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**Research Report**

## Who's afraid of sovereign bonds?

Bruegel Policy Contribution, No. 2012/02

**Provided in Cooperation with:**

Bruegel, Brussels

*Suggested Citation:* Merler, Silvia; Pisani-Ferry, Jean (2012) : Who's afraid of sovereign bonds?, Bruegel Policy Contribution, No. 2012/02, Bruegel, Brussels

This Version is available at:

<https://hdl.handle.net/10419/72116>

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# WHO'S AFRAID OF SOVEREIGN BONDS?

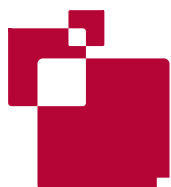
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## Highlights

- The crisis has underlined the strong interdependence between the euro-area banking and sovereign crises. To understand the role domestic banks have played in holding sovereign debt, a breakdown of government debt by holding sectors is required.
- The data shows that at the start of the crisis, most continental euro-area countries were characterised by the large size of their banks' portfolios of domestic government bonds, which were markedly larger than in the UK or the US. Consequently, concern about sovereign solvency was bound to have major consequences for banks.
- The structural vulnerability of euro-area countries has increased, reinforcing the sovereign/banking crisis vicious cycle. All countries for which concerns about state solvency arose in recent years have seen a reversal in the previously steady increase of the share of government debt held by non residents. Germany, by contrast, has seen an increase in the share held by non residents.
- In the short term, these observations raise a question about the effectiveness of ECB provision of liquidity to banks as a means to alleviate the sovereign crisis. At a point when government bonds are considered risky assets, euro-area banks are faced with both balance sheet and reputational risks compared to their non-euro area counterparts, and may prove reluctant to increase this exposure further.
- In the longer term, the question is if and how euro-area regulators should set incentives to reduce banks' heavy exposure to sovereigns. This issue should be given more attention in European policy discussions on how to strengthen the euro area.

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# WHO'S AFRAID OF SOVEREIGN BONDS?

SILVIA MERLER AND JEAN PISANI-FERRY, FEBRUARY 2012

## THE CRISIS HAS REVEALED A CRITICAL WEAKNESS

of euro-area countries: the strong interdependence between banking and sovereign crisis. This is not a specific feature of the euro area – it has been documented that, historically, banking crises tend to be followed by sovereign crises – but for the euro area the vicious cycle seems to be particularly strong.

The reason why euro-area banks and sovereign seem to be indissolubly tied together is twofold. First, given the absence of a supranational banking resolution framework, member states remain individually responsible for the rescue of their national banking systems. Given the size of the banking systems across the euro area, this implies that the fiscal consequences of bank rescues are potentially large, and explains how stress in the banking system can spill over to the sovereigns. Second, domestic banks hold on their balance sheets a considerable share of national government debt. Any doubt about sovereign solvency immediately affects domestic banks. This bank-sovereign interdependence constitutes one of the features of the euro area that renders it especially fragile [Pisani-Ferry, 2012].

Our analysis intends to shed some light on the second channel of the sovereign/banks vicious cycle. By using data on the breakdown of government debt by holding sectors, we show that domestic banks in key continental euro-area countries have traditionally accounted for a larger share of government debt than in the United Kingdom or the United States (where, instead, the national central banks started very early on to play an important role). The introduction of the euro has to some extent reduced this phenomenon, by fostering portfolio diversification and resulting in a significant increase in cross-border sovereign-bond holdings. As a consequence, the share of domestic banks has been eroded by non-resident holders in all

countries across the euro area. By 2007, however, just before the outbreak of the financial crisis, the share of government debt held by domestic banks was still very large, particularly for the countries that have been subject to the greatest pressure on the sovereign-bond markets (Greece, Ireland, Italy, Portugal and Spain). More worryingly, these holdings – and the associated vulnerabilities – have increased substantially during the crisis in the peripheral countries, where domestic banks have played a key role in compensating for the outflow of scared foreign investors.

The important role of banks in holding debt issued by 'their' sovereigns has become a vulnerability during the crisis, when the solvency of sovereigns has started to be questioned and the stress on the sovereign-bond markets has translated into pressure on the banking system. These considerations suggest that reducing the share of government debt held by national banks could help to reduce sovereign vulnerability in the euro area. But it raises in turn the question of who would finance sovereigns in place of domestic banks, in 2012 and after.

## THE DATA

To understand what role domestic banks have played in holding sovereign debt, a breakdown of marketable government debt by holding sectors is required. Unfortunately this data is not available from a single official source at euro-area level, so we have assembled data provided by national sources (national central banks, statistical authorities, treasuries)<sup>1</sup>. The sample comprises the main euro-area countries (France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal and Spain) to which we have added the US and the UK for comparison purposes.

In Table 1, we compare the situation at the end of 2007 (before the outbreak of the global financial

1. Eurostat conducted a survey and provides data on the breakdown of government debt by country but has three shortcomings: first they only start in 2002 ending in 2010; second, they are only annual; third, they do not disaggregate within financial corporations (meaning that domestic banks are reported together with all the other financial institutions and the central banks). IMF (2011a) also looks at holdings of government debt but with a broader breakdown. BIS data published in January looks at cross border claims of foreign banks on each country's public sector. Data is not entirely comparable with our non-resident holdings because the measure is not the same and because: (i) BIS banks would only be a subset of our non residents; (ii) we do not have information on the breakdown of non-resident holdings, so we only observe the 'net' result.

Table 1: Breakdown by sector of holdings of marketable debt, 2007 and 2011 (billions of national currency and, in parentheses, percent of total stock)

	Domestic banks		Central bank		European Central Bank		Other public institutions		Other residents		Non-residents (excl. ECB)		TOTAL	
	2011	2007	2011	2007	2011	2007	2011	2007	2011	2007	2011	2007	2011	2007
Greece	35.5 [19.4]	23.9 [10.6]	4.8 [2.62]	3.2 [1.4]	42.0 [22.9]	.. [10.1]	18.5 [11.3]	25.4 [6.5]	11.9 [2.9]	6.5 [38.5]	70.5 [73.8]	166.1 [73.8]	183.2	225.1
Ireland	15.1 [16.9]	0.8 [2.6]	n/a	n/a	14.4 [16.05]	.. [0.9]	0.8 [0.3]	0.1 [2.4]	2.2 [3.95]	1.2 [63.75]	57.1 [93.1]	28.8 [93.1]	89.7	30.9
Portugal	36.0 [22.4]	10.6 [9.1]	1.2 [0.8]	0.0 [0.0]	18.0 [11.2]	.. [11.2]	.. [11.2]	.. [13.5]	21.7 [15.0]	17.3 [15.0]	83.5 [52.1]	87.7 [75.9]	160.5	115.6
Italy	267.9 [16.7]	159.9 [12.1]	76.5 [4.8]	60.3 [4.6]	103.4 [6.4]	.. [6.4]	.. [6.4]	.. [29.3]	471.6 [34.2]	450.7 [34.2]	687.5 [42.8]	647.1 [49.1]	1606.9	1317.9
Spain	173.1 [27]	74.3 [21.2]	20.8 [3.2]	9.2 [2.6]	34.5 [5.4]	.. [5.4]	65.3 [10.2]	26.5 [7.6]	128.4 [20]	73.3 [20.9]	219.3 [34.2]	166.7 [47.7]	641.4	349.9
Germany	404.2 [22.9]	456.9 [29.7]	4.4 [0.3]	4.4 [0.3]	.. [0.3]	.. [0.3]	0.5 [0.03]	0.5 [0.03]	249.2 [14.1]	317.1 [20.6]	1105.0 [62.7]	761.5 [49.4]	1763.3	1540.4
France	123.3 [14.0]	83.3 [13.0]	n/a	n/a	.. [14.0]	.. [13.0]	.. [14.0]	.. [13.0]	255.5 [29.0]	205.0 [32.0]	502.2 [57.0]	352.4 [55.0]	881.0	640.7
Netherlands	33.3 [10.7]	18.7 [8.9]	n/a	n/a	.. [10.7]	.. [8.9]	3.4 [1.1]	0.9 [0.4]	66.4 [21.4]	44.7 [21.4]	207.1 [66.8]	144.6 [69.2]	310.1	209.0
UK	114.9 [10.7]	-7.9 [-1.6]	207.9 [19.4]	2.4 [0.5]	.. [10.7]	.. [0.5]	1.5 [0.1]	0.8 [0.2]	423.5 [39.5]	337.3 [68.5]	323.5 [30.2]	160.2 [32.5]	1071.2	492.8
US	284.5 [2.0]	129.8 [1.4]	1617.1 [11.3]	754.6 [8.2]	.. [11.3]	.. [8.2]	5087.7 [35.5]	4616.5 [50.0]	2853.0 [19.9]	1375.1 [14.9]	4500.8 [31.4]	2353.2 [25.5]	14343.1	9229.2

Source: Bruegel based on national authorities. Note: 2007 is the year-end data for all countries. 2011 is: October for Ireland; September for France; August for Italy; Q2 for Greece, Spain, Germany, The Netherlands, UK and US; 2010 end-year for Portugal. ECB mid-December 2011 country shares have been computed on the basis of estimates by Open Europe and JP Morgan.

crisis) and with the most recent available data (generally 2011 Q2 or Q3). Some of the countries concerned report longer time series (going back to the early or mid-nineties), and for these countries we also present an historical overview of the evolution of banks' holding, as opposed to non-resident holdings. It has to be stressed that the absence of a single data provider implies that the scope varies somewhat from country to country, for example regarding the type of debt for which the breakdown is available (general government debt versus central government debt, all maturities versus long-term debt, only securities or also loans). We are aware that this may to some extent limit comparability across countries, especially in level terms but we have checked our results against a similar (static) analysis that the International Monetary Fund conducted for Greece, Ireland, Portugal, the UK and the US (IMF, 2011), and found them to be consistent<sup>2</sup>. For European Central Bank holdings

within the framework of the Securities Market Programme, no official breakdown is available, so we rely on estimates by JP Morgan and Open Europe. For a detailed explanation of data sources and issues, see the Appendix.

## FINDINGS

Back in 2007 two visibly different patterns could be observed. First, euro-area countries appeared to be characterised by large foreign holdings of sovereign debt. The share of non-residents in total holdings was very large for small countries (consistent with portfolio theory), but even for the bigger ones – France, Germany and Italy – it was significantly above the corresponding figure for the UK. The data does not provide for disaggregation between other euro-area residents and non-euro area residents, but Lane (2006) showed that after the introduction of the single currency cross-border debt portfolios became

2. The IMF used for those countries the same measure of debt that we use (different across countries) and focused only on the latest available data.

more 'EMU-oriented' across the euro area (meaning that the proportion of cross-border security holdings accounted for by Economic and Monetary Union partners increased). Partial evidence suggests that, except for German and French debt, which are traded globally, foreign holders of euro-area government debt are overwhelmingly from euro-area partners<sup>3</sup>.

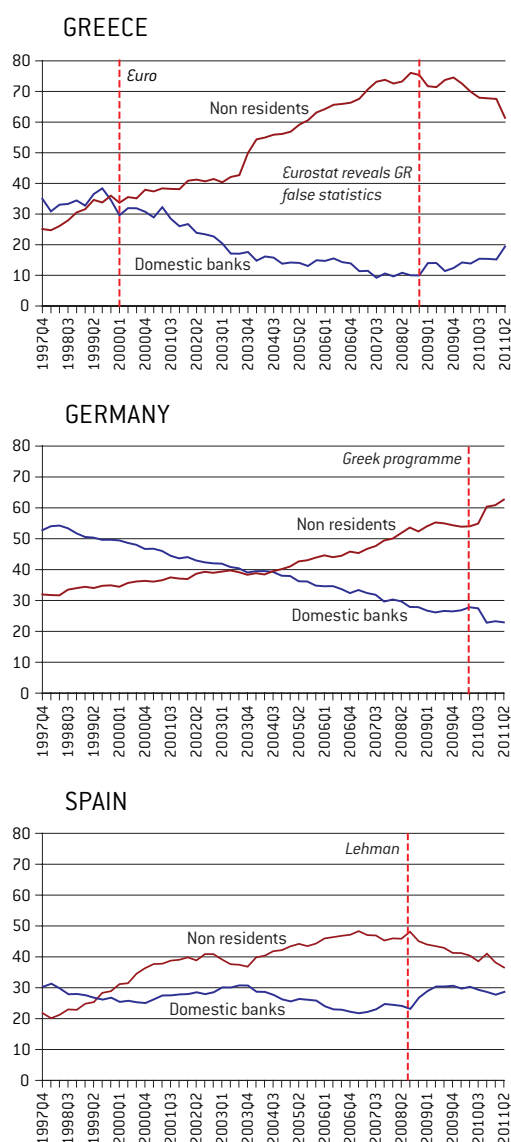
Second, Table 1 also indicates a clear differentiation between continental European and Ireland, the UK and US as far as the size of banks' holdings of sovereign debt is concerned. In 2007, continental banks held significant shares of domestic public debt (more than one-fourth of the total in Germany, Italy and Spain; about one-tenth in France, Greece, the Netherlands and Portugal) whereas in Ireland, the UK and the US, banks held almost no domestic public debt. The vulnerability of the euro area resulting from bank-sovereign interdependence was therefore related to inherited patterns of debt holdings.

The reason why banks in Europe hold so much government debt is possibly twofold. First, it relates to the features of the European financial system, which remains largely bank-based. In continental Europe, banks play a key intermediary role that is to some extent mirrored by the size of their assets. Government bonds are appealing because they can be easily used as collateral (both on the interbank markets in normal times and for central banks' emergency lending in troubled times) and because the Basel regulatory framework allows for the zero-risk weighting of bonds issued by euro-area governments. These considerations might explain why banks' balance sheets are loaded with government debt, but they are not sufficient to clarify why banks may decide to buy domestic government debt. Governments may have exercised some (more or less implicit) form of pressure on banks. The introduction of the euro and the consequent convergence of interest rates to the German levels removed the rationale for such 'financial repression' and coincided with a decline in banks' holding of domestic government debt (see Figure 1). But the temptation to resort to some form of 'financial repression' might return in crisis time.

In 2011, significant changes can be observed.

First, holdings of government debt by non-residents have diminished in proportion for all the countries in trouble (Greece, Ireland, Portugal, Spain and to a lesser extent Italy), while remaining more or less stable for France and the Netherlands, and increasing for Germany. It is worth recalling that our data only cover end-Q2 or Q3 at the latest, so the situation might have changed (especially for Italy, which has been under considerable stress from September onwards). This drop in the proportion of non-resident holdings is evidence of portfolio rebalancing away from risk, and the increase for Germany illustrates the safe-haven role of the Bund (as well as the US T-Bond)<sup>4</sup>.

**Figure 1: Evolution of holdings by domestic banks and non-residents (% of total holdings)**



Source: Bruegel based on data from national authorities.

3. For example in Spain (for which data is available) more than 63 percent of non-residents' holdings in 2005 were accounted for by euro-area investors and more than 80 percent by European investors.

4. More recently, British gilts also experienced inflows, but our data for the UK ends at 2011Q2, so this effect is not evident as November/December figures would be needed.

Table 2: Breakdown by sector of holdings of marketable debt, 2007 and 2011 (% of GDP)

	Domestic banks		Central bank		European Central Bank		Other public institutions		Other residents		Non-residents		TOTAL as %GDP	
	2011	2007	2011	2007	2011	2007	2011	2007	2011	2007	2011	2007	2011	2007
Greece	16.1	10.5	2.2	1.4	19.0	..	8.4	11.2	5.4	2.9	31.9	73.2	82.9	99.1
Ireland	9.6	0.4	n/a	n/a	9.2	..	0.5	0.1	1.4	0.6	36.3	15.2	57.0	16.3
Portugal	20.8	6.2	0.7	0.0	10.4	..	..	..	12.6	10.2	48.4	51.8	92.9	68.3
Italy	16.9	10.3	4.8	3.9	6.5	..	..	..	29.7	29.1	43.3	41.8	101.1	85.2
Spain	15.9	7.0	1.9	0.9	3.2	..	6.0	2.5	11.8	7.0	20.2	15.8	59.0	33.2
Germany	15.7	18.8	0.2	0.2	..	..	0.0	0.0	9.7	13.1	43.0	31.4	68.7	63.4
France	6.2	4.4	n/a	n/a	..	..	..	..	12.9	10.9	25.3	18.7	44.3	33.9
Netherlands	5.5	3.3	n/a	n/a	..	..	0.6	0.2	10.9	7.8	34.1	25.3	51.1	36.5
UK	7.5	-0.6	13.6	0.2	..	..	0.1	0.1	27.6	24.0	21.1	11.4	69.9	35.1
US	1.9	0.9	10.7	5.4	..	..	33.8	32.9	18.9	9.8	29.9	16.8	95.2	65.8

Source: Bruegel based on national authorities; IMF WEO September 2011. Note: 2007 is the year-end data for all countries. 2011 is: October for Ireland; September for France; August for Italy; Q2 for Greece, Spain, Germany, The Netherlands, UK and US; 2010 end-year for Portugal.

Consequently, the share of domestic sovereign debt held by domestic banks increased significantly between 2007 and 2011 in all countries with bonds that have been shunned by non-residents (Greece, Ireland, Italy, Portugal and Spain), remained roughly stable in France and the Netherlands, and decreased in Germany. If this can be interpreted as evidence of a new wave of 'financial repression' is unclear, but at end-2011, suggestions have been made that banks in the euro area should increase their holdings of government debt (see, for example, President Sarkozy's public suggestion that banks should use the ECB liquidity to buy more sovereign bonds).

In Table 2 we report the same data as a proportion of GDP. This is relevant as far as the aggregate weight of public debt is concerned. It provides evidence of the importance of bank holdings of domestic debt in the euro area. In mid- to late-2011 the domestic debt held by Italian banks amounted to more than one-third of GDP in Italy, one-fifth in Greece, Portugal and Spain, and one-sixth in Germany. Even in Ireland it had increased from a negligible level to one-tenth of GDP, thanks to both the increase in the debt level and the increase in the share held by banks. Only France and the Netherlands exhibited low levels of holdings, in part because their banks' portfolios are more diversified<sup>5</sup>.

When available, time series provide a longer-term perspective and help understand what triggered

changes in holding patterns. Greece is a model example in this respect (Figure 1). After the country joined the single currency in 2001, the share of government debt held by domestic banks started decreasing and reached its low point in 2008. Conversely, non-resident holdings exhibited an opposite trend, peaking in 2008. The end of 2009, when Eurostat disclosed that Greece was misreporting fiscal data, coincided with the beginning of the reversal of the trend: non-resident holdings started to decline markedly and national banks' holding increased again.

A reversal can also be observed in Spain, the start of which coincided approximately with the Lehman shock and the deterioration of the domestic fiscal situation. The increased supply of government bonds was increasingly absorbed by domestic banks, whereas the share held by non-residents decreased.

In contrast, data for Germany show that the good reputation of the country is long-lived: non-resident holdings of government debt have been increasing at least since the beginning of the 1990s. More interestingly, the share held by domestic banks, which was stable until 1998, started declining steadily after the introduction of the euro. The financial crisis coincided with a timid and short-lived reversal, before the crisis in the European periphery resulted in an acceleration of the increase of non-resident holdings.

5. The definition of marketable debt in France is also narrow; see the Appendix.

Figure 2 also shows that the initial phase of the financial crisis has had a much stronger effect on Ireland and the UK than more recent developments. In Ireland the share of non-residents was about to plateau at a very high level at the time of the Lehman shock and dropped immediately by more than ten percentage points. Paradoxically, the very crisis that highlighted the perverse interdependence between banks and sovereigns and its dire consequences for Irish public finances led to a reinforcement of this interdependence. In the UK also there was a shift of the same nature, although of lesser magnitude.

On the whole, our findings reveal common patterns in the changes in the structure of government bond portfolios both in the first nine years and the last three years of EMU. They provide consistent evidence for the recent reversal of tendencies observed across the board during the quiet 1999-2007 period, highlight the reaction of non-resident and domestic banks to concerns about state solvency, and illustrate the safe-haven character of the German Bund.

## CONCLUSIONS

The euro crisis has revealed how interdependence between sovereigns and banks can weaken both sides, and the whole monetary union as a consequence. Data presented in this note provides evidence of this hazardous relationship and shows that it has – to some extent paradoxically – strengthened during the crisis.

In 2007, despite a steady diversification trend attributable to the introduction of the euro, most

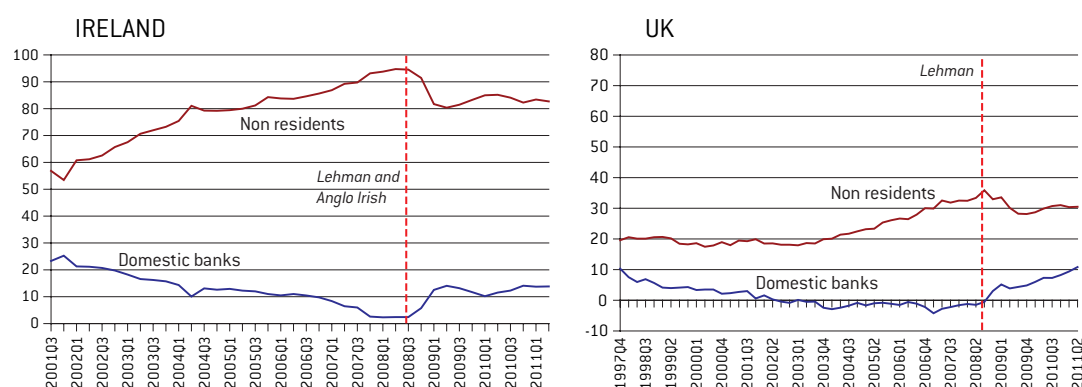
continental euro-area countries were still characterised by the large size of portfolios of their domestic government bonds held by banks. These were markedly larger than in the UK or the US, where banks were not major buyers of government paper. As a consequence, any concern about sovereign solvency was bound to have major consequences for banks.

Developments since 2007 have increased the structural vulnerability of euro-area countries, reinforcing the sovereign/banking crisis vicious cycle. All countries for which concerns about state solvency arose in recent years have seen a reversal in the previously steady increase of the share of government debt held by non residents. Germany, by contrast, has seen an increase in the share held by non residents. As a consequence, domestic banks have become even more creditors of 'their' sovereigns, at a time when sovereigns are exposed to increasing pressure.

In the short term, these observations raise a question about the effectiveness of ECB provision of liquidity to banks as a means to alleviate the sovereign crisis. At a point when government bonds are considered risky assets, banks, whose exposure to their domestic sovereign has increased markedly, are faced with both a balance sheet and a reputational risk in comparison to non-euro area counterparts, and may prove reluctant to increase this exposure further.

In the longer term, the question is if and how regulators and supervisors in the euro area should set incentives to reduce the banks' heavy exposure to sovereigns, especially their own sovereign. This is

Figure 2: Holdings of domestic banks and non-residents (% total)



Source: Bruegel based on data from national authorities. For Ireland, data on banks also includes the central bank.



*'Developments since 2007 have increased the structural vulnerability of euro-area countries. All countries for which concerns about state solvency arose in recent years have seen a reversal in the previously steady increase of the share of government debt held by non residents.'*

an issue that deserves more attention than it is receiving in European policy discussions on how to strengthen the euro area.

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## APPENDIX: DATA SOURCES AND ISSUES

Collecting the data for sectors' holdings of government debt is made difficult by the fact that the data provider can be different in different countries (central banks, treasuries, national statistical offices). In addition, there are three main issues:

- 1 For some countries, whole general government debt (including loans etc) is given; in others only government securities or even a narrower sub-item (eg long-term securities) are given.
- 2 The **frequency** also varies: some countries collect monthly data, others quarterly, and others give the end-year figure.
- 3 Most importantly, **different countries give different breakdowns of debt by holders**, and provide different degrees of detail (ie the number of sub-groups). This point is especially relevant when looking at the holdings of national central banks (NCBs), as this is generally included in the broader category of Monetary Financial Institutions (MFIs) or in the public sector (as is the case for the US). Isolating the central banks is therefore possible only if the NCBs' balance sheets report information on the banks' holding of domestic government securities (not always the case).

The relevant problems/issues by country are as follows (for further details, contact the authors):

**GERMANY** (Bundesbank): breakdown available only for whole general government debt. This measure is reported in national financial statistics and is different from the Maastricht definition, which includes some liabilities that are excluded from the national statistics' definition.

**IRELAND** (Central Bank of Ireland, CBI): the disaggregation is available only for Irish Long-term Government Bonds and it is impossible to isolate the CBI from other MFIs as holdings of government securities in the asset side of CBI's financial statements.



**ITALY** (Central Bank of Italy): breakdown available both for general government debt and for securities. We use data for securities because the alternative series includes a break because of reclassification of *Cassa Depositi e Prestiti*.

**SPAIN** (Banco de Espana): breakdown available for general government securities, from the financial accounts, or for general government debt (Maastricht definition) from the Banco de Espana. We use securities, results are not sensitive to the measure used.

**PORTUGAL** (Banco de Portugal): breakdown available for general government debt, only annual data.

**THE NETHERLANDS** (National Statistical Office): data is available for total government debt or for single instruments. We use total securities.

**GREECE** (Central Bank of Greece): the series for the breakdown of short- and long-term securities by holders can be reconstructed by looking at the liability side of the central government's balance sheet and merging it with data from the asset side

of each sectors' balance sheet, to fill gaps.

**UK** (Office for National Statistics, ONS): the breakdown can be reconstructed for long-term government bonds issued by the UK central government, looking at the UK's sector financial accounts. To isolate the Bank of England we relied on data on the bank's holding of sterling securities issued by the public sector, provided by the Bank of England itself. For some years, MFIs' holdings of securities are recorded with a negative sign. This is the result of the accounting practice chosen, as holdings of gilts are reported net of long and short positions.

**US** (Economic Report to the President and Treasury Monthly Bulletin for the most recent months' data, older data is identical across the two sources): the breakdown is available for Treasury Securities. To isolate the Federal Reserve, we use data on the consolidated statement of conditions of all Federal Reserve Banks, which identify Treasury securities holdings on the asset side. Pension funds are divided between private and government funds. We decided to combine government pension funds and private sector funds, but the weight of this category is very limited in any case.