The link between the Financial Operation Register and the policy measures to face capital flows sudden stops[1]

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Theoretically, policy decisions should be made using the best available data to support a sound economic analysis. However, is this feasible? In practice, and especially in critical periods, economic conditions may change so rapidly that standard macroeconomic statistics may simply not be available or not reflect the changing scenario. This paper aims to illustrate this situation by describing the decision-making process to implement specific actions to tame the sudden-stop in capital flows that immediately followed the international financial crisis of September 2008. The Banco Central do Brasil (BCB) implemented several measures to provide foreign currency liquidity to resident corporations (financial and non-financial) from September 2008 to the end of 2009. Instead of adopting "helicopter-money" measures, those programs intended to provide foreign currency liquidity to targeted needs. The estimation of those targets was provided by primary data sources of macroeconomic statistics, i. e., Brazilian administrative system for the register of foreign capitals. The paper concludes making the case for the importance of having transaction-by-transaction databases, updated in a timely manner, to provide çinformation with adequate periodicity and timeliness, in most times (much) shorter than the international standards.

Keywords: register of foreign capitals; external debt; evidence-based decision-making; foreign currency liquidity.

"*Without statistics, economic and monetary policy would be blind*"
Axel Weber (*apud* Issing, 2015).

1. Introduction

The availability of good, comprehensive, internationally comparable and timely statistics is essential to the policymaker's decision process. However, producing macroeconomic statistics is a challenging and time-consuming task. It is necessary to access the primary data, most likely surveying economic units; transform those data from multiple sources into statistical accounts; and disseminate them. International standards consider those aspects and the diversity of countries' statistical development when defining the timeliness of the data dissemination. For example, external sector statistics (ESS) for Special Data Dissemination Standards (SDDS) countries are currently reported quarterly with a lag of one (balance of payments, BoP) to three months (external debt, EXD, and international investment position, IIP).

Economic crisis have foster improvements in the international macroeconomic statistical standards as they reveal their deficiencies. Those include information gaps, limited transparency, insufficient international harmonization, and lack of timely dissemination. In the wake of the Mexican crisis in 1994-95, the International Monetary Fund (IMF) Board approved the SDDS on March 1996. After the Great

[1] This paper should not be reported as representing the views of the Banco Central do Brasil (BCB). The views expressed are those of the authors and do not necessarily reflect those of the BCB.

Financial Crisis (GFC), which begun in 2008, the Group of Twenty (G-20) decided to implement the Data Gaps Initiative (DGI). Tissot (2017), and cited literature, deals in more detail with the relations of the GFC to the setting of new statistical standards.

Economic crisis are also moments when policy measures should especially be based on all available evidence, to react in a timely manner or even try to anticipate shocks and its impacts. In such moments, standard periodicity and timeliness can make policymakers virtually blind as regards unfolding events. Let us take September 2008 example. The effects of the Lehman Brothers collapse on capital flows were felt immediately and caused a severe sudden-stop on the last quarter of that year. Nonetheless, according to the international standard, BoP statistics were only to be published by January next year. In this case, a single quarter can be the "huge time lag" in the question: "*what's the informative value of data for economic policymakers if those data only come out with a huge time lag?*" (Issing, 2015).

The point of this paper is the existence of a tradeoff between statistics that match the quality and comprehensiveness of international standards versus the need of more periodic and timely data for monitoring purposes. Policymakers' (and users) in some (or most) cases need prompt, frequent and reliable (although imperfect and/or incomplete) information to make "evidence-based decisions". In this sense, we argue for the **importance of data collecting systems based on transaction-by-transaction reporting, with daily/weekly frequency, allowing for the creation of micro data databases**. Such reporting systems make it possible both to generate information for monitoring purposes and policy-making and, in a consistent way, to compile macroeconomic statistics.

This paper tries to make this case by presenting the Banco Central do Brasil's (BCB) experience in dealing with the spillover effects of the 2008 GFC in the Brazilian economy. It is organized as follows: section 2 presents the problem of capital outflows and its sudden-stop. Section 3 describes the decision-making process to implement specific actions to tame that sudden-stop. Section 4 shows the role of statistics in targeting the problem. Finally, section 5 concludes.

2. The Problem: September 2008 sudden-stop and capital outflows

The Brazilian economy in the years pre-GFC benefited from strong net capital inflows, commodities supercycle and its impact on the terms of trade (more than 20% increase from 2005 to the GFC) and five years in a row of current account surpluses (2003-07). Domestic credit increased from 25% of GDP in 2004 to almost 40% in 2008. The Bovespa index triplicated in the period to a peak not yet reached even considering nominal values and the exchange rate doubled in nominal terms against the US dollar. Brazilian international reserves went from an average of USD50 billion in 2004 (including IMF lending) to a record of USD206.5 as of September 2008.

In this scenario, on April 2008, Standard & Poor's upgraded Brazil's long-term foreign currency sovereign debt to investment-grade a movement followed by Fitch in the next month.

With the recession in the US beginning on December 2007, financial conditions in the international markets begun to deteriorate by mid-2008. The first impact on net capital inflows to Brazil were felt on the portfolio investment account of the BoP. Equities showed net outflows from June on. While foreign direct investment (FDI) maintained its strong levels throughout the year, total capital inflows decreased from May/June and turned to significant net capital outflows in the last quarter of 2008. In this way, BoP statistics depicts three distinct periods in that year. From January to April there were monthly average of net capital inflows of USD7.9 billion; from May to September, this average declined to USD5 billion; while the last quarter presented a substantial monthly average net outflows of US$8.2 billion.

In other words, after September 15, 2008, international financial markets froze and we saw a stop in gross capital inflows (sudden-stop) and gross capital outflows (flight to quality). Two examples from the Brazilian economy. The long-term private EXD rollover rate (the ratio of monthly disbursements to amortizations) declined from 167% from January to October 2008, to merely 22% on November, indicating significant net capital outflows. Net short term foreign loans to Brazilian banks showed outflows of USD11.4 billion in the second half of 2008 (Mesquita & Torós, 2010).

These events led to a foreign currency liquidity shortage that immediately reflected on the exchange rate, which depreciated 49% from July to December 2008 (BRL1.57/USD to BRL2.34/USD). The depreciation of Real and the reduction in credit supply on both foreign and domestic currency exposed many financial and non-financial corporations to losses on foreign exchange derivatives, including small and medium-sized enterprises, which found difficulties in rolling over their financial commitments (BCB, 2009). The uncertainty, namely the intensity and duration of the crisis, was unpredictable.

3. Addressing the Problem: providing foreign currency liquidity

To address the problem of the foreign currency liquidity shortage, the BCB needed to temporarily step in into the foreign exchange market as provider of the necessary liquidity. The policy objectives were to maintain the capacity of resident corporations to serve their international commitments and to try to minimize the GFC impact on Brazilian exports by keeping a reasonable level of trade finance, because even this line of credit was significantly affected by the crisis.

On September 2008, BCB announced three programs regarding foreign currency liquidity (BCB, 2008):

1) **Interventions in the foreign exchange spot market**: this traditional reaction to foreign currency shortages was the immediate reaction to the crisis, but was soon substituted by the other programs;

2) **Repo lines of credit**: auctions to sale foreign currency conjugated with commitment of future repurchase up to one year, which began on September 19; and

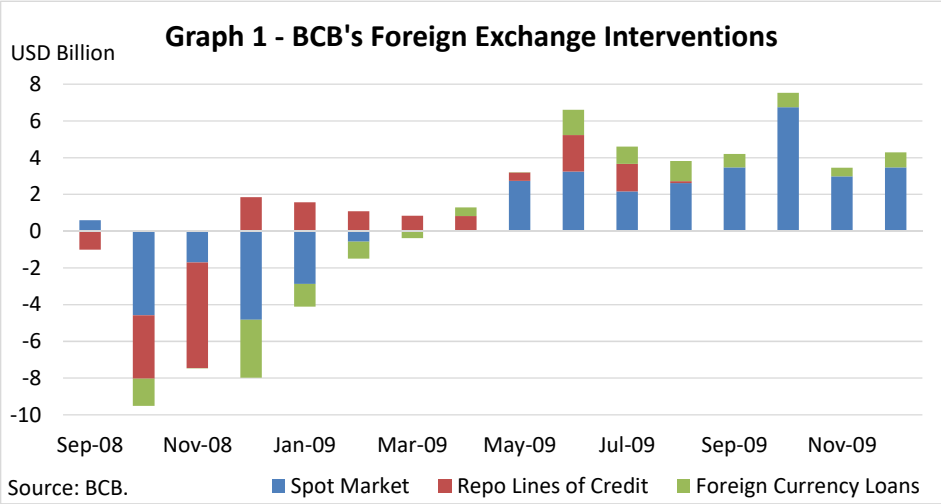
3) **Foreign currency loans**: loans denominated in foreign currency guaranteed by sovereign bonds traded on the international markets or by export operations (Advances on Exchange Contracts, ACC; Advances on Exchange Deliveries ACE; and other external financing modalities), whose the proceeds must be on lent to non-financial corporations to finance exports or amortize EXD.

The foreign currency loans program was an innovation adopted by the BCB. Its goal was to support minimum foreign trade financing conditions and EXD-related payments. The implementation of this line of credit required considerable operational effort, as well as changes in the legislation (if only to except these loans from the prohibition to denominate domestic credit in foreign currencies). The loans were limited to 360 days, including renewals, at the cost of Libor plus a percentage fixed by BCB according to market conditions. The guarantees offered by market participants[2] to the monetary authority had to be denominated in the same currency of the loan.

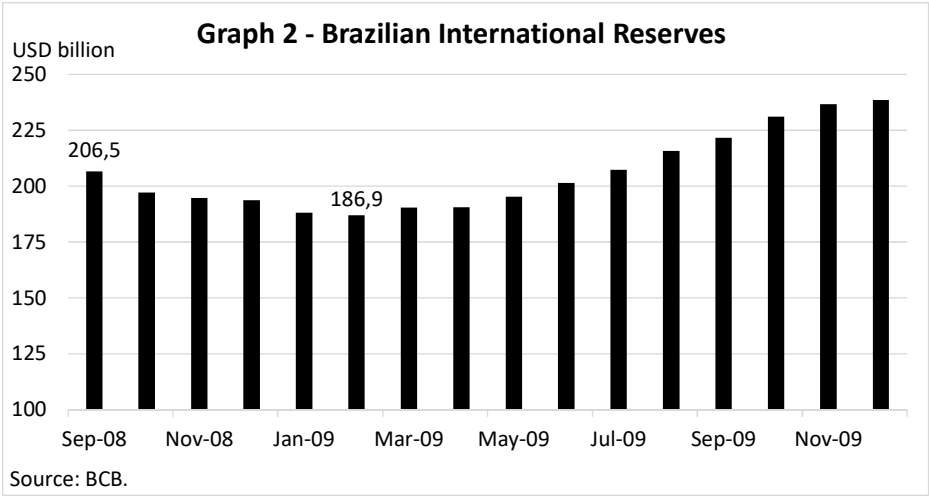
The programs complied with certain basic principles (Mesquita & Torós, 2010). The one that is most important for this paper is the principle to **minimize the exposure of the BCB, which means aiming to preserve international reserves by minimizing definitive sales of foreign currency**. To do that the BCB formulated **targeted programs** instead of providing some kind of "helicopter money".

[2] Loan auctions were open to all institutions authorized to operate in the foreign exchange market, not just dealers.

The monthly evolution of the outstanding amount of these programs from September 2008 to December 2009 is depicted on Graph 1. Sales of foreign currency began immediately on September 2008. Notwithstanding the severity of the crisis and the continuity of the foreign currency shortage, the BCB resumed buying international reserves by December 2008 as the first repo lines mature and were rolled over as foreign currency loans. On March 2009, international reserves resumed its growth trend.



The objective of the targeted programs to minimize the loss of international reserves can be seen on Graph 2. Brazilian international reserves fell by 9.5% to a minimum of USD187 billion on February 2009, five months after the beginning of the GFC. By July 2009, it has already achieved its September 2008 levels.



However, to implement a targeted program the BCB must have been able to set the targets. It was when all available data and statistics had to be organized to try to quantify the **predetermined demand for foreign currency in the short term**. In this case, the demand equals the **EXD service payments – amortization plus interest – and achieving minimum trade finance levels**.

To be able to achieve those objectives, the available databases have to comply with three main conditions. The first was to constitute a granular and detailed database, providing micro data. Then it should provide high frequency and timely information. The databases in question were able to provide transaction-by-transaction and daily information, with one or two-day lag.

By gathering such information, the BCB could identify the channels to provide liquidity in the foreign exchange market to alleviate the sudden stop of capital flows, considering the constraints of the financial and non-financial corporations. The following section describes the three databases used to provide evidence for the targeted programs: Financial Operation Electronic Declaratory Register (RDE-ROF), International Transactions Reporting System (ITRS), and Lines of Credit.

4. The Role of Statistics in Targeting the Program

The most important data sources for compiling and disseminating ESS are the RDE-ROF (EXD) and the foreign exchange contracts, which constitutes an ITRS (BoP). As both systems are connected, they form a closed system for the conciliation of flows and positions. **They register online each single transaction in the domestic exchange market (ITRS) and each contract for borrowing or issuing abroad (RDE-ROF). Data is available for compilers with a one-day lag**.

The RDE-ROF is a system, created in the 1980s, in which any resident wanting to raise funds in the international markets (loans, trade credits, debt securities, among other instruments) need to register the full details of the borrowing previously to internalizing these resources in Brazil. There is no threshold and each record represents one single contract, also in the case of any debt contract modification, due to debt reorganization, write-offs and debt assumptions. There are currently about 44.8 thousand active registers in the database. As such, this system serves as the main source of information to compile the Brazilian EXD.

Besides allowing calculating total external indebtedness of each resident unit or sectors, and as such the monitoring of Brazil´s external debt on a daily basis and on a contract-by-contract basis, the **RDE-ROF also allows estimating EXD amortization schedule on a monthly basis**[3]. **This characteristic allowed the precise estimation of EXD payments predetermined capital outflows and to determine one of the targets for the foreign currency loans offered by the BCB during the GFC**.

Domestic exchange contracts are registered for each singe transaction (without thresholds) in a BCB system (Sisbacen)[4]. The register contains information on the parties involved, economic transaction (around 250 codes), amounts in foreign and domestic currency, settlement date and other. **Daily ITRS data is used for monitoring gross and net flows to the Brazilian economy. At the time of the GFC, the ITRS were used to quantify daily outflows and to compare with the BCB's estimates, allowing to revise it according to changing market conditions**.

Lines of Credit database was created during the Asian Crisis of 1997 aiming at monitoring the impacts of the crisis in the amounts of credit lines available to resident banks from their counterparts abroad. During the GFC, information were provided by a sample of 35 resident banks thru one dedicated Sisbacen transaction[5]. This information is available to compilers on a daily basis with a two-day lag. **By daily monitoring the changes in the amounts of lines of credit and comparing it to the levels before**

[3] RDE-ROF provides information on the parties involved in the operation (debtor, creditors, agents, guarantors, etc.) and all the financial details of the contract. Among the latter are the principal amount, its amortization scheme and/or grace period, amortization periodicity and number of payments; the type of interest rate, base and spread, and periods of interests; the interests service periodicity and number of payments; eventual surcharges, fees and commissions; the currency of denomination; and the form of payment.

[4] This IT system was updated in 2012 and now information on exchange contracts are sent online to the BCB's computing system.

[5] This database was updated in 2010 and 2016. The main modifications were moving from sampling to a census, upgrading the IT for transmitting data, and broadening its scope to include, beside credit lines, issuances, loans, interfinancial deposits and intragroup borrowing.

September 15, 2008, policy makers were able to estimate minimum levels of trade finance and to target the instruments to provide foreign currency liquidity, namely the repo lines and the foreign currency loans.

The ability of the BCB to successfully create the targeted programs to address the shortage of foreign currency liquidity in Brazil during the GFC and its sudden stop in capital flows was directly linked to the existence of those databases.

5. Conclusion

Macroeconomic statistics allow detailed and comprehensive understanding of the economic structure and conjuncture of a country and its sectors. As such, they are fundamental for the policy making decision process. However, even considering the increased frequency and reduced timeliness after post-crisis initiatives such as the DGI, macroeconomic statistics are only available with a lag, which can be significant in crisis periods. In this way, macroeconomic statistics need to be complemented with all available information for monitoring and policy making purposes.

To be able to perform this task, the available information set – mostly raw data which are sources for macroeconomic statistics compilation – should ideally present the following characteristics: i) be as granular and disaggregated as possible, preferentially **micro data**; ii) reflect **transaction-by-transaction** flows; iii) have a **weekly or daily frequency**, but (soon) in some cases, online; and iv) have **one to few days lag** in reporting periodicity.

The point of this paper is the existence of a tradeoff and a complementarity between statistics that match the quality and comprehensiveness of international standards versus the need of more periodic and timely data for monitoring purposes. The Brazilian case of implementing a targeted program to provide liquidity in foreign currency during the initial moments of the GFC illustrates the importance of those two sets of information for the evidence-based policymaking decision process.

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