



BANCA D'ITALIA
EUROSISTEMA

Questioni di Economia e Finanza

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Number

213



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The series is available online at www.bancaditalia.it.

ISSN 1972-6627 (print)

ISSN 1972-6643 (online)

Printed by the Printing and Publishing Division of the Bank of Italy

THE NEGATIVE FEEDBACK LOOP BETWEEN BANKS AND SOVEREIGNS

by Paolo Angelini, Giuseppe Grande and Fabio Panetta^{a,b}

Abstract

More than four years since the outbreak of the sovereign debt crisis in the euro area the banking systems of several countries remain exposed to the vagaries of government bond markets. The paper analyzes the different channels through which sovereign risk affects banking risk (and vice versa), presents some new evidence on bank-sovereign links, and discusses policy options for addressing the related risks.

JEL Classification: E44, E51, E58, G01, G21, G28, H63.

Keywords: sovereign risk, sovereign debt crisis, global financial crisis, banking sector risk, bank regulation, contagion, credit crunch.

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^b A previous version of the paper was published in French in *Revue d'économie financière*, Volume 111(3), 2013, with the title "Les interactions négatives entre banques et états".

1. Introduction ^{*}

The link between the condition of sovereign borrowers and that of their domestic banking systems has been a key feature of the global financial crisis. In the US and the UK, where the crisis erupted, the government had to intervene heavily to shore up the banks and combat recession; thanks to various factors, including their solid initial fiscal position, they succeeded, although at a high cost in terms of fiscal deterioration. The phase now known as the euro-area sovereign debt crisis started in Greece at the end of 2009, when news came out about errors in public finance figures.¹ The sovereign difficulties spread rapidly to the domestic banking system via a sharp deterioration of the economic outlook, depreciation of government bond portfolios and funding problems. These events acted as catalysts, accelerating the emergence of problems that had been brewing in other economies. Between April 2010 and April 2011, Greece and then Ireland and Portugal became unable to tap bond markets and received international financial assistance. In the summer of 2011 the tensions spread to Italian and Spanish government securities.

In some of these countries the direction of causality was from banks to the sovereign: in Ireland and Spain the public finances were regarded as sound before the crisis, but suffered from the difficulties of the domestic banking sector, in turn related to a steep fall in real estate prices. In Greece, instead, the sovereign situation was the main fragility factor.

Independently of the trigger, some countries fell into a self-reinforcing negative spiral involving sovereign difficulties, bank fragility and economic recession. This paper seeks to shed light on this spiral. We begin by reviewing the different channels through which sovereign risk affects banking risk, highlighting those that are unique to banks and that should make the relationship between the sovereign and the domestic banking system “special”. Next we present evidence on the bank-sovereign relationship. We first look at the correlation between sovereign and bank CDS premia and compare it with the analogous correlation between sovereign and non-financial firms’ CDS. We would expect the former to be higher than the latter. We then focus on banking systems’ exposures to the domestic sovereign. We would expect the sovereign-bank link to be tighter when this exposure is larger. Next, we discuss different factors that may explain the rise

^{*} We are indebted for useful comments to Marco Pagano, Alessio De Vincenzo, Giovanni Di Iasio, Dario Focarelli, Aviram Levy, Giuseppe Marotta, Federico Maria Signoretti, Luigi Federico Signorini and participants at the conference “2013 ISI/IEA Strategic Forum” (Rome, 1-2 July 2013). We also thank Carmela Aurora Attinà, Maria Pia Mingarini and Daniela Molinari for excellent research assistance. All errors are ours.

¹ For an analysis of the different phases of the sovereign debt crisis and its fiscal dimension, see Lane (2012).

in banks' holdings of domestic government bonds observed since end-2008 in most euro-area countries. In a nutshell, our evidence suggests that in practice the bank-sovereign nexus may not be as "special" as one might have expected a priori, pointing instead to the special status of sovereign risk for the whole domestic economy: when the sovereign runs into trouble, so does the entire economy; country risk seems to be a key factor underlying the sovereign-bank relationship.

The paper is organized as follows. Section 2 describes the main channels through which sovereign risk affects banking risk. Section 3 provides new evidence on the relationship between sovereigns and domestic banks, while Section 4 focuses on the explanations of the recent increase in banks' exposure to domestic sovereigns. Section 5 addresses the issue of whether banks' large sovereign bond purchases in 2012-13 were a driver of the fall in lending observed over the period. The policy options to loosen the sovereign-bank link are discussed in Section 6. A summary of the main findings is presented in the final section.

2. Why sovereigns and banks are intertwined

Channels transmitting sovereign risk to banks. – Sovereign risk affects banks through several channels.² Some work via the assets side of banks' balance sheets. A deterioration/improvement in a government's creditworthiness, as perceived by the markets, may cause losses/gains on banks' portfolios of sovereign securities and may also affect banks' standing in relation to their loans to the government.³ In this sense, sovereign exposures are not conceptually different from claims on any other debtor, but they are often substantial, typically reflecting large holdings of domestic government debt (direct exposure to foreign sovereign debt is ordinarily limited).⁴

This home bias may be the result of several factors, including hedging motives (e.g., exchange rate risk, asset-liability management), transaction costs, legal risk and informational frictions; similar motives may rationalize the home bias observed for other financial operators and asset classes.⁵ Moreover, as bond markets are relatively less volatile and more globally integrated

² Potential determinants of sovereign-to-banks spillovers that will not be mentioned here are risk aversion, crowding out effects and changes in risk management techniques. See CGFS (2011).

³ Whether securities are booked at market value or amortised cost makes little difference when bank's creditors become concerned about a possible default of the bank. In that case, creditors will look through accounting conventions, assessing the solidity of the bank based on its assets at market value, even if they are in the banking book.

⁴ However, indirect exposure to foreign sovereigns, via interbank exposures, can be substantial. Direct or indirect international spillovers from the countries severely hit by sovereign tensions have played a role for some European banks, such as those in Germany, France and Belgium (CGFS (2011)). See also Financial Times (2013).

⁵ E.g. equity holdings, bond holdings and bank loans. See, for instance, the survey by Coeurdacier and Rey (2012).

than markets for other financial assets, diversification out of domestic bonds might be relatively less beneficial. A further factor can be traced to current regulations, which give claims on the government preferential treatment over those on private borrowers. First, national authorities may (and de facto do) choose to apply reduced risk weights to banks' claims on the sovereign where the holding company is incorporated, denominated and funded in the domestic currency; they may also decide to waive concentration limits to sovereign exposures, which are instead mandatory for exposures to private entities (see BCBS (2006), numbers 54 and 773).⁶

In the EU, neither the old regulations nor the CRD IV impose a general zero risk weight on sovereign debt. However, partly reflecting the Basel II framework, de facto zero risk weights are granted to most of the debt issued by EU sovereigns, including those in the euro area. In the attempt to foster the single market for financial services, Directive 2006/48/EC extended the Standardized Approach exemption – and therefore the zero risk weight regime – to all banks within the euro area that finance euro-denominated government debt, regardless of whether they adopt the Standardized or the IRB approach.⁷ It is worth remarking that in the euro area, unlike elsewhere, prudential regulations do not produce a bias in favour of *domestic* sovereign exposures, as the preferential treatment is extended to euro-denominated debt issued by most EU sovereigns.

The impact of sovereign strains on bank funding conditions is not only in terms of credit risk, but also in terms of liquidity/funding risk. Since government bonds are typically used as collateral, e.g. in repos, a fall in their price can trigger margin calls or larger haircuts, thus reducing the liquidity that can be obtained via a given nominal amount of sovereign paper. Related to this, in most countries government paper is typically given preferential treatment as collateral in central bank operations. It is also assigned an important role in the Basel III liquidity framework via the so-called liquidity coverage ratio. The indicator relies on the concept of high quality liquid assets, which include government paper (see BCBS (2013)).

⁶ In particular, in the so-called Standardized Approach, the Basel II rules imply risk weights ranging from 0% to 150%, depending on the external rating assigned by a recognized agency, or a 100% weight by default where no rating is available. However, national authorities are allowed to apply a zero risk weight for exposures to the domestic sovereign denominated and funded in domestic currency, if national regulations allow it. In the Internal Ratings Based Approach – typically used by large and sophisticated banks – risk weights are calculated according to banks' own internal rating models. Since these models are typically estimated using historical data, which show few or no sovereign defaults, they tend to yield very low or zero risk weights on sovereign exposures.

⁷ The CRD (Article 89, “permanent partial use”) permits credit institutions using the IRB approach to apply the standardized approach to any domestic sovereign exposures, irrespective of their size, as long as these exposures are assigned a 0% standardized risk weight. This exemption is much broader than that in the Basel regulation and effectively allows European IRB banks to apply a one-size-fits-all zero risk weight to the euro-denominated debt of EU sovereigns, if permitted by national supervisors.

Sovereign-bank dependence is also created via other mechanisms that work on banks' liabilities side. Several governments introduced explicit guarantee schemes on bank bonds after the collapse of Lehman Brothers in October 2008. There is evidence that these guarantees helped reduce risk premia on banks' liabilities, and that their effect was proportional to the creditworthiness of the sovereign (Grande, Levy, Panetta and Zaghini (2013)). Implicit guarantees are harder to measure, but there is evidence that they may be among the reasons why on average large banks borrow at a discount (see e.g. Angelini, Nobili and Picillo (2011) and Schich and Lindh (2012)).

Yet another sovereign-bank channel works via the connection between the ratings of public and private issuers. Sovereign downgrades often lead to downgrades of domestic banks, not least because the sovereign rating normally represents a ceiling for the ratings assigned to private borrowers. Downgrades reduce the value of banks' liabilities; loss of investment grade status can make them ineligible as collateral in funding operations, or as investments suitable for certain categories of investors, such as pension funds and insurance companies.

As a result of these mechanisms, and of competition (government paper is an obvious alternative to bank products), changes in sovereign yields tend to affect the availability and cost of bank funding. There is now substantial evidence about the importance of this form of transmission during the recent sovereign debt crisis: the effect is larger and faster on the cost of wholesale funds, but it is gradually transmitted to retail sources as well.⁸

To conclude, when discussing the sovereign-bank links, it is useful to distinguish between the domestic sovereign and other sovereigns. In general, links with the former have the most important implications for financial stability, as they can feed the bank-sovereign loop via all of the channels mentioned above, unlike exposures to a non domestic sovereign. Within the euro area a few further qualifications are necessary. In particular, some of the above-mentioned incentives to incur exposures to the domestic sovereign also work vis-à-vis non domestic euro-area sovereigns – in other words, euro-area banks have an incentive to diversify their exposures towards non domestic sovereigns. However, the impact via the liability-side channels is absent. These considerations are summarized in Table 1.

⁸ See CGFS (2011) and van Rixtel and Gasperini (2013). Albertazzi, Ropele, Sene and Signoretti (2012) find that a rise in the spread between the Italian and German 10-year sovereign rates is followed by an increase in the cost of wholesale funds and of certain forms of retail funding for Italian banks, with a larger impact during the sovereign debt crisis. Similar estimates are provided by Zoli (2013). The Italian case is interesting because the direction of causality is clear – initially the instability of the sovereign affected domestic banks, and not vice-versa.

Table 1

Some key drivers of the sovereign-bank relationship

		Domestic sovereign	Foreign sovereigns, euro area	Other foreign sovereigns
Banks Assets Side	Preferential capital charges on sovereign exposures	Yes	Yes	No
	Special status of sovereign paper in liquidity regulation	Yes	Yes	No
Banks Liabilities Side	Explicit/implicit government guarantees to banks	Yes	No	No
	Special status of sovereign paper in central bank operations	Yes	Yes	No
	Impact of sovereign rating on bank rating	Yes	No	No

Factors transmitting bank risks to the sovereign. – The direction of causality can also be reversed: a banking crisis can trigger a surge in sovereign risk. Indeed, there is evidence that banking crises tend to lead sovereign crises (Reinhart and Rogoff (2010)). A financial crisis may require the government to support banks and other financial institutions (this is the implicit or explicit guarantee channel seen above). In late 2008-early 2009 the magnitude of this support was unprecedented (see e.g. Panetta et al. (2009)). The impact on the public finances typically comes from the recession and the fiscal expansion typically implemented to deal with it. In some cases (Ireland, Iceland, and more recently Cyprus) the size of the banking problem was so large as to jeopardize the sovereign.

Interactions. – Once a shock has set in motion a weakening of the sovereign, or of the banking system, a self-reinforcing feedback loop can easily develop. There is ample evidence that tensions in the sovereign debt market affect banks' funding conditions, and thence lending to domestic households and firms.⁹ A credit squeeze will weaken the economy, leading to a decline in borrowers' creditworthiness and to further tensions in the sovereign's situation, due to falling fiscal revenues and the need for further fiscal tightening. Supply and demand factors will contribute to depress credit growth, with negative effects on banks' interest margin and profitability.¹⁰ In general,

⁹ Albertazzi, Ropele, Sene and Signoretti (2012) find that a rise in the Italian 10-year sovereign spread is followed by an increase in Italian banks' cost of funding and the cost of credit to firms and households. The latter effect was significant only during the sovereign debt crisis, indicating the presence of non-linearities. The authors also find evidence of credit rationing (i.e., an increase in the spread had a direct negative effect on lending growth beyond that implied by the rise in lending rates). Neri (2013) shows that the sovereign spread had a significant impact on rates on new bank lending in the countries most exposed to sovereign debt tensions (Italy, Spain, Greece and Portugal), while it had no effect in the others (Germany, France, Belgium, the Netherlands, Austria and Finland).

¹⁰ Four papers on Italian banks try to disentangle the contributions of supply and demand factors to the dynamics of bank lending. On the basis of aggregate data, Zoli (2013) finds that supply-side factors due to bank funding shortages were a major factor behind the lending slowdown in late 2011, while in 2012 weak demand was the main driving force. This finding is confirmed by Del Giovane, Nobili and Signoretti (2013) using individual bank data from the Eurosystem Bank Lending Survey. They also find that the supply tightening during the sovereign debt crisis reflected the common shock of the widening sovereign spread, not idiosyncratic bank funding problems..

the causality links are hard to identify, although in some recent instances the initial direction of causality was clear, as we have argued above.¹¹

While the focus of this paper is on the interaction between sovereign and banking risk in crisis periods, the seeds of instability, as is often the case, are sowed in normal times. For instance, Di Iasio (2013) shows that banks that are backed by a sound government, with a large bailout capacity, have an incentive to reduce their home-bias and load up with riskier non-domestic sovereign bonds, as they expect that in the event of foreign sovereigns' default their government would support them. In this conceptual framework, a solid government unwittingly fosters excessive risk-taking, which, in turn, leads to an increase in sovereign contingent liabilities. This squares well with the evidence from the recent euro-area sovereign debt crisis. BIS data for December 2010 show that banks located in some triple A countries had large exposures towards the sovereigns of the countries worst hit by the crisis (Greece, Ireland, Portugal and Spain).

3. Some facts about the sovereign-bank relationship

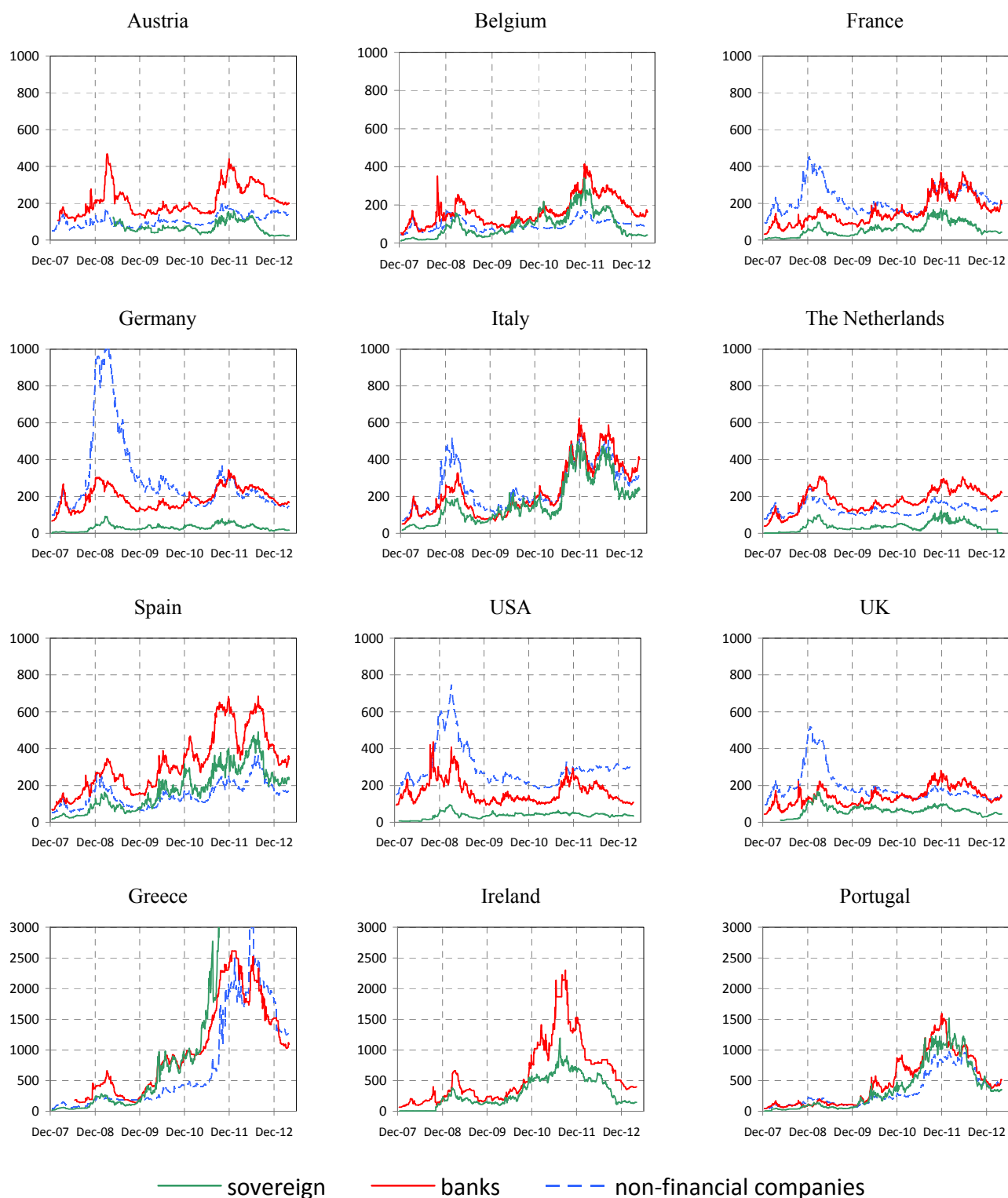
The previous discussion points to some features that make the relationship between a banking system and its domestic sovereign “special”. In what follows we look at various indicators of the sovereign-bank relationship and compare them to similar indicators for the relationship between a sovereign and its domestic non-financial firms. Under the hypothesis that the sovereign-bank relationship is “special”, differences in the behavior of these two sets of indicators should emerge, allowing us to make inferences on this “specialness”.

Figure 1 reports CDS premia for the sovereign, the banks and the non-financial firms of a selected group of countries. The charts reveal that the three series tend to comove quite tightly, although with exceptions both in the time series and the cross-country dimension.

Bofondi, Carpinelli and Sette (2013) find that during one of the worst phases of the sovereign debt crisis (the second half of 2011) Italian banks tightened lending conditions and firms were not able to compensate fully by borrowing from foreign banks. Albertazzi, Ropele, Sene and Signoretti (2012) find that a rise in the sovereign spread had a negative effect on banks' margins and profits that was stronger for larger intermediaries.

¹¹ Acharya, Drechsler and Schnabl (2011) find evidence of a “two-way feedback” between financial and sovereign credit risk during a financial crisis.

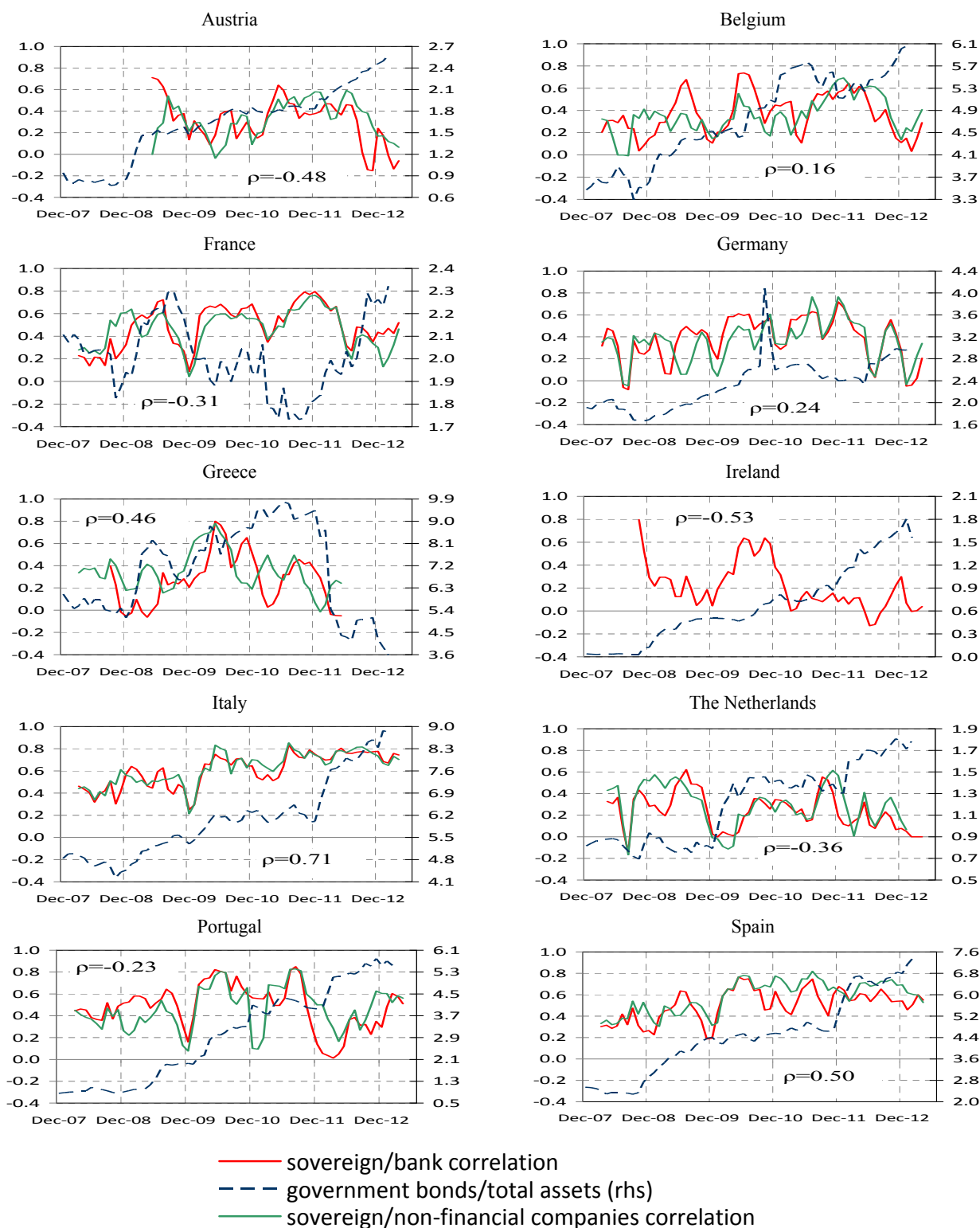
**Credit risk premia for sovereigns, banks and non-financial companies
in selected advanced countries (1)**
(daily data; basis points)



Sources: based on Thomson Reuters Datastream and Bloomberg data. (1) For banks and non-financial companies, the series are computed as simple averages of data for individual firms available as of end December 2012. This excludes those firms whose CDS ceased to be traded at some point in the previous years. Data refer to CDS contracts denominated in euros.

Figure 2

Credit risk premia correlations between sovereign and banks and between sovereign and non-financial companies and banks' exposure to domestic government bonds (1)
(average monthly data; correlation indexes and per cent)



Sources: based on Eurosystem, Thomson Reuters Datastream and Bloomberg data.

(1) The correlations of CDS premia are calculated on daily changes and a 60-day moving window. For CDS indexes, see note (1) to Figure 1. In each graph, ρ denotes the value of the correlation between the sovereign/bank correlation and banks' exposure to domestic government bonds over the available sample period.

The evidence of comovements among these series is confirmed by Figure 2, reporting for the same countries the correlations of first-differenced CDS premia on government bonds with the corresponding premia for domestic banks (solid red line) and for domestic non-financial companies (solid green line). In both cases, the correlation is generally strongly positive. Under the hypothesis that the sovereign-bank relationship is “special” (regardless of the causality nexus), the sovereign-bank correlation should be consistently higher than the sovereign-non-financials correlation. The figure offers little if any support to this a priori. In particular, the correlations display several common features across the countries considered. First, they are highly volatile, sometimes moving, in a period of a few months, from values close to zero to values as high as 0.8. Second, the sovereign-bank and the sovereign-non-financials correlations comove strongly – i.e. they are highly correlated. Third, within each country the levels of the two correlations look similar; in some countries or periods the sovereign-bank correlation is higher, but in other cases the opposite holds true. Fourth, at least from a visual inspection, there is no clear structural shift in these patterns following the onset of the sovereign debt crisis at the end of 2009 (when problems in Greece began to emerge), or since its aggravation in the summer of 2011. Unfortunately, data availability problems prevent us from looking into the pre-crisis period. Overall, these facts suggest that both correlations are influenced by some common driver, and fail to support the notion that the sovereign-bank relationship is somehow special.¹²

In Table 2 we corroborate the graphical evidence with some sample statistics over two sub-periods: December 2007-May 2011 and June 2011-April 2013 (the acute phase of the sovereign debt crisis).¹³ The top panel reveals substantial cross-country differences in correlations in both periods. The average sovereign-bank correlation is as low as 0.22 for Ireland and as high as 0.65 for Portugal. All the correlations are statistically different from zero at least at the 1 per cent level. Similar dispersion levels and significance also characterize the sovereign-non-financials correlations.

¹² It could be argued that the comovements between sovereigns and non-financial firms are driven by banks transmitting risk from the sovereign to companies. Indeed, Bedendo and Colla (2013) find that, in the countries in which sovereign default risk is sizable, a further deterioration in a country’s credit quality has a greater adverse effect on firms that rely most heavily on bank financing. However, non-financial companies with traded CDS are typically large, blue-chip companies, which in principle should be those least dependent on bank financing. Therefore, it is unlikely that the comovements documented in the charts mainly reflect the causality link explored in some of the empirical works discussed in the previous section (from sovereign to banks to firms). Also, if this were the direction of causality, one would expect the sovereign-bank correlation to lead the sovereign-non-financials correlation, but the charts in Figure 2 point to a simultaneous relationship.

¹³ In the early summer of 2011, following discussions about the involvement of the private sector in the restructuring of the Greek public debt, investor concerns about the creditworthiness of sovereign debt in the euro area became systemic, spreading to Italy and Spain.

Table 2

**CDS premia for euro-area sovereigns: Correlations with the premia
for domestic banks and for non-financial companies (1)**
(first differences computed on daily data)

	AT	BE	DE	ES	FR	GR	IE	IT	NL	PT	average
Correlation between sovereign and banks											
<i>December 2007 - May 2011</i>											
Correlation	0.41	0.24	0.27	0.53	0.50	0.41	0.22	0.48	0.29	0.65	0.40
P-value (2)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
No. of observations	545	902	897	902	897	769	689	902	818	860	
<i>June 2011 - April 2013</i>											
Correlation	0.36	0.52	0.47	0.55	0.65	0.08	0.11	0.75	0.20	0.35	0.40
P-value (2)	0.00	0.00	0.00	0.00	0.00	0.30	0.01	0.00	0.00	0.00	
No. of observations	481	481	481	481	481	192	481	481	456	481	
Correlation between sovereign and non-financial companies											
<i>December 2007 - May 2011</i>											
Correlation	0.17	0.22	0.28	0.52	0.41	0.36		0.51	0.34	0.52	0.37
P-value (2)	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	
No. of observations	869	902	902	902	902	769		902	902	902	
<i>June 2011 - April 2013</i>											
Correlation	0.42	0.58	0.51	0.66	0.60	0.11		0.76	0.28	0.53	0.49
P-value (2)	0.00	0.00	0.00	0.00	0.00	0.14		0.00	0.00	0.00	
No. of observations	481	481	481	481	481	192		481	456	481	
Comparison of banks and non-financials											
<i>December 2007 - May 2011</i>											
Difference in correlation	0.24	0.02	-0.01	0.01	0.08	0.06		-0.03	-0.06	0.13	0.05
P-value (2)	0.00	0.71	0.78	0.86	0.02	0.18		0.36	0.20	0.00	
<i>June 2011 - April 2013</i>											
Difference in correlation	-0.06	-0.06	-0.04	-0.11	0.05	-0.03		-0.01	-0.11	-0.18	-0.06
P-value (2)	0.30	0.18	0.40	0.01	0.25	0.75		0.75	0.09	0.00	
Comparison between Dec 2007-May 2011 vs June 2011-April 2013											
<i>sovereign-banks</i>											
Difference in correlation	-0.05	0.28	0.20	0.03	0.15	-0.34	-0.10	0.27	-0.11	-0.30	
P-value (2)	0.32	0.00	0.00	0.51	0.00	0.00	0.08	0.00	0.04	0.00	
<i>sovereign-nonfinancials</i>											
Difference in correlation	0.25	0.36	0.23	0.14	0.19	-0.25		0.24	-0.06	0.00	
P-value (2)	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.21	0.96	

Sources: based on Thomson Reuters Datastream and Bloomberg data.

(1) Correlation of daily changes in CDS premia between the domestic sovereign and banks or non-financial companies, computed for the countries and over the periods indicated. Data refer to 5-year CDS denominated in euros. – (2) Estimated on the basis of a Fisher Z test of correlation coefficients.

The last column of the table reports simple averages of the country figures. Over the first sub-period, the average sovereign-bank correlation is 0.40, slightly higher than the 0.37 recorded for sovereign-non-financials. Over the second sub-period, the former correlation remains broadly

unchanged at 0.40, whereas the latter increases to 0.49.¹⁴ The table also reports statistical tests of significance conducted at the country level: in most cases the two correlations are not statistically different.

For each country, Figure 2 also reports banks' exposure to the domestic sovereign, measured by the portfolio of government bonds as a percentage of total assets (dashed line).¹⁵ One would expect that when banks' exposure to the domestic sovereign increases, the sovereign-bank correlation should also increase. In reality, the relationship is not robust: the correlation between the dashed and red lines is positive in some countries (e.g. 0.71 for Italy, 0.5 for Spain) but negative in others (-0.48 for Austria, -0.23 for Portugal). What about the fiscally weak vs. strong country dichotomy? It is in the former countries that we would expect to see a positive sovereign-bank correlation, since it is there that sovereign debt became riskier. Interestingly, Figure 2 shows that the correlation is positively related to banks' exposure to the sovereign in Italy, Spain and Greece. However, the relationship is positive in Belgium and Germany as well, and negative in Portugal and Ireland. Altogether, this evidence does not suggest a clear-cut connection between this dichotomy and the bank-sovereign relationship.

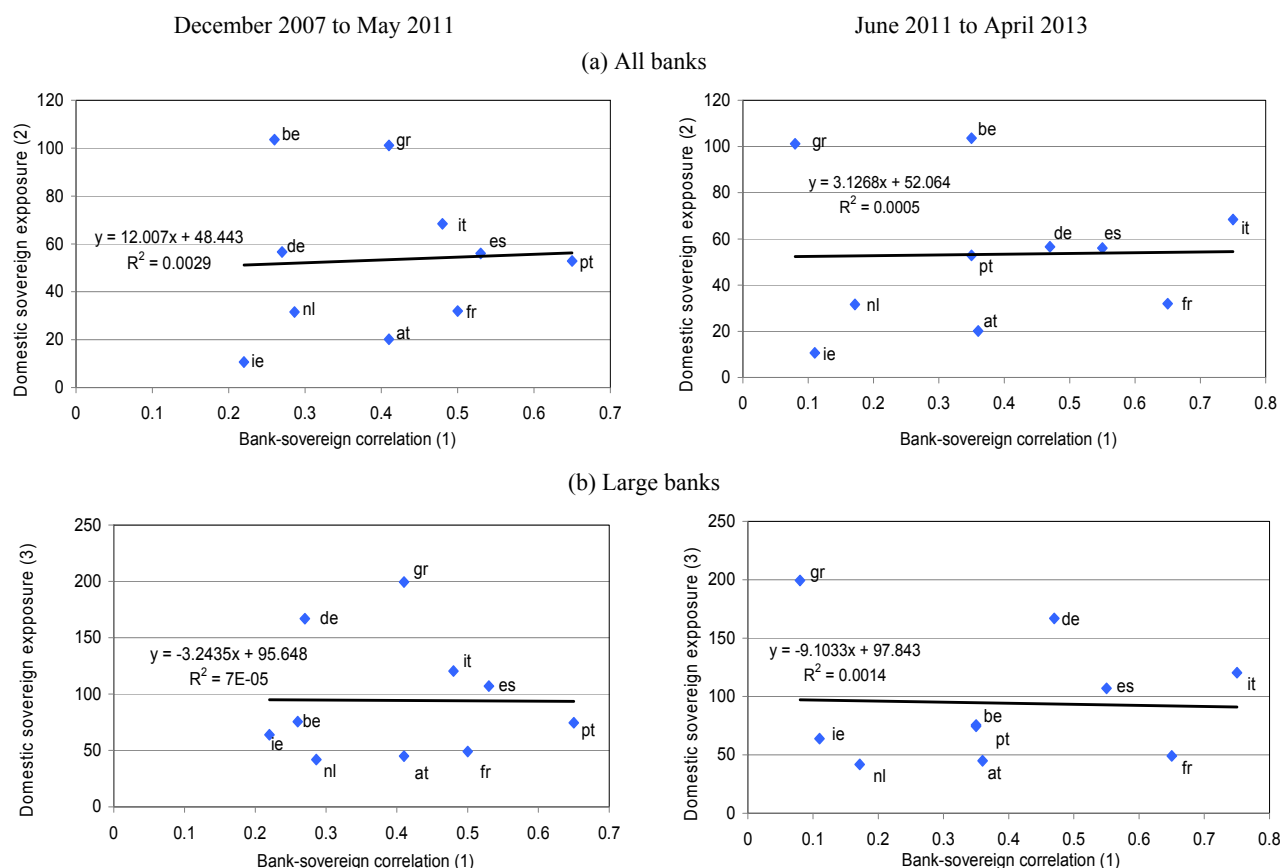
One could argue that this evidence is not convincing: what matters should be the level of banks' exposure to the domestic sovereign, not its change. In other words, the sovereign-bank correlation should be high where the exposure to the domestic sovereign is high, and vice-versa. To investigate this hypothesis Figure 3 looks at levels. Specifically, each panel plots the bank-sovereign correlation (horizontal axis) against banks' exposure to the sovereign, computed as a percentage of total regulatory capital (vertical axis). Both variables are computed as averages over two relevant sub-periods.

The two top panels, for the entire banking system of the euro-area countries, fail to confirm the hypothesis: there is no relationship between the two variables in either sub-period, as shown by the flat regression lines. The two bottom panels replicate the exercise using the sovereign exposures of the main banks (those that participated in the EBA stress tests; the bank-sovereign correlation is the same as in the top panels). This might yield more reliable results, as large banks should be more representative of the CDS indexes used to compute the correlations; furthermore, the exposure to

¹⁴ The relatively low average sovereign-bank correlation may reflect the change in pattern that occurred in Portugal, Greece and Ireland, the countries under a program of financial assistance. If these countries are eliminated from the sample the average correlation rises to 0.47, roughly in line with the average sovereign-non-financials correlation.

¹⁵ Due to data availability problems, the indicators of banks' exposures to domestic sovereigns shown in the figures overlook other technical forms of bank exposure to sovereigns, beginning with loans. These are potentially important. As of December 2012, Italian banks' exposures to the domestic sovereign in forms other than bonds amounted to about €70 billion.

Domestic sovereign/banks CDS premia correlation and banks' exposure to domestic sovereign



Sources: based on European Banking Authority, Eurosystem and Thomson Reuters Datastream data.

(1) Correlation of daily changes in CDS premia between the domestic sovereign and banks, computed for ten euro-area countries and over the periods indicated. Data refer to 5-year CDS denominated in euros. – (2) Holdings of domestic general government bonds at 31 December 2010 as a percentage of capital and reserves. – (3) Gross exposures to domestic sovereign on a consolidated basis at 31 December 2010 of the sample of banks that participated in the stress tests conducted by the European Banking Authority in July 2011, as a percentage of total regulatory capital.

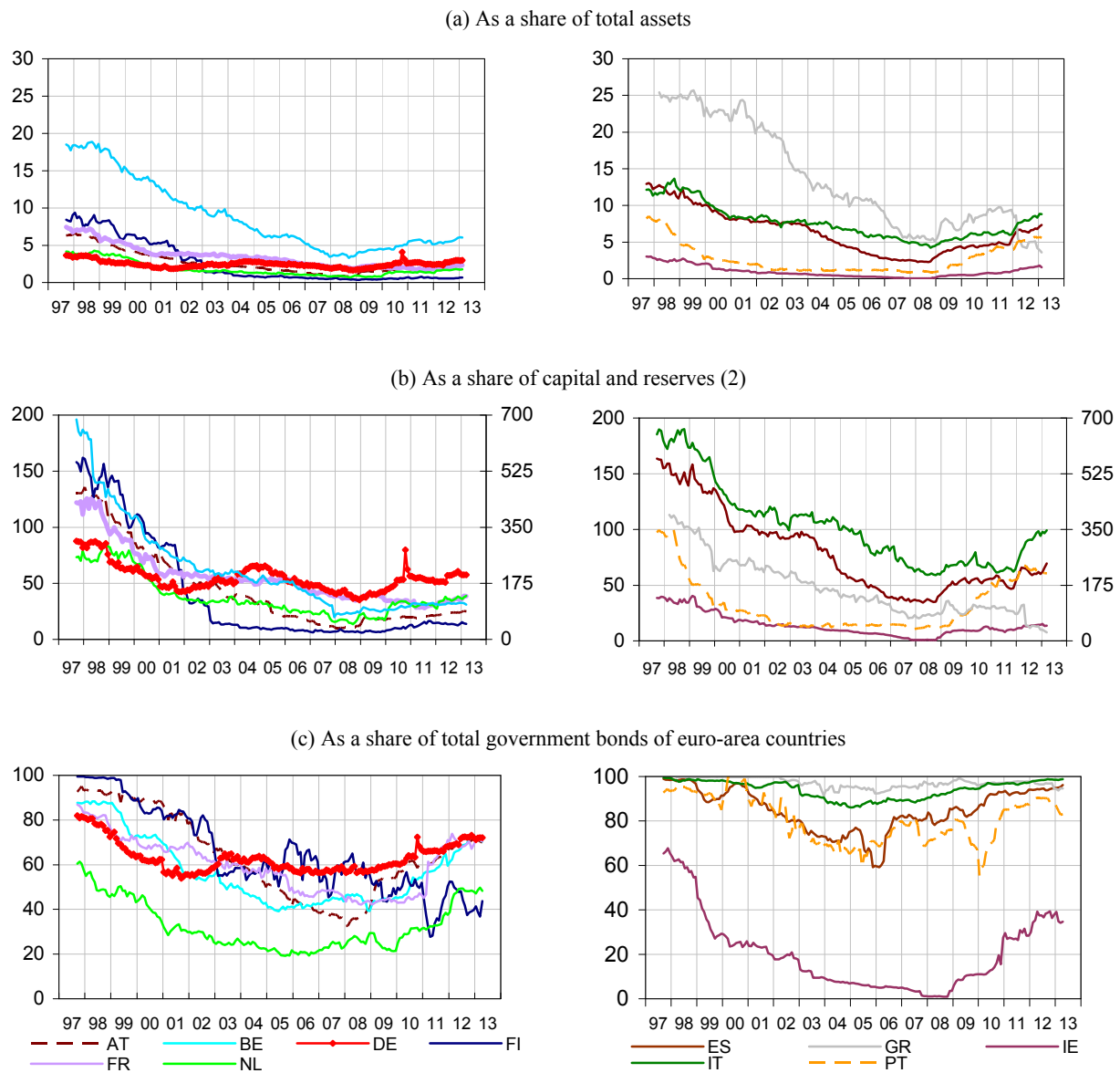
the domestic sovereign is on average much larger than for the entire system. However, the results of the top panels are confirmed.

Figure 4 adds a longer time-series perspective to the analysis, yielding several additional insights. First, in all the countries considered, banks' exposure to the domestic sovereign declined steadily between the mid-1990s (the earliest date available in our data sample) and the end of 2008 (Panels a and b). In most countries this date marks an inversion of the trend: banks began to buy domestic government bonds once more, steadily increasing their holdings – although to levels well below historical maxima. While common to most of the countries considered, this pattern (a decline in the home bias, and a reversion of this trend after 2008) is more evident in those whose sovereign

conditions are perceived as weak, and in Belgium. It is also clearly visible in Panel (c), where domestic bonds are measured as a share of the portfolio of sovereign bonds.¹⁶

Figure 4

Domestic government bonds held by banks (1)
(per cent, monthly data)



Source: based on Eurosystem data.

Country legend (from left to right): AT, Austria; BE, Belgium; DE, Germany; FI, Finland; FR, France; NL, Netherlands; ES, Spain; GR, Greece; IE, Ireland; IT, Italy; PT, Portugal.

(1) Bonds issued by the general government. – (2) Data for Belgium and Greece are shown on the right-hand axis.

¹⁶ Some recent research using micro data does detect a link between banks' exposure to the sovereign and the comovements between bank-sovereign risk/performance measures. See, for example, Bedendo and Colla (2013), discussed above, and Acharya and Steffen (2013). Reconciling these findings with ours is beyond the scope of the present paper.

4. Why have banks' exposures to domestic government bonds increased since end-2008?

Banks in virtually all European countries had been reducing their exposures to their domestic sovereign (indeed, to all euro-area sovereigns) for several years, but in the Fall of 2008, after the Lehman default, they resumed purchases. This timing of events shows that under normal circumstances banks have no incentive to load up with government paper, in spite of the preferential treatment the regulations grant to this form of investment. It also suggests that the increasing exposure of banks to their domestic sovereign after 2008 was a consequence, not a cause, of the crisis (although it may have contributed to exacerbating the difficulties of the domestic private sector, thus feeding the bank-sovereign loop).

What were the mechanisms whereby the crisis triggered a resurgence of the home bias from the end of 2008 on? Battistini, Pagano and Simonelli (2013) advance three non-mutually exclusive hypotheses: (i) *Moral suasion*: high-risk sovereign issuers may exert “moral suasion” on their domestic banks, asking them to support demand for sovereign debt; (ii) *Gambling for resurrection/Carry trade* (also advanced by Acharya and Steffen (2013)): undercapitalized banks may have “gambled for resurrection” by engaging in carry trades – getting cheap liquidity from the ECB and investing it in high-yielding bonds, which absorbed little if any capital; and (iii) *Re-nationalization/fragmentation*: Banks wishing to hedge redenomination risk gradually moved to match their assets and liabilities at the national level, replacing foreign assets with domestic ones.

Using factor analysis, Battistini, Pagano and Simonelli (2013) decompose each of the euro-area domestic sovereign yields into a country-specific and a systemic component, and show that banks in the fiscally vulnerable countries (Greece, Ireland, Italy, Portugal and Spain) increased domestic sovereign holdings in response to an increase in the country risk factor, whereas banks in the core countries did not. Furthermore, banks in all countries increased their domestic sovereign holdings in response to an increase in the systemic risk component. They read this as evidence in favour of hypothesis (iii) and, for banks in fiscally weak countries, in favour of hypothesis (i) or (ii), between which they were unable to discriminate.

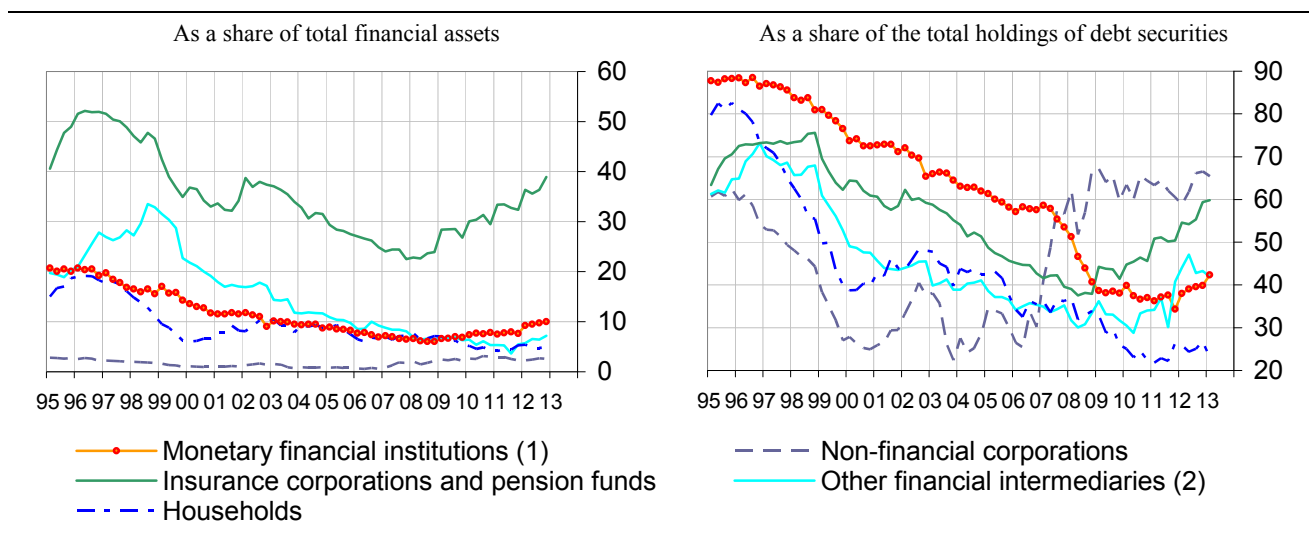
The authors acknowledge however that hypothesis (ii) does not have direct implications for the home bias. In principle, every bank gambling for resurrection in the euro area could have used the carry trade strategy. Indeed, Acharya and Steffen (2013) find that this carry trade behaviour is stronger for large banks, and banks with low Tier 1 ratios, in both GIPSI and non-GIPSI countries, but not for similar banks in other western economies. This does not lend support to hypothesis (ii) as an explanation of the increased home bias. Interestingly, the finding by Acharya and Steffen (2013) that certain large banks in countries not under stress increased their sovereign bond

exposures to Italy, Spain and Portugal in 2010 would be consistent with a *decline* in the home bias for these countries. For this evidence to square with our Figure 4, it could be that smaller banks did not increase their exposures. This suggests that a full breakdown by bank size could yield valuable insights.

Additional indications on the drivers of the recent increase in banks’ holdings of domestic government bonds can be obtained by comparing banks’ portfolio choices to those of other types of financial institutions. Figure 5, left panel, shows domestic government bond holdings as a share of total financial assets for the main Italian institutional sectors (similar data for other countries are not available). In the 2008-2012 period the share increased for all sectors except households. The increase was particularly large for insurance companies and pension funds. Similar results hold using total debt securities as an alternative scale variable (Figure 5, right panel).

Figure 5

Holdings of domestic government bonds by selected institutional sectors in Italy
(per cent, quarterly data)



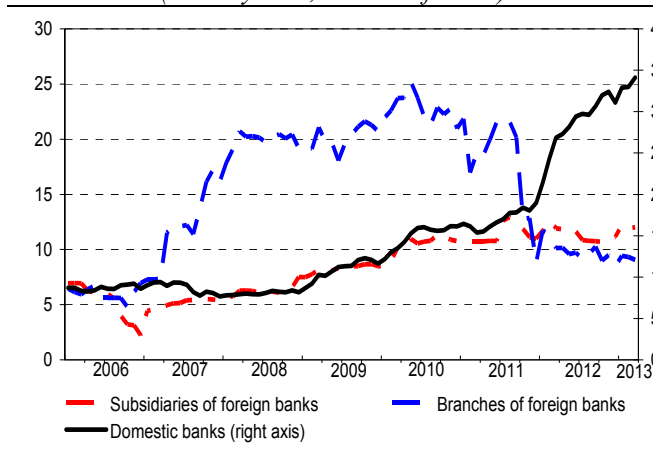
Source: based on Bank of Italy data obtained from the Italian financial accounts.

(1) Monetary financial institutions mainly include banks. – (2) Other financial intermediaries mainly include non money-market mutual funds.

Overall, these trends do not appear consistent with “gambling for resurrection” by Italian banks, or with the “moral suasion” hypothesis. They also suggest that the preferential treatment granted by banking regulations to domestic sovereign exposures (see Section 2) is unlikely to be a key driver of the phenomenon, as large purchases of government paper were also observed among other financial intermediaries.

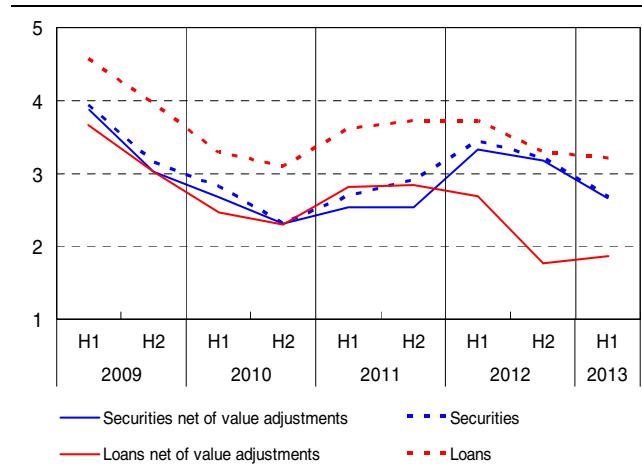
Figure 6 brings further evidence on the “moral suasion” hypothesis. Domestic government bond holdings are reported for three groups of Italian banks: domestic intermediaries and branches and subsidiaries of foreign banks. Under the moral suasion hypothesis, one would expect only domestic banks to increase their holdings. In reality, the figure tells two different stories. Between August 2008 and the summer of 2011 both domestic banks and subsidiaries roughly doubled their holdings; branches kept theirs roughly constant. From the last months of 2011 on the behaviour of the three groups diverged radically: domestic banks sharply increased their holdings following the ECB’s three-year Long-Term Refinancing Operations (LTROs), whereas branches and subsidiaries did not. This evidence, in line with Acharya and Steffen (2013), does not seem consistent with the moral suasion hypothesis prior to the Fall of 2011. Afterwards it might be. However, the micro data reveal that purchases of sovereign paper were quite widespread among Italian banks, including very small ones (see Bank of Italy (2012) p. 27). This makes it difficult to believe in a strict version of the hypothesis. Overall, this evidence suggests that the aggravation of the sovereign debt crisis in the Fall of 2011 marks a watershed in banks’ behaviour, and that a single hypothesis may be insufficient to explain both the years 2008-2011 and the more recent period.

Figure 6
Holdings of Italian government bonds: Italian banks vs. branches and subsidiaries of foreign banks
(monthly data; billions of euros)



Source: based on Bank of Italy data.

Figure 7
Rates of return on bank assets (1)
(per cent)



Source: Bank of Italy (2013).

(1) Income as a percentage of the respective balance-sheet items. Excludes branches of non-Italian EU banks.

The above evidence is consistent with the *Re-nationalization/fragmentation* hypothesis advanced by Battistini, Pagano and Simonelli (2013): purchases of domestic government paper, not only by banks but also by other financial intermediaries, may have been driven by the desire to hedge redenomination risk, which gradually led them to match assets and liabilities at the national (rather than the currency) level. They were part of the general phenomenon of re-nationalization of euro-area financial markets during the period, which was also visible in the fall of cross-border

interbank lending. Another argument in favour of this hypothesis is that financial intermediaries in the countries characterized by weak sovereign conditions knew that in the event of a domestic sovereign default they would have been in serious difficulty, due to direct exposure and the other channels that link banks to their domestic sovereign. While sovereign crises are not always followed by banking crises (Reinhart and Rogoff (2010)), Figure 4.b shows that for many banking systems sovereign exposure in the form of bonds amounted to a large share of own funds, even at the minimum achieved around end-2008 – about 40 percent for Spanish and German banks, 60 percent for Italian banks and almost 80 percent for Belgian banks. A sovereign default would have been hard to survive.¹⁷ More generally, Figure 2 and Table 2 suggest that the destinies of a sovereign and of the domestic economy are (perceived by the markets as) strictly intertwined. In the end, a “simul stabunt, simul cadent” type of story is likely to be part of the explanation.

Bank of Italy (2012) and (2013) add two additional explanations of Italian banks’ large purchases of domestic government bonds in the last 2 years:¹⁸ (iv) *Precautionary motive*: in the second half of 2011, with the escalation of the sovereign debt crisis, wholesale markets had all but frozen. Euro-area banks, especially those of countries under stress, had become unable to roll over their wholesale debt. Therefore, they took ample advantage of the 3-year LTROs and invested the funds in government securities, which could be easily liquidated to reimburse maturing wholesale bonds, if conditions for new issuances continued to be prohibitive; and (v) *Yield motive*: from 2011 on the risk-adjusted differentials between returns on investments in securities and returns on loans to resident customers in Italy widened considerably (Figure 7). Therefore, banks chose the most profitable investment. This explanation is different from the *gambling for resurrection/carry trade* hypothesis. In this period an Italian bank did not need to be undercapitalized, or to be gambling for resurrection, in order to invest in government bonds: virtually all banks made this investment. And ex post, the related returns helped sustain their interest margin at a critical moment, when the large losses on loans to firms were absorbing most of the operating profits.

¹⁷ In reality, banks’ vulnerability to their sovereign is much larger than can be gauged via sovereign bond holdings. One should also include other direct exposures (loans to the central government, exposures to local administrations, etc.), indirect exposures – for instance, loans to firms and households that have claims on the sovereign – and the other channels discussed in Section 2.

¹⁸ A further take on the issue is adopted by Broner, Erce, Martin and Ventura (2013) in a theoretical analysis. They argue that the increase in the domestic demand for government securities in fiscally stressed countries can be explained by the so-called “creditor discrimination” hypothesis, according to which domestic creditors, compared with foreigners, are less likely to see their debt defaulted on (or, equivalently, more likely to be repaid) in the event of a sovereign default.

Overall, the evidence presented in this paper provides no support for hypotheses (i) and (ii), i.e. *Moral suasion* and *Gambling for resurrection*, while it is consistent with hypotheses (iii) through (v), i.e. *Re-nationalization/fragmentation*, *Precautionary motive* and *Yield motive*.

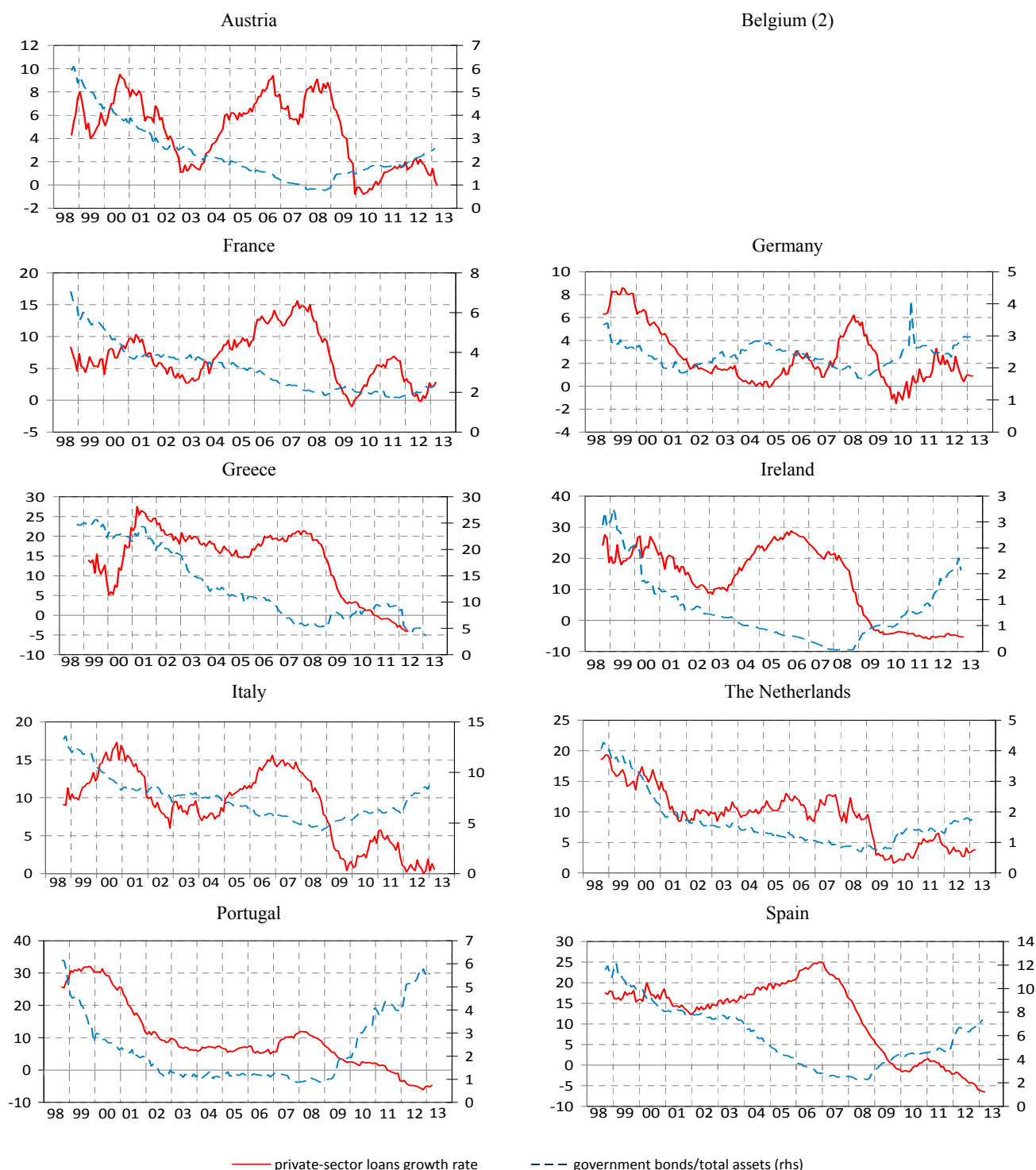
5. Sovereign bond purchases and lending patterns

Several commentators have argued that banks' large purchases of government paper in 2012-13 crowded out lending to the private sector. Figure 8 plots the share of domestic sovereign bonds in banks' portfolios against the 12-month growth rate of loans to the private sector. Until end-2008 there is no clear relationship between the two series. With the onset of the crisis the relationship becomes negative in the fiscally weak countries. Note however that in virtually every country the deceleration in lending started in the year prior to the Lehman default.

Figure 9.a, taken from Bank of Italy (2013), sheds further light on this issue. The growth rates of government bond portfolios and lending, computed using individual bank level data for Italian banks, show that there is no clear relationship between the two phenomena. Furthermore, Figure 6 showed that in recent years Italian banks added to their portfolio of Italian government securities whereas branches and subsidiaries of foreign banks reduced theirs, but Figure 9.b shows that lending patterns by these two groups of banks is broadly similar. This points to demand factors (arguably similar across banks) as the main drivers of credit dynamics over the period, and suggests that the link between purchases of general government securities and the fall in lending is weak. Overall this evidence is not consistent with the view that purchases of sovereign bonds drove the fall in lending from the second half of 2011 on.¹⁹

¹⁹ This conclusion is supported by Bofondi, Carpinelli and Sette (2013). They find that the decline in bank lending in Italy in the second half of 2011 (the worst phase of the sovereign debt crisis) was different across domestic banks and banks headquartered abroad. At the same time, they show that bank-specific factors – including the holdings of sovereign debt issued by the countries most hit by the crisis (Greece, Ireland, Italy, Portugal and Spain) did not affect lending patterns.

Annual growth rate of bank loans to the private sector and banks' exposure to domestic government bonds in the euro area (1)
(monthly data; per cent)

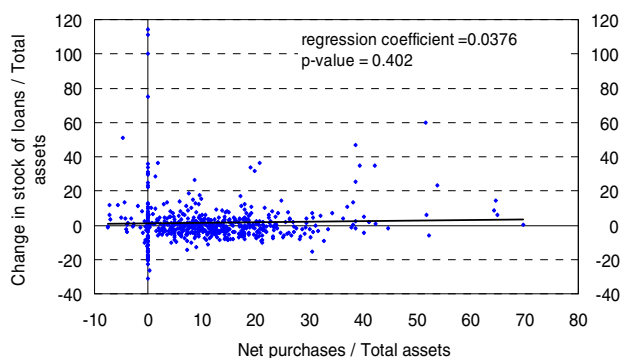


Source: based on Eurosystem data.

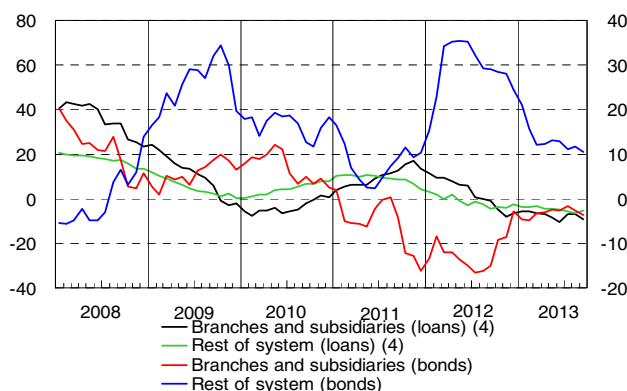
(1) Loans are adjusted for the accounting effect of securitizations. Domestic government bonds refer to bonds issued by the general government. – (2) Data are missing due to confidentiality issues.

**Italian banks' purchases of domestic government bonds and
growth in lending to the non-financial private sector (1)**
(per cent and percentage points)

(a) Relation between the change in loans to the non-financial private sector and purchases of domestic government bonds (2)



(b) Growth in lending to the non-financial private sector and in banks' holdings of general government securities (3)



Source: Bank of Italy (2013).

(1) Domestic government bonds issued by the general government. Cassa Depositi e Prestiti is excluded. Holdings of government bonds are net of fluctuations in market prices. – (2) Excludes observations before the 1st and after the 99th percentiles of the distribution of either of the two indicators. – (3) Twelve-month growth rate. – (4) Right-hand side.

6. The policy response to the sovereign-bank nexus

The close interdependence between the state and the banking system presents policy-makers with two main challenges: how to manage episodes of systemic instability stemming from downward spirals between sovereign strains and bank fragility; and how to loosen the sovereign-bank nexus on a permanent basis.

The recent euro-area experience is instructive in both respects. Large-scale long-term bank refinancing operations, flexible monetary control techniques and the Outright Monetary Transactions program have been fundamental in helping to defuse perverse loops between sovereign risk and bank risk. Massive intervention in the money market and flexible operational frameworks, however, are not costless. They reduce banks' willingness to engage in interbank lending, tend to increase banks' asset encumbrance, shift credit risk to the central bank and encourage moral hazard (see CGFS (2008)). Moreover, these policies may lead to an increase in banks' holdings of domestic government bonds, raising their direct exposure to sovereign risk. Thus, they should be used sparingly, with appropriate safeguards in place (e.g., conservative haircuts, concentration limits on the types of collateral), and be removed or reined in as soon as more normal conditions are reestablished.

Concerning the long-term solutions to the sovereign-bank nexus, several considerations come to mind. First, a strong fiscal condition is a necessary (although not a sufficient) condition for avoiding the adverse feedback loop involving weakening public finances, deteriorating macroeconomic conditions and fragile banking systems. This suggests that fiscal policy should be seen as a key component of the macroprudential policy apparatus, and a sound fiscal position as a prerequisite for a countercyclical use of fiscal policy. The narrow ties between banks and the domestic sovereign are yet another reason to maintain sound public finance conditions. In this respect, significant institutional progress has been made in the EU.

A second key factor is the quality of financial regulation and supervision. This is true even for countries with strong public finances, as the latter increase the value of implicit guarantees and thus foster moral hazard on the part of financial institutions. In this perspective, adequate capital cushions help shield the sovereign from the banking system, but they also shield the banking system from its sovereign. Improvements in this area are also under way. The new regulations establish several extra capital buffers: for systemic institutions; for countries with a large financial system relative to the domestic economy (the systemic risk buffer); and for periods of buoyant economic and financial conditions (the countercyclical buffer). These capital cushions should increase banks' resilience in a crisis and reduce the likelihood (and investors' expectations) of a public bailout. This should weaken the correlation between bank funding costs and sovereign risk, enhance market discipline and reduce excessive risk-taking by banks.

Third, enhanced transparency of banks' balance sheets will also help reduce the sovereign-bank correlation. In a crisis, lack of information may prevent investors from discriminating banks on the basis of fundamentals and actual exposures. In such cases, what seems the quickest solution from an individual viewpoint – i.e. cutting exposures to entities located in troubled countries – may lead in the aggregate to self-reinforcing fire sales and sudden capital outflows, with potentially catastrophic consequences for financial stability.

In the case of the euro area, moving banking supervision and resolution from the national to the supranational level appears the keystone of a framework that can effectively sever the link between banks and domestic sovereigns, and eradicate a source of fragmentation of the banking system (Van Rompuy et al. (2012), Draghi (2012)). This is the rationale underpinning the European banking union project (Mersch (2013)), with provision for a single supervisory system and, in perspective, a common resolution authority and deposit guarantee scheme.

Some authors have suggested revising the preferential regulatory treatment of sovereign exposures (see e.g. Gros (2013), Acharya and Steffen (2013), Battistini, Pagano and Simonelli

(2013)). The argument is that sovereign default risk is clearly not zero, hence the preferential treatment given by prudential regulations to domestic sovereign exposures is not justified, and should be replaced with an approach more similar to that applied to exposures vis-à-vis private sector operators. This argument is in principle correct. However, several caveats are in order.

First, in crisis times, given that in many countries financial sector operators – banks, but also others, including insurance companies and pension funds – have large exposures to their domestic sovereign, such a reform could have strong procyclical effects. If implemented in the current situation, it could create a capital shortage, exacerbate credit market malfunctioning and reignite tensions in sovereign debt markets. Thus, even the advocates of regulatory reform admit that the subject should be discussed only after the current crisis has been fully resolved.²⁰

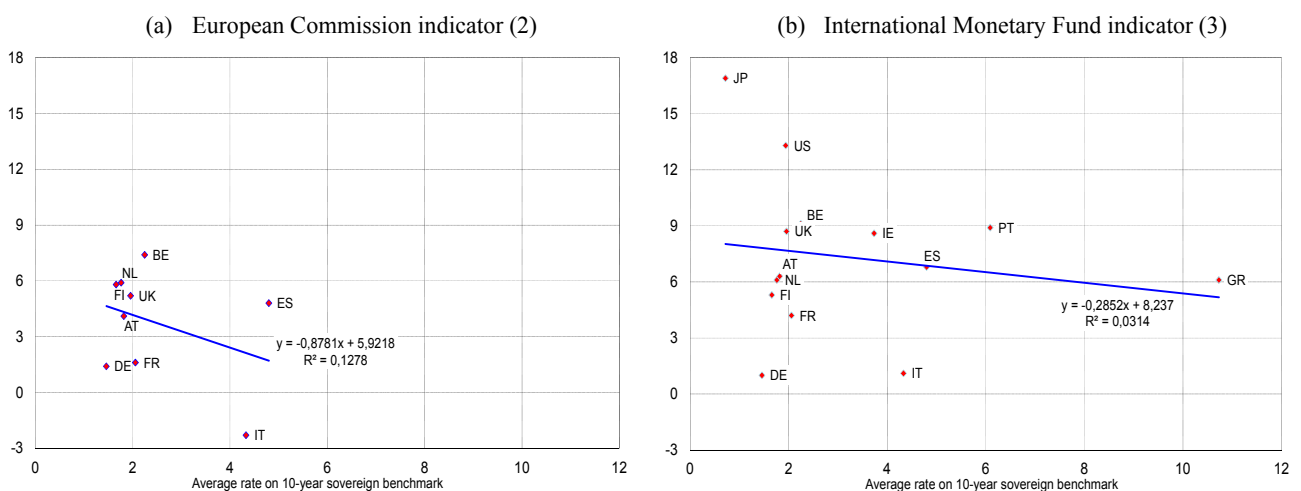
Even overlooking short- to medium-term difficulties, and considering a long-run equilibrium condition, following this path would present several challenges. First, some conceptual issues remain unresolved. Where individual countries are responsible for both fiscal and monetary policy, the sovereign always has the ultimate option of inflating its debt away, i.e. to trade-off default risk with inflation risk (Goodhart (2012)). This does not necessarily apply to monetary unions. Should the prudential treatment of sovereign exposures be kept preferential in countries with fiscal and monetary sovereignty, and abandoned in monetary unions such as the euro area? Or, should it be revised in both to take due account of default risk and inflation risk? At the same time, we have argued above that in the euro area, unlike elsewhere, prudential regulation produces no home bias in banks' sovereign portfolios. Indeed, we showed that, throughout the period leading up to the Lehman collapse, banks' exposure to the domestic sovereign steadily declined in virtually all the European countries examined, and that the regulations in force likely contributed to this phenomenon, by eliminating one incentive to maintain a home bias. Since it is the home bias that fuels the sovereign-bank loop, euro-area countries could have one reason less than others to amend the regulations, other things being equal. What is the balance of these two arguments for the euro area? More broadly, the concept of a risk-free rate is hard to define in theory, as Goodhart's argument shows, and even more difficult to operationalize. Should it be absolute, or dependent on the institutional and political context? The implications of this question extend beyond banking; the European insurance sector is currently grappling with it too (see EIOPA (2013)).

²⁰ Gros (2013) suggests using a grandfathering rule, so that only new exposures to domestic government would be subject to regulatory constraints. This solution is unlikely to work, as it would still create strong incentives to frontload the adjustment. The experience with the Basel III capital requirements clearly illustrates the point.

Second, amending the current regulations might prove tricky. Applying non-zero prudential risk weights to sovereign debt holdings could entail extending the use of ratings by agencies. But this would go against recent FSB principles stating that the medium-term objective must be to gradually eliminate credit rating agencies from the regulations – a principle that finds a forceful justification in the questionable performance of rating agencies in the current financial crisis (failing to foresee the build-up of systemic risks, actively contributing to fueling some of them, enhancing financial system procyclicality) and in their conflicts of interest. Weighting methods based on market indicators – e.g. sovereign spreads – might result in even greater procyclicality and tend to deliver self-fulfilling equilibria of the bad type, as recent experience in the euro area has shown. Methods using internal-ratings-based (IRB) estimates of the probabilities of default, relying on historical time series of defaults, would likely deliver quasi zero risk weights, leaving the problem unaffected. More viable methods could build on quantitative exposure limits, or on indicators of long-term fiscal sustainability/soundness elaborated by international organizations, although these could also present problems. For instance, the indicators of fiscal sustainability elaborated by the IMF and the EU Commission put Italy and Germany on a roughly similar footing, and place the UK, Japan and the US in a relatively unfavorable position. Thus, the correlation of these indicators with ratings, or with the markets’ assessment, is rather poor (Figure 10). Who should be trusted?

Figure 10

Indicators of long-term fiscal sustainability and yields on 10-year government bonds (1)
(percentage points)



Sources: based on EU Commission, International Monetary Fund and Bloomberg data.

(1) Higher values of the fiscal sustainability indicators, measured on the vertical axis, denote larger fiscal imbalances. – (2) The EU Commission indicator measures the increase in the primary surplus/GDP ratio (with respect to 2011) needed to satisfy the general government intertemporal budget constraint, given demographic and macroeconomic projections. The estimate takes account of the level of the debt, the outlook for economic growth, changes in interest rates and future primary surpluses, which are affected by the trend of age-related expenditure. Data from European Commission, Fiscal Sustainability Report 2012. – (3) The IMF indicator measures the increase in the primary surplus/GDP ratio that would need to be achieved by 2020 (and maintained for a further decade) in order to bring the debt/GDP ratio down to 60 per cent by 2030. The value includes the projected increase in health and pension expenditure between 2013 and 2030.

Third, piecemeal attempts at amending the regulations could prove problematic. As we have seen, the status of sovereign exposures is special due to preferential risk weighting, but also to liquidity regulation and long-standing central bank practices. A comprehensive approach to the matter should probably be adopted.

7. Conclusions

The paper examines the connection between the creditworthiness of a sovereign borrower and that of its domestic banking system (the “sovereign-bank” linkage), and assesses what economic policy measures could make the linkage less stringent. The analysis, based on graphs and correlations, does not seek to identify cause-and-effect relations in a rigorous fashion, but it highlights a number of results.

The “sovereign-bank” linkage is fostered through a number of channels that work on both the liability and the asset side of banks’ balance sheets. Regulation also plays a role (in particular, the capital charges for government securities are typically low or nil). However, within the euro area regulatory factors favour banks’ exposure to any area Member State, not just the one in which they are established. This incentive to diversify tends to attenuate the link between banks and the domestic sovereign and should accordingly be judged favourably with a view to financial stability.

From the analysis of credit risk premia (gauged by CDS contracts and banks’ exposure to the domestic sovereign), three facts stand out. First of all, within the euro area the sovereign-bank link, as indicated by the correlation between the CDS premia for the sovereign and banks, is no stronger than the link between sovereigns and domestic non-financial corporations, both before and after June 2011. Second, there is no clear connection between the proportion of banks’ assets consisting in domestic government securities and the sovereign-bank correlation. Third, in all the countries of the area the proportion declined steadily from the mid-1990s through to the end of 2008, and turned up again in the following years. In Italy, the same pattern is found for insurance companies and pension funds.

This evidence suggests, first, that the risk of a government’s insolvency is a factor that permeates the entire national economy and is transmitted to all of the country’s private institutions, not just to the banks; second, that the recent expansion of banks’ government securities portfolios is a consequence, not a cause, of the crisis; and third, that the regulatory incentives for banks to hold government securities were not decisive in the expansion.

What were the mechanisms whereby the crisis triggered a resurgence of the home bias in banks' sovereign portfolios from the end of 2008 on? Overall, the evidence presented in this paper suggests that the phenomenon should be seen as part of the general pattern of re-nationalization/fragmentation of the euro-area financial markets that has taken place in recent years. A factor may have been banks' efforts to hedge redenomination risk by matching assets and liabilities by nation, no longer by currency. In Italy, we argue that after the end of 2011 two additional factors fostered home bias: waiting for wholesale bond markets to normalize, banks needed to temporarily invest the funds acquired from the Eurosystem via the three-year LTROs; also, banks reacted to the widening of the risk-adjusted yield spread between government securities and loans caused by the high losses on credit. By contrast, our evidence provides no support for two hypotheses recently advanced in the literature, according to which the increased home bias was the result of political pressure on domestic banks, aimed at supporting the demand for sovereign debt (the "moral suasion" hypothesis), or the result of speculative purchases of high-yield bonds by undercapitalized banks using cheap liquidity from the ECB (the "gambling for resurrection" hypothesis).

To diminish the feedback loop between sovereigns and banks, stiffer prudential treatment of sovereign exposures has been proposed (for instance, by introducing capital requirements). In our view, these proposals deserve careful scrutiny. In the present phase they could exacerbate the instability of the government securities markets and of banks' funding conditions. And even when the sovereign debt crisis has been definitively overcome, their application would raise both theoretical and practical difficulties. First, it is not clear whether the prudential treatment of the government paper of countries with full monetary and fiscal sovereignty should be different from that of countries, like those of the euro area, that lack it. Second, it is not clear what measure of sovereign risk should be adopted in practice, in the light among other things of the need to reduce regulatory dependence on rating agencies. Finally, to avoid piecemeal approaches, the treatment of government securities would have to be reconsidered in all areas of financial regulation, including liquidity requirements and collateral for monetary policy operations.

To attenuate "sovereign-bank" feedback, it is necessary to ensure the soundness of the public accounts and to strengthen the banks, by means of higher capital requirements and careful supervision. A significant contribution can also come from greater transparency of banks' exposures to sovereign borrowers. For the euro area, Banking Union is an essential part of the solution.

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