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The Portuguese Central Credit Register as a key input to the analysis of financial stability ... and beyond!¹

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¹ 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.

The Portuguese Central Credit Register as a key input to the analysis of financial stability... and beyond!^{1,2}

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The Portuguese Central Credit Register (CCR) is a powerful multi-purpose tool, which contains monthly granular information on credit on a borrower-by-borrower basis and that includes, in some cases, details that provide loan-by-loan information with a virtually complete coverage. These features have enabled the *Banco de Portugal* to use its CCR data for a variety of purposes, from, *inter alia*, the compilation of very comprehensive and detailed statistics on credit, to the promotion of a better understanding of the risks underlying banks' balance sheets.

In this paper, we explore the richness of the Portuguese CCR, which is leveraged by its integration with other large granular datasets managed by *Banco de Portugal* (e.g. the data from the Bank's Central Balance Sheet Data Office). Furthermore, we highlight the way its features and ongoing reformulation – to meet the reporting requirements set by the AnaCredit Regulation and to fulfil additional data needs – have been key to monitor monetary and financial phenomena and to help the *Banco de Portugal* in meeting its mandate of ensuring the stability of the national financial system.

Keywords: Credit register data; AnaCredit Regulation; Macroprudential analysis; Microdata

JEL classification: C80; E50

¹ The analysis, opinions and findings of this paper represent the views of the author, which are not necessarily those of the *Banco de Portugal* or of the Eurosystem.

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1. Introduction

The Portuguese Central Credit Register (CCR) is an information system managed by the Statistics Department of the *Banco de Portugal* (hereafter referred to as “the Bank”), which contains granular information on credit granted by the institutions participating in the system – all resident credit-granting institutions – on a borrower-by-borrower basis and that includes, in specific cases, details which provide loan-by-loan information, with a virtually complete coverage.

It is currently regulated by the Decree-Law no. 204/2008, by the Bank’s Instruction no. 21/2008, and it is also mentioned in the Bank’s Organic Law (Art. 17º - 1). The use and access to CCR data is compliant with the provisions laid down in specific data protection and use laws emanated by the Portuguese Parliament and by the National Commission for Data Protection (by National Commission for Data Protection’s Authorization no. 4241/2011).

CCR data is used by the Bank not only for the compilation and dissemination of statistics, but also for a multitude of other purposes, such as for microprudential supervision of credit institutions, for monetary policy making, for economic research and for the macroprudential analysis and policymaking. In this context, this paper seeks to explore the richness and the usefulness of the Portuguese CCR in meeting these tasks, with a special focus on its role in the tasks pertaining to financial stability.

To that extent, this paper is organised as follows: the next section presents an overview of the Portuguese CCR and how its data are being used by the Bank for the compilation of statistics, monetary policy making, economic research and microprudential supervision; section three focuses on the role of the CCR in supporting the Bank in macroprudential analysis and policymaking; section four highlights the premises and the expected results of the ongoing CCR reformulation and its connection with the AnaCredit project; lastly, section five concludes.

2. The Portuguese CCR at a glance

2.1 Overview

The main purpose of the CCR is to offer its participants relevant data for their assessment of the risks underlying the provision of credit – *i.e.* aggregate information on the credit responsibilities of each client (borrower) *vis-à-vis* the participant institutions as a whole.

The CCR was firstly established in 1978 and initially it covered only the credit liabilities of non-financial corporations (NFCs). Later on, in 1993, began the collection of the same data for households and thereafter, in 1996, was issued an authorization for the compilation of statistics on credit based on the CCR. Subsequently, in 1999, the Statistics Department of the *Banco de Portugal* was assigned the responsibility for the management of this database and of all its related services.

Since 1999, a number of significant developments were introduced aiming at further improving the CCR’s coverage and usability, namely: (i) the establishment of a bilateral exchange of individual credit data among the 7 signatories of the respective

Memorandum of Understanding (in 2005),³ (ii) the incorporation of the potential credit liabilities of personal guarantors (in 2007)⁴, and (iii) the implementation of a new information system that introduced additional breakdowns at the level of credit data and a greater efficiency in identifying private individuals (in 2009).

More recently, the *Banco de Portugal* has also successfully implemented a number of changes to the CCR which are equally worth highlighting:

- a. Its coverage was expanded to cover new reporting institutions (e.g. NFCs that buy credit portfolios to the resident financial sector);
- b. A new analytical data system for data analysis and exploration was developed;
- c. Additional details were included to allow for the individual identification of the loans used as a collateral in the Eurosystem's monetary policy operations; and
- d. Additional breakdowns were introduced (e.g., new collateral types, original and residual maturity brackets, special characteristics on non-performing loans and restructured loans).

Against this background, the entities that currently participate in the CCR are all the resident financial institutions granting credit – i.e., banks (including savings and mutual agricultural credit banks) and other credit institutions (e.g., financial leasing companies, factoring companies, credit financial companies and credit-purchase financing companies). Concomitantly, the borrowers registered are resident or non-resident entities, both private individuals and legal persons, to whom credit has been granted by the participant institutions. In this system, resident borrowers are uniquely identified through their tax payer number, while non-resident borrowers are identified through a set of elements provided by the participant entities, which include a code – unique for each borrower in each reporting institutions – and the name, country of residence and identification document of the non-resident borrowing entity.

Moreover, to ensure a level playing field between all the participating entities, the Bank guarantees that these institutions are entitled to access aggregate information on the credit liabilities of each borrower⁵ vis-à-vis the CCR's reporting institutions as a whole. Concurrently, the borrowers also have the legal right to access their own information stored in the CCR and, in case of missing or wrong information, they must address the reporting institution to change or update their information, since the Bank is not legally authorized to correct the information by itself.

³ The seven initial Signatories of the 2005 Memorandum of Understanding on the exchange of information among CCRs were the National Central Banks (NCB) of Austria, Belgium, France, Germany, Italy, Portugal and Spain. A few years later, the NCBs of the Czech Republic and Romania also joined this group.

⁴ The CCR database contains information on the actual and potential credit granted by its participants (mainly resident financial institutions) to borrowers. Actual credit includes all the loans granted by the participants and truly taken up – *inter alia*, loans for house purchase, loans to purchase cars, furniture and other consumer goods or services, loans for the acquisition of shares or bonds, payment of bills of exchange or other commercial bills, overdrafts, leasing or factoring operations, and balances on credit card transactions. Potential credit encompasses all the irrevocable commitments by participants, such as available credit on credit cards, credit lines, pledges granted by participants and other credit facilities which may become actual credit.

⁵ Or of each potential client, when such client asks for a loan or explicitly authorizes the entity to access its information.

In this framework, the CCR's participants have to report their borrower's loans according to a predefined list of attributes and dimensions, using the following variables:

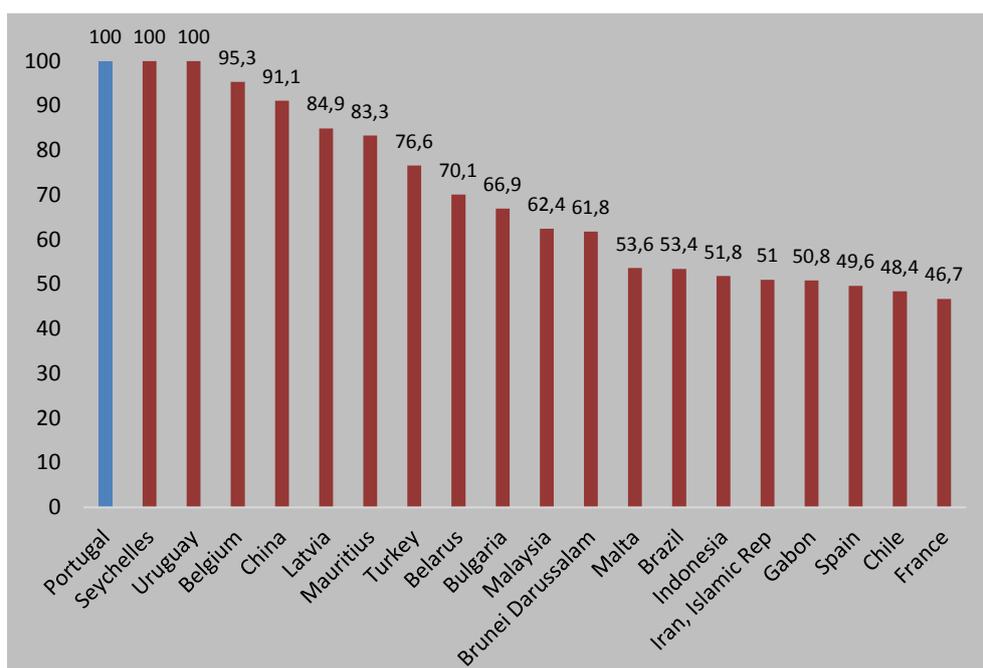
- a. Type of liability of the borrower – identifies the type of commitment the borrower has *vis-à-vis* the credit institution (*e.g.* individual credit, joint credit, personal guarantee);
- b. Status of the loan – shows the type of liability underlying the relation between the participant and the borrower and to what extent the repayment schedule is being respected (*e.g.*, drawn credit in a regular situation, undrawn credit, overdue loans, written-off loans);
- c. Type/purpose of the loan – identifies the credit instrument used and, in some cases, its end-purpose (*e.g.*, consumer credit and car credit, credit card, factoring with or without resource, housing loans);
- d. Original and residual maturity – classified according to a list of predefined brackets;
- e. Number of days the loan is past due – in the event of a default, this variable shows the number of days since the loan has defaulted in accordance with a list of predefined brackets;
- f. Currency – *i.e.* the currency in which the loan is denominated;
- g. Type and value of the collateral or guarantee securing the loan (if it exists);
- h. Identification of relevant special characteristics underlying the loan – this information is reported with a view to be used internally by the Bank in the identification of, *inter alia*, securitised loans (derecognized and non-derecognized), syndicated loans, loans used as collateral for monetary policy operations, non-performing loans;
- i. Value of monthly repayments – reported exclusively for specific types of personal loans.

Apart from this information reported by the participants, this system also collects data on the insolvency status of the borrower – for private individuals, companies or other legal entities – which is provided by the Portuguese Courts of Law.

All things considered, the aforementioned data is reported by the participants to the CCR on a monthly basis – until the 6th working day after the end of the reference period – for all the credits where the outstanding amounts of the borrower's actual or potential liabilities exceed fifty euros. This very low threshold, together with a full coverage in terms of participants and borrowers, has allowed the Portuguese CCR to lead the world ranking of public credit registries in terms of their coverage⁶ (please see Figure 1).

⁶ The credit registry coverage reports the number of individuals and firms listed in a credit registry's database as of 1 January 2016, with information on their borrowing history within the past five years, plus the number of individuals and firms that have had no borrowing history in the past five years, but for which a lender requested a credit report from the registry in the period between 2 January 2015 and 1 January 2016. The number is expressed as a percentage of the adult population, according to the World Bank's World Development Indicators. A credit registry is a database managed by the public sector that collects information on the creditworthiness of borrowers (individuals or firms) in the financial system and facilitates the exchange of credit information among banks and other regulated financial institutions. For more details on the methodology underlying the calculation of the credit registry coverage, please consult <http://www.doingbusiness.org/data/exploretopics/getting-credit/faq>

Figure 1: Credit registry coverage (as a % of the adult population)



Source – Doing Business 2017, World Bank

At the current juncture, the CCR processes over 20 million records in each reporting period which pertain to approximately 6.2 million borrowers with either actual or potential credit data and are drawn from 185 reporting institution.

Having thoroughly described the CCR’s framework and the data it contains, it is now pertinent to ascertain to what extent it is used by the Bank and its relevance in meeting its mandate.

2.2 Using the CCR in meeting the Bank’s mandate

2.2.1. Compilation and dissemination of statistics

The above mentioned authorization issued in 1996 reflected one of the main goals foreseen for the CCR: the compilation of comprehensive statistics on credit granted. Bearing in mind this objective, several credit instruments and other variables related to the classification of loans were defined, in such way that they are meaningful for economic analysis. In addition, the database also included a classification of borrowers classified according to appropriate statistical criteria⁷ (e.g., by sector of economic activity, by institutional sector, by corporation size and by region of residence).

Currently, the statistics compiled by the Bank based on the CCR data, whose main focus is the loans granted by the resident financial CCR’s participants to the resident entities classified as NFCs, non-profit institutions serving households and households (NPISH), are made available to the public at large on a monthly or quarterly basis,

⁷ Since the participating institutions only report the borrowers’ identifications (i.e., their taxpayer numbers), the statistical classification of the resident borrowers is made in the Bank, mostly by means of a business register managed by the Statistics Department.

depending on the statistics involved. Indeed, the set of statistical indicators published by the Bank on a monthly basis includes:

- a. The outstanding amounts of the loans granted and their correspondent annual rate of change;
- b. The ratio of overdue⁸ loans.
- c. The percentage of borrowers with overdue loans.

Such indicators are compiled for borrowers belonging to the NFCs, NPISH and households institutional sectors. Moreover, for the NFCs sector, this information is also broken down by corporation size⁹ (micro, small, medium-sized and large corporations), by corporation statute (public and private corporations) and also made available for private exporting corporations¹⁰. For households, the statistics compiled also include a breakdown according to the purpose of their respective loans.

On a quarterly basis, the Bank publishes more detailed statistical information based on its CCR, both for NFCs and for the households sectors. In the case of NFCs, statistical data is broken down by:

- a. Region, according to the NUTS II and III classification¹¹ of the NFC's headquarter;
- b. Economic activity sector (according to NACE¹² sections, with further detail for the manufacturing industry);
- c. Corporation size;
- d. Financial product of the loan
- e. Brackets of credit amount, for the level of indebtedness of the NFCs *vis-à-vis* the resident financial sector;
- f. Original and residual maturity;
- g. Type of guarantee.

As for the Households sector, statistical data is available with the following breakdowns:

- a. Region breakdown, according to the NUTS II and III classification and, for some indicators, by municipality;
- b. Purpose and financial product of the loan;
- c. Brackets of credit amount, for the level of indebtedness of the debtors classified in the households sector *vis-à-vis* the financial sector;
- d. Original and residual maturity;

⁸ Overdue loans correspond to the outstanding amount of loans which were contractually due and have not been paid (past due).

⁹ This classification is based on the European Commission's Recommendation 2003/361/EC of 6 May 2003, which addresses the definition of micro, small and medium-sized enterprises.

¹⁰ The definition of "exporting corporations" is applied to all enterprises who meet the following criteria: a) at least 50% of their turnover comes from the export of goods and services or b) at least 10% of their turnover comes from the export of goods and services being the value more than 150 thousand euros.

¹¹ Nomenclature of Territorial Units for Statistics.

¹² Statistical Classification of Economic Activities in the European Community.

e. Type of guarantee.

In general, five indicators are published regularly for both institutional sectors: the outstanding amounts of the granted loans, the amount overdue loans, the ratio of overdue loans, the number of borrowers and the percentage of borrowers with overdue loans. As for the data broken down by original and residual maturity, it is only made available the amounts outstanding of loans granted, for each bracket of maturity; concurrently, for the type of guarantee breakdown, the Bank only releases the percentage of credit amount of each type of guarantee in the total loans granted.

In addition, on an annual basis, some additional indicators on the relationship of the borrowers with entities belonging to the financial sector – within the loans context – are published. Such indicators are presented both for the households sector and for the NFCs sector (which are also further broken by corporation size). Such indicators are:

- a. The average number of entities belonging to the financial sector with which each credit client has credit relations;
- b. The average percentage of loans granted by the entity with the largest share;
- c. The average indebtedness of the credit clients.

Apart from being able to produce high quality fit-for-policy statistics, the CCR has also been able to bring about a reduction of the reporting requirements underlying the Bank's data collection for Monetary and Financial Statistics (MFS), thus alleviating the participants' reporting burden and curtailing data redundancy. Indeed, a good example of such feature was the source used for the breakdown by branch of economic activity of the credit granted to NFCs. From 1990 to 2002, this breakdown was included in the MFS reporting requirements, but the data collected showed a number of quality weaknesses, which were due to the need to aggregate the information according to several statistical criteria prior to its submission to the Bank by the reporters. Against this background, and since the CCR, as mentioned above, also provides an alternative source for the same data, but with higher quality – given that it is a micro data based system –, the Bank decided, in 2003, to discard this breakdown in the MFS data collection system and use exclusively the data of the CCR for this purpose.

Having thoroughly discussed the statistical potentialities of the CCR, it is now pertinent to discuss to what extent this data can be used for other tasks of the Bank and its impact. Concomitantly, in the next sections we discuss how the CCR's data has been used for economic research, monetary policy making and banking supervision purposes and some of the findings that it has enabled.

2.2.2. Economic research

Article 12 e) of the Bank's Organic Law states that the Bank is incumbent to "*Advise the Government in the economic and financial fields [...]*". In this capacity, the Bank's economic researchers have been using the CCR's micro data for several technical papers and empirical analysis, by, *inter alia*, regularly bringing together this data with other micro data sources as, for example, the Bank's Central Balance Sheet Database (CBSD).

Indeed, a good example of this exercise is the combination of CCR data with firm-by-firm accounting information drawn from the Central Balance Sheet Database, for internal research purposes pertaining to the analysis of the drivers of credit risk for non-financial corporations. Moreover, even though the study of household data is

severely more restricted by legal constraints, there have also been significant efforts to identify what drives households to default.

In the same vein, another notable example on the utility of the CCR's data for economic research is found in Augusto & Félix (2014). In this paper, the authors investigated the impact of the recent bank recapitalization on the firms' access to credit between the first quarter of 2010 and the fourth quarter of 2013. Since the main dataset used for this study was the Bank's CCR, its granularity allowed the usage of sophisticated micro-econometric approaches to find the effects of the bank recapitalizations on the supply of credit. To that extent, the study included two firm distress indicators based on the firms' overdue credit (as reported to the CCR) and a sample of 201,768 non-financial corporations and 327,777 loans (firm-bank pairs). The results suggested that firms have on average two banking relationships and that that bank bailouts fostered an increase in the supply of credit and that this effect, which was verified for the sectors of manufacturing and trade, was negatively connected with the capital buffer of recapitalized banks. Moreover, the paper found no evidence that the bank recapitalizations contributed to a more selective behavior in granting credit to towards distressed firms when compared to other firms.

In a similarly minded study, Farinha & Félix (2014) studied the importance of credit demand and credit supply-related factors in explaining the evolution of credit granted to Portuguese small and medium-sized enterprises (SMEs). The findings of their study indicated that the interest rate is a strong driver of the demand for credit of SMEs, as well as their internal financing capacity. Moreover, it was found that the credit supply to SMEs mostly depended on the firms' ability to generate cash-flows, to repay their debt and on the amount of assets available to be used as collateral. To achieve such findings, a model was estimated for the period between 2010 and 2012, and its estimated coefficients were then used in the computation of the probability of credit rationing. In addition, the model produced in the study also suggested that a considerable fraction of Portuguese SMEs were affected by credit rationing in the surveyed period.

2.2.3. Monetary policy making

In light of the monetary policy making duties conferred by the Bank's organic law, the Bank has been using the CCR as an auxiliary tool for the identification of loans used as collateral in the Eurosystem's financing operations, since the CCR collects the necessary information to evaluate the risks associated with the acceptance of bank loans as collateral in monetary policy credit operations.

Indeed, the general documentation of the Eurosystem's monetary policy instruments and procedures requires that:

- a. All Eurosystem credit operations are based on adequate collateral;
- b. Such collateral assets fulfill a number of criteria in order to be eligible to be used in the Eurosystem's monetary policy operations;
- c. A single framework for the definition of collateral eligibility is common to all Eurosystem credit operations.

In this context, such single framework encompasses two distinct asset classes:

- a. Marketable assets;
- b. Non-marketable assets (*e.g.*, credit claims).

Since February 2012, the NCBs are temporarily allowed to accept as collateral for Eurosystem credit operations additional performing credit claims. Such credit claims shall also meet specific eligibility criteria proposed by the NCBs and approved by the ECB's Governing Council.

Currently, each NCB is responsible for the eligibility assessment of a subset of assets. To this extent, the Bank is responsible for the eligibility assessment of the marketable assets traded in Portugal and of the non-marketable assets granted by domestic counterparties and presented as collateral to the Bank.

To meet such endeavor, the Bank is using its CCR on the eligibility assessment (and *ex post* verification) of credit claims – *i.e.* verifying the existence and confirming the major characteristics of such credit claims –, on the elaboration of collateral generation capacity estimates of domestic counterparties for credit claims, asset backed securities (ABS) and covered bonds, and to simplify the report for monetary policy purposes.

2.2.4. Microprudential supervision

Pursuant to its attributions in the field of micro-prudential supervision, the Bank has also been using the CCR's data in the evaluation of credit risk and of the concentration of risk exposures, both at micro and macro level, as well as for the improvement of the effectiveness of on-site inspections.

However, it is also relevant to mention the Bank's work in developing an Early Warning System (EWS), whose aim is to find companies evidencing a high likelihood of defaulting as a result of an excessive level of indebtedness. This system seeks to encourage credit institutions to be more proactive in identifying and setting forth the appropriate procedures and solutions in the treatment of the companies in such situations.

This EWS, which assesses the ability of the company to generate cash flows and its existing capital structure, incorporates information available on the Portuguese CCR and on the CBSD in the calculation of a set of five financial ratios, which are computed for each company, irrespectively of their industry or sector:

- a. Two financial ratios (Total Debt to EBITDA¹³ and the EBITDA Interest Coverage), which are classified as core ratios, in accordance with Standard & Poor's Corporate Ratings Framework;
- b. Three additional supplementary ratios are considered, since they promote a better understanding of the company's financial risk profile and capture other critical risk dimensions, such as its profitability and leverage : FFO to Total Debt¹⁴, Gearing, Return on Capital.

Having thoroughly discussed the current uses of the CCR for the compilation of statistics, economic research, monetary policy making and micro-prudential supervision, it is now pertinent to focus with greater detail to what extent the CCR's data is employed to ensure financial stability.

¹³ EBITDA is an acronym for "Earnings Before Interest, Taxes, Depreciation and Amortization".

¹⁴ FFO ("Funds from Operations") is given by (EBITDA - Net Interest - Income Taxes).

3. Using the Portuguese CCR to ensure financial stability... and beyond

In the previous section, we discussed the nature of the Portuguese CCR and how the Bank has been leveraging this tool to meet its tasks pertaining to the production of official statistics, economic research, monetary policy and microprudential supervision. However, one of the most relevant tasks entrusted to the *Banco de Portugal* through its Organic Law is ensuring *"the stability of the national financial system, performing for this purpose, in particular, the functions of lender of last resort and national macro-prudential authority"* and participating *"in the European system for the prevention and mitigation of risks to financial stability and in other bodies pursuing the same goal"*. To meet this challenge, the Bank resorts to a number of different inputs and techniques that allow for a systemic view of the financial systems and of the build-up of systemic risks.

In this context, the above exposed statistics based on the CCR are an instrumental input and extensively used, since they allow for a crucial crossing and analysis of the various dimensions and characteristics attached to the loans, debtors and/or creditors. Indeed, in light of its intrinsic homogeneity and of the possibility to compare its data with other databases, the CCR data allows for a complementary analysis to the "traditional" aggregated data by providing the underlying distribution measures and by enabling the enhancement of the testing and monitoring (*e.g.*, stress testing) of the banks' results in ever-changing and increasingly complex scenarios.

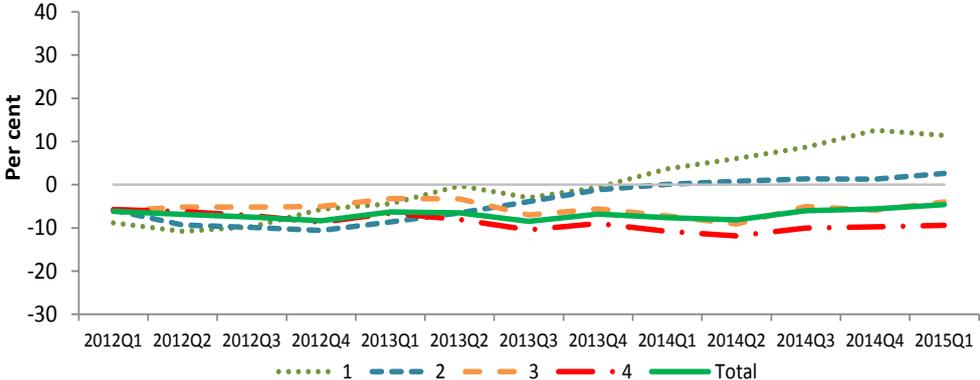
Concretely, these data are used, *inter alia*, in the support to the following tasks:

- a. Assessment of the risks stemming from the household and NFCs sectors, through the examination of the distribution measures of the loan/debtor classes, according to, when applicable, their economic activity sector, type and number of guarantees, exposure size, firm size, performing/non-performing status and other characteristics;
- b. Identification of the financial situation of NFCs, by distinguishing the different financial situation of NFCs through their positive, null or negative changes in borrowing. The CCR is also used in the support to this task to allow for a breakdown by economic activity and by firm size and it is also complemented and cross-checked with data from the Bank's CBSD;
- c. Analysis of the NFCs' credit performance in the wake of credit restructuring;
- d. Evaluation of the effects of the age of the NFCs on their credit spreads – in this case, the CCR is also complemented by the Bank's interest rate statistics database;
- e. Monitoring of the credit tendencies of the largest indebted NFCs;
- f. Exploration of the credit history of high growth corporations.

Indeed, Lima & Drumond (2015) discussed the insufficiencies attached to aggregated data when assessing financial stability and showed how microdata databases, such as the CCR, enable an assessment of the causes of the movements behind the aggregates and thus uncover the potential buildup of imbalances. Moreover, they also recognize that some macroprudential tools require specifically the use of characteristics that are only available in granular datasets – such as the collateral amount of real estate and debt instalments.

Using data drawn from the CCR, the authors concluded that the credit granted by Portuguese banks to non-financial corporations during the recent crisis diminished more significantly in the non-tradable sectors, whereas the credit granted to exporting firms, which are less dependent on the domestic economic recovery, increased. The authors then went on to estimate a z-score model, based on data from the CCR and from the CBSD, which then allowed to conclude that the most of credit granted was being channelled to less risky firms and that the underlying interest rates were decreasing both for high and low credit risk NFCs.

Figure 2 - Total loans granted by risk category/ year-on-year growth rate by risk classes (1 – less risky firms, 4 – riskiest firms)



Source: Lima & Drumond (2015)

Notwithstanding, to assess the necessity of additional prudential measures to increase the pace of the deleveraging of NFCs, Lima & Drumond (2015) argued that additional micro data, which also focuses on the credit institution’s balance sheets, are needed. To that extent, the authors underline, yet again, the importance of the CCR and of the Bank’s Large Exposure Database to assess the coverage rate of non-performing loans (NPL) in the credit institutions’ balance sheets and to estimate the potential impact of writing of such loans on their capital position, while emphasizing the role of the “Corporate Debt Restructuring Monitor” in the assessment of the developments of the NFCs’ indebtedness and NPLs.

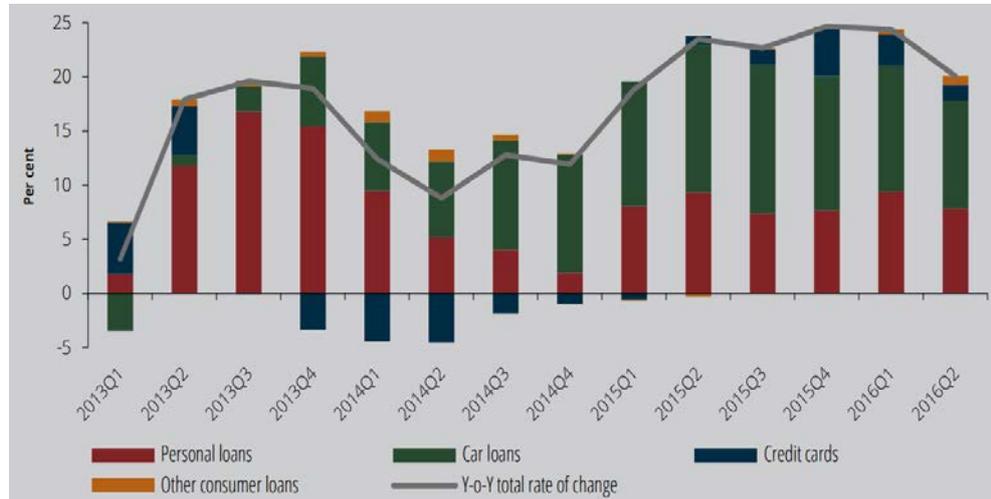
Another good example of the usefulness of the CCR in meeting the Bank’s financial stability mandate is its role in supporting the systemic analysis expressed in the Bank’s biannual Financial Stability Report. For instance, the latest version of such report – published in November of 2016 – even included a special section on the recent developments in consumer credit, in light of the systemic impact that excessive credit growth and leverage can exert on an economy.

For this study, the Bank’s researchers resorted to the Bank’s CCR in order to examine the loans broken down by loan segment¹⁵ and type of institution granting the credit, on a quarterly basis. The results have shown that, while the share of loans for consumption and other purposes in total household debt is relatively low – below 20% –, its recent increase was mainly driven by car loans (Figure 3 and 4), which reflected the effect of the anticipation of the decision to buy a car, in the wake of the entry in force – in April of 2016 – of an increase in the Vehicle Tax. Moreover, this analysis has also uncovered that such loans were mainly taken from credit institutions not belonging to the eight largest banking groups and were mainly granted to

¹⁵ Four segments of consumer loans were taken into account: (i) personal loans; (ii) car loans; (iii) credit cards; and (iv) other consumer loans.

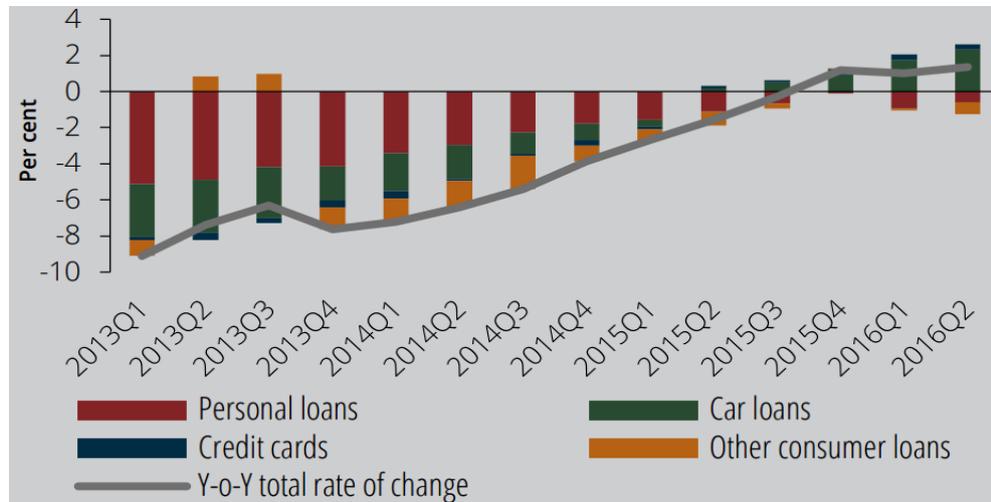
households whose total indebtedness was less than € 50,000 (Figure 5). This observation also allowed to infer that the greater access to credit of households with little or no credit could stem from two causes: (i) such households were previously refused in their attempts to seek and were now being funded by credit institutions; or (ii) such households did not seek or need credit in the past.

Figure 3- Contributions to the year-on-year rate of change in new consumer loans (flows), by consumer loan segment



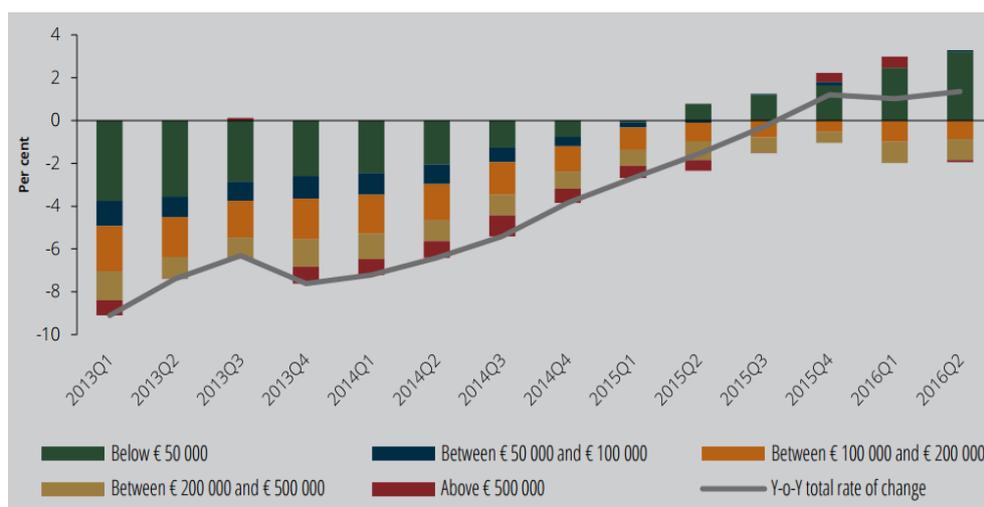
Source – Banco de Portugal | Financial Stability Report – November 2016

Figure 4- Contributions to the year-on-year rate of change in the stock of consumer loans, by consumer loan segment



Source – Banco de Portugal | Financial Stability Report – November 2016

Figure 5- Contributions to the year-on-year rate of change in the stock of consumer loans, by class of total household indebtedness



Source – Banco de Portugal | Financial Stability Report – November 2016

All in all, the study concluded that the recent increase in consumer credit, and particularly car loans, was likely to be interconnected with temporary factors and targeted to lowly indebted households and that, taking into account the relatively low importance of consumer credit in the household’s and banking system’s balance sheets, there was no expected increase in the risk to financial stability on the short run.

3.1. The In-house Credit Assessment System

The different microdata databases currently available at the Bank and the choice for an integrated management of information model has, as Lima & Drumond (2015) argue, allowed the Bank to meet the needs of its ever-challenging statistical stakeholders and enabled the Bank to go beyond the aforementioned tasks, by supporting and participating in a set of new initiatives at the Eurosystem level.

Indeed, in the framework of the European Credit Assessment Framework, the Bank has set up an In-house Credit Assessment System (ICAS), by further exploring the informational potential of the CCR and of its CBSD.

In the wake of the recent economic and financial crisis and inherent shortage of assets eligible to be used as collateral in monetary policy operations, these systems have been gaining importance in the Eurosystem, as shows the increasing number of Eurosystem NCBs who have either introduced them or are planning to introduce in the near future¹⁶. The Bank’s ICAS, which was formally made available to credit institutions on November of 2016, provides the Bank with its own internal credit risk assessment system, thereby curtailing its dependence on external credit assessment providers.

At the current juncture, a more compelling use case for ICASs is related to monetary policy making, for which the ICAS will provide an evaluation of NFCs credit notation, to assess whether the debt issued by such entities is eligible to be used as collateral in the Eurosystem’s monetary policy operations. However, the merits of such a system

¹⁶ Currently, eight Eurosystem NCBs have their own ICASs: Belgium, Germany, Ireland, Spain, France, Italy, Austria, Portugal and Slovenia.

are not exclusively related to monetary policy making, as there are a number of advantages that this system offers to different business areas, especially those connected to micro and macroprudential supervision.

In the field of microprudential supervision, the credit notations derived from the ICAS can be used not only as a benchmark for those provided by credit institutions – which are obtained through their own internal assessment systems –, but also as a method to assess the quality of each credit institution's credit portfolios, while contributing to the early identification of specific risks to which these institutions may be exposed to. Furthermore, the ICAS can also support the identification and analysis of the risks and weaknesses attached to different economic sectors and assist in the preparation of the Portuguese financial sector's response to them, hence proving as an important input for stress-testing.

Concurrently, in the domain of macroprudential supervision, the data stemming from the Bank's ICAS can also be employed as a tool to monitor the developments the non-financial sector and their associated potential build-up of imbalances. This is done not only through the credit risk indicators on non-financial corporations generated by the ICAS, but also interconnected with the judgement of the Bank's risk assessment experts. To this extent, the purpose of this tool is twofold: on the one hand, to evaluate the frailty of specific economic activities through the economic and financial analysis of the companies that constitute them; and, on the other hand, to support the assessment of other systemic risks building-up in the NFCs sector, thus providing additional insights on the main risks and threats to financial stability.

To this extent, the CCR's data is a quintessential input in allowing the ICAS to fulfil its potential uses, as the default observations used in the ICAS are determined using the CCR and are in line with the Basel III default definition (and its guiding principles for the identification of defaults). Moreover, the CCR's data is also a key input for the calibration of the econometric models developed for the ICAS and also to assess the firm's scoring performance. Concretely, the CCR data that assists the ICAS is, *inter alia*:

- a. Data on legal proceedings (legal defaults);
- b. Data on all remaining elements of the reference default definition.

In addition, the remaining standard credit information expressed in section 2 (e.g., non-performing loans, loan volume, number of banks and write-offs) is also used by the ICAS's analysts to feed their qualitative analysis on the NFC's creditworthiness, which then allows to support their decision to revisit (or not) the company's rating upwards or downwards.

Finally, after carefully discussing how the CCR is used to support the fulfilment of the Bank's mandate, it is now pertinent to understand how the ongoing CCR reformulation will add value to the existing data solutions and deepen the support that it provides to such areas of the Bank.

4. The new CCR

As discussed in the previous sections, central credit registers, such as the CCR, are a crucial tool for Central Banks that allow to monitor and manage credit risk, while providing provide a thorough description of the credit exposures and the level of indebtedness of both resident and non-resident borrowers *vis-à-vis* the national financial intermediaries.

Having recognized the importance of such tools, and in order to grasp an enhanced overview of the level of indebtedness of the borrowers across the Member-States of the European Union (EU), the European System of Central Banks (ESCB) has been exploring, since 2007, the potential statistical use of CCRs at the EU level. Particularly, it sought to understand the content of national CCRs could be enhanced and adapted to euro area and European Union statistical needs, such that it fostered the reduction of the reporting burden of the participants and promoted an increase in transparency.

Against this background, the European Central Bank (ECB) launched, together with experts from both the statistical and credit registers' areas of a number of euro area and non-euro area NCBs, the so-called AnaCredit¹⁷ project in 2011. This project will create a new database which will be fed from new or already existing data in NCBs, that will allow to generate a harmonised repository of credit information to support the main central banking functions, in particular, monetary policymaking and macroprudential supervision.

The recent crisis showed how important good and detailed statistics are as a basis for decision making process, by giving more transparency for all the stakeholders. Therefore, AnaCredit will improve the statistical information basis for the Eurosystem in a significant way.

To fulfil the AnaCredit requirements, the CCR is currently being redesigned and will adopt a new philosophy: a loan-by-loan basis. Although the first stage of AnaCredit will only consider loans granted by credit institutions to legal entities, the CCR will keep its current extensive coverage, both in terms of its participating institutions and borrowers, in an attempt to cover all the attributes for nearly all this universe.

The implementation of the new CCR information system has already been initiated and is also taking into careful account other data needs (non-related with AnaCredit) and specific functionalities identified as relevant by its participant institutions and users. The resulting new data model will include not only the 94 attributes requested by AnaCredit but also other credit data needed by the Bank internal users, which will lead to a rationalization of the data requests to financial intermediaries, through the usage of a single entry point in the Bank for credit data, thus achieving a high standard of data integrity.

Concomitantly, the new CCR retains some rules of the current CCR: (i) different reporting rules for static and dynamic data; (ii) identification of borrowers through a unique code (the use of the taxpayer number will continue to be mandatory for residents in Portugal); (iii) statistical classification of borrowers will be made in the Bank through its business register; (iv) the monthly backflow data to the financial system will be approximately the same; (v) corrections to reported data will be made only by the reporting institutions; and (vi) the system itself should be composed by two components (transactional and analytical).

In order to improve the performance of the Bank's tasks related with monetary policymaking, risk management, statistical compilation, supervision and financial stability, the new CCR will cover more than 180 attributes. This means that when a loan is eligible to report to the CCR (the 50 euros threshold will be kept), the participant institutions will have to report information on the instrument, the debtor(s), the protection/guarantees, the accounting and risk information. Moreover, to meet a need of the financial intermediaries, the CCR will also deal with daily data

¹⁷ The name AnaCredit stands for "Analytical Credit Datasets".

on relevant credit events, thus fostering a better evaluation of the credit risk of the credit clients and also enabling the Bank to follow the credit evolution on the financial system with a much smaller time lag.

The new CCR system is expected to “go live” in June of 2018, one quarter before the beginning of the AnaCredit reporting reference period. There will be no overlap with the current system since a test phase is planned to be included in the project development.

5. Concluding remarks

Upon its creation, the main objective of the Portuguese CCR was the provision of relevant information to better understand the risk attached to granting specific credit contracts or to specific borrowers. However, over time, the CCR has also shown a significant potential and usefulness to support other central bank’s purposes, such that the current CCR legal framework already foresees that this data can be used in meeting the tasks entrusted to the Bank, such as the compilation of official statistical, micro and macroprudential supervision, economic research and monetary policymaking.

Indeed, the use of CCR data for statistical purposes has allowed, *inter alia*, the improvement of the quality of monetary and financial statistics (MFS), namely in balance sheet statistics, since the CCR fosters a greater accuracy in the institutional classification of the counterparties receiving credit from monetary and financial institutions’ (MFI). Furthermore, in this statistical domain, the use of CCR data has been facilitated, due to the fact that: (i) both the CCR and the MFS domains share the same reporting institutions; (ii) the content of the reported information is coherent; and that (iii) they both share identical reporting frequencies and timeliness.

Notwithstanding, the CCR has also enabled a better assessment of credit developments, while also increasing the analytical possibilities at the disposal of the Bank by enabling a thorough evaluation through several different breakdowns. New statistical products have also been developed – without imposing further reporting requirements and intensifying the respondents’ burdens – and new statistical capabilities are planned within the CCR’s reformulation horizon.

In the domain of micro and macroprudential supervision, the CCR has been extensively used in the assessment of the risk of the credit granted by credit institutions to non-financial corporations and of the concentration of such risk exposures, both at micro and macro level. Furthermore, the CCR has also proved to be particularly useful in improving on-site inspection practices and to assess the need for prudential policy making. Concurrently, the CCR has also been a source extensively used by the Bank’s economic researchers, as its microdata, often combined with other microdata databases available at the Bank (e.g. the CBSD), have fuelled several research papers and analysis. Concomitantly, within the monetary policy framework, the CCR has been employed in the identification of the loans used as collateral in the Eurosystem’s financing operations.

In the future, as today, the CCR will surely continue to be of utmost importance to fulfil the Bank’s mandate. Notwithstanding, when taking into account the new data model arising from the CCR’s reformulation and the Bank’s information model, which fosters the combination of its data with other microdata databases available at the Bank (namely the securities holdings and issues and corporate balance-sheet data),

it will be possible to develop and produce new statistics, thus increasing the contribution of the Bank to the official statistics universe.

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Irving Fisher Committee on
Central Bank Statistics

BANK FOR INTERNATIONAL SETTLEMENTS

IFC-National Bank of Belgium Workshop on "*Data needs and Statistics compilation for macroprudential analysis*"

Brussels, Belgium, 18-19 May 2017

The Portuguese Central Credit Register as a key input to the analysis of financial stability ... and beyond!¹

João Cadete de Matos,
Bank of Portugal

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

The Portuguese Central Credit Register as a key input to the analysis of financial stability... and beyond!



BANCO DE PORTUGAL
EUROSYSTEM

João Cadete de Matos

Director • Statistics Department

IFC – National Bank of Belgium

Workshop on “Data needs and Statistics compilation for macroprudential analysis”

Brussels, Belgium | 18 – 19 May, 2017



Outline

1. The Portuguese CCR at a glance

- a) Overview
- b) Using the CCR in meeting the *Banco de Portugal's* mandate
 - i. Compilation and dissemination of statistics
 - ii. Economic research
 - iii. Monetary policy making
 - iv. Microprudential supervision

2. Using the Portuguese CCR to ensure financial stability... and beyond

3. The ongoing CCR reformulation

4. Concluding remarks



A brief overview of the Portuguese CCR

- The Portuguese Central Credit Register (CCR) is an information system managed by the Statistics Department of the *Banco de Portugal*;
- Contains granular information on credit granted by resident credit-granting institutions (the participants) to individuals and legal entities;
- Has a very low reporting threshold (50€), which allows it to have a virtually complete coverage.
- Currently on a borrower-by-borrower basis;

Main Purpose: offer its participants relevant data for their assessment of the risks underlying the provision of credit



A brief overview of the Portuguese CCR



20 Million
records monthly



6.2 Million
private individuals



289 Thousand
corporations

185
Reporting Agents



15
different types of loans



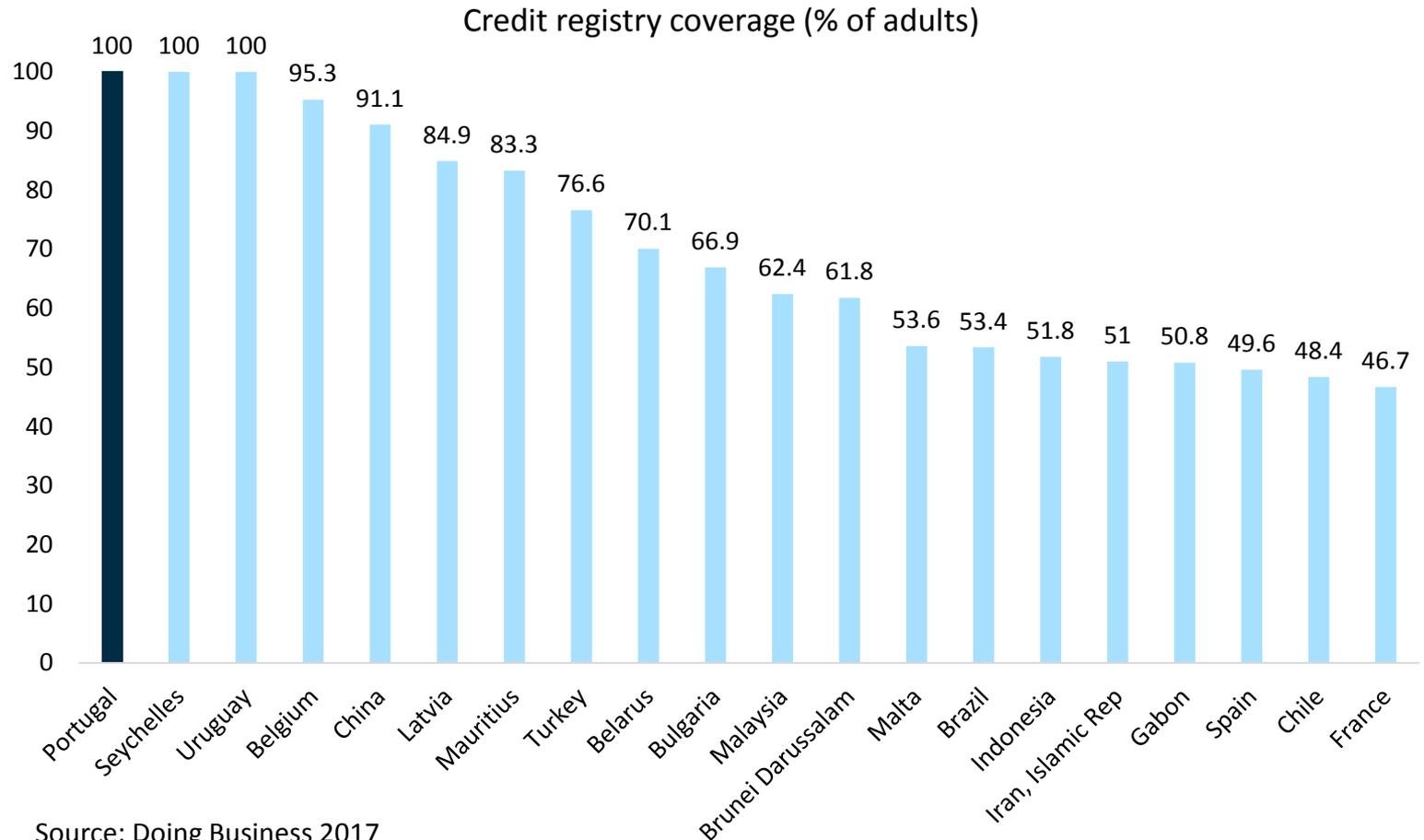
50€
threshold



6 Working Days deadline for reporting 16h/7 days a week



A brief overview of the Portuguese CCR



Source: Doing Business 2017



Using the CCR to compile and disseminate official statistics

The CCR allows to **compile very comprehensive statistics** on several credit related indicators and **with several breakdowns**

On a monthly basis, for NFCs, NPISH and Households sectors...

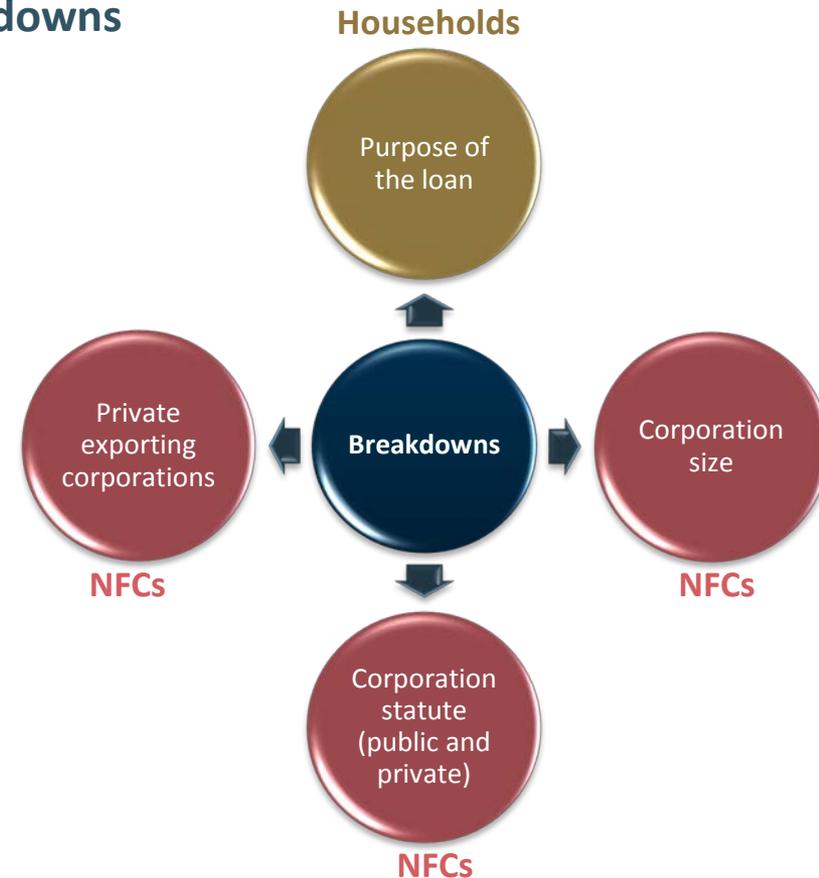
Indicators

Outstanding amounts of the granted loans

Annual rate of change

Overdue loans ratio

Percentage of borrowers with overdue loans





Using the CCR to compile and disseminate official statistics

On a quarterly basis, for NFCs and Households sectors...

Indicators

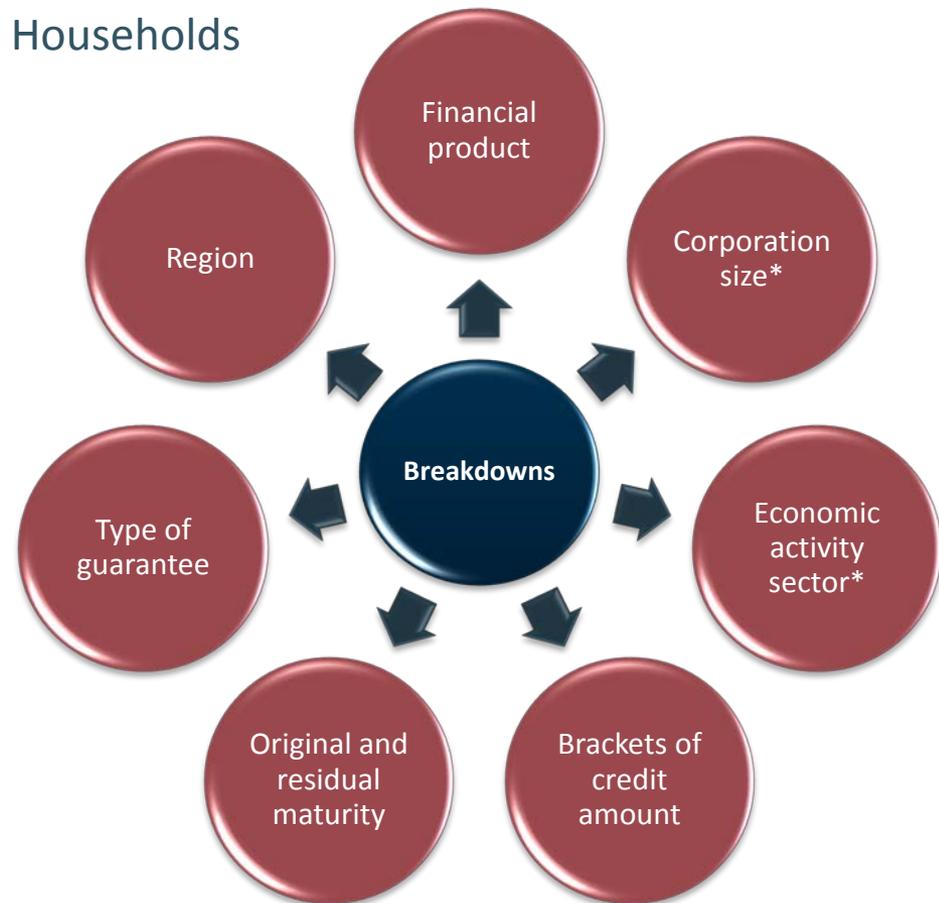
Outstanding amounts of the granted loans

Overdue loans

Overdue loans ratio

Number of borrowers

Percentage of borrowers with overdue loans



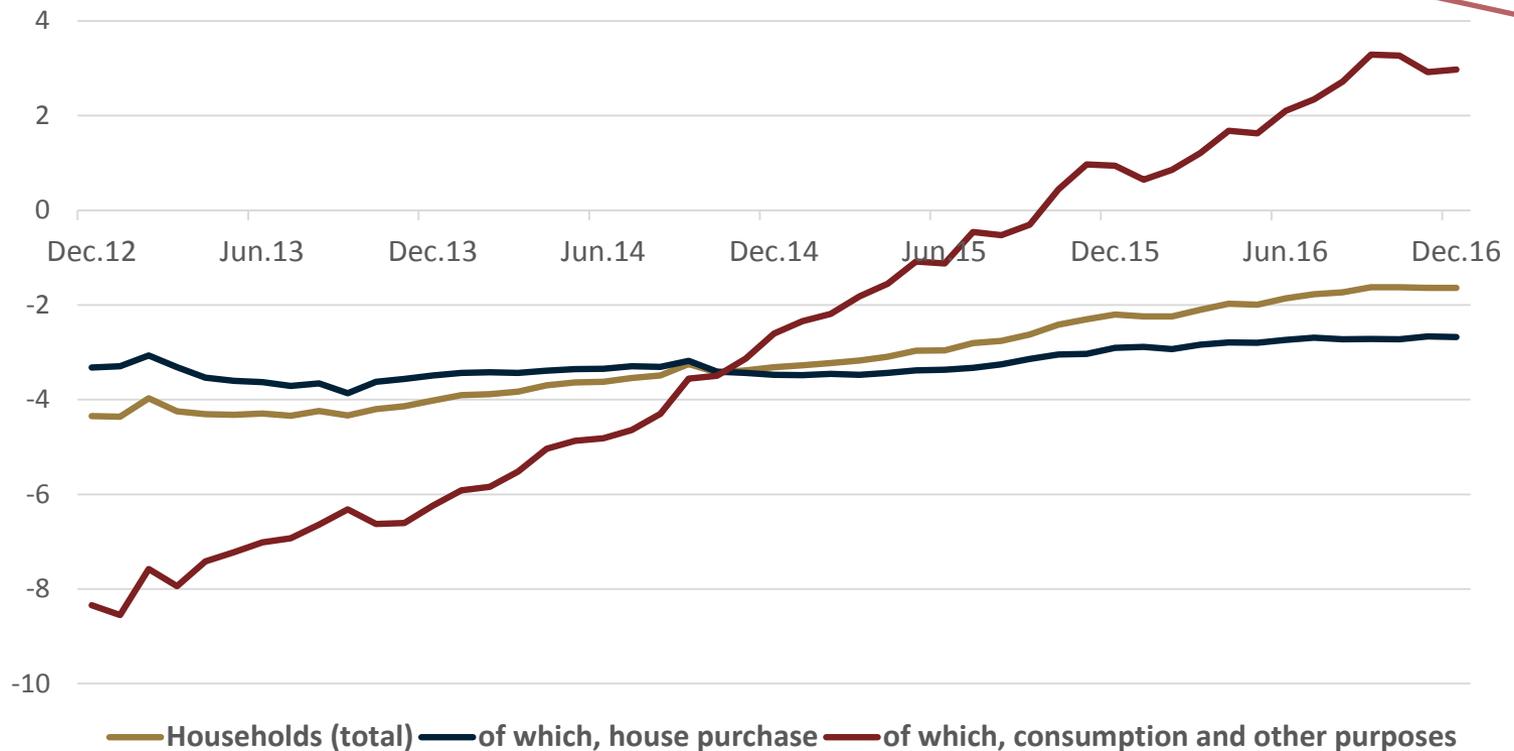
* Only for NFCs sector



Using the CCR to compile and disseminate official statistics

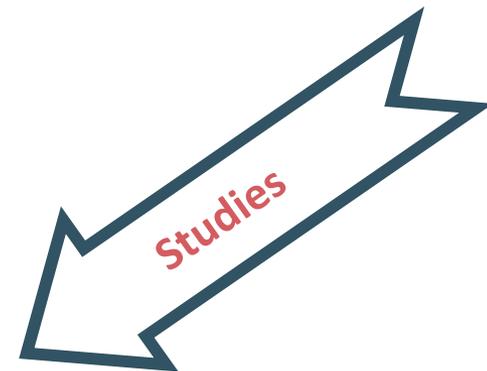
Loans to Households – by purpose
(% - annual rate of change)

CCR's microdata allows for a more detailed analysis



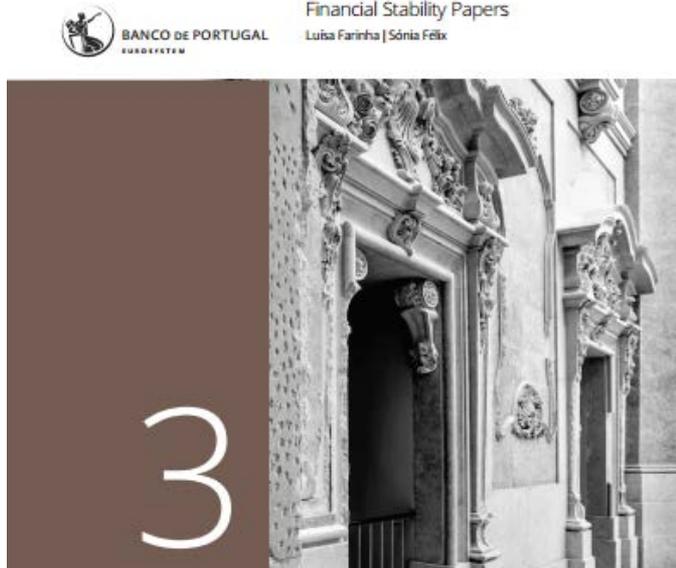


Using the CCR for economic research





Using the CCR for economic research



[...] The results suggest that a considerable fraction of Portuguese SMEs [Small and medium enterprises] were **affected by credit rationing** in this period [2010–2012].

In Farinha & Félix (2014)



Using the CCR for monetary policy making



CCR data is used:



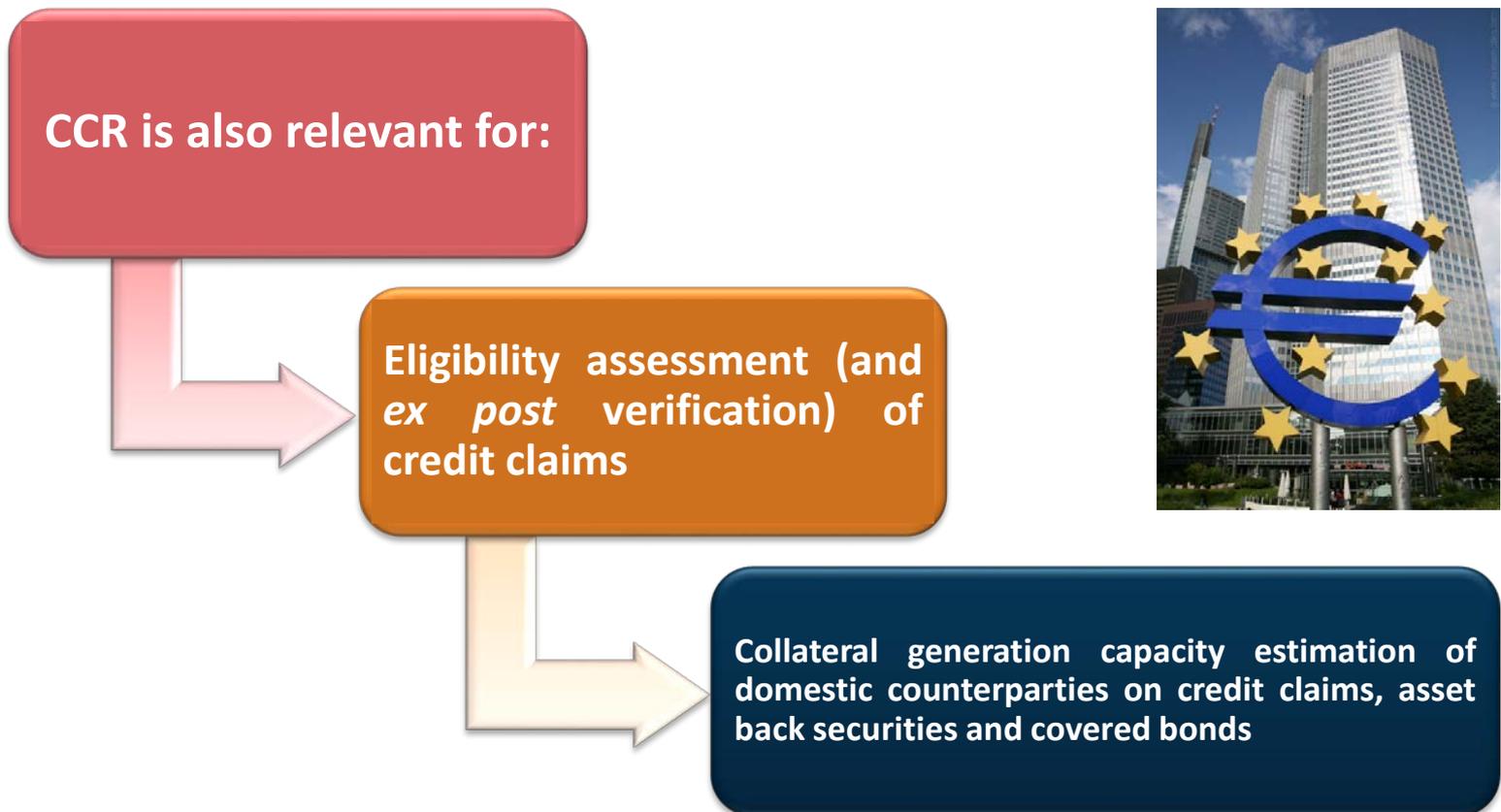
As an auxiliary tool in the identification of loans used as collateral in Eurosystem financing operations



To evaluate the risks associated with the acceptance of bank loans as collateral of monetary policy credit operations



Using the CCR for monetary policy making





Using the CCR for microprudential supervision

CCR data is used for the:

Assessment of credit risk

Evaluation of the concentration of
risk exposures

Improvement of on-site inspection
practices





Using the CCR for microprudential supervision

The CCR is also used in the *Banco de Portugal's* Early Warning System (EWS), which aims at finding companies evidencing a high default probability as a result of excessive indebtedness

EWS

Two core ratios in accordance with Standard & Poor's Corporate Ratings Framework:

Total debt to EBITDA

EBITDA Interest Coverage

To foster the understanding of the company's financial risk profile, three additional supplementary ratios:

Funds From Operation to Total Debt

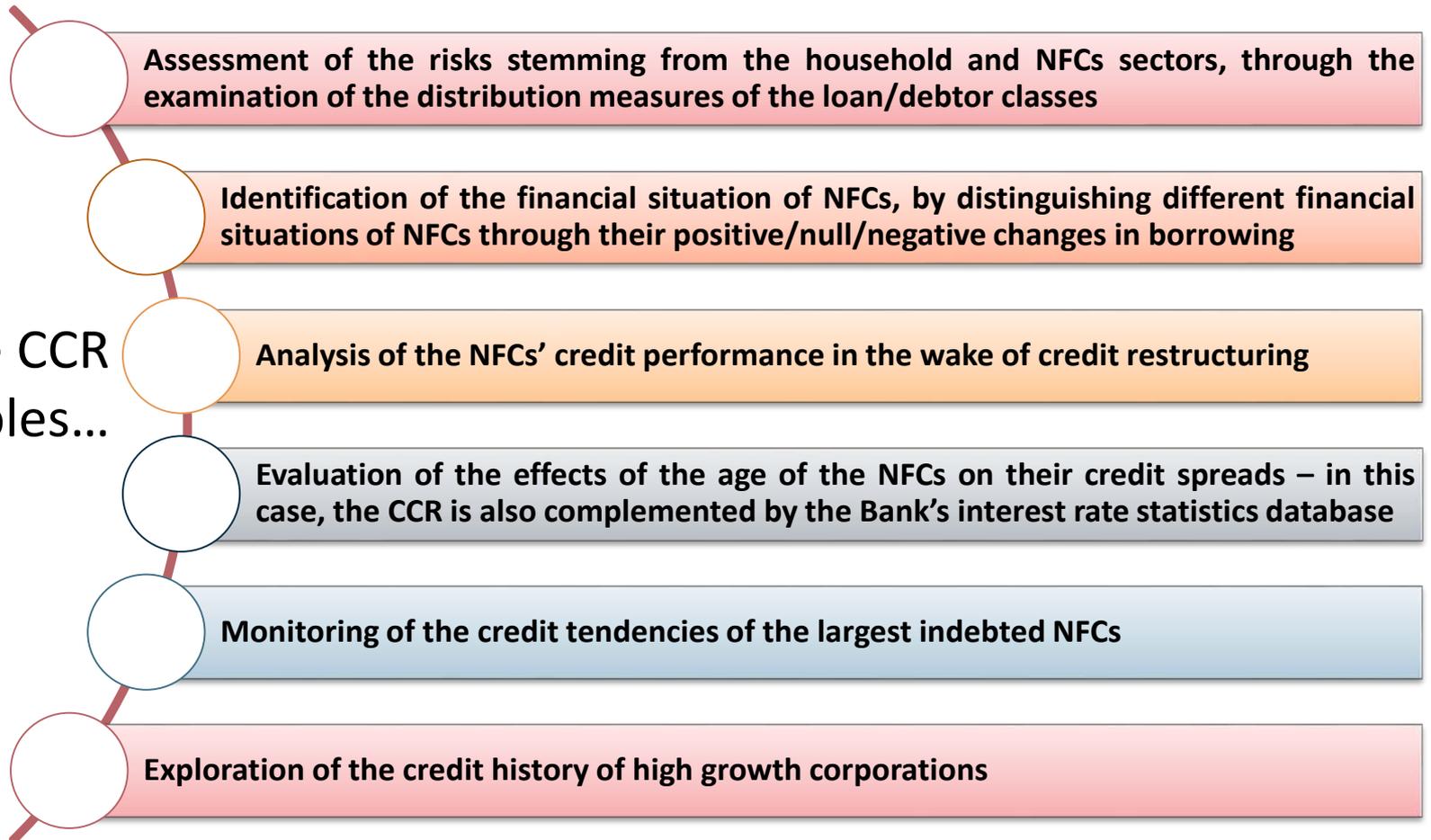
Gearing Ratio

Return on Capital



Using the Portuguese CCR to ensure financial stability... and beyond

The CCR enables...





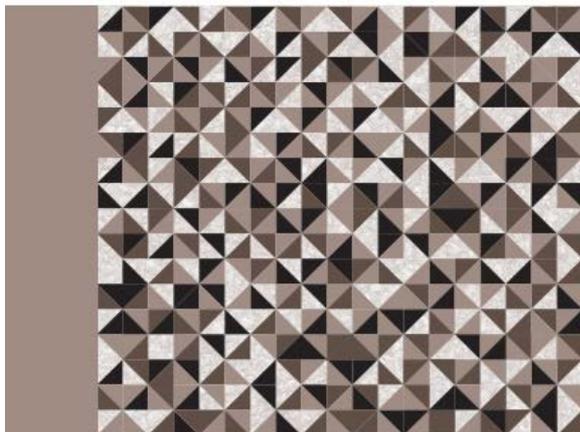
Using the Portuguese CCR to ensure financial stability...

A good example of the usage of the CCR to assess financial stability: the Financial Stability Report



BANCO DE PORTUGAL
EUROSYSTEM

Financial
Stability Report
November 2016



Contents:

1. Financial stability: Vulnerabilities and risks (Vulnerabilities, risks, macroprudential policy)

CCR Data!

2. Financing of the Economy

CCR Data!

(Financial Markets, Households, Non-financial Corporations, General Government, Financial Corporations, External Sector)

3. Banking Sector

CCR Data!

4. Special Issues

CCR Data!



Using the Portuguese CCR to ensure financial stability...

A good example of the usage of the CCR to assess financial stability: the Financial Stability Report



1. Recent developments in consumer lending: A macroprudential approach

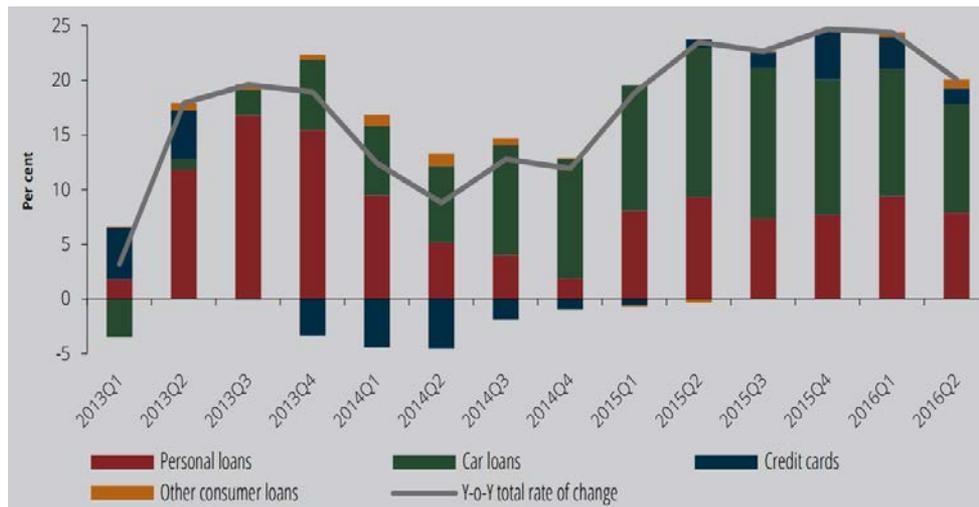
“[...] one of Banco de Portugal’s **responsibilities**, is the **mitigation and prevention of excessive credit growth** and leverage of the economy. Thus, when **assessing risks to financial stability**, as undertaken by Banco de Portugal, **monitoring the evolution of credit to the economy is of the utmost importance.**[...]”



Using the Portuguese CCR to ensure financial stability...

“[...] the upward path recently shown by consumer credit is analysed, [..., since] this segment of the lending market presents a significant default risk, and its persistent high growth could also lead to an increase in vulnerabilities, both for households and the banking system.[...]”

Contributions to the year-on-year rate of change in new consumer loans (flows), by consumer loan segment



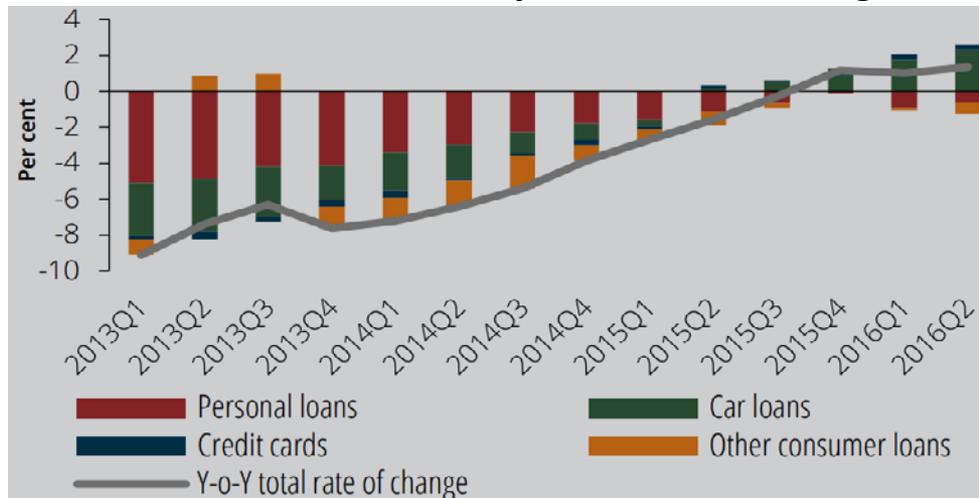
CCR's microdata allows for a more detailed analysis



Using the Portuguese CCR to ensure financial stability...

“[...] The recent increase in consumer credit was mainly driven by car loans, and was mostly associated with the effect of the anticipated purchase of cars as a result of the announcement of an increase in Vehicle Tax that came into force in April 2016. [...] this evolution is expected to be of a temporary nature. [...] Therefore, given the reduced relative importance on households' balance sheets and the resident financial system, there is not expected to be a significant increase in risk to financial stability.”

Contributions to the year-on-year rate of change in the stock of consumer loans, by consumer loan segment

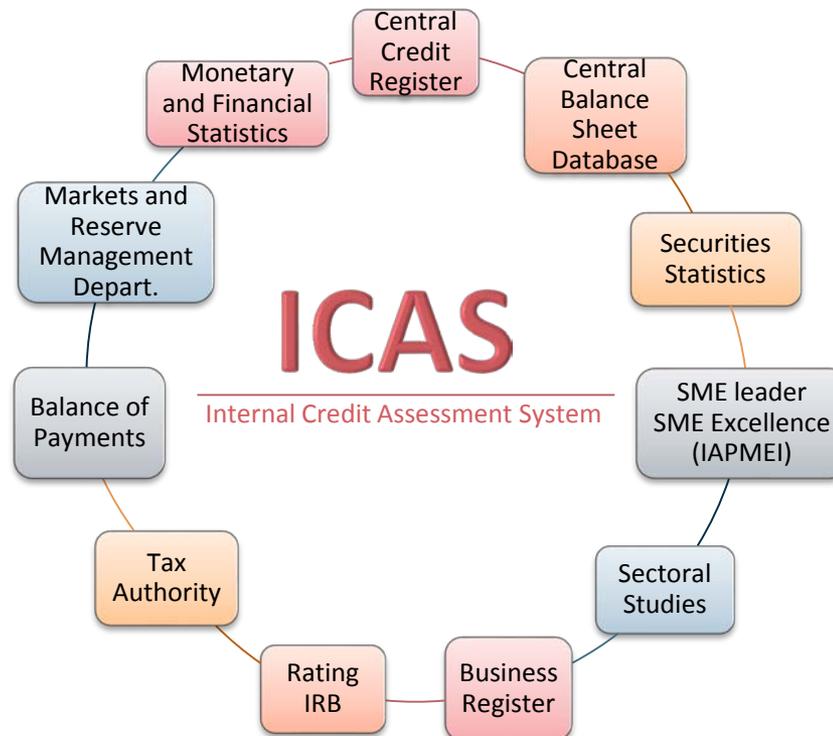


CCR's microdata allows for a more detailed analysis



Using the Portuguese CCR to ensure financial stability... and beyond!

The **In-House Credit Assessment System (ICAS)**: a new credit-rating tool developed by *Banco de Portugal* to support many of its key tasks





Using the Portuguese CCR to ensure financial stability... and beyond!

ICAS

Main purpose: Assessing the **creditworthiness of non-financial corporations**, with a view to determine the **eligibility of the debt issued by such corporations as collateral in monetary policy operations**

Additional uses:

Microprudential supervision:

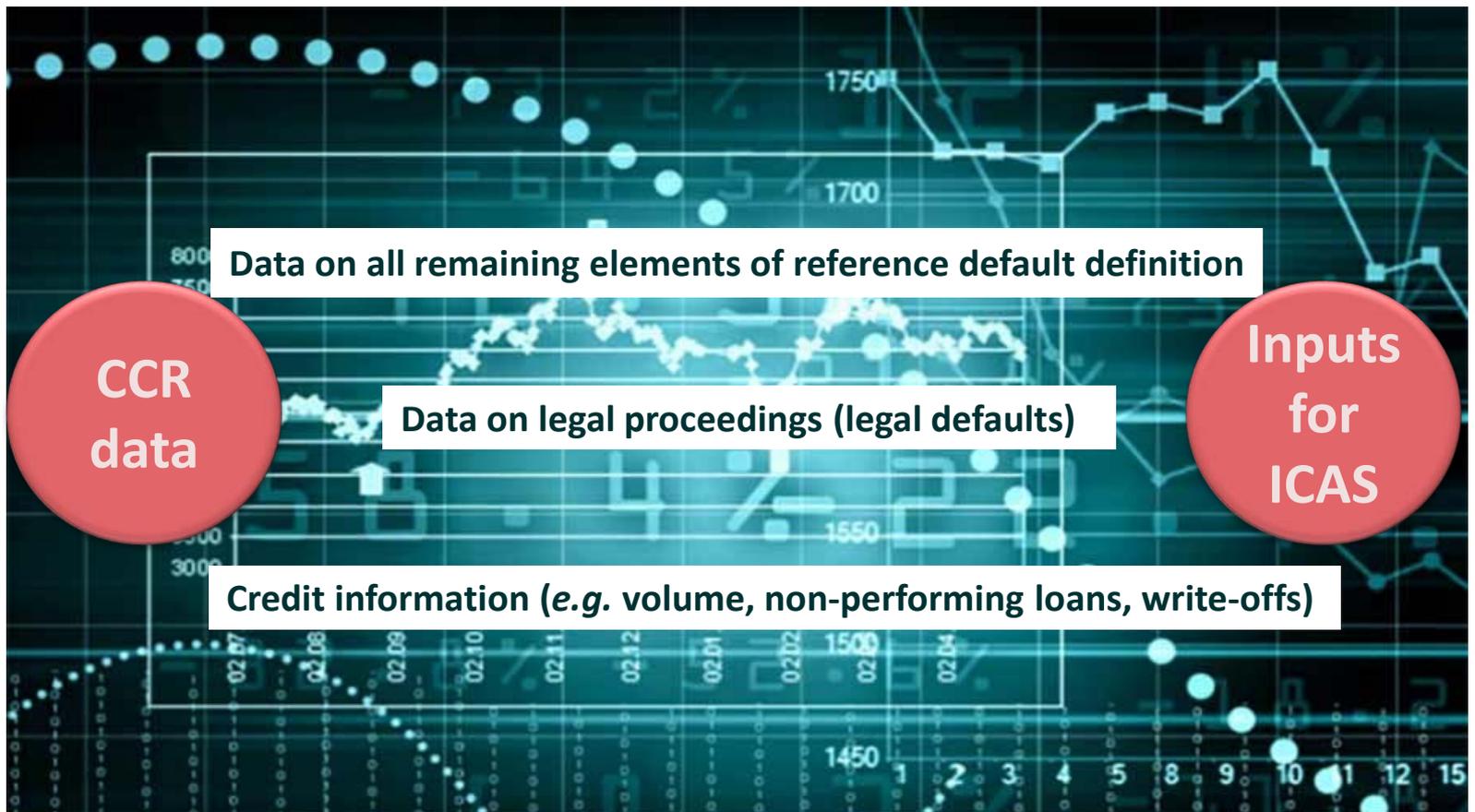
- **Benchmarking the credit notations** provided by ICAS against those of the supervised institutions
- Computation of **sectoral default probabilities** (input for stress testing)

Macroprudential supervision:

- **Identification of potential financial fragilities** in a set of companies and / or economic sector
- Assessment of **other systemic risks stemming from the non-financial corporations sector**



Using the Portuguese CCR to ensure financial stability... and beyond!

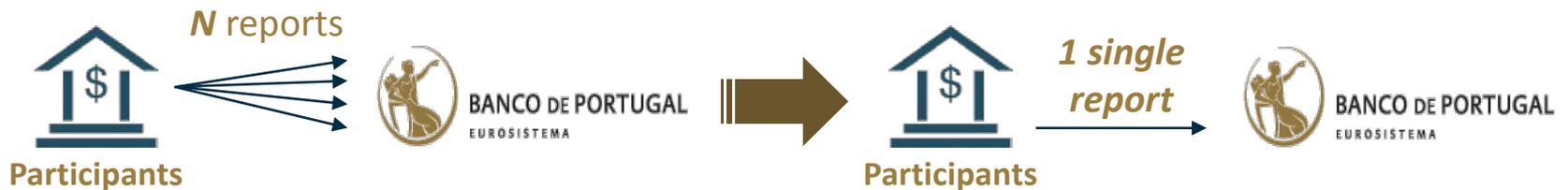




The ongoing CCR reformulation

The *Banco de Portugal* is currently undertaking a **significant reformulation to its CCR**. This project was developed due to the **need to:**

- Meet the forthcoming **AnaCredit requirements**
- **Rationalize the participant's reports to the CCR, thus integrating other credit reports in the CCR**

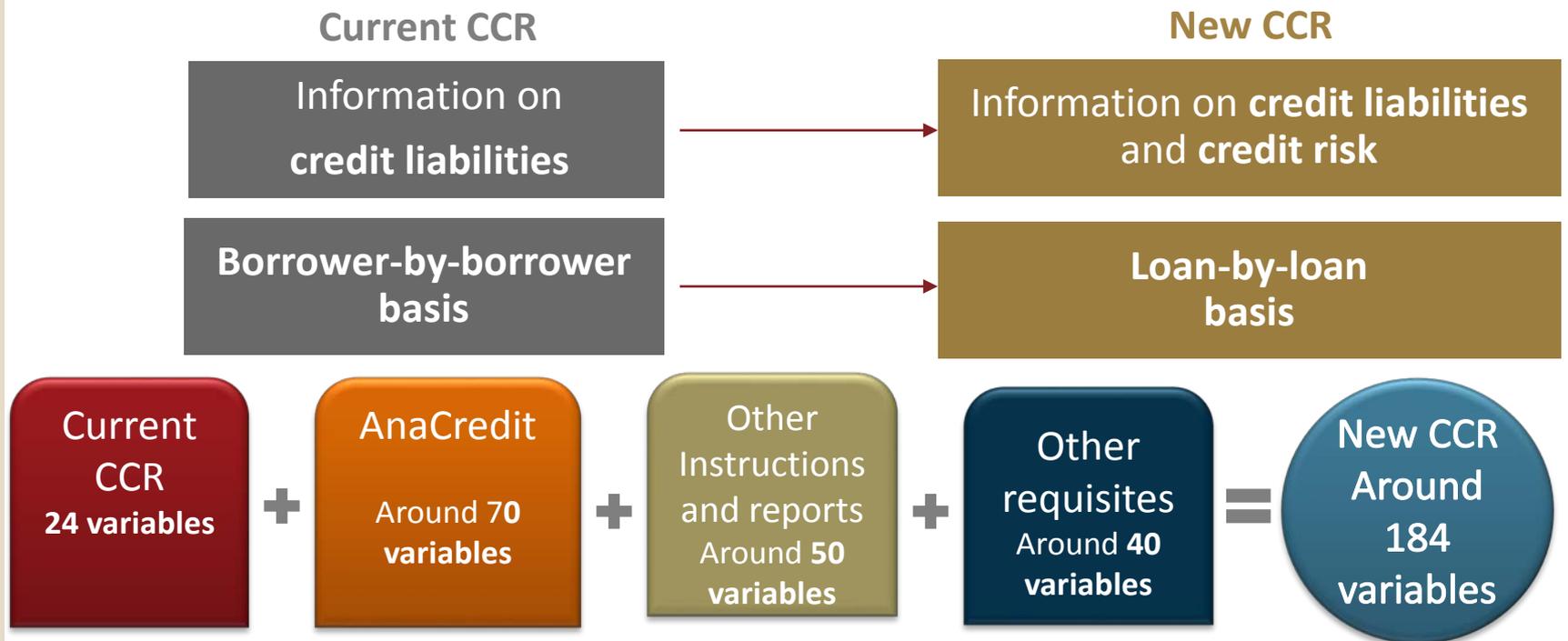


- **Improve the service** that the CCR offers to the financial system and to the public at large
- Include **new internal data needs**



The ongoing CCR reformulation

New CCR perspective: Loan-by-loan basis





Concluding remarks

- The Portuguese Central Credit Register (CCR) is **truly a multi-purpose tool**, which **supports the fulfillment of several tasks entrusted to the *Banco de Portugal***
- It is particularly **useful to assess credit developments** with great detail, by offering a multitude of different breakdowns of analysis which are only possible due to its microdata reporting basis
- It has proved to be a **key input to the development of innovative initiatives**, such as **the establishment of the Bank's Internal Credit Assessment Framework**
- In the near future, it will experience a **deep reformulation to meet the AnaCredit requirements (and beyond)**, which **will reinforce its supportive power**



Thank you for your attention!



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