in specific instruments or modalities.
- With the Selic rate at historical lows, how further can we go in the reduction of banking lending rates and banking spreads?



## Statistics of new operations' interest rates

- The traditional measure of interest rates in Brazil considers the **weighted average of interest rates of the new operations contracted in the reference month.**
- These interest rates statistics try to express the **"price" of the credit contracted at the margin** (i.e., in the last month)
- Besides the aggregated interest rates (for the financial system or by modalities), the **BCB also publishes each financial institution interest rate by line of credit on a daily basis** (moving average of the last five business days data), aiming to bring more transparency to borrowers and to stimulate competition.
- BCB also compiles statistics of the banks' funding costs and, thus, statistics on the **banking spreads.**

# Statistics of new operations' interest rates

## Pessoa Física - Crédito Pessoal Consignado Público

Classificadas por ordem crescente de taxa

Período: 07/08/2018 a 13/08/2018

Modalidade: Pessoa física - Crédito pessoal consignado público

Tipo de encargo: Pré-fixado

Posição	Instituição	Taxas de juros	
		% a.m.	% a.a.
1	BCO DO NORDESTE DO BRASIL S.A.	0,06	0,74
2	BCO ALFA S.A.	1,43	18,52
3	FINANC ALFA S.A. CFI	1,51	19,70
4	BCO A.J. RENNER S.A.	1,57	20,61
5	BANCO INTER	1,58	20,72
6	BCO SANTANDER (BRASIL) S.A.	1,61	21,06
7	BCO BRADESCO S.A.	1,62	21,28
8	BCO DO ESTADO DO RS S.A.	1,64	21,56
9	BCO BRADESCO FINANC. S.A.	1,65	21,69
10	BCO SAFRA S.A.	1,66	21,88
11	BRB - CFI S/A	1,67	21,93
12	BARIGUI S.A. CFI	1,70	22,42
13	BCO DO BRASIL S.A.	1,71	22,50
14	BCO CCB BRASIL S.A.	1,71	22,55
15	CAIXA ECONOMICA FEDERAL	1,76	23,24
16	BANCO PAN	1,77	23,47
17	BCO BANESTES S.A.	1,80	23,81
18	BCO ARBI S.A.	1,83	24,30
19	BANCOOB	1,84	24,48
20	PARANA BCO S.A.	1,85	24,60
21	BCO CETELEM S.A.	1,85	24,64
22	BCO OLÉ BONSUCESSO CONSIGNADO S.A.	1,87	24,85
23	BANCO ITAÚ CONSIGNADO S.A.	1,92	25,69

## Average Cost of Outstanding Loans (ICC)

- **There were gaps in the then available set of interest rates statistics.** One of the most important was the need for a broader measure of interest rates, besides last month's average cost.
- **The first new statistic created by the BC+ agenda was the ICC.**
- **ICC represents the average cost of all credit operations with amounts outstanding,** regardless of the operations' reference month.
- ICC represents how much interest borrowers would pay, considering all the operations contracted in the past yet with instalments to be paid, as well as the new operations of the reference month.
- From the point of view of the financial system, it is an estimate of how much revenue financial institutions would receive from their credit operations (assuming zero delinquency rate).

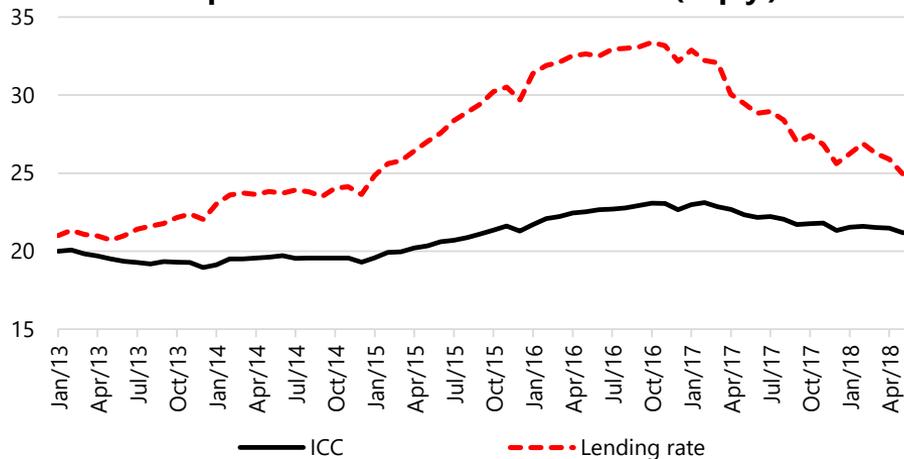
## Average Cost of Outstanding Loans (ICC)

- Let us consider two extreme cases (**real estate lending and revolving credit card loans**) to clarify the differences between the ICC and “traditional” interest rates statistics.
  - As the typical maturity of revolving credit card loans is less than two month, its amounts outstanding are BRL35.1 billion, and monthly new operations, BRL15.3 billion.
  - For real estate, with average maturity of 131 months, the values are BRL576.1 billion and BRL7.6 billion.
- **The share of credit card in the “traditional” interest rate statistics is the double of the real estate loans** (amounts of new operations).
- As for the **ICC**, **the weight of real estate loans is significantly higher**, as is the total amount outstanding.

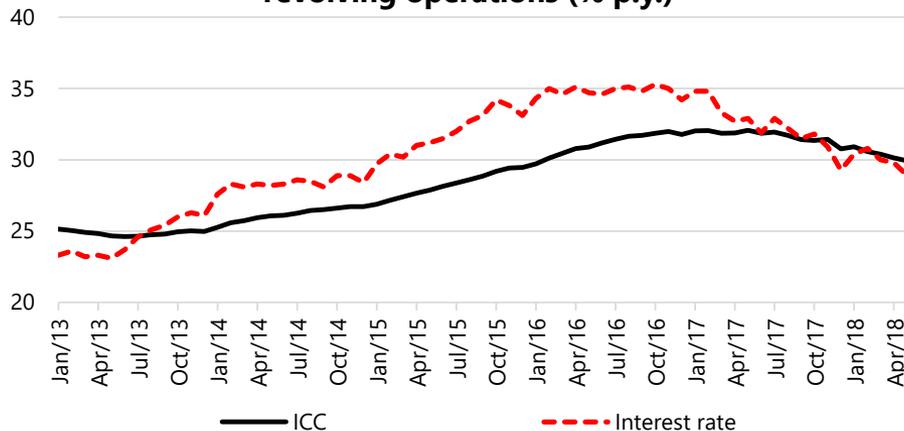
# ICC and Interest Rate Statistics

- As expected, ICC is lower and more stable than “traditional” interest rates. But...
- ... one should expect the lines in graph 2 to cross (average x margin), but they don't!
- Part of the answer lies on the role of revolving credit, with its three-digit interest rates per year.
- Considering credit cost without revolving operations, the lines do cross.

**Graph 2 - Credit cost for total credit (% p.y.)**



**Graph 8 - Non-earmarked credit costs excluding revolving operations (% p.y.)**



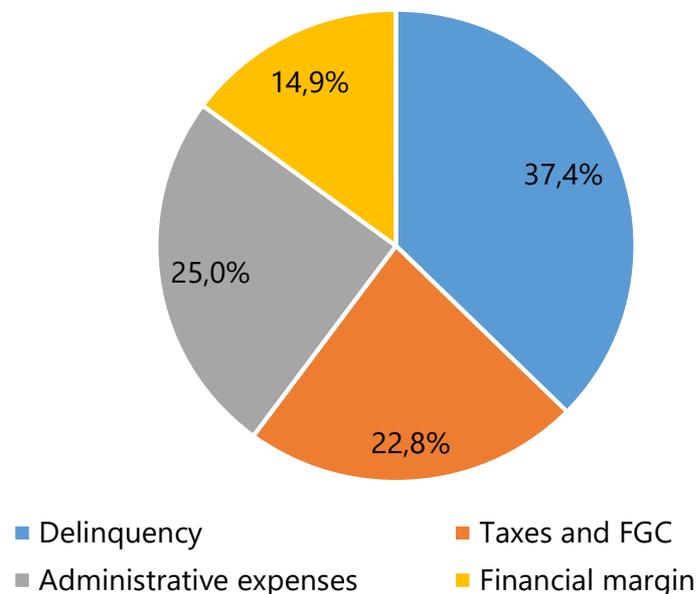
# Internal Rate of Return (IRR) and the ICC

- The other part of the answer has to do with methodologies of weighting and capitalization of the interest rates.
- At high interest rates, it does make a significant difference whether:
  - the interest rates of each line of credit are calculated as rates per month (interest paid on the reference month divided by the total amount outstanding) and then aggregated as a weighted average and only after that, annualized; or
  - if the interest rates are, from the beginning, calculated as per year interest rates.
- Although preliminary tests with the first methodology seems to show better results, further research is still needed to define the best operational proxy for an IRR to the Brazilian credit costs.

# New banking spread decomposition

- Besides providing users with a full set of credit cost measures, the BC+ Agenda also pushed for revising the decomposition of banking spreads, aiming at achieving a comprehensive and up-to-date overview of the structural causes of its high levels.
- As the graph summarizes, delinquency rates, taxes and administrative costs represents 85% of the total average banking spread.
- From these results, a series of measures were implemented to address the causes of high interest rates in Brazil.

**Graph 12 - ICC spread components**



## Further Steps in Credit Statistics in Brazil

- As already mentioned, current research is trying to define the **best operational proxy for an IRR for the Brazilian credit market**. The results of the research have potential impacts for the current methodology of the ICC and possibly also the “traditional” interest rates.
- Other (permanent?) challenge is the communication of the new statistics, its methodologies and results, and the relation (differences!) with the traditional statistics. Some initiatives are:
  - A specific press conference for the ICC release;
  - ICC methodological note in the BCB’s website;
  - Publication of the Report on Banking Economics, with a press conference; and
  - Monthly credit press releases.

**Thank you!**

**Questions, suggestions, critics  
and contributions are much  
welcome!**

---

[fernando.rocha@bcb.gov.br](mailto:fernando.rocha@bcb.gov.br)