Upgrading Financial Accounts with Central Balance Sheet Data – What's in it for central banks' policy? [1]

João Cadete de Matos*
Banco de Portugal, Lisbon, Portugal – jcmatos@bportugal.pt

Lígia Maria Nunes
Banco de Portugal, Lisbon, Portugal – lmnunes@bportugal.pt

Abstract

Good statistics are a precondition to good policy-making. Thanks to their comprehensiveness and methodological soundness, financial accounts provide a powerful tool in helping to assess the influence of monetary policy actions on the different economic sectors, in a context characterized by their increased financial interconnectedness and threats to financial stability. To achieve fully integrated and consistent financial accounts, *Banco de Portugal* benefits from the richness in statistical content of its Central Balance Sheet Database which is based on census data submitted by virtually all resident corporations through the so-called *IES – Informação Empresarial Simplificada* (literally meaning "Simplified Corporate Information") reporting scheme. Based on our experience, this paper aims to illustrate the advantages and potential uses of corporate accounting data by financial accounts compilers, namely in the processes of improving the consistency and for data quality control purposes.

Keywords: accounting information; micro databases; sectoral accounts; non-financial corporations.

JEL classification: E52; E58

1. Introduction

The global financial crisis of 2008 highlighted the need to better identify the build-up of risks in the financial sector and to understand financial connections among the resident sectors of an economy and between them and their counterparties in the Rest of the World.

Under this context, several initiatives were taken aiming the enhancement of the availability of financial statistics, especially of those related to financial stability issues and systemic risk assessment. This effort was, from the onset, clearly inserted within the general financial accounts framework through the encouragement to the development of integrated sectoral accounts and the compilation of flow of funds schemes (*vd.* recommendation 15 of the G20 data gaps initiative). Financial accounts, an integrated part of the national accounts, are a simplified statistical representation of the financing structure and net financial assets of the various institutional sectors which allow an overview of the uses of the financial surpluses and the way deficits are financed. Complemented with counterpart information, from-whom-to-whom matrices become possible to be compiled. On the basis of these matrices, it is additionally possible to build flow of funds schemes recognised by showing the interlinkages between institutional sectors and, therefore, as a powerful tool to support decision making processes at a macroeconomic level.

The definition of such ambitious statistical output, given the demand for complete information for all institutional sectors, financial instruments and counterparts, was accompanied by the recognition of the challenges imposed by the lack of so detailed data, especially for some institutional sectors, as the Non-Financial Corporations (NFC) and the Households (HH) (Tissot, 2016).

As a way to overcome this concern, the collection of micro data has been increasingly encouraged and their benefits are being globally recognised: the information required to compile integrated sectoral accounts and flow of funds schemes can be easier derived from granular administrative datasets, given that these data sources have generally a good coverage of the relevant economic agents.

At this respect, the Statistics Department has a remarkable experience in managing administrative databases, which are taking on a predominant role in the achievement of fully integrated and consistent national financial accounts. Among them we highlight the Securities Statistics Integrated System (SSIS) – a security-by-security and investor-by-investor database of both securities holdings and issues; the Central Credit Register (CCR) – which contains granular information on e.g. credit exposures; and the Central Balance Sheet Database (CBSD) – an economic and financial database based on annual and quarterly accounting data on individual Portuguese NFC, which will be discussed in greater detail in the Section 3.

The next section of this paper presents briefly the experience of *Banco de Portugal* (the Bank) as a financial accounts compiler and Section 4 addresses the use of CBSD data to the compilation of national accounts.

2. The Portuguese solution to compile national financial accounts

Following a protocol signed in 1998, in Portugal, the responsibility of the production and dissemination of national accounts is shared between the Portuguese National Statistical Institute, for the non-financial accounts, and the Bank, in charge of the financial accounts compilation. This last process is carried out, on a quarterly basis, by a multidisciplinary team denominated *Estrutura de Missão das Contas Financeiras* (EMCF). This successful arrangement was put in place at the Statistics Department by the end of 2009, and has proved the importance of the involvement of all the divisions of the Department. The EMCF is chaired by the National Financial Accounts Head of Unit and encompasses both national financial accounts experts – permanently allocated to these tasks – and experts from the different underlying primary statistics. Within this new format, all team members become stakeholders of national financial accounts statistics and therefore also actively engaged in collectively contributing to the end-product: for instance, experts from the Central Balance Sheet Statistics Unit provide not only primary data but also are specifically responsible for the compilation of the NFC sector account, and more generally co-responsible for national financial accounts (Matos, 2016a).

Financial accounts data include both the financial transactions and stocks of the different institutional sectors. Its compilation is done on a quadruple-entry basis, whereby each transaction is recorded for the two institutional sectors involved and as a change in both assets and liabilities. In practice, this is achieved by constructing highly detailed from-whom-to-whom matrixes with information on creditor and debtor sectors, financial instrument and assets/liabilities. For the flow of funds representation, the availability of the information on a from-whom-to-whom basis is crucial.

The most important internal data required for the compilation of this output are monetary and financial statistics, balance of payments and international investment position statistics, CBDB and securities statistics. Regarding external sources, information for general government accounts is one of the main inputs. As mentioned above, micro-databases have an unquestionable valuable to ascertain counterparts and construct from-whom-to-whom matrixes, allowing the Bank to go beyond its statistical reporting obligations.

3. The Central Balance Sheet Database: the IES and the ITENF

As mentioned, the Central Balance Sheet Database of *Banco de Portugal* is an economic and financial database on Portuguese NFC. The data sources used to feed the CBSD are based on annual and quarterly accounting data on an individual basis.

For annual data the CBSD is based on information on the annual accounts of corporations reported within a scope of Annexes A and R of IES – *Informação Empresarial Simplificada* (literally meaning "Simplifies Corporate Information"). IES was an innovative solution launched in 2007, as a result of a joint effort by four public entities in Portugal: the Ministry of Justice, Portuguese Tax and Custom Authority, the Portuguese National Statistical Institute and the Bank. Formerly, in order to fulfil their statutory obligations, corporations were obliged to remit, in separate and independent reports, nearly the same information about their annual accounts to the aforementioned four public entities, in four different moments in time and according to four different formats. The submitted data was not completely harmonized, once each public entity had different requirements (Figure 1).

IES has brought about several advantages for all stakeholders involved. Firstly, it has contributed significantly to streamline companies reporting requirements, decreasing their reporting burden and also avoiding redundancies, by allowing companies to fulfil all the different reporting obligations through one single paper-free report. The statement containing the annual business accounting data is submitted online by each company, once a year, with a delay of about seven months after the end of the reference period. Secondly, it came to make it simpler to those public entities, since they no longer directly request the annual data included in IES. Data is now more "friendly", i.e., it is now much easier to conduct analysis and guarantee the quality of the data because it is reported online and in a harmonized template. The information collected through IES is chiefly of an accounting nature, based on the financial statements and the respective annexes set out in the accounting standards. Additionally, it also comprises a range of data with further detail on the activity and situation of the corporations, as necessary for statistical purposes.

Figure 1: The reporting of corporate information before and after IES
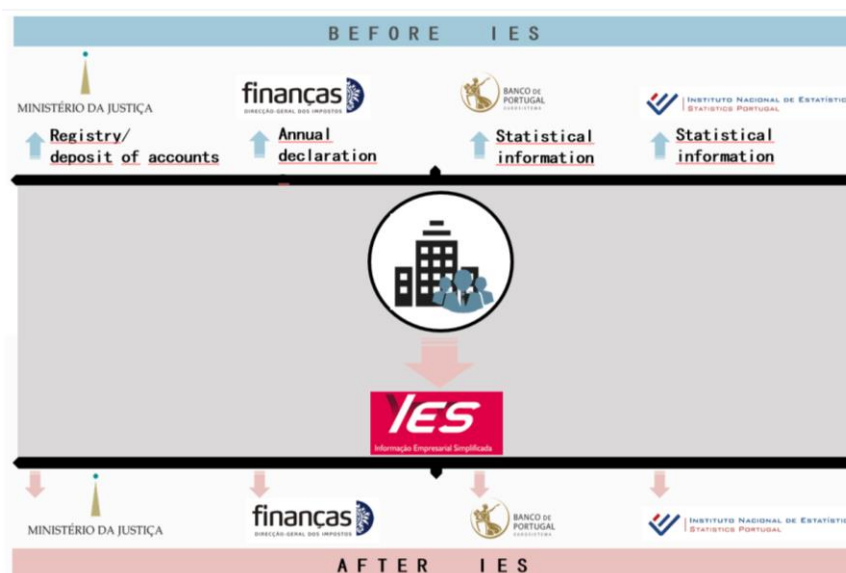
The CBSD annual output includes a very significant observed component obtained via data submitted under IES. In the last years a coverage of about 95% of the total corporations was achieved.

This observed component also allows the estimation of the residual component for non-response, which aims to obtain the main variables of the balance sheet and profit and loss account for corporations that have not fulfilled the reporting requirements or in cases of delayed delivery of IES reporting.

The starting point for the treatment of this last component is the information available in the reference population of the NFC sector and in the census databases managed by the Bank.

The first step consists in obtaining an estimate for total assets of corporations not reporting to IES, by resorting to IES information on the same corporation for a previous period, or information on that corporation in other *Banco de Portugal* databases (SSIS and CCR). The second step corresponds to estimate a set of relevant information on these corporations not reporting IES, using as ancillary information the NACE – Rev.2 and turnover from the reference population, SSIS and CCR data and the total asset estimates in the previous step. In the end, estimations are calibrated so as to maintain, to the extent possible, the initial classification of the corporations by quantitative stratum (turnover and total assets).

This information is indispensable for the extrapolation process and conciliation between annual and quarterly data. This procedure makes it possible to complete the annual database but, give the small weight of the non-response component, it does not introduce changes in the development of the main indicators observed in responses to the IES.

For quarterly data, the CBSD is feed with information reported through the Quarterly Survey to NFC (here in after denominated ITENF, from the Portuguese designation *Inquérito Trimestral às Empresas Não Financeiras*), a statistical operation jointly developed between *Banco de Portugal* and the Portuguese National Statistical Institute, with a main objective of collecting a range of accounting variables related to the activity and financial situation of a sample of companies. In recent years, significant improvements have been introduced in the methodology associated with the definition of the ITENF's final sample. The current approach, since it does not correspond to a classical sampling design, makes necessary to estimate probabilities of selection of corporations, which are key to calculate the extrapolation factor assigned to each corporation.

The extrapolation procedure is based on the account variables reported by the respondents of the ITENF (Figure 2). In addition, the probabilities of selection used are those previously calculate to determine the extrapolation factor of each corporation, as well as data on the reference population on the NFC sector, updated with information for all relevant variables. This extrapolation procedure makes possible to obtain estimates for variables of interest, for total corporations in the sampling-frame. However, total output for the corporations in the sampling frame does not substantially differ from the population of NFC, in terms of total assets and turnover.

Figure 2: Extrapolation Procedure for Quarterly Data
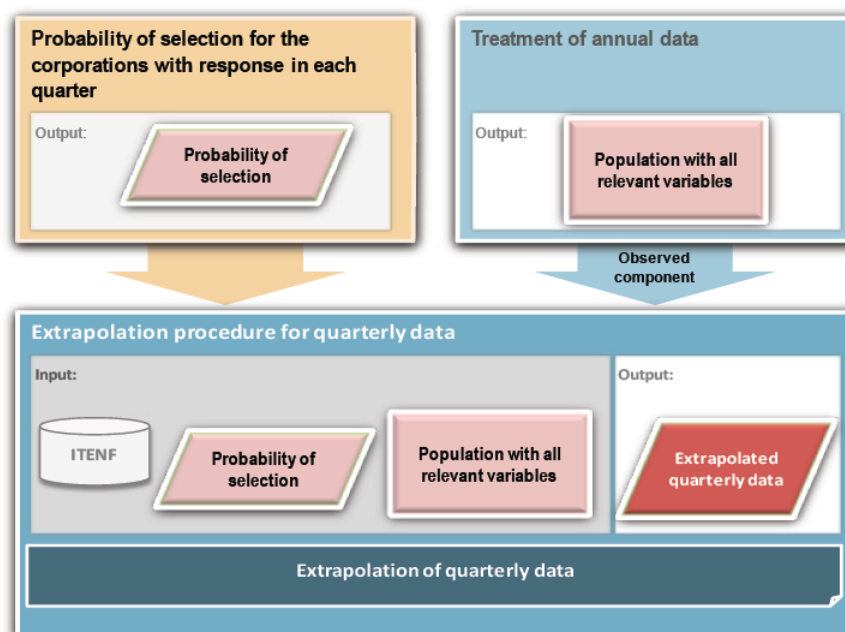
Extrapolated data are thus used as data for total NFC, which is undoubtedly a great plus to the production of NFC statistics and also to the elaboration of different and flexible statistical products – inter alia, quarterly national financial accounts, which will be discussed in the next section.

Given the existence of both annual and quarterly data sources, different values are obtained at year-end between annual and quarterly indicators. In this context, a conciliation procedure is used, which is known as benchmarking. The data sources used in benchmarking are the outputs of procedures regarding annual and quarterly data. This conciliation method makes it possible to adjust the quarterly time-series obtained by extrapolating ITENF to the annual time-series obtained from IES, which are considered as benchmarks. In order to carry out this adjustment, a set of constraints to be fulfilled by final data are defined:

- Aggregation constraints which ensure that the quarterly time-series is consistent with the annual time-series. They are defined according to the type of variable: for stock variables, the value at the end of the fourth quarter shall be equal to the value at the end of the year and for flow variables, the value of the annual time series shall correspond to the accumulated value in the year for the quarterly variable.
- Contemporaneous constraints of accounting balance which ensures that an accounting balance condition between the balance sheet and the profit and loss account is met in each period. This condition is particularly relevant in the case of variables in the ITENF, where the extrapolation procedure may give rise to imbalances between the balance sheet and the profit and loss account, since the balance sheet variables (stocks) and activity variables (flows) are obtained through the implementation of different procedures. On the other hand, the estimate based on aggregation constraints alone does not ensure intra-annual data balance.
- Assessment of final data: the final result for each aggregate consists in a range of quarterly time series based on a balance sheet and a profit and loss account without imbalances, which combine the annual value obtained in IES with the intra-annual dynamics resulting from the extrapolated ITENF.

4. National financial accounts compilation using CBSD data

The information derived from the above described extrapolation procedure has assumed an increasingly role in the compilation of quarterly national financial accounts, as a direct source for NFCs account and an indirectly contributor to the HH account compilation.
There are two main complementing elements to compile NFCs and HHs accounts: counterpart information and own data sources.
Counterpart information refers to the appropriation of information from other sectors, in the cases where it is deemed of a superior quality, and whenever the counterpart is NFC or HH. Typically, both the NFC and the HH sector lie at the bottom of the hierarchical chain of counterpart information. This means that these sectors normally take the information of other sectors as given and incorporate it directly. More specifically, compilation of NFCs' accounts takes on board counterpart information from:

- Financial corporations, i.e., balance sheet statistics from Monetary Financial Institutions (and from Other Financial Institutions);
- General government statistics;
- Rest of the World account, i.e., balance of payments and international investment position statistics.

In other words, NFC compilation takes on board the counterpart information of all other sectors/ statistical domains except for HHs. In turn, HH account compilation uses counterpart information of all other sectors.

The second approach pertains to the use of data sources which are specific to these two sectors.

This is where the information derived from CBSD comes to play in terms of NFCs' account compilation. Finally, the SSIS provides information on securities holdings and issuance for the two sectors.

The interesting element of CBSD data is that it is not only an own source for NFCs, but it also provides indirectly contributes to the HH account compilation as counterpart information, to the extent that some types of operations between the NFCs and the HH sector are collected. There are two ways in which the information used from CBSD to compile the NFCs' account is also relevant for the HH sector:

- It helps identify HH equity stakes in NFCs, i.e., HH equity assets in NFCs' equity liabilities. In a country such as Portugal, where the structure of NFCs is heavily tilted towards small and medium-sized corporations, these figures represent an important share of HH equity holdings as well as of NFCs' equity liabilities.
- Secondly, loans received/granted by NFCs and granted/received by HHs are also collected in IES and are therefore used to determine assets and liabilities of NFCs and HH loans.

5. Conclusions

The achievement of Portuguese fully integrated and consistent financial accounts, was only made possible due to the richness of the statistical content of the CBSD run by the Bank. This huge potentiality is due to the relevant data on the population of corporations in Portugal for a relatively long period, as a result of the excellent coverage of IES, which allows the Bank to access to new and more complete information on the Portuguese NFC and, more recently, by the appropriate methodology for the selection of corporations within the scope of the ITENF and the respective extrapolation procedure.

Alone or combined with other information, CBSD data also proved to be a great value for pursuing the statistical central bank statutory obligations. The use of this information for the compilation of the NFC and HH sectors' financial accounts is an example of the statistical possibilities of such census information.

References

Banco de Portugal (2013). "Statistics on non-financial corporations of the Central Balance Sheet Database: Methodological notes". Supplement to the Statistical Bulletin (2|2013)

Brites, M. (2013). "Efficient ways of dealing with accounting data from enterprises". *Banco de Portugal*

Cordeiro, P., Magalhães, C. & Poiares, R. (2016). "Quarterly time-series from Central Balance Sheet Database". *Banco de Portugal*

Lima, F. & Drumond, I. (2016). "How to keep statistics' customers happy? Use micro-databases!". *Banco de Portugal*

Cadete de Matos, J. (2015). "Using financial accounts to better understand sectoral financial interlinkages". *Banco de Portugal*

Cadete de Matos, J. (2016a). "Innovative solutions in compiling financial accounts". *Banco de Portugal*

Cadete de Matos, J. (2016b). "Using census information on non-financial corporations to compile national financial accounts". *Banco de Portugal*

Cadete de Matos, J. (2016c). "Reaping the benefits of using integrated micro-data for statistical purposes... and beyond". *Banco de Portugal*

Cadete de Matos, J. (2016d). "Brief note about the use of Census information on non-financial corporations to compile national financial accounts". *Banco de Portugal*

Cadete de Matos, J. (2016e). "Using financial accounts to better understand sectoral financial interlinkages". *Banco de Portugal*

Tissot, B. (2016). "Development of financial sectoral accounts: new opportunities and challenges for supporting financial stability analysis". IFC Working Papers no. 15