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THE PORTUGUESE ECONOMY SEEN THROUGH THE LENSES OF FLOW OF FUNDS: HOW INTER-SECTORAL RELATIONSHIPS EVOLVED IN 2000-2012

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THE PORTUGUESE ECONOMY SEEN THROUGH THE LENSES OF FLOW OF FUNDS: HOW INTER-SECTORAL RELATIONSHIPS EVOLVED IN 2000-2012[1]

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Abstract

Flow of funds data allow for a very comprehensive analysis of inter-sectoral relationships between the resident sectors of the economy and the rest of the world. The Portuguese economy has undergone important shifts in its net funding patterns, against the backdrop of the sovereign debt crisis. We carry out a who-to-whom analysis of the main developments in recent times to illustrate the usefulness of these data for analytical purposes and policy guidance.

1 Introduction

The outburst of the global financial crisis together with the more recent sovereign debt crisis have sparked the demand – by policy makers, market participants and the general public – for more detailed and timely statistics.

One particular statistical domain that has received plenty of attention is financial accounts and flow of funds data. Both have a wide range of applications, from monetary policy to financial stability and macroprudential policy. In fact, the crisis has shown the importance of monitoring the composition of balance sheets with an eye on mismatches (maturity, currency, etc.) as well as the interconnections between the different sectors of the economy. The G20 data gaps initiative has identified the need for "balance sheet approach (BSA), flow of funds, and sectoral data more generally" under its recommendation 15 (see IMF 2009).

The main purpose of this paper is to provide an overview of the main developments in the Portuguese economy in recent times using flow of funds data and to illustrate how a more extensive use of these data at the Banco de Portugal has added value to the analytical framework of financial accounts. The data are particularly important at the current juncture as they allow keeping track of the significant changes in the patterns of inter-sectoral relationships within the economy. In this sense, they are fundamental to understand and better grasp the impacts of the crisis on the funding patterns of the Portuguese economy. The paper will also briefly present the current compilation experience of flow of funds at the Banco de Portugal.

[1] We thank *Olga Monteiro, Paula Menezes* and *Paulo David* for helpful discussions and comments.

2 Flow of funds compilation and the use of micro-databases at the Banco de Portugal

Financial accounts data include both the transactions and the financial positions of the different institutional sectors of an economy. Flow of funds data are a subset of the financial accounts, establishing the net transactions, on a who-to-whom basis, between the different domestic sectors of a given economy as well as with the rest of the world. More specifically, according to the SNA2008, "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 are therefore very rich and encompassing datasets as they give an overall picture of the whole economy. Whereas most datasets are confined to specific sectors – monetary financial institutions (MFI) balance sheet data, balance of payments, general government statistics, etc. – financial accounts (and hence also, by definition, flow of funds) are the only system where all sectors of an economy 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 Banco de Portugal is done on a quarterly basis and is carried out using different sets of primary statistics, originating from the Banco and other external sources[2]. 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, these mainly relate to information pertaining to insurance corporations and pension funds as well as to general government accounts. The compilation is done under a quadruple-entry basis, whereby each transaction is recorded for the two institutional sectors involved and as a change in both assets and liabilities[3]. In practice, this is achieved by constructing highly detailed who-to-whom matrixes with information on creditor and debtor sectors, financial instrument and assets/liabilities[4].

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 who-to-whom matrixes. For instance, the Securities Statistics Integrated System at the Banco de Portugal is a security-by-security system with essential information on counterpart sectors, for both securities holdings and issues. 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 (NFCs) in Portugal[5].

On the other hand, from an output perspective, micro-databases and, in general, the availability of grainy 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 recent detailed data requests within the Economic and Financial Assistance Programme to Portugal. In fact, some of the data requests can only be fulfilled on account of the highly granular information contained in Banco de

2 A more detailed account of financial accounts' compilation issues can be found in Banco de Portugal (2005b and 2005c)

3 Or in uses and resources, in non-financial accounts terminology

4 Examples of these matrixes for loans and deposits can be found in the Annex.

5 For more information see Banco de Portugal (2005a, 2005d and 2008).

Portugal's micro-databases. In general, micro-databases have a valuable use in the flow of funds analysis, since they allow the comprehension of the interlinks within an economy and with the rest of the world and, when needed, stepping down to identifying micro-data.

Turning to data availability and timeliness, annual Portuguese financial accounts data are available since 1995. Quarterly financial accounts data are available since the fourth quarter of 1997 for stocks and since the first quarter of 1998 regarding flows. A full set of financial accounts with counterpart sectors is available since the fourth quarter of 2006 for stocks and the first quarter of 2007 for flows. Moreover, given that they typically lie at the end of the statistical production/compilation chain, financial accounts data are only available after all other statistical domains and therefore normally with a longer time lag. Notwithstanding, this timeliness cost must be weighed against the completeness and richness of the data. Flow of funds data largely make up for this shortcoming by providing an encompassing picture of sectoral developments within the whole economy. The dissemination of Portuguese data is associated to the Eurosystem reporting deadlines. There are two main reference dates: a first and partial set of data – a "quick estimate" – is reported to the European Central Bank (ECB) at t+80 days and is followed by a later sending of a larger and complete set of series at t+110 days. The timeframe of the second data will be shortened during the coming exercises.

3 Recent developments in the Portuguese economy seen through the lenses of flow of funds data

In this section, we provide an overview of recent developments in the Portuguese economy using flow of funds data. We start by providing a general overview of the major trends in savings and investment behaviour. We then move to a more detailed account.

3.1. General overview

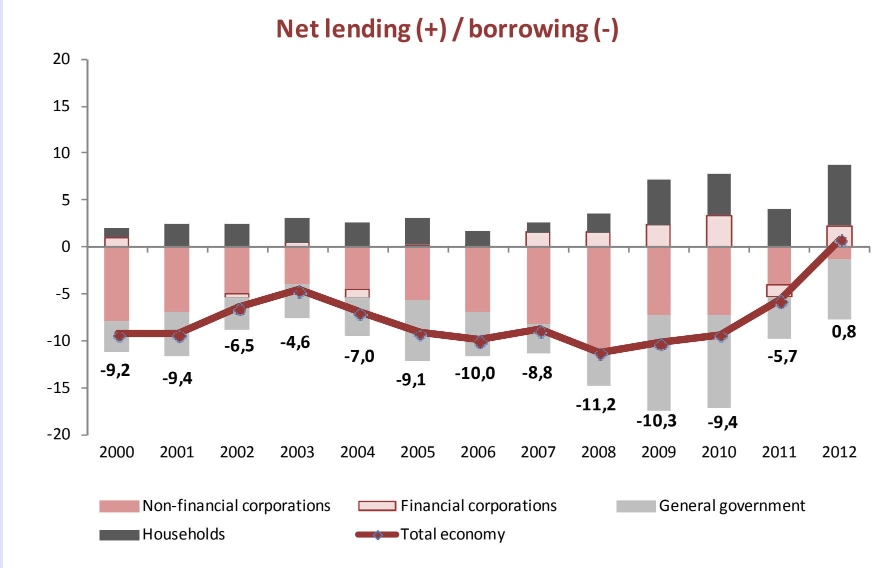
The Portuguese economy has been a net borrower of funds from the rest of the world. Focusing on the period from 2000 to 2012 plotted in Chart 1, the average net borrowing of the economy was 7.7% of GDP. Despite some moderation in the early 2000s (2002 and 2003), net borrowing resumed its increasing trend immediately thereafter. Funding needs reached a maximum of slightly in excess of 11% of GDP in the midst of the global financial crisis in 2008. Although smaller, they remained elevated in 2009 and 2010. Since then however, net borrowing has contracted impressively and even turned into a slight net lending of almost 1% of GDP in 2012.

In addition to the contraction in the overall net external borrowing of the economy, there are also important changes at the sectoral level. Traditionally, NFCs used to take up the lion share of net borrowing, followed by the general government. At the same time, households had a small surplus while the financial sector was close to balance for most of the period. Since 2009 however, net funding needs of NFCs declined while those of the general government further expanded, against the background of public stimulus packages and automatic stabilizers. The financial sector became a net lender in 2007, consolidated and even increased this position since then, despite an interruption in 2011. Households were the only sector that was always a net lender throughout, a characteristic which accentuated over time and also became more prominent recently, since 2009.

These developments mask significant changes in net flows within the sectors of the Portuguese economy. In the next section, to better illustrate the analytical power of this dataset, we dig deeper and provide a more thorough account of developments.

Chart 1 - Net lending (+)/net borrowing (-) of the Portuguese economy, 2000s

(in % of GDP)



Source: Banco de Portugal and Instituto Nacional de Estatística

3.2. Detailed who-to-whom analysis

In what follows, we highlight three main periods characterized by distinct inter-sectoral patterns of the Portuguese economy. The first comprises roughly the period since Portugal joined the Eurozone and up until the build up to the crisis. The second period goes from the initial tensions in global financial markets on the back of the subprime crisis and until 2010, when the Greek crisis broke out. Finally, the third and last period encompasses 2011 and 2012 and is mainly marked by the start of the Portuguese financial assistance programme.

The analysis will be done resorting to flow of funds charts. These charts are constructed on a who-to-whom basis and 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[6] of each sector and is filled in green if it is positive and red if it is negative. Moreover, the dashes' width is proportional to the inter-sector relations.

a) <u>2000 – 2007</u>

The financial sector was carrying out its typical intermediary role, raising funds from the rest of the world and from domestic sectors – households and the general government – and channelling these funds to the resident non-financial corporation (NFC) sector (see Chart 2). There was however a significant asymmetry between domestic and foreign sources, as domestic savings were clearly insufficient. Hence, the vast majority of the funding was coming from abroad – 15.6 billion euros from the rest of the world compared to 1.7 billion euros of households and the general government combined, in 2007.

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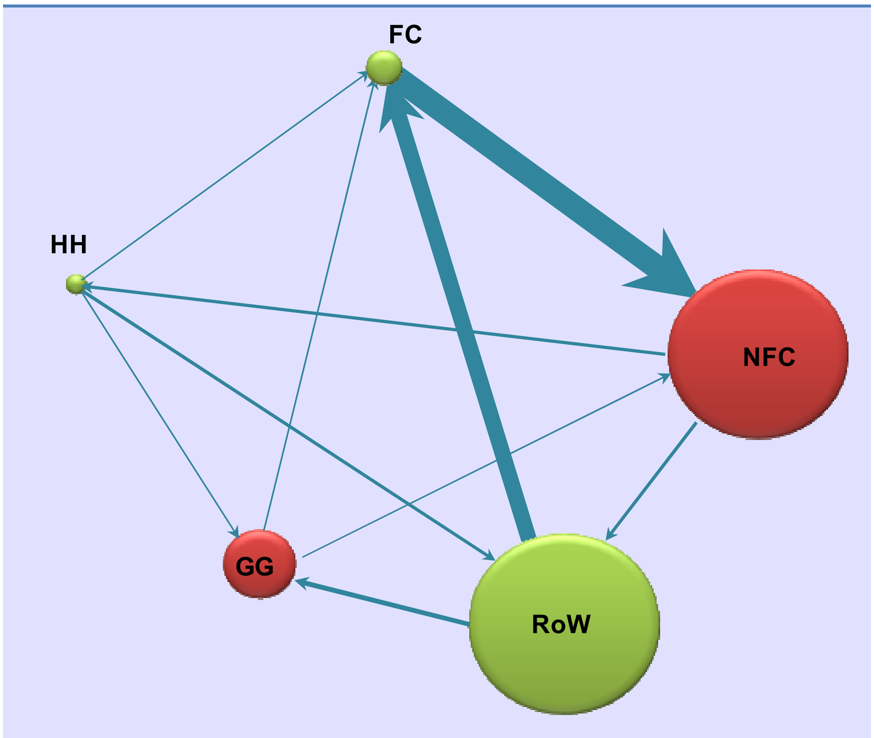
6 Financial saving is calculated as the difference between investments in financial assets and liabilities in a given period.

Another important trademark was the rather contained funding needs of the general government at this point in time. Specifically, in 2007, the net borrowing of the general government was 3.1% of GDP (5.4 billion euros), the lowest level attained in the period from 2003 to 2012.

Chart 2 - Flow of funds of the Portuguese economy, 2007



Source: Banco de Portugal
Note: NFC – non-financial corporations; FC – financial corporations[7]; GG – general government; HH – households[8]; RoW – rest of the world

b) <u>2008 – 2010</u>

In 2010, an important change in sectoral relationships took place with three main interrelated effects, as can be seen in Chart 3.

First, as mentioned, the overall financing needs were larger than before, with those of the general government ballooning to 9.9% of GDP (slightly down from 10.2% of GDP in 2009) or 17 billion euros; these were only partly offset by a decrease in the net borrowing of NFCs.

Second, at the same time that the needs were higher, the general government ceased to be able to tap financial markets to raise 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 fixed income markets together with the regular amortization scheduling.

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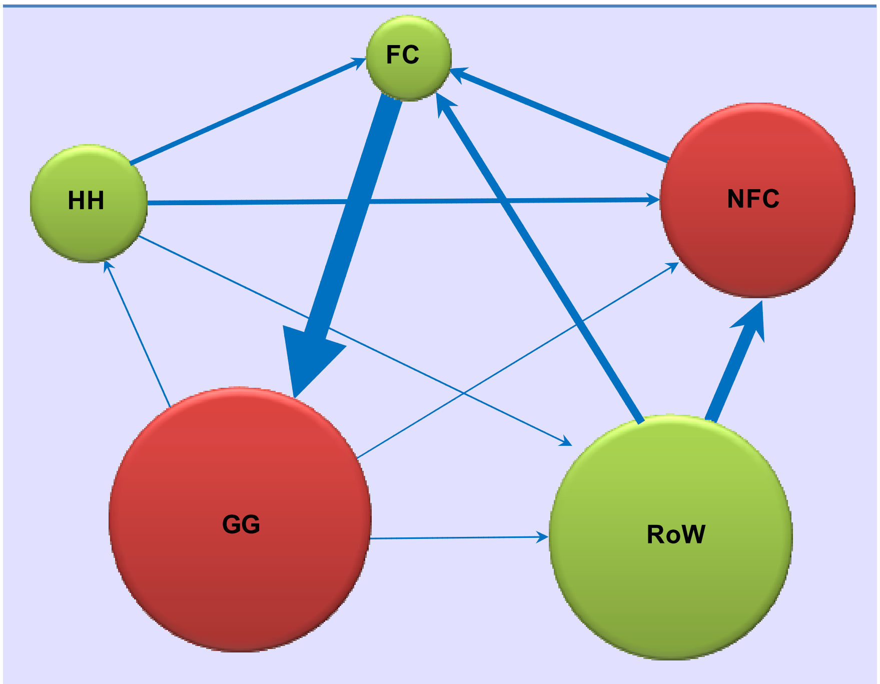
7 Includes the central bank, other monetary financial institutions, other financial intermediaries and financial auxiliaries and insurance corporations and pension funds.

8 Includes households and non-profit institutions serving households (NPISH).

Third, the financial sector steps in and most of the funding provided by financial corporations – chiefly by MFIs 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.

Chart 3 - Flow of funds of the Portuguese economy, 2010



Source: Banco de Portugal
Note: NFC – non-financial corporations; FC – financial corporations; GG – general government; HH – households; RoW – rest of the world

Furthermore, rather surprisingly, NFCs became net lenders of the financial sector in 2010 – mainly on the back of reductions of previously obtained loans, which were larger than the decrease of deposits. At the same time, they 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. This was however likely the case mostly for large corporations which already had access to international markets – the access to funding of small and medium enterprises (SMEs) remained severely constrained.

c) <u>2011 and 2012</u>

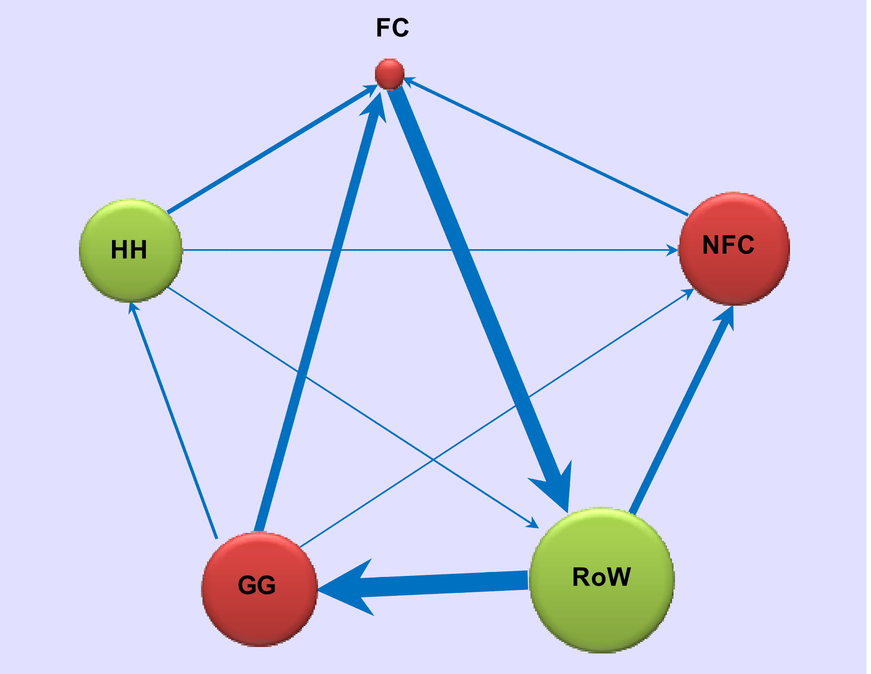
The third and final period begun in 2011 and was mostly influenced by the start of the Portuguese external financial and economic assistance programme. As before, there were three main developments that took place and which once more led to significant changes in funding patterns (see Chart 4).

First, the start of the financial 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, inflows of official origin associated to the disbursements under the financial 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 on the back of the state support to banks as well as the placement of non-used funds from the financial assistance programme. The general government sector then turned into the *de facto* financial intermediate of the Portuguese economy, channelling the funds received from abroad to all resident sectors, mostly to the financial sector.

Third, MFIs and non-deposit taking financial corporations carried out intense sales of foreign assets in a context of both funding strains and regulatory indications for balance sheet restructuring, which largely involved stepping out of non-core markets and activities and the maintenance of programs to reduce credit exposures. Notwithstanding, an important movement in the opposite direction was the funding provided by the Eurosystem – largely channelled from the rest of the world to the national monetary authority under the so-called TARGET2 system –, which only partially made up for the outflows associated to the aforementioned deleveraging process. This highlights the need to look not only at *net* flows but also *gross* flows, as the former, in some cases, might mask developments in the latter; this point will be taken up again later.

Chart 4 - Flow of funds of the Portuguese economy, 2011

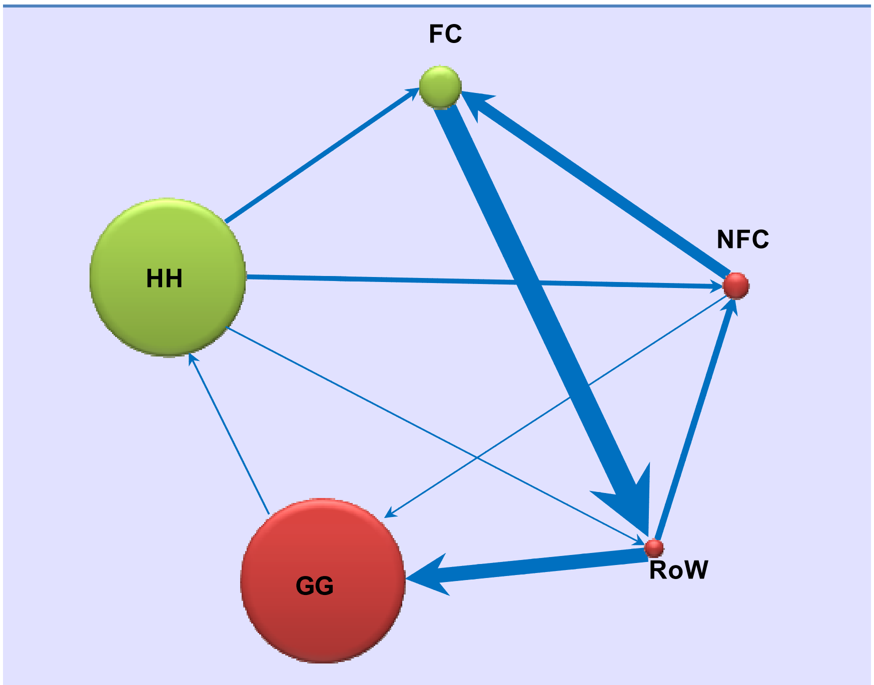


Source: Banco de Portugal
Note: NFC – non-financial corporations; FC – financial corporations; GG – general government; HH – households; RoW – rest of the world

Events in 2012 were qualitatively very much in line with those of 2011. Net flows from the financial sector to the rest of the world increased as the deleveraging of the financial sector vis-à-vis the rest of the world deepened in 2012 and the Eurosystem funding lost momentum. At the same time, foreign inflows into the general government moderated. Moreover, abating state aid flows to support troubled banks contributed to the general government becoming a net borrower of the financial sector instead of a net lender.

The combination of these two effects – i.e., (i) lower inflows into the general government due to lower overall funding needs and (ii) higher outflows from the financial sector – led to a further important development, which is the shift of the rest the world from net lender to net borrower of the Portuguese economy (see Chart 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.

Chart 5 Flow of funds of the Portuguese economy, 2012



Source: Banco de Portugal
Note: NFC – non-financial corporations; FC – financial corporations; GG – general government; HH – households; RoW – rest of the world

4 Discussion

The previous analysis shows how flow of funds data provide a clear insight of inter-sectoral relationships. Notwithstanding, an important point that should also be dully considered – and which can be applied to different contexts – is the need to be careful when looking at net figures. Obstfeld (2012) discussed how net and gross balance of payments flows should be used in a complementary way. Forbes and Warnock (2012) reassessed the literature on capital flows and surges using gross flows instead of net flows and arrived at the conclusion that previous studies were not capturing many of these episodes because they were focusing only on net flows. Furthermore, these considerations are not specific to financial flows, they also apply to financial stocks. In fact, financial stability and macroprudential authorities are increasingly focusing their attention on gross exposures – at the individual and aggregate levels – acknowledging possible channels liable to cause disruptions due to mismatches. Examples of the latter are short-term liabilities, especially if denominated in foreign currencies, which may be difficult to roll over and refinance in periods of elevated risk aversion and events of market disruption. One consequence of this is that even countries with net surplus positions might run into funding strains on account of the size and structure of their balance sheets.

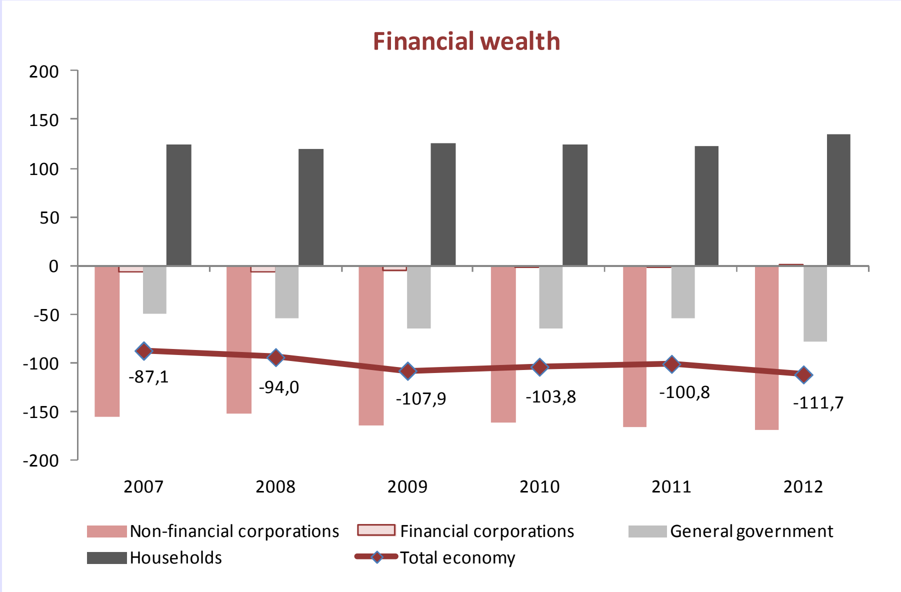
Coming back to the particular case of Portugal, while strictly looking only at net flow figures in 2012 leads to the conclusion that the country was financing the rest of the world, in fact the country benefited from official funds to stay afloat, pertaining to both the financial assistance programme – which has already two years of existence and will run until mid-2014 – and Eurosystem liquidity provision. In other words, despite being a *net* lender of the rest of the world, Portugal is not financially self-sufficient.

A key element to understand the nature of the funding strains is the rapid build up of substantial inter-sectoral financial exposures and especially between the domestic sectors and the rest of the world. Chart 6 shows that financial wealth – the net financial asset position of a given sector, i.e., the difference between the stock of assets and liabilities – was close to -120% of GDP by the end of 2012. Most of the overall negative net financial asset position was driven by the NFCs. The general government also had a negative net financial asset position which, although being considerably smaller, has grown significantly over the past couple of years, despite the sharp drop in market prices of the general government debt securities. Moreover, these two sectors were only partially offset by the household sector stock. Finally, the financial sector had a virtually zero position, which is in line with its intermediation role.

This clearly shows that the past accumulation of imbalances – not only vis-à-vis the rest of the world but also within the economy – is determinant for the current situation. Therefore, monitoring imbalances is an essential feature for policy analysis and guidance.

Chart 6 - Financial wealth of the Portuguese economy, 2000s

(in % of GDP)



Source: Banco de Portugal and Instituto Nacional de Estatística

5 Conclusions

This article provides an analysis of recent developments in the inter-sectoral relationships of the Portuguese economy, especially in light of the global financial crisis and the sovereign debt crisis.

Flow of funds is a very useful framework in this context as it provides a unique way of looking into developments in the build-up to the crisis and since its outburst. Moreover, although the emphasis on this article was on financial saving, many other alternative uses[9] of these data – out of the scope of this article – are available such as, for instance, exploring the available breakdowns of financial instruments.

Furthermore, the analysis should be complemented with other data and sources. In particular, as stressed, one should be aware of the limitations of looking at net flows and should also consider gross flows. Gross flows and positions are fundamental in assessing imbalances and different types of mismatches which, at the current juncture, seem to play a significant role in explaining funding conditions of the economy.

[9] See also SNA2008, §27.9, §27.23, §27.37.

References

Banco de Portugal (2005a) "A New Source for Monetary and Financial Statistics: the Central Credit Register", *Supplement to the Statistical Bulletin 1/2005*

Banco de Portugal (2005b) "National financial accounts for the Portuguese economy – methodological notes and statistical results for 2000-2004", *Supplement to the Statistical Bulletin 2/2005*

Banco de Portugal (2005c) "National financial accounts for the Portuguese economy – statistics on financial assets and liabilities for 1999-2004", *Supplement to the Statistical Bulletin 3/2005*

Banco de Portugal (2005d) "Statistics on Non-Financial Corporations from the Central Balance-Sheet Database", *Supplement to the Statistical Bulletin 5/2005*

Banco de Portugal (2008) "Securities Statistics: Integrated System Features and Main Results", *Supplement to the Statistical Bulletin 2/2008*

Forbes, K. and F. Warnock (2012) "Capital flow waves: surges, stops, flight and retrenchment", *Journal of International Economics*, Vol 88 (2), pp. 235-251

International Monetary Fund and Financial Stability Board (2009) "The financial crisis and information gaps" *Report to the G-20 Finance Ministers and Central Bank Governors*

Lima, F. and O. Monteiro (2011) "An integrated analysis of the Portuguese economy: the financial and real economy" *Supplement to the Statistical Bulletin 2/2011*

Obstfeld, M. (2012) "Does the current account still matter?", *American Economic Review*, Vol 102 (3), pp. 1-23

Commission of the European Communities, International Monetary Fund, Organisation for Economic Cooperation and Development, United Nations, and World Bank (2008) "System of National Accounts 2008"

Annex I

Table I.1 – Who-to-whom matrix of the Portuguese economy, loans, 2012

(EUR million)

		DEBTOR SECTOR						
		Non financial corporations	Monetary financial corporations	Other financial intermediaries	Insurance companies and pension funds	General government	Households	Rest of the w orld
CREDITOR SECTOR	Non financial corporations	0	6.706	2.132	0	-1.347	-308	555
	Monetary financial corporations	-6.706	0	13.718	-245	-2.178	-5.129	249
	Other financial intermediaries	-2.132	-13.718	0	0	2.771	-2.060	-254
	Insurance companies and pension funds	0	245	0	0	0	-13	43
	General government	1.347	2.178	-2.771	0	0	39	-26.719
	Households	308	5.129	2.060	13	-39	0	-4
	Rest of the w orld	-555	-249	254	-43	26.719	4	0

Source: Banco de Portugal

Table I.2 – Who-to-whom matrix of the Portuguese economy, deposits, 2012

(EUR million)

		DEBTOR SECTOR						
		Non financial corporations	Monetary financial corporations	Other financial intermediaries	Insurance companies and pension funds	General government	Households	Rest of the w orld
CREDITOR SECTOR	Non financial corporations	0	-6.159	0	0	236	0	1.601
	Monetary financial corporations	6.159	0	-574	-1.003	-1.351	1.137	10.313
	Other financial intermediaries	0	574	0	0	12	0	-461
	Insurance companies and pension funds	0	1.003	0	0	0	0	9
	General government	-236	1.351	-12	0	0	1.648	-113
	Households	0	-1.137	0	0	-1.648	0	-833
	Rest of the w orld	-1.601	-10.313	461	-9	113	833	0

Source: Banco de Portugal