Using financial accounts to better understand sectoral financial interlinkages¹*

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Abstract

The global financial crisis of 2008 exposed the existence of serious data gaps in a set of important domains for macroeconomic policy analysis. One of such domains relates to sectoral accounts, more specifically, sectoral balance sheet data and flow of funds information (vd. recommendation 15 of the G20 Data Gaps Initiative). In fact, such information is an important analytical tool for macroeconomic analysis and financial stability purpose in a context characterized by an increased financial interconnectedness between economies and high financial positions of the different sectors. This paper presents the new compilation methods of financial accounts data at the Banco de Portugal, including from-whom-to-whom matrices and flow of funds information, and the powerful uses of such information to better understanding sectoral financial interlinkages and in supporting policy decision making.

Keywords: Balance Sheet Data, Financial Accounts, Financial Stability, Flow of Funds, Macroeconomic Analysis, Sector Accounts, From-whom-to-whom matrices.

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1. Introduction

Financial accounts are an integral part of the national accounts. They are a simplified statistical representation of the financing structure and net financial assets of the various institutional sectors and give an overview of the uses of the financial surpluses and the way deficits are financed. With additional information on the counterparts of financial operations, from-whom-to-whom matrices are possible to compile. The flow of funds is then constructed on the basis of these matrices, shows the interlinkages between institutional sectors and is, therefore, a powerful tool to support decision making in a macroeconomic level.

The compilation of the flow of funds demands the availability of detailed information for all institutional sectors, financial instruments and counterparts.

This note presents, in section 2, the managing of the compilation of financial accounts in the Banco de Portugal. In section 3 we explain the developments and uses of the flow of funds in the Banco de Portugal. In section 4, we show some examples of the use of financial accounts for analysis purposes, in particular concerning the financial sector. Section 5 concludes.

2. Managing the compilation of financial accounts

Financial accounts are a component of the national accounts. Following a protocol signed in 1998, the responsibility for the compilation of national accounts is shared between INE – Instituto Nacional de Estatística (the Portuguese national statistical institute), for the non-financial accounts, and the Banco de Portugal for the financial accounts. The rationale for this arrangement is that the Portuguese central bank already produces a cluster of statistics necessary for the financial accounts. The two institutions have set up mechanisms for co-operation and consultation, necessary to ensure a high degree of consistency between the financial and the non-financial accounts. The situation is similar to other euro area countries, where the national central bank often has responsibility for compiling the country’s financial accounts. The close collaboration between the Banco de Portugal and INE leads to better quality in the two types of accounts. This stems, for instance, from the cross-checking of primary information and statistical criteria in a way that reduces the possibility of statistical discrepancies.

Moreover, in the case of the general government institutional sector, an agreement of institutional cooperation between INE, the Banco de Portugal and the Ministry of Finance and Public Administration was put into place in 2006, to coordinate the compilation of the several statistics in the field of that institutional sector.

Financial accounts started to be published in Portugal in 2005 with an annual frequency. Later on, in 2007, quarterly financial accounts started to be disseminated.
In organizational terms, the compilation of financial accounts has been assigned to a unit, the Financial Accounts Unit, created in the Statistics Department of the Banco de Portugal specifically for this purpose in 1997. This unit used to be responsible for the collection of data and compilation of financial accounts for all the institutional sectors. As financial accounts statistics are derived from primary statistics, from both internal and external data sources, whenever the need arises for further clarifications on a specific development, the Financial Accounts Unit experts used to ask the producers of the primary statistics for further details. Although this model worked for the period until 2009, there was still room for improvement.

In 2009 a new organizational model of compilation of financial accounts was adopted with the goal of improving quality and consistency. A key element in the new institutional arrangement was the creation of a multidisciplinary team that included members from all the divisions of the Statistics Department. At the same time, a new unit on general government statistics was also created.

Under this new model, the collection of data and compilation of financial accounts for each institutional sector is a task attributed to the unit responsible for the compilation of the core primary statistics of the respective sector (see Figure 1), namely:

- Non-financial corporations sector – Central Balance Sheet Statistics Unit;
- Financial corporations sector – Monetary and Financial Statistics and Central Credit Register Division;
- General government sector – General Government Statistics Unit;
- Rest of the world sector – Balance of Payments and International Investment Position Statistics Division.

The compilation of the accounts for the households and non-profit institutions serving households sector is a task of the Financial Accounts Unit, which is also responsible for the aggregation, consistency, quality assessment and dissemination of this statistics.

In this process, contributions are also provided by the securities statistics and methodological development experts.

While being more demanding in terms of coordination, the new organizational model for the financial accounts compilation has many advantages:

- More resources are allocated to the financial accounts compilation;
- Financial accounts become a shared responsibility and a collective effort of all the Divisions of the Statistics Department;
- Financial accounts compilers are no longer seen as a client by the other business areas;
- By integrating the production of the primary statistics and financial accounts, the overall quality of the statistics produced in the various statistical domains improved.
2. Flow of funds: development and uses

2.1 Development of the flow of funds

Financial accounts data include both the financial transactions and stocks of the different institutional sectors. For the flow of funds representation, financial accounts data have to be available on a from-whom-to-whom basis, between the different domestic institutional sectors of a given economy, as well as with the rest of the world. More specifically, according to the SNA 2008, “the flow of funds is a three dimensional presentation of financial statistics where both parties to a transaction as well as the nature of the financial instrument being transacted are elaborated” (see §27.9). These data comprises very rich and encompassing datasets, as they give an overall picture of the whole economy. Whereas most datasets are confined to specific sectors – e.g. monetary financial institutions statistics, balance of payments and international investment position statistics, general government statistics –, financial accounts (hence, by definition, flow of funds) are the only system where all institutional sectors are put together in a single framework, in an integrated and balanced manner. This enables to
comprehensively track the relationships and interconnections between the different sectors of an economy.

The compilation of financial accounts in the _Banco de Portugal_ is accomplished on a quarterly basis and is carried out using different sets of primary statistics, from internal and external sources. Starting with the former, the most important building blocks are monetary and financial statistics, balance of payments and international investment position statistics, central balance sheet database and securities statistics. Turning to external sources, information for general government accounts is one of the main inputs.

The 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.

One aspect that has been gaining relevance in recent times is the usage of micro-databases. There are, in general, numerous advantages to this approach for the architecture of most statistical systems. We highlight two main advantages in the specific context of financial accounts.

On the one hand, from an input perspective, they are important to ascertain counterparts and construct from-whom-to-whom matrixes. For instance, the Securities Statistics Integrated System is a security-by-security and investor-by-investor database, managed by the Statistics Department, with key and highly detailed information on securities data. The same also applies to other micro-databases, such as the Central Credit Register – which contains granular information on credit exposures – and the Central Balance Sheet Database – which contains accounting and financial information covering the universe for the specific institutional sector of non-financial corporations in Portugal.

On the other hand, from an output perspective, micro-databases and, in general, the availability of granular information, boost a higher degree of flexibility which facilitates exploring the data and constructing tailor-made data reports. For this reason, they can better address users’ _ad hoc_ requests. One particular domain where these features have proved to be very useful is in the provision of detailed data requests within the external Economic and Financial Assistance Programme to Portugal (hereinafter referred as to ‘the Assistance Programme’). In fact, some of the data requests were only fulfilled on account of the highly detailed information available in the micro-databases managed by the Statistics Department of the _Banco de Portugal_. In general, micro-databases have a valuable use in flow of funds analysis, since they allow for the understanding of the interlinkages between the various institutional sectors and, when needed, for the drilling down to more granular data, thus allowing for the identification of specific economic behaviours.
2.2 Using the flow of funds

The information in a from-whom-to-whom matrix may be analysed by resorting to the flow of funds charts shown below. These charts display the net flows between the resident institutional sectors – financial sector, general government, non-financial corporations and households – and also the rest of the world. In these charts, the diameter of the circle is proportional to the financial saving (net lending \( / \) net borrowing) of each sector, filled in green when positive and in red if negative. Moreover, the arrows’ width is proportional to the inter-sector relations.

In what follows, we highlight four main periods characterised by distinct inter-sectoral patterns of the Portuguese economy. The first one roughly comprises the period between Portugal joining the euro area up to the initial tensions in global financial markets on the wake of the subprime crisis (2000-2007). The second period covers the ensuing international financial turmoil ending in 2010, when the Greek sovereign debt crisis broke out (2008-2010). The third period encompasses 2011 and 2012 and is mainly marked by the start of the Assistance Programme. Finally, the fourth period, 2013 and 2014, shows the results of the adjustment policies followed in Portugal in the aftermath of the Assistance Programme.

a) 2000 – 2007

During this period, the financial sector was carrying out its typical intermediary role, raising funds mainly from the rest of the world, and channelling these funds to the resident non-financial corporation sector (see Figure 2, for the 2007 figures). There was however a significant asymmetry between domestic and foreign financing sources, as domestic savings were clearly insufficient. Hence, the vast majority of the funding was coming from abroad. Another important trademark was the relatively contained funding needs of the general government at this point in time.

Figure 2 – Flow of funds in 2007

Legend: NFC – Non-financial corporations; FC – Financial corporations; GG – General government; HH – Households; RoW – Rest of the world

Source: Banco de Portugal
b) 2008 – 2010

In 2010, an important change in sectoral relationships took place with three main interrelated effects, as can be seen in Figure 3. First, as mentioned, the overall financing needs were larger than before, with those of the general government reaching around 10% of GDP; these were only partly offset by a decrease in the net borrowing of non-financial corporations (NFCs).

Second, at the same time that the needs were higher, the general government ceased to be able to access international financial markets funding. In fact, there were net flows from the general government to the rest of the world in 2010, contrary to previous years, indicating the inability to issue debt securities in foreign markets together with the regular amortisation scheduling.

Third, the financial sector stepped in and most of the funding provided by financial corporations – chiefly by the banks but also, albeit to a lesser extent, by non-deposit taking corporations – was channelled to the general government instead of to NFCs as before. The considerable change in the recipients of the domestic financial corporations’ intermediation is particularly interesting to notice. In other words, domestic credit was diverted to the public sector and became less available to the private sector, which resembled a sort of crowding out effect.

Furthermore, rather surprisingly, NFCs became net lenders of the financial sector in 2010, mainly because amortizations of previous loans were larger than new loans granted. At the same time, NFCs were also able to raise a substantial share of their funding directly from non-residents, thus effectively bypassing the intermediation of the resident bank system, which was able to raise less funds from abroad than before the crisis. However, this was mostly the case for large corporations, which already had access to international markets – the funding of small and medium enterprises remained severely constrained.

Figure 3 – Flow of funds in 2010

Legend: NFC – Non-financial corporations; FC – Financial corporations; GG – General government; HH – Households; RoW – Rest of the world
Source: Banco de Portugal
c) 2011 and 2012

The third period started in 2011 and was mostly influenced by the beginning of the Assistance Programme. There were three main developments that took place and which once more led to significant changes in funding patterns (see Figure 4).

First, the start of the Assistance Programme is mirrored in the net funds being channelled from the rest of the world directly to the general government sector. In this sense, the disbursements under the Assistance Programme replaced the previous inflows coming from private sources, impaired with the disruption of international financial markets.

Second, the general government became a net lender of the financial sector. This was mainly due to the State granting financial support to banks, as well as to the placement of non-used funds from the Assistance Programme in the banking system. The general government sector then turned into a de facto financial intermediary of the Portuguese economy, channelling Assistance Programme funds to resident sectors, mostly to the financial sector.

Third, the deleveraging process in the financial sector took place by which banks and non-deposit taking financial corporations carried out significant sales of foreign assets in a context of both funding constrains and regulatory guidelines for balance sheet restructuring, which largely involved stepping out of non-core markets and activities and programmes to reduce credit exposures. Notwithstanding, an important movement that partially made up for the outflows associated to the aforementioned banks’ deleveraging process, was the funding provided by the Eurosystem.

![Figure 4 – Flow of funds in 2011](image_url)

Legend: NFC – Non-financial corporations; FC – Financial corporations; GG – General government; HH – Households; RoW – Rest of the world

Source: Banco de Portugal
d) 2013 and 2014

The Assistance Programme to Portugal ended in 2014. The flow of funds of the Portuguese economy in this year was very different from the one in the beginning of the 2010s.

The most important development was the shift, from 2012 onwards, of the rest the world from net lender to net borrower of the Portuguese economy (see Figure 5). On the non-financial side, this was mirrored in the sharp narrowing of the external current account deficit – and therein, in the trade balance – which eventually turned into a surplus.

The general government deficit decreased and the non-financial corporations became net lenders, in result of the sharp decline in investment. Households presented a higher savings rate as a result of a contraction in private consumption.

Figure 5 – Flow of funds in 2014

Legend: NFC – Non-financial corporations; FC – Financial corporations; GG – General government; HH – Households; RoW – Rest of the world
Source: Banco de Portugal

3. Changes in financial intermediation in a context of financial and sovereign debt crisis

3.1 The financial sector in the Portuguese economy

The Portuguese economy has lagged behind the euro area average in most of the last 15 years, accumulating a differential of above 10 percentage points in terms of gross domestic product (GDP) growth. During the same period, the Portuguese economy experienced insufficient domestic savings, which led to significant external deficits, reversed only from 2012 onwards. The link between excessive debt and low growth is noticeable when looking at Portuguese data for the period 1999-2014 (see Figure 6) – Portugal’s net financial wealth shows a marked decreasing trend since 1999, and the
accumulation of the GDP growth differential between Portugal and the euro area has also been declining since that year (except for 2009 and 2014).

**Figure 6 – Financial wealth and growth**

The accumulation of negative financial savings had an impact in the financial wealth of the economy and of the most indebted sectors, *i.e.*, general government and non-financial corporations. Consequently, external debt (Figure 7) has also increased, mostly on account of the general government. From 2008 onwards, as a consequence of the global financial crisis and the sovereign debt crisis, regular access by domestic banks and the general government to the international financial markets became more difficult. The shortage of market financing has been overcome in two ways: through central bank financing in the context of the Eurosystem (addressed to banks) and through the Assistance Programme for Portugal agreed in May 2011 with the European Union (EU) and the International Monetary Fund (IMF).

**Figure 7 – Net external debt, by sector (% GDP)**

Source: Banco de Portugal; Instituto Nacional de Estatística
It is therefore in this context that the Portuguese economy can be regarded as an interesting case. Financial accounts are useful to illustrate what has been the role of the financial intermediaries and how their balance sheets have changed. In particular, the interlinkages within the banking sector – including the central bank – are worth analysing. This is of special interest given that one of the main objectives of the Assistance Programme for the banking sector was to “maintain liquidity and support a balanced and orderly deleveraging in the banking sector”. This objective was part of a more ambitious goal of achieving a sounder macroeconomic framework for the Portuguese economy. In particular, besides deleveraging of the banking sector, the main goal was to reduce the fiscal and the external deficits.

Financial corporations in Portugal have increased their weight in the economy over the last 20 years, reaching a peak of 570% of GDP in 2010. For the period 2010-2014, the relative weight of the financial sector in Portugal is slightly below the one in the euro area. In terms of composition by subsector banks are, by and large, the main players in the Portuguese financial sector, representing more than 50% of the total. Nonetheless, this share has been diminishing over time due to the increase of the relative importance of other financial intermediaries (OFIs) especially until 2010, and, since then, to the increase of the central bank weight, due to monetary policy operations in the context of the Eurosystem.

3.2 Unveiling financial sector interlinkages: consolidated vs. unconsolidated data

Comparing consolidated to unconsolidated figures, we are able to derive the interlinkages between the different subsectors that compose an aggregate sector. Those interlinkages can be divided into two categories: (i) intra-sector operations corresponding to the activity between entities classified within the same subsector (e.g., between bank A and bank B); (ii) inter-sector operations, which refer to operations between entities belonging to different subsectors of the aggregate sector under analysis (e.g., between bank A and insurance company C).

In Portugal significant intra-sector flows are observed for the financial corporations’ sector (see Figure 8). Those flows are significantly larger than the sum of the intra-sector flows of the three main subsectors, denoting significant interlinkages between the different financial corporations’ subsectors. This can be most likely explained by the existence of financial groups in Portugal typically composed by a diversity of entities operating in the different financial domains (banks, holding corporations, insurance companies, pension funds, etc.). The funding between the central bank and banks also plays a role in this respect. In the case of the insurance corporations and pension funds’ sector in Portugal, intra-sector positions are rather small, which can be interpreted as evidence that reinsurance is mostly done with foreign insurance companies.

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2 Refers to non-deposit taking corporations excluding insurance corporations and pension funds.
In terms of financial instruments related with these intra-sector stocks, we have: (i) deposits, mainly influenced by operations between banks and with banks and the central bank; (ii) debt securities, especially in the recent past, for banks’ issues that remained with the issuer or were acquired by other banks, particularly after the sovereign debt crisis, as they could be used as collateral for monetary operations with the European Central Bank; and, (iii) equity and loans, justified by intra-OFIs operations (with a significant importance of holding corporations) and relationship between OFIs and banks (usually belonging to the same financial group).

Concerning inter-sector stocks, the relationship between banks and the central bank is worth analysing (see Figure 9). Deposits are, by far, the most prominent financial transactions within the banking sector. As already referred, in the aftermath of the international financial crisis, Portuguese banks became highly dependent upon the central bank and the Eurosystem intermediation. In addition to the traditional deposit facilities, debt securities operations were also relevant, and, in particular, we can divide the time span under analysis into 3 sub-periods: (i) 1994-2004, where we observed liabilities of the central bank could be found in the banks’ portfolio, related to the absorption of liquidity (these securities refer to the liquidity absorption operated at the moment the new regime ruling minimum cash reserves came into force in late 1994); (ii) 2004-2008, where no debt securities operations were recorded between the two subsectors; and (iii) 2009-to date, even though in very limited amounts, the central bank purchased some banks’ bonds.
To wrap up, in the most recent years the main changes experienced by the Portuguese financial intermediaries can be summarized as follows: (i) the more relevant role of the central bank in terms of monetary policy operations, carried out within the framework of the Eurosystem, in response to high primary liquidity demand by Portuguese credit institutions, in a context of financial market instability; (ii) in the banking sector, previous sources of funding (international financial markets) were replaced by funds provided by the central bank and by an enlarged deposit base; (iii) there has been an increase of operations between units of the financial sector, in particular, between units of different subsectors.

4. Final remarks

Financial accounts are a powerful tool to understanding the dynamics of the financial situation of the various institutional sectors. The availability of detailed data on the counterparts of financial operations allows for a more in-depth analysis of the relationships between agents in an economy.

In the Portuguese financial accounts, data is available, for all financial instruments and institutional sectors, on a from-whom-to-whom basis. Two key aspects for the high quality and detailed Portuguese flow of funds figures are, on one hand, the in-house availability of micro-databases and, on the other hand, the organizational model for the financial accounts compilation.

The flow of funds and financial accounts for Portugal have proved to be particularly useful to the analysis of the current economic situation and are an input for supporting policy decision making.
References

- Banco de Portugal, Annual Reports, 2010-2013.
- International Monetary Fund, Portugal Memorandum of understanding on specific economic policy conditionality, 2011.
- New chapter on non-financial sector indebtedness, Press Release, Banco de Portugal, February 2012.
- The European System of Regional and National Accounts (ESA 2010).