EUROPEAN ECONOMY
BANKS, REGULATION, AND THE REAL SECTOR

SOVEREIGN AND BANKING RISKS: WHAT POLICIES?

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European Economy
Banks, Regulation, and the Real Sector
2016.1

Sovereign and banking risks: What policies?

What is European Economy

European Economy – Banks, Regulation, and the Real Sector (www.european-economy.eu) is a new on line journal to encourage an informed and fair debate among academics, institutional representatives, and bankers on the regulatory framework and its effects on banking activity and the real economy. It is an independent journal, sponsored by Unicredit Group.

The journal aims at becoming an outlet for research and policy based pieces, combining the perspective of academia, policy making and operations. Special attention will be devoted to the link between financial markets and the real economy and how this is affected by regulatory measures. Each issue concentrates on a current theme, giving an appraisal of policy and regulatory measures in Europe and worldwide. Analysis at the forefront of the academic and institutional debate will be presented in a language accessible also to readers outside the academic world, such as government officials, practitioners and policy-makers.

This issue of European Economy discusses the so called "diabolic loop" between sovereign and banking risks and the pros and cons of a tighter regulatory framework for banks' sovereign exposures. It takes stock of the recent institutional and academic debate on the best measures to limit the potential effect of sovereign distress on banks' default risks and discusses the foremost challenges ahead.

EUROPEAN ECONOMY
BANKS, REGULATION, AND THE REAL SECTOR
YEAR 2 - ISSUE 1

European Economy – Banks, Regulation, and the Real Sector
is an online publication of the Review of Economic Conditions in Italy magazine.
Accessible free of charge at: www.european-economy.eu

Registrazione del Tribunale di Roma n. 13977 del giugno 1971

PUBLISHED BY
Europeye srl
via Gregorio VII 368 - 00165 Roma
t. 06 3700556 - www.europeye.com

ISSN 2421-6917

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From the Editorial Desk

Diabolic Loop or Incomplete Union? Sovereign and Banking Risk

by Giorgio Barba Navaretti, Giacomo Calzolari and Alberto Franco Pozzolo[1]

1. The issue

The "deadly embrace", the "vicious circle" and the "diabolic loop". These evocative expressions refer to the perverse effects of the interconnection between sovereigns' and banks' liabilities that emerged as a key feature of the financial crisis started in 2007-2008. In some countries, it was a severe banking crises that forced the government to support and bailout banks, causing a surge in the deficit of the public sector and contributing to the subsequent domestic sovereign bond crisis (for example, in Ireland; see the account of the Irish Crisis by Lars Frisell in this issue). In other cases, it was the sovereign debt crisis that caused the instability and in some cases the collapse of the domestic banking sector (for example, in Greece). This double link of faith is well known to investors, as illustrated in Figures 1 and 2 of the 'Numbers' section of this issue, that shows the high correlation between Sovereign CDS premia and bank CDS premia, respectively. If this double edged scenario were not enough, in recent years banks in the peripheral euro-area countries further increased their holdings of domestic sovereign debt as a reaction to sovereign distress, showing at the same time a contraction in credit supply, an increase in lending rates, and higher solvency risk.[2]

1. University of Milan, University of Bologna, University of Molise
2. See below, and Altavilla et al. (2016) and Acharya and Steffen (2015), among others.

The single supervisory mechanism (SSM), one of the pillars of the Banking Union, was established precisely to severe this perverse link, as clearly reported in the Euro Area Statement from the 28-29 June 2012 Summit: "*We affirm that it is imperative to break the vicious circle between banks and sovereigns. The Commission will present Proposals on the basis of Article 127(6) for a single supervisory mechanism shortly.*"

Yet, whereas the Banking Union covers one side of the loop – the risk that banks' crises end up on the shoulders of tax payers – this is not the case for the other side of the loop: that too much exposure towards home sovereign bonds weakens banks' balance sheets.

The combined action of two of the three pillars of the Banking Union fully or partially implemented as yet – enhanced and centralised supervision and higher capital requirements; a resolution framework with bail-in procedures – do transfer effectively a large share of bank risks and of the costs of banks' resolution from tax payers to investors. The third pillar, yet to be implemented, a common European Deposit Insurance Scheme (EDIS), introduces a risk sharing mechanism among Euro countries that partly reduces the direct link between national tax payers and national failing banks. Though the Union is still incomplete and the risks of missteps during transition are still high, nevertheless the institutional design is there, and, arguably, it will be fully implemented in a foreseeable future.

In contrast, the present regulatory framework in Europe still considers banks' exposure towards domestic sovereign bonds as risk free and it grants very favourable provisions in terms of large exposure limits towards these assets (a similar framework currently applies also to the US, see the article Institutions in this issue). The debate on how to deal with this risk is fierce. Several banks and governments in the more vulnerable European countries are extremely reluctant to a tightening of the regulatory framework that would raise capital requirements and limit the size of sovereign exposures. Others in less vulnerable countries, and a large share of the academic and institutional community, argue instead that these steps are urgent and appropriate to enhance the financial stability of the European Union.

This issue of European Economy deals with this debate, discussing different measures that have been proposed. As always, our aim is to provide an impartial account of the different positions and to highlight the trade offs involved in

alternative choices. Several bottom lines emerge from our discussion. The first one has to do with the time frame of the analysis: *we must clearly distinguish the assessment of what should have been done during the financial and the sovereign crisis, between 2009 and 2014, from what can be done now, and what should be done in the foreseeable future, under more "normal" circumstances.* For this reason, our editorial will initially discuss the period following the outburst of the financial crisis, then what should be done under "normal" circumstances, and finally the transition to the new long-run equilibrium.

Second, *the trade-offs have different features in countries with their own central bank and currency and in countries that belong to a Monetary Union, like the Euro area. In the latter case, the implicit mechanisms of risk and burden sharing among member states (or the lack of explicit ones), and the constraints faced by the common lender of last resort in supporting sovereigns of single member states, affect crucially the terms of the debate.*

The inability of the Eurosystem to act swiftly and thoroughly as a lender of last resort, the lack of a Banking Union and of an effective mechanism of fiscal support among Member States were key ingredients in the building up of the vicious circle at the inception of the crisis, besides, of course, for the primordial vice of excessive deficit and debt in some of the vulnerable countries. *The loop was indeed diabolic, but to a large extent unavoidable in that institutional setting. At the same time, effective mechanisms of risk sharing have been implemented or are envisaged by the institutional reforms that took place during and in the aftermath of the crisis. It is precisely the implementation of these mechanisms, that should be completed and implemented as speedily as possible, that requires addressing, under "normal times", the inherent different levels of riskiness of European Sovereigns. But action requires time, a very carefully designed transition, and ingenious institutional mechanisms,* especially given that risk sharing devices have not yet been fully implemented recovery is slow and still fragile in front of unexpected events like Brexit, which is unfolding at the time of writing.

To look at the different aspects of the debate, we have collected several contributions, with the journal's usual mix between academia, business and representatives from institutions.

The rest of this editorial is structured as follows. We first briefly discuss the issue of whether and under what circumstances sovereign liabilities should

indeed be considered as risky. We then discuss what should have been done during the high momentum of the crisis to tame the diabolic loop, especially in the perspective of the monetary union. Next, we examine the state of the debate on what should be the optimal setting in normal times and on the road that might take us from where we are to such equilibrium.

2. Are sovereigns risky?

Sovereign bonds can indeed be risky, even though their probability of defaulting is low (no OECD country defaulted on its domestic debt between 1950 and 2010; Reinhart and Rogoff, 2008). Dramatic busts, like that of Argentina in 2002, remind us that mismanaged economic policies can lead countries to default on their sovereign debt, with dramatic consequences for the population. And the 2011 partial default of Greece reminds us that they can occur also in Europe and within the Euro area.

The evidence that sovereign risk increased during the crisis and that a large share of this risk is borne by banks, especially in vulnerable countries, is strong. It is based on several ingredients. First, the rapid rise of the spreads between the interest rates paid on the sovereign of vulnerable countries (derogatorily defined as PIIGs, from Portugal, Italy, Ireland, Greece and Spain, and that in the following we will name using the alternative and more politically correct acronym of GIIPs), reported in Figure 3 if the 'Numbers' section of this issue. Second, the fast increase in the amount of sovereign bonds held by banks, especially those based in GIIPs (Figures 4 and 5). Third, the "home country bias" of these assets, i.e. the dominant share of home sovereigns on total sovereigns held by banks (Figure and Table 1). Fourth, the rapid and generally parallel rise in the price of CDS on sovereigns and banks already documented in Figures 1 and 2.

Also, the riskiness of sovereigns varies considerably within the Euro. Brunnermeier et al. (2016), provide a thorough assessment of the heterogeneity of countries of the Euro area (as of December 2015). Averaging out and indexing Moody's and S&P scores, they rank Euro countries on a scale from 1 (AAA) to 19 (CCC-). Only Germany, Netherlands and Luxembourg have

a score of 1. As for the GIIPS, Ireland has 6.5, Spain 9.0, Italy 9.5, Portugal 12 and Greece 19. The expected loss rates in a benchmark scenario range from 0.45 for safe countries to 34.16 for Greece. Even though this is to a large extent an inheritance of the crisis, it still persists now that we are sailing in relatively calmer waters.

Besides this descriptive evidence, several papers have analysed the recent surge in sovereign risk econometrically, identifying a quite convincing causal spiral between the share of sovereign assets and the frailness of banks' balance sheets, as also reported by Pagano in this issue. Altavilla et al. (2016) compute that in GIIPs countries a 100-basis-point increase in the domestic sovereign CDS premium translated into a 31.5-basis-point increase in the CDS premium of a bank with a median exposure to sovereigns. The empirical evidence also suggests that banks with a high exposure to sovereigns lend less to the real sector, and this has negative implications for growth, which fires back into reduced fiscal revenues, exacerbating the sovereign vulnerability (see also Figure 8 in the 'Numbers' section). Again, from Altavilla et al. (2016), we learn that a 1-standard-deviation drop in the price of government bonds reduced the loan growth of the median domestic bank by 1.4 percentage points, i.e. 20% of the standard deviation of loan growth. A similar effect was observed by De Marco (2014) and Popov and van Horen (2013) studying the syndicated credit market.

This evidence supports the view that the present regulatory framework, in which sovereign bonds are treated as zero risk assets, underestimates a powerful channel of systemic risk, even though measures concerning the leverage ratio or the treatment of gains and losses in the sovereign bonds held in the available for sales book, do already impose some prudential containment (see Visco 2016 and Lanotte et al. in this issue). Hence the calls for reforms. Yet, as we will show below, in assessing the present regulatory framework and its potential reforms, a clear distinction should be made between the "emergency times" of the crisis and the post-crisis "normal" circumstances. And if reforms were implemented, special care should be taken in designing the transition period. Given that the sovereign crisis was a matter for the Euro area, we will focus most of our discussion on the special issues emerging within a monetary union.

3. What should have been done? Banks and sovereigns and the specificities of a monetary union

The first issue relates to the sustainability of sovereigns. Is a monetary union a special case, absent a fiscal union? There are indeed crucial differences between the financial sustainability of sovereign debt in a country with its own currency and a country that is part of a monetary union.

The first one is that in the former there is a lender of last resort (the central bank) that can directly purchase sovereign bonds in times of distress, with the only side effect that this may impact on its ability to guarantee price stability. But indeed this is far from being the case in the current situation, in which many countries are very close to deflation. In fact, partly as because of their quantitative easing programs, the US Federal Reserve and the Bank of England own at the moment 13% and 24% of all public domestic bonds outstanding, respectively (see Bruegel, 2016). The Bank of Japan (see the article Institutions in this issue) owns a similar share.

However, in the case of a monetary union, especially a rather new one, any intervention by the central bank in support of distressed sovereigns can be seen as an unwarranted backing of some individual member countries at the expense of others. For this reason, the institutional setting and the ability to reach the necessary consensus within the decision bodies limits the ability of the central bank to intervene in the government bond market. The long delay with which the Eurosystem decided to implement quantitative easing in comparison with the Federal Reserve, the Bank of England and the Bank of Japan, despite the low aggregate demand and the deflationary pressures, is a clear example of such difficulties.

The second difference is that a sovereign-bank crisis loop in one country can cause severe negative externalities to other countries of a monetary union, and this would call for a stronger mutualisation of sovereign risks, for example through mechanisms of fiscal solidarity. Although fiscal risk sharing and lending of last resort by a monetary authority are complementary measures, nevertheless the presence or even the presumption of a transfer from fiscally solid to fiscally vulnerable countries may fully or partially compensate the limited degrees of freedom available for a lender of last resort within a monetary union.

The explosion of the sovereign debt crisis of the Euro area, besides for the vice of excessive deficit and debt in some of the vulnerable countries, is to a large

extent related to the fact that after the financial crisis of 2007-2008 neither of the two mechanisms, the lender of last resort and a fiscal risk/burden sharing, were active. The account of Lars Frisell of the Irish crisis in this issue, is especially explicit in this respect. In Ireland there was an instantaneous build up of the bilateral banks-sovereign exposures, as banks were recapitalised with debt instruments (IOU notes for about 30 billion, 15% of Irish GDP) issued by the Government. This bold policy choice, that put simultaneously public and bank's balance sheets at hazard, had no alternative at the time, given the absence of a lender of last resort and of instruments of fiscal risk sharing, and given that at the time Ireland had no longer access to the security market.

Eventually, the perverse spiral of the crisis was tamed through the implementation of risk sharing mechanisms (the EFSF, the ESM, the sequence of interventions in support of Greece), the activation of lender of last resort interventions by the ECB (the large Long-Term Refinancing Operations, LTRO, in December 2011 and February 2012) and the announcement of a buyer of last resort program (the Outright Monetary Transactions program, OMT, implicitly announced with the famous London speech by Mario Draghi in the Summer of 2012, and that as for now has never been used).[3]

The second issue is the perspective of banks. Was buying sovereigns a rational strategy? Within a monetary union, also the perspective of banks is special, particularly in vulnerable countries. As shown in Altavilla et al. (2016), thinly capitalised banks in the GIIPs held a higher concentration of their assets in the form of domestic sovereign bonds; and during the crisis the rise in the purchase of sovereign bonds was much more prominent in these countries than elsewhere. These banks made large carry-trade profits, especially after the "whatever it takes" speech, funding these bond purchases with the liquidity windows provided by the ECB, and using those same bonds as collateral. Such strategies clearly made these banks even more exposed towards sovereign risk.

Yet, what alternative strategies had these banks during the unfolding of the sovereign crisis? Could have they lent more to the private sector instead of the sovereign? This is unlikely, given that they had limited equity, and therefore

3. "*Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough. (...) The short-term challenges in our view relate mostly to the financial fragmentation that has taken place in the euro area.*" Speech by Mario Draghi, President of the European Central Bank at the Global Investment Conference in London, July 26, 2012.

they could not invest in capital absorbing assets like loans to the private sectors; and they were also constrained on the liability side, because of the large funding gaps at the peak of the crisis and of the need of sovereign securities as collateral to access the liquidity provision by the ECB (Acharya and Steffen, 2016)

But even if they had managed to increase their loan supply, would lending to the private sector have improved their risk profile? Again, this is also unlikely, given the building up of non-performing loans during recession.

Finally, could banks have reduced the size of their balance sheets and the extent of carry trade in sovereign bonds? In fact, disintermediation did take place, at least to some extent: total assets of European banks declined in the aftermath of the sovereign debt crisis (see for example the first Issue of European Economy, 2015.1 "Capital Requirements for Large Banks"). But an even stronger deleveraging by part of the more exposed banks would have further reduced their profitability, worsened their capital position and therefore reduced lending to the economy even more than what we have observed.

In other words, even if a more stringent regulation had discouraged banks form buying sovereigns in the aftermath of the crisis, it is far from obvious that the outcome would have been better.

The third issue is the extent of the home bias in sovereign purchases. Was buying domestic sovereign bonds a rational strategy for banks in vulnerable countries? Indeed, banks could have bought sovereigns issued by safer member countries. Why did banks in vulnerable countries concentrate such a large share of their investments in home sovereigns? Figure 5 in the 'Numbers' section of this issue shows pretty clearly that the home bias was much larger for vulnerable than non vulnerable countries.

There are several explanations of this behaviour. The first one is a *carry-trade* motive (Acharya and Steffen, 2015): betting on resurrection by exploiting the larger price swings of sovereign bonds issued by vulnerable countries. Yet, this only justifies a bias towards debt issued by any GIIPs, not a home bias.

A complementary argument is a *"nothing to lose"* one. If vulnerable home sovereigns were to default, home banks would very likely go out of business even if they held a diversified portfolio of safe bonds. As explicitly argued by Erik Nielsen and Lanotte et al. in this issue, home banks cannot hedge the risk of home sovereign's default. In the case of default of their own sovereign, their downside would be the same whether they bet on resurrection or they

allocate their investments to safer assets. Hence, if banks survive only if there is resurrection, a rational strategy is to bet on resurrection and hold a home-biased portfolio. Of course, this is not the case for banks in non-vulnerable countries, where incentives for carry-trade are weaker, and safer assets have largely a better risk/return ratio.

An alternative interpretation is the "*moral suasion*" one, according to which governments in vulnerable countries exercised pressure on domestic banks into buying domestic sovereign bonds, especially if these banks had been previously bailed out with taxpayers' money and they turned out to be owned by public entities. Again, the Irish account by Frisell in this issue provides the case in point.

Altavilla et al. (2016) show that both sets of motives hold in explaining the rapid rise of sovereign exposures of banks in vulnerable countries, and that the moral suasion motive is especially likely to hold for previously bailed out banks.

What can we say of these motives? The carry-trade option was a risky bet, but it probably paid off, at least in part, giving weak banks some additional profits that helped them to stay afloat. And, in practice, it was not as risky as it might have first appeared, given that it was highly likely that some form of fiscal risk sharing would have been devised and that the Eurosystem would have finally acted as a buyer of last resort to "preserve the euro" and to guarantee a smooth transmission of monetary policy. In fact, carry-trade was funded by the ECB's liquidity windows. Also, it took place especially after the establishment of the ESFS and the ESM moved the policy stance in the Euro area towards a higher degree mutualisation of fiscal risks. And also after the "whatever it takes" speech, that changed the monetary stance. In other words, carry-trade was favoured by both enhanced fiscal backstops and less constrained monetary policy within the monetary union (See also Marco Pagano in this issue).

As for the moral suasion motive, it should be examined within the policy context of the time. Especially in the earlier stages of the crisis, when no mutualisation was in place, the willingness of banks to buy sovereigns partly smoothed the severity of the sovereign problem.[4] As recalled by Visco (2016), there is ample evidence that domestic banks sold sovereign bonds when markets overheated and bought them when markets were excessively bearish

4. Of course this was not the case for all countries: in Greece, the extent of the fiscal imbalances was such that local banks could indeed do very little to match the demand shortage of sovereign bonds.

and foreign investors were fleeing. Banks' home bias can thus help reducing excessive variability in financial markets.

In Italy, for example, domestic banks had effectively been acting as buyers of last resort, supporting weak demand in auctions (See Lanotte et al. in this issue on this point). Had domestic banks not raised their investments in sovereigns, spreads might have increased even further, and probably pushed some countries towards insolvency. Hence, given that domestic frail banks would in any case be very severely affected by the bankruptcy of their sovereign, supporting it was a fully rational choice, even if it had been the outcome of some degree of moral suasion.

In other words, the loop was indeed diabolic, but to a large extent it was unavoidable, given the absence at the time of an unconstrained lender of last resort and of a mechanism of mutual fiscal support among Euro countries. Indeed, this is clearly shown by common trends between sovereign and bank CDSs shown in Figures 1 and 2.

The fourth issue is whether we are now in equilibrium or broader policy actions are needed. The two sided lending of last resort between banks and sovereign is certainly useful in the short term to smooth unwarranted market shifts. Nevertheless, when crises are deeper, as between 2008 and 2012, fragile States sustaining fragile banks and fragile banks sustaining fragile sovereigns is a ping pong of mutual fragilities, a house of cards that can support the system only in the short term.

We have seen that what finally severed the diabolic loop in the Euro area were the crucial institutional reforms, like the Banking Union, the ESM, and the direct intervention of the ECB in the market for sovereign debt. These reforms are crucial and provide an institutional framework that, once fully implemented, will make the reappearing of the loop less likely.

Nevertheless, we are not there yet. The Banking Union is far from complete. The mechanisms for fiscal mutualisation have not yet the scale and the institutional design for their effective use in systemic crises. Finally, although the ECB has shown that within its mandate it can deploy a large range of monetary policy tools to avoid excessively unstable sovereign markets, monetary policy cannot do the whole job by itself.

The necessary and urgent completion of this institutional design, as times get gradually normal (although the Brexit outcome is injecting a new wave

of financial instability at the time of writing), makes a rethinking of banking regulations on sovereign exposures an inevitable step.

4. The long run equilibrium: revisiting the regulatory treatment of sovereign exposures under "normal conditions"

Monetary vs. non Monetary Union members: implications of introducing risk sharing mechanisms. We have argued that, following the deterioration of fiscal conditions and of banks' balance sheets, the loop in the Euro area initially spiralled because the lender of last resort had tied hands and because of limited options to mutualise fiscal costs and risks. We have also argued that, in this context, more stringent rules on banks' sovereign exposures would not have necessarily limited the perverse systemic effects of the loop, nor they would have necessarily helped the stabilisation of credit to the private sector.

Yet, the crisis has clearly reminded us that sovereigns can indeed be risky and, even within the Euro area, there is a large heterogeneity in their degree of riskiness. Therefore, we may ask if in a world of calmer waters, with lower spreads and a fully working institutional umbrella, there would be scope for changing the rules on sovereign exposures in a way that better accounts for their intrinsic riskiness.

Reforms of the regulatory framework for sovereign exposures are being discussed within the Basel Committee (see the Institutions section for details). The direction is that of restoring the spirit of Basel II and Basel III with any possible reform being applied to all countries under the Basel agreement, so as to level the playing field. However, as argued earlier, *even in the spirit of a regulatory reform to be implemented in normal times, there are key differences between countries that are members of a monetary union and countries that are not.* For example, Hoshi and Ito (2014) argue that the fact that a country like Japan with a debt to GDP ratio of over 230% has much higher credit ratings than Euro area members with less distressed public finances is not only due to the high saving ratio in the Japanese economy, but also to the home bias of domestic institutional investors, that have a strong aversion to exchange rate risk. Clearly, this would be very different if Japan were a member of a monetary union.

If it was the absence of a risk sharing framework that made the Euro area so special, *in the long-run, and in "normal times" the argument is reverted. It is*

precisely the implementation of a risk sharing framework, if and when it will be fully implemented, that makes the equalitarian risk free treatment of sovereigns with different levels of inherent riskiness non sustainable. It is it precisely the actual or potential existence of risk sharing arrangements that make the Euro area special and the call for reforms more impellent than for individual countries like Japan or the US.

The treatment of asymmetries and the actual implementation of risk sharing mechanisms, therefore, go hand in hand. In fact, asymmetries make safer countries resist the implementation of the European Deposit Insurance Scheme, unless the regulatory treatment of foreign exposures is reformed, and make vulnerable countries resist bank sovereign exposure reforms, unless a full risk sharing mechanism is put in place (see for example the last statement of the EU Commission Expert Group on Banking, Payments and Insurance).

In principle, if all asymmetries were removed, there would be a fully integrated European financial market, as for example in the United States. The fate of a large European bank with a diversified loan portfolio will thus not be linked to that of its sovereign any more, and not only because risk sharing mechanisms will reduce the danger of an idiosyncratic crisis hitting a single member state. The rational but perverse incentive to bet on resurrection and hold a home-biased portfolio of sovereigns described above would not be present anymore: banks would likely hold diversified portfolios. In this situation, risk weighting and large exposure provisions on banks' holdings of sovereign debt may indeed be non binding, as banks would autonomously follow an optimal diversification strategy in any case, or simply because the full implementation of the Fiscal Compact had managed to make all Euro sovereign risk free.

However, the time when all sovereigns will have similar conditions of riskiness is certainly far away. Even the most optimistic projections of convergence of debt levels among Euro Member States envisage a very long time horizon. And full harmonization will likely never be achieved, for as effective mechanisms pushing towards harmonization might be. Hence, we have to envisage a world where asymmetries are persistent, where effective incentives to reduce them are in place and where the implementation of the Monetary and Banking Union and of Fiscal risk sharing devices keep being implemented. Not an easy equation to solve. In what follows, we discuss a few proposals that have also emerged in the contributions to this journal.

These are long term solutions. As we will discuss in section five the transition towards their implementation will have to be gradual and handled with care: times are indeed not yet normal.

Risk sharing and persistent asymmetries. The March 2015 Report of the European Systemic Risk Board expert group on the regulatory treatment of sovereign exposures suggests several possible measures that should be envisaged within a long-term horizon, when banks will have fully repaired their balance sheets and gradually reduced their sovereign exposures.

In broad terms, there are three main families of regulatory measures that could be considered, possibly combined together. The first one assigns a non-zero risk weight to sovereign bonds, reflecting the effective risk of such exposures. The second implies lifting partially or fully the exception to the large exposure provision, which imposes extra capital surcharges on exposures larger than 25% of a bank's total assets. The third one restricts the use of sovereigns to comply with liquidity requirements, for example in the computation of the Liquidity Coverage Ratio (LCR) or the Net Stable Funding Ratio (NSFR). Essentially, the proposed reforms imply re-establishing the spirit of the Basel II framework, then revised in the Basel III, lifting the carve out treatment.[5]

The papers by Lars Frisell and by Erik Nielsen provide a detailed discussion of these individual measures. For example, they both suggest that risk weighting is not an effective measure to deal with this issue. Erik Nielsen also argues that risk weights also raise a philosophical issue of potential loss of sovereignty. Sovereigns might indeed be very reluctant, and in fact they are, in institutionalising the assessment of their riskiness through a mechanical implementation of risk weighting. Instead, both Nielsen and Frisell argue that caps on large exposures would be less distortionary and encourage effective diversification. We refer the reader to these papers for a detailed discussion. What they show is how focussing just on one measure or single sets of measures might introduce unexpected distortions and side effects.

For this reason, here, we would like to discuss the two alternative broad strategies suggested by the papers in this issue by Andritzky et al. and Andritzky

5. For a thorough analysis of pros and cons of the current proposals see also Visco (2016).

et al. (2016), which reflects the position of the German Council of Economic Advisors, and by Marco Pagano. These papers reflect general visions underlying the policy debate, rather than the pros and cons of specific instruments.

The proposal in the piece by Andritzky et al. in this issue is based on a principle of "horizontal discrimination" between sovereign bonds, whereby risk weighting, large exposure provisions or other regulatory measures should reflect the effective riskiness of member states, as measured by different rating mechanisms.

The "horizontal discrimination" implicitly provides strong incentives for reducing fiscal imbalances in peripheral countries (though the proposal does indeed envisage a long transition period). Nevertheless, it raises a series of issues which are not of simple solution even in normal times, and even if the issue of how to measure the effective relative riskiness of countries were resolved (rating agencies or else). The first problem is that it does not take into account the systemic dimension of the Union. As far as within the Euro area, there are large externalities, and asymmetries are to an extent persistent, risk free sovereigns remain exposed to shocks from risky sovereigns. Vulnerable countries need financing. Lifting risk free status might make funding these sovereign problematic and very expensive, as banks' portfolios would shift towards risk free countries. This move would likely signal an increase in their vulnerability, amplify their distress and might impair the whole Union. Even more so if effective risk sharing mechanisms were in place.

Second, even in the long-run, sovereign bonds issued by risk free countries may not be enough to fulfil the requirements of the Euro area banking system. Banks need risk free assets for plenty of reasons: to use them as collateral in repo transactions or transactions with the central bank, to fulfil liquidity requirements, and as an asset class they can revert to in moments of distress. Indeed, at the moment only Germany, Luxembourg and the Netherlands issue such assets in the Euro area (Altavilla et al., 2016), although we cannot yet claim to be in "normal" times.

Of course, this does not imply that maintaining an artificial risk free status for all sovereigns would solve the problem. It only means that a mechanism that de facto "tranches" risks based on "horizontal discrimination" is likely to be unable to provide a sufficient amount of risk free assets to the banking system.

An alternative mechanism is instead based on a combination of "horizontal" and "vertical" discrimination (Brunnermeier et al., 2011 and 2016, and Corsetti

et al., 2016). The paper by Marco Pagano discusses this option. The idea is to introduce different regulatory treatments based on the riskiness of the sovereigns – in line with the proposal of the German Council of Economic Experts – but to create at the same time a risk free asset through pooling and tranching portfolios of sovereign bonds ("vertical discrimination").

The process to create this European Safe Bonds (ESBies) would take two steps. First, a private and market based financial entity would acquire a portfolio of bonds issued by all member countries of the Euro area, with the share of securities from each country defined on the basis of an objective parameter, such as their contribution to aggregate nominal GDP. Second, this entity would issue a set of securities, backed by the portfolio of sovereign bonds, using a tranching technique. The most subordinate tranche will suffer all losses on the value of sovereign securities held by the financial entity, up to its nominal value. Only if and when the value of the most subordinate tranche were annihilated, the owners of the next tranche would incur losses on their securities. Even with just two tranches, the most senior would have a larger size and similar or better risk characteristics than risk-free sovereign bonds.

Three aspects of this proposal are particularly appealing. First, it involves a mechanism of risk sharing, because it creates a portfolio of sovereigns issued by all Euro area member countries. Second, it introduces a "vertical" risk discrimination among different tranches of the same diversified portfolio. This second characteristic is crucial, because it generates a large pool of low-risk assets, which are necessary to fulfil the needs of banks.[6] Third, it reduces the risk of severe shortages in the demand of bonds in vulnerable countries, as might instead emerge under a pure horizontal mechanism.

It may appear at first sight that the risk sharing mechanism implicit in the ESBies and other similar proposals would create moral hazard to countries with high public debt, allowing them to issue cheap government bonds. But this is not true. Sovereigns would first be issued at market prices and only subsequently

6. Indeed, the same result would not be attained without tranching: using the level of risk of national sovereigns at the end of 2015, for example, Brunnermeier et al. (2016) calculate that a portfolio obtained by simply pooling sovereigns issued by Euro area countries according to their contribution to aggregate GDP would have an expected loss rate of 2.90%, nearly 6 times the expected loss rate of what is considered a safe asset (0.50%) and of German sovereign bonds (0.45%). If instead this risk is redistributed through tranching, even with just one junior tranche representing 30% of the pooled portfolio, that wold have an expected loss of 9.30% (comparable to that of Portugal), the expected loss rate of the senior tranche representing the remaining 70% would be a mere 0.15%, one third of that of Germany.

they would be bought by the financial entity described above. Moreover, a large enough share of the total amount of debt issued by each member State would be left for trading. In this way, the price of sovereign bonds would always reflect their degree of riskiness as perceived by market investors. The cost of unsustainable fiscal policies would therefore be priced in bonds issued by non-virtuous governments, even though, as argued, dramatic shortages in demand would be less likely to emerge than under pure "horizontal" discrimination.[7]

Moreover, banks' rational but perverse incentive to hold a home-biased portfolio for the reason discussed above would be eliminated, because different regulatory treatments based on the riskiness of the sovereigns would be imposed.

A possibly drawback of the ESBies proposal is instead the allocation of the junior tranche. As it has become very clear after the recent financial crisis, pooling and tranching does not eliminate risks, it only relocates them. Therefore, the question is if there is enough demand for about 1.2 trillions of euros of assets with a default probability of 9.30%. Finding enough investors willing to buy such a large amount of high risk assets might not be as easy as finding a three times larger pool of investors willing to buy securities with an expected loss rate that is less than a third of it. Moreover, if such a large amount of risky assets ended up concentrated in the hands of a small set of investors, huge contagion effects might emerge in case of default, especially if these investors were in the lightly regulated shadow-banking sector. Probably, some degree of control on the holdings of the junior tranche, and a fiscal backstop in case of extreme events, should be considered.

Summing up, in our view, under "normal" long run conditions a combination of "horizontal" and "vertical" risk discrimination along the lines of the proposals by Brunnermeier et al. (2011 and 2016) and Corsetti et al. (2016) is preferable

7. Precise computations should be made, but in fact, the cost of financing vulnerable sovereigns might be even higher than if only "horizontal" discrimination were present (besides for extreme conditions). Consider a case in which there is a structural undersupply of safe assets, as in the case of the proposal of the German Council of Economic Experts. In these conditions, some investors would be forced to buy a larger share of sovereigns issued by vulnerable countries than they would prefer, simply because safe assets are not available. For these countries, the marginal cost of financing its debt would therefore be lower than if risk free assets were in large supply. Assume now that an ESBies is issued in this market. With a much larger supply of risk free assets, investors will be unwilling to purchase sovereigns of vulnerable countries at the margin. Neither the demand by the financial entity in charge of creating the ESBies could compensate for this, because the composition of its portfolio is constrained by the chosen objective parameter, for example the contribution to aggregate nominal GDP. In the end, the marginal cost of financing the debt of a vulnerable country would therefore be higher than if risk free assets were in short supply.

to the simple "horizontal" discrimination advocated by the German Council of Economic Experts. In fact, while both proposals guarantee identical results with respect to the ability to break the bank-sovereign loop and to create correct incentives for fiscal discipline, the former also solves the problems of an insufficient supply of risk-free assets and of an insufficient demand of government bonds in vulnerable countries. Both issues are rightly of great concerns to bankers and policy makers, especially in vulnerable countries.

Yet, whatever proposal we may consider, we are not yet in normal times, and the financial turmoil following the Brexit referendum, as we write, makes the transitional process even more delicate. Policy makers and bankers have therefore crucial concerns also or perhaps especially, regarding the transition.

5. The transition period

The concern of Visco (2016) of losing the role of banks in smoothing excessive variability in financial markets is especially relevant at the moment, when asymmetries within the European monetary union are still sizeable, banks' balance sheets are not yet in good shape, and the recovery is extremely slow and uncertain. S*ince markets tend to frontload regulatory changes, even a slow path to a fully "horizontal" risk discrimination could cause huge problems to banks and sovereigns.* Increased risk weights might induce pro-cyclical behaviour and jeopardise the already very slow recovery in lending. Limits to exposures, may generate large portfolios adjustments and large yields and prices gyrations in the Euro area (see also Pagano in this issue)

The magnitude of these effects will be large especially for vulnerable countries. Lanotte et al. in this issue and Lanotte et al. (2016) show that the effects on banks' Tier 1 ratio of removing the current "carve out", the zero risk weight on sovereigns, can be highly non-linear and in some more vulnerable countries could become disruptive in case of a worsening of the fiscal conditions. For example, if the sovereigns' carve out were to be removed, Italian sovereign exposures would result in a risk weighting of 50% and the average Tier 1 ratio would decline by 120 basis points, given the large exposure of Italian banks to their sovereign. In contrast, it would decline by only 30 basis point in Germany and 10 in France.

Also limits on large exposures would imply very sizeable reduction in assets, or adjustments in their portfolio and not just in vulnerable countries. As reported by Lanotte et al. (2016) and in this issue, on the basis of EBA data as of June 30, 2013, a ceiling of a 100% of Tier1 capital on domestic sovereigns would generate an excess exposure of roughly 100 billion for Italian banks and of 150 billion for German banks. Indeed, banks in these two countries are the most exposed to their sovereigns.

The impact of such reductions on the price of sovereign bonds appears to be rather small, but estimates are based on a large number of assumptions and depend largely on the assumption about the possible regulatory changes in other parts of the financial industry, most notably in the insurance sector. *Indeed, there is no guarantee that a small initial shock might not subsequently give rise to a self-fulfilling speculative attack on some banks or sovereigns, that might eventually become systemic. At this very moments the pros of introducing tighter limits on bank sovereign holdings seem to be far fewer than the cons.*

These concerns explain why the negotiations on sovereign regulation and, in parallel, on expanding risk sharing mechanisms through the implementation of the third pillar of the Banking Union and the setting up of a common deposit guarantee scheme, have reached a stalemate. Simple regulatory solutions, like straightforwardly increasing capital requirements or imposing stringent large exposures limits risk to be politically non viable and also disruptive in the short term. Similarly, broader schemes of horizontal discrimination are raising concerns. Yet, without an adequate framework dealing with sovereign risk asymmetries, risk free countries are unwilling to implement risk sharing mechanisms. Moreover, as argued by Erik Nielsen in this issue, as far as the EDIS is not yet implemented, stringent regulatory measures would hardly be able to effectively severe the banks sovereign loop in member countries.

In this respect, the introduction of ESBies might prove to be more manageable, also addressing concerns in the transition period. This is precisely because ESBies combine the two ingredients of: (i) risk sharing (through a market based instrument) and of (ii) differential treatment of sovereign exposures, based on their inherent riskiness. Banks would be indirectly holding the same amount of government bonds as they hold now, and possibly more. The portfolio would be diversified by construction, requiring no imposition of concentration limits, and its riskiness would be so low that capital requirements would not be required.

Moreover, with "vertical" risk diversification, there would be no additional risks of self-fulfilling speculative attacks. As already mentioned above, the only concern would be the impact of an increase in the supply of risky securities, the junior tranche. Indeed, Brunnermeier et al. (2016) discuss at length the details of how ESBies could be introduced quite rapidly in European markets.

Considering both the hurdles of a transition period and the requisites of an optimal long run equilibrium, the introduction of different regulatory treatments based on the riskiness of the sovereigns and creating at the same time a risk free asset through pooling and tranching portfolios of sovereign bonds seem to be a viable policy option. An alternative approach based on the fine tuning of thresholds and weights would miss the big advantage of "vertical" risk diversification: that of creating a market that fulfils the needs of banks to hold a risk-free asset in a way that is not currently available.

Summing up we believe that the banks sovereign loop in the Euro area can only be severed if a complex equation between enhanced risk sharing within the Union and a tighter regulatory framework addressing risk asymmetries among sovereigns is solved. These two elements are inevitably tangled together and it is precisely their being tangled together that explains why the issue is of special concern for Eurozone countries. The lack of risk sharing mechanisms at the beginning of the financial crisis was to a large extent responsible for the acceleration of the diabolic loop. The implementation of risk sharing mechanisms during the crisis, albeit yet imperfect and limited, and its strengthening thereafter, instead calls for a reform of the regulatory framework on sovereigns. But there are no simple solutions. Reforms will require "normal times" conditions, a carefully devised transition and the implementation of ingenious instruments, like the ESBies.

References

Acharya, V., and Steffen, S. (2015). The "greatest" carry trade ever?: Understanding eurozone bank risks. Journal of Financial Economics, 115 (2), 215–236.

Altavilla, C., Pagano, M., and Simonelli S. (2016). Bank exposures and sovereign stress transmission. Working Paper 11, European Systemic Risk Board.

Andritzky, J., Gadatsch, N., Körner, T., Schäfer, A., Schnabel, I. (2016). A proposal for ending the privileges for sovereign exposures in banking regulation, voxeu.org 04 March.

Bruegel (2106). Bruegel database of sovereign bond holdings developed in Merler and Pisani-Ferry (2012), "Who's afraid of sovereign bonds", Bruegel Policy Contribution 2012|02.

Brunnermeier, M. K., Garicano, L., Lane, P., Pagano, M., Reis, R., Santos, T., Thesmar, D., Van Nieuwerburgh, S., and Vayanos, D. (2011). European Safe Bonds (ESBies). The Euronomics Group.

Brunnermeier, M. K., Garicano, L., Lane, P., Pagano, M., Reis, R., Santos, T., Thesmar, D., Van Nieuwerburgh, S., and Vayanos, D. (2016). The Sovereign-Bank Diabolic Loop and ESBies. American Economic Review Papers and Proceedings, 106, May 2016.

Corsetti G., Feld, L., Koijen, R., Reichlin, L., Reis, R., Rey, H., and Weder di Mauro, B. (2016). Reinforcing the Eurozone and Protecting an Open Society, Monitoring the Eurozone 2, CEPR Press.

De Marco, F. (2014). Bank Lending and the Sovereign Debt Crisis. Boston College working paper.

Popov, A., and Van Horen, N. (2013). The Impact of Sovereign Debt Exposure on Bank Lending: Evidence from the European Debt Crisis. DNB Working Paper No. 382.

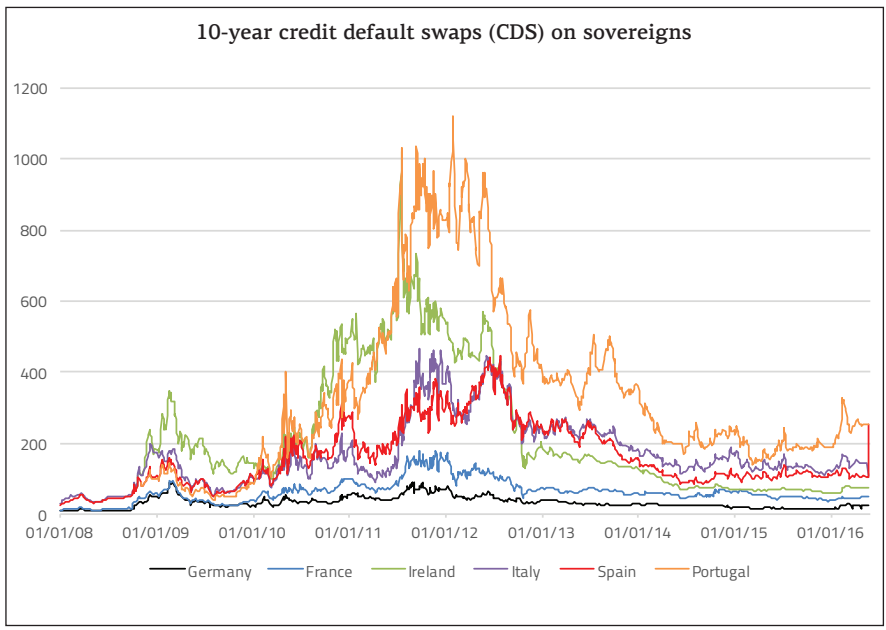
Reinhart C. M., and Rogoff, K. S. (2008). The forgotten history of domestic debt. NBER Working Paper 13946

Visco, I. (2016), "Banks' Sovereign Exposures and the Feedback Loop Between Banks and Their Sovereigns," Concluding Remarks presented at the Euro50 Group Conference on The Future of European Government Bonds Markets, 2 May.

Numbers

by José Manuel Mansilla-Fernández[8]

Figure 1



Source: Thomsom Reuters Datastream. Data are expressed in basis points.

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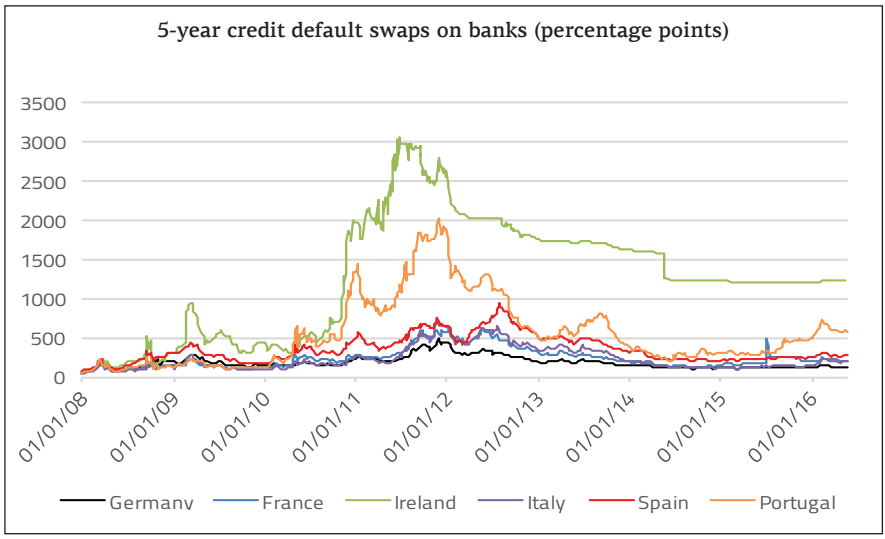
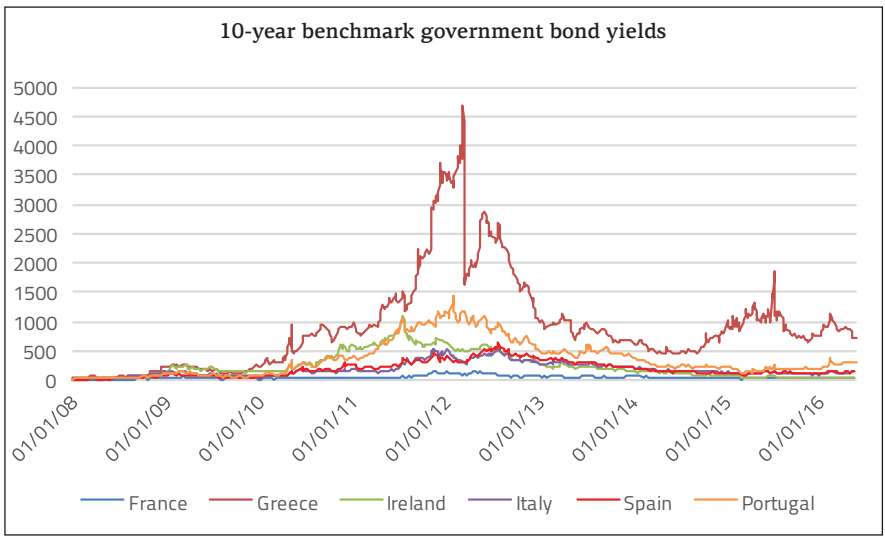
Figure 2



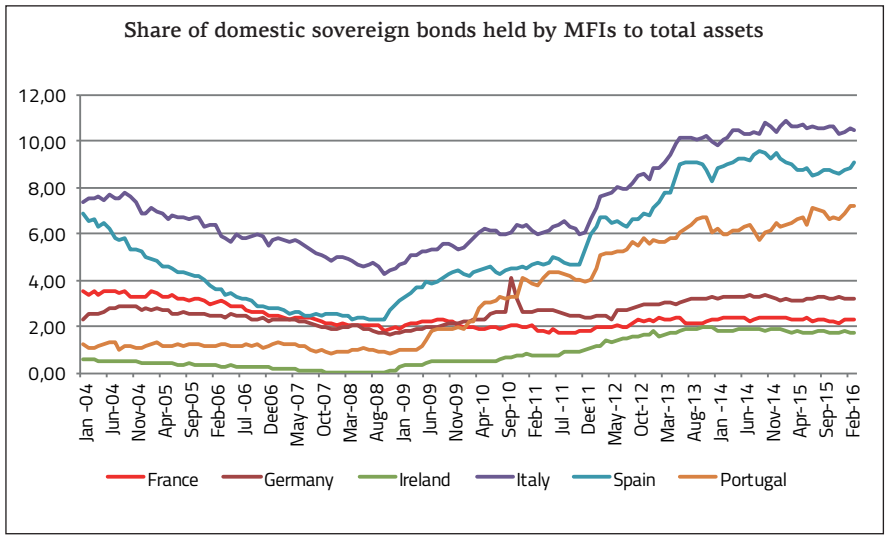
Source: Thomsom Reuters Datastream. Data refer to averages of 5-year credit default swaps on banks from each country. Data are expressed in basis points.

Figure 3



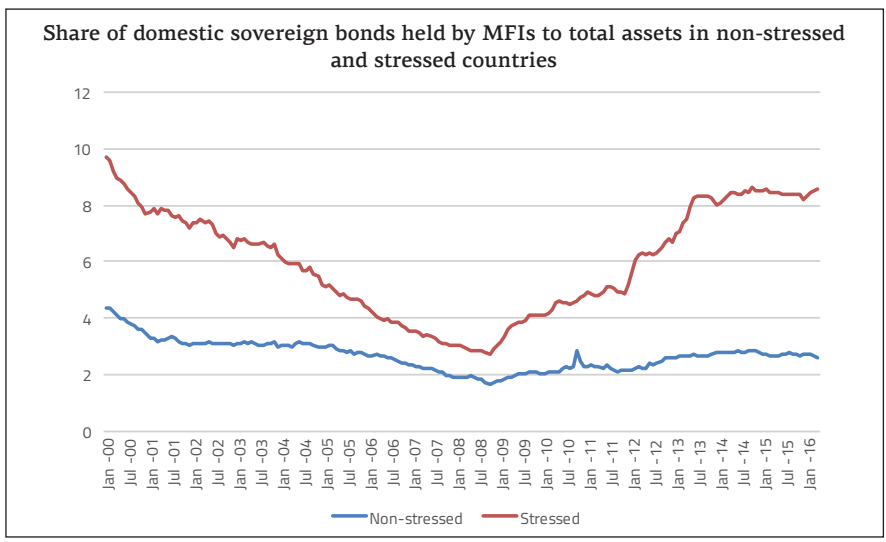
Source: Thomsom Reuters Datastream. Data are expressed in basis points.

Figure 4



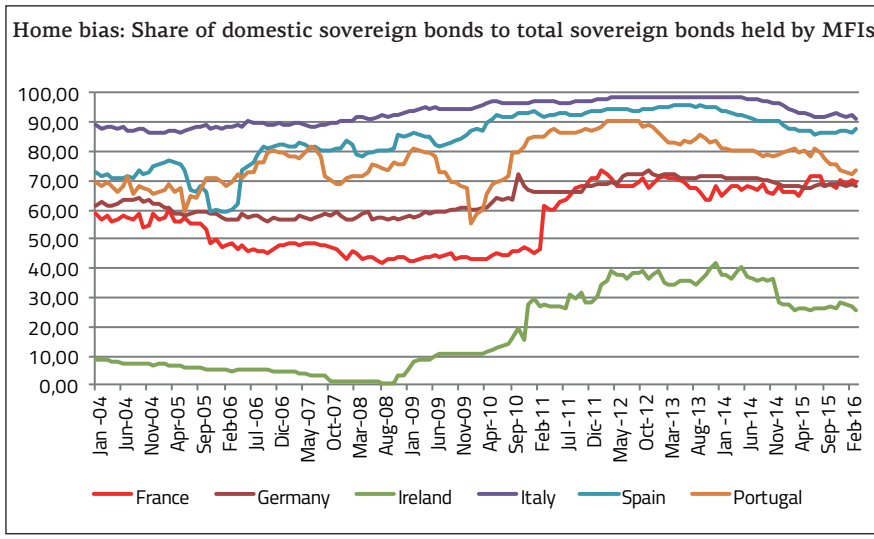
Source: ECB. Ratio of the holdings of domestic sovereign debt and total assets by MFIs in each country. Data are expressed in percentage points.

Figure 5



Source: ECB. Ratio of the holdings of domestic sovereign debt and total assets by MFIs in each country. Data are expressed in percentage points. Non-stressed countries are Austria, Belgium, Finland, France, Germany, and the Netherlands; stressed countries are Greece, Ireland, Italy, Portugal, and Spain.

Figure 6



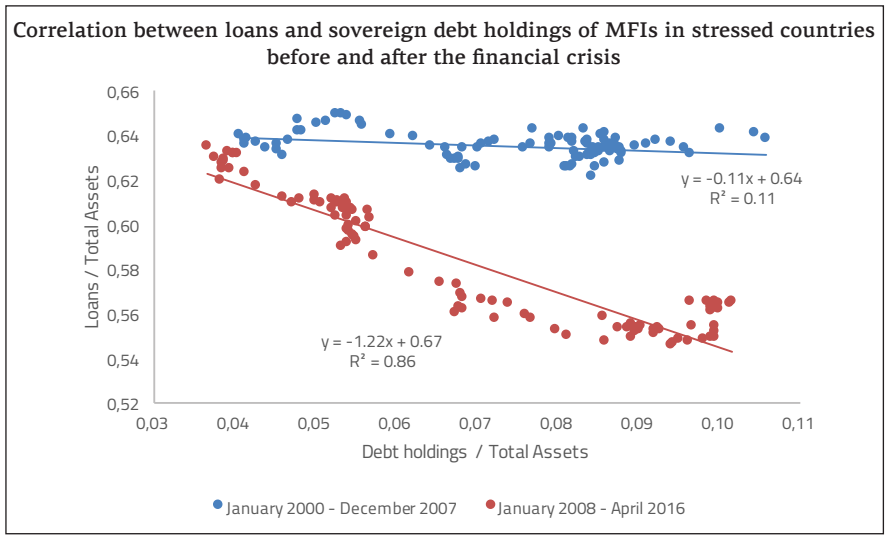
Source: ECB. Data are expressed in percentage points.

Table 1 - Share of domestic and foreign sovereign bonds held by MFIs to total assets

Domestic and other Euro area sovereign holdings by MFIs in 2014 (share of total assets)														
	AT	BE	DE	ES	FI	FR	GR	IE	IT	LU	NL	PT	MT	Total
Austria	4.89	0.11	0.24	0.04	0.05	0.18	0.00	0.03	0.20	0.00	0.10	0.01	0.01	5.87
Belgium	0.13	8.85	2.76	0.18	0.03	0.85	0.00	0.08	3.11	0.00	0.17	0.30	0.00	16.45
Germany	0.45	0.20	9.50	0.46	0.08	0.50	0.00	0.06	1.08	0.03	0.41	0.10	0.00	12.87
Spain	0.01	0.02	0.11	8.86	0.00	0.13	0.00	0.00	0.27	0.00	0.05	0.11	0.00	9.56
Finland	0.00	0.18	1.01	0.00	0.21	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.52
France	0.11	0.62	0.96	0.29	0.04	5.45	0.00	0.02	1.17	0.02	0.21	0.03	0.00	8.90
Greece	0.00	0.02	0.03	0.00	0.00	0.02	5.76	0.00	0.03	0.00	0.02	0.00	0.00	5.89
Ireland	0.05	0.00	0.15	0.00	0.03	0.29	0.00	5.29	0.09	0.00	0.16	0.00	0.00	6.05
Italy	0.56	0.03	1.28	0.13	0.00	0.09	0.00	0.00	12.08	0.00	0.01	0.01	0.00	14.20
Luxembourg	0.59	2.03	0.53	0.41	0.04	1.16	0.00	0.39	2.18	3.82	0.27	0.28	0.00	11.71
Netherlands	0.18	0.93	1.38	0.05	0.13	0.84	0.00	0.01	0.20	0.02	4.99	0.02	0.00	8.75
Portugal	0.00	0.01	0.00	0.04	0.00	0.10	0.00	0.09	0.48	0.00	0.00	10.03	0.00	10.76
Malta	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.08	0.03	0.00	0.00	0.04	11.49	11.92
Domestic and other Euro area sovereign holdings by MFIs in 2011 (share of total assets)														
	AT	BE	DE	ES	FI	FR	GR	IE	IT	LU	NL	PT	MT	Total
Austria	3.80	0.11	0.38	0.05	0.03	0.11	0.12	0.01	0.31	0.01	0.03	0.04	0.02	6.71
Belgium	0.27	3.59	1.66	0.35	0.03	0.46	0.47	0.03	2.59	0.02	0.04	0.25	0.00	10.12
Germany	0.23	0.13	6.37	0.38	0.02	0.27	0.16	0.02	0.74	0.04	0.09	0.07	0.00	8.55
Spain	0.01	0.03	0.10	10.66	0.02	0.18	0.02	0.00	0.34	0.00	0.02	0.25	0.00	11.63
Finland	0.00	0.20	0.24	0.00	0.54	0.26	0.00	0.05	0.00	0.00	0.00	0.00	0.00	1.30
France	0.09	0.59	0.82	0.26	0.04	2.13	0.18	0.04	0.95	0.01	0.25	0.09	0.00	5.49
Greece	0.00	0.00	0.11	0.00	0.00	0.04	14.43	0.00	0.03	0.00	0.00	0.00	0.00	14.70
Ireland	0.14	0.06	0.18	0.10	0.01	0.36	0.01	3.72	0.25	0.00	0.16	0.07	0.00	5.07
Italy	0.16	0.02	1.01	0.16	0.01	0.04	0.07	0.01	8.11	0.03	0.01	0.02	0.00	9.85
Luxembourg	0.29	0.42	0.00	0.45	0.02	0.07	0.22	0.00	6.28	7.67	0.08	0.47	0.00	16.02
Netherlands	0.12	0.60	1.29	0.11	0.05	1.15	0.06	0.02	0.50	0.01	2.21	0.04	0.00	6.18
Portugal	0.00	0.00	0.00	0.07	0.00	0.16	0.40	0.15	0.29	0.00	0.00	5.61	0.00	6.72
Malta	0.00	0.02	0.22	0.00	0.00	0.24	0.16	0.11	0.06	0.00	0.00	0.04	11.50	12.53

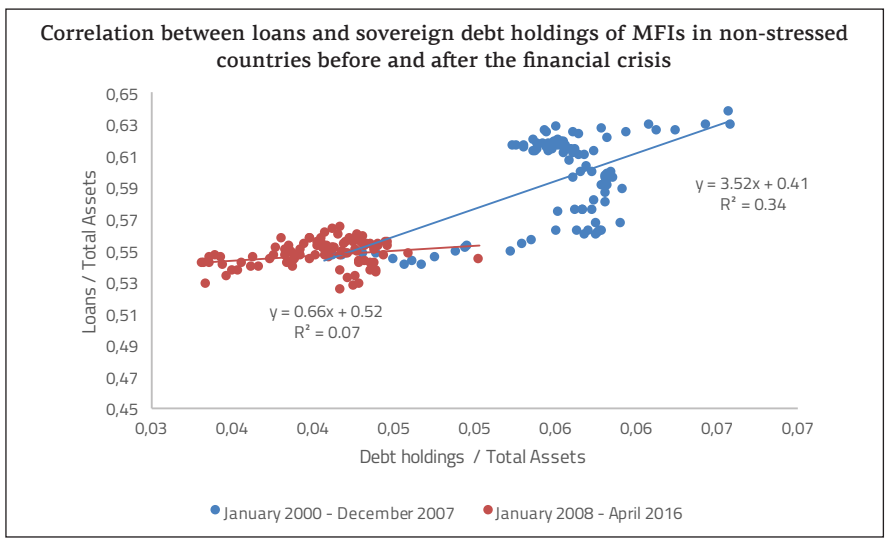
Source: ESRB (2015). Data refer to a sample of mainly large banks. The total euro area sovereign exposures in column 14 may exceed the sum in columns 1 – 13 because the table does not show exposures towards Slovenia and Slovakia.

Figure 7



Source: own elaborations on ECB data. Correlation between monthly ratios of MFIs' loans to total assets and sovereign debt holdings to total assets. Stressed countries refer to Greece, Ireland, Italy, Portugal, and Spain.

Figure 8



Source: own elaborations on ECB data. Correlation between monthly ratios of MFIs' loans to total assets and sovereign debt holdings to total assets. Non-stressed countries refer to Austria, Belgium, Finland, France, Germany, and the Netherlands.

Institutions

by José Manuel Mansilla-Fernández

The regulation on sovereign exposures: The Basel framework and the European Directive

The main framework of recommendations of the Basel Committee on Banking Supervision (BCBS) on risk weights for sovereign exposures is still that of Basel II (BIS, 2006). According to this framework, banks may choose two ways of assessing the risk of an exposure depending on the methodology used: (i) the standardized form or (ii) the internal-rating based (IRB) approach.

The Basel II framework allows banks to apply a weighting rage between 0 per cent and 150 per cent when an assessment from a rating agency is available. Table 1 displays the weights applied to sovereign debt depending on credit rating assessments under the Basel II standardized approach.

Table 1 - Basel II standardized approach: Sovereign risk weights (in percentage)

Credit ratings	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-	Unrated
Risk weights	0	20	50	100	150	100

Source: BIS (2013).

Banks opting for the IRB approach are instead allowed to use their own internal measures of credit risk by using a granular rating scale, accounting for all relevant differences in risk with an adapted risk weight per sovereign (EBA, 2015).

However, paragraphs 53 and 54 of the Basel II Accord state that "at national discretion, a lower risk weight may be applied to banks' exposures to their sovereigns (or central banks) of incorporation denominated in domestic currency and funded".

In fact, the European Capital Requirement Directive - Directive 2013/36/EU (CRD-IV), and Regulation (EU) No. 575/2013 (CRR) - introduced a more general zero risk weight, that can be seen as an extension of the provisions of Basel II: a zero risk weight is assigned to all "exposures to Member States' central government" denominated in the domestic currency. For Eurozone member countries, this implies that all sovereign exposures denominated in euros have a zero risk weight.

Under the new Basel standards domestic and 0 per cent risk-weighted government bonds are explicitly exempted from the limits on large exposures (ESRB, 2015).[9]

Basel III (BIS, 2014) has not modified the main framework on risk weights and large exposures on sovereigns of Basel II, but it has introduced three main additional requirements impacting on holdings of government debt: the leverage ratio, the liquidity coverage ratio (LCR), and the net stable funding ratio (NSFR).

The leverage ratio is defined as the ratio of capital (usually CET1 or total regulatory capital) to risk exposures. Since sovereign exposures are included among total risk exposures, the denominator of the leverage ratio, even a bank investing only in sovereign debt would be forced to hold equity of at least 3 per cent out its assets. More in general, the leverage ratio will work as constraint on sovereign holdings for banks that operate close to the minimum regulatory level (or close to a target internally set).[10]

Under Basel III, sovereign bonds with a zero risk weight are considered highly liquid assets both for the purpose of respecting the LCR and the NSFR. Altering the risk weighting of sovereign bonds might have a sizeable impact on banks' abilities to respect these ratios.

Recently, the Five President's report (EPSC, 2015) and a more recent document produced under the Dutch Presidency (AHWP, 2016) suggest that

9. Article 400 of the CRR exempts all sovereign exposures that would be assigned a risk weight of 0 per cent under the standardised approach for credit risk from the limit to large exposures.
10. Liquidity is measured under Basel III through the liquidity coverage ratio and the net stable funding ratio. The liquidity coverage ratio entered into force on the 1st January 2015, although the minimum requirement began at 60 per cent, raising an equal step of 10 percentage points to reach 100 per cent will began on the 1st January 2019. The NSFR will be enforced from the 1st January 2018.

the zero risk weight and large exposures allowances on sovereign debt within the European union should be reconsidered, on the grounds that they may be a source of vulnerability.

The Five Presidents' Report (2015) report propose to review the treatment of large exposures to sovereign debt in the medium term. However, far-reaching changes to the current framework should only be considered as part of a coordinated effort at the global level. The Basel Committee has not decided on these models yet, but plans to make a decision on the new regulations in 2016.

The regulation on sovereign exposures in other countries

In the **United Kingdom**, the Basel framework and the Capital Requirement Directives are integrated in the national legislation. The Prudential Regulation Authority (PRA) Rulebook Online stablishes the exemption of large exposures to sovereign debt in respect of Article 400 of the CRR.

Interestingly, in **Sweden,** the Financial Supervisory Authority announced, in October 2015, that it would require its four largest banks to apply positive risk weights on their sovereign exposure (Lenarcic et al., 2016).

In **the US**, according to the Dodd-Frank Wall Street Reform and Consumer Protection of 2010, government exposures, including securities issued by the Federal Reserve and the federal government agencies, are assigned a zero risk weight (Getter, 2015). Exposures to foreign governments (and banks) are assigned risk weights depending on whether the entity is a member of the Organization for Economic Co-operation and development (OECD hereafter) and if the country has received Country Risk Classification (CRC hereafter) assigned by the OECD. The Federal reserve Banks and the Federal Deposit Insurance Company launched the final rule 12 CFR § 208.225 in order to introduce specific risk-weighting factors for sovereign debt position. This rule, which entered into force on April 1st 2014, maps the risk weights to CRCs in a manner consistent with the Basel II standardized approach and contains specific provisions depending on whether the position is denominated in the sovereign entity's currency, the bank has at least an equivalent amount of liabilities in that foreign currency, and the sovereign entity allows bank under its jurisdiction to assign the lower specific risk-weighting factor to the same exposures to the sovereign entity.

Finally, in **Japan**, the Basel II regulatory framework is integrated within the national legislation. Regarding Basel III, the new regulatory capital requirements are fully implemented, although other requirements such as the leverage ratio are still phasing-in. The Japanese Government Bonds (JGBs hereafter) are assigned zero risk weight, in line with the current Basel approach.

References

Bank for International Settlements (2016): Tenth progress report on adoption of the Basel regulatory framework. Basel Committee on Banking Supervision. Available at: https://www.bis.org/bcbs/publ/d366.pdf

Bank for International Settlements (2013). Low rates spur credit markets as banks lose grounds. BIS Monetary and Economic Department. Available at: http://www.bis.org/publ/qtrpdf/r_qt1312a.pdf

Dutch Presidency an Ad Hoc Working Party (2016). Strengthening the banking union and the regulatory treatment of banks' sovereign exposures. Informal ECOFIN. April 2016. Available at: https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/kamerstukken/2016/04/14/bijlage-8-presidency-paper-strengthening-the-banking-union/bijlage-8-presidency-paper-%E2%80%93-strengthening-the-banking-union.pdf

European Banking Association (2015). ESBR report on the regulatory treatment of sovereign exposures. Available at: http://www.esrb.europa.eu/pub/pdf/other/esrbreportregulatorytreatmentsovereignexposures032015.en.pdf?c0cad80cf39a74e20d9d5947c7390df1

European Political Strategy Centre (2015), "Further Risk Reduction in the Banking Union", Five Presidents' Report Series, Issue 3. Available at: http://ec.europa.eu/epsc/pdf/publications/5p_note_bankexposure.pdf

Getter, D. E. (2014). U.S. Implementation of the Basel Capital Regulatory Framework. Congressional Research Service. Available at: https://www.fas.org/sgp/crs/misc/R42744.pdf

Lenarcic, A., Mevis, D, and Siklos, D. (2016). Tackling sovereign risk in European banks. European Stability Mechanism.

Legislation cited

12 CFR Parts 208 and 225 (2014). Federal Register Vol. 78, No. 243 of 18th December 2013. Available at: https://www.gpo.gov/fdsys/pkg/FR-2013-12-18/pdf/2013-29785.pdf

Bank for International Settlements (2006). Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework - Comprehensive Version. Available at http://www.bis.org/publ/bcbs128.pdf

Bank for International Settlements (2014). International regulatory framework for banks (Basel III). Available at: http://www.bis.org/bcbs/basel3.htm

Directive 2013/36/EU (Capital Requirement Directive IV) of the European Parliament and of the Council of 26th June 2013. Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:176:0338:0436:En:PDF

Dodd-Frank Wall Street Reform and Consumer Protection of 2010. Senate and House of Representatives of the United States of America in Congress Available at: https://www.sec.gov/about/laws/wallstreetreform-cpa.pdf

Prudential Regulation Authority (2015). PRA Rulebook Online. Available at: http://www.prarulebook.co.uk/

Regulation (EU) No. 575/2013 (Capital Requirements Regulation) of the European Parliament and of the Council of 26th June 2013. Available at: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0575&from=en

A Bird Eye (Re)view of the Key Readings

by José Manuel Mansilla-Fernández

This section of the journal indicates a few and briefly commented references that a non-expert reader may want to cover to obtain a first informed and broad view of the theme discussed in the current issue. These references are meant to provide an extensive, though not exhaustive, insight into the main issues of the debate. More detailed and specific references are available in each article published in the current issue.

On bank exposures and sovereign risk

A key feature of the recent financial crisis (2007-2008) has been the interconnectedness between banks and sovereigns (see Altavilla et al. 2016 and Li and Zinna, 2014). This crisis has shown two directions of transmission. On the one hand, in some countries it has been originated in banks and transmitted to the governments, i.e. the *Irish style* crisis. On the other hand, sovereign public finances have dampened the banks' balance sheets inducing bank fragility, i.e. *the Greek style* crisis. Importantly, the crisis has cast doubts on the solvency of European banks which were exposed to mark-to-market losses and impairments on peripheral (Greece, Ireland, Italy, Portugal, and Spain) sovereign bonds (Acharya and Steffen, 2015; Acharya et al., 2014). The effects of this risk towards and the consequences of possible bailouts on credit supply and real investment have been present in the foremost financial literature (e.g. Correa et al., 2012b).

Acharya et al., (2014) examines whether the financial sector bailouts were igniting the rise of sovereign credit risk in developed economies and showed that governments face a trade-off between bailouts and credit availability to the private sector.

Several authors have demonstrated that government support, in several manners, implies introducing *ex ante* moral hazard cost at the bank level, thus inducing risk-taking behaviour to the overall banking sector (Acharya et al., 2016, Berger et al., 2016, Dam and Koetter 2012; Giannetti and Simonov 2013, among others).

One of the important externalities created during the European sovereign debt crisis in 2011 was the freezing of the interbank markets and the subsequent market fragmentation, with banks in core European countries unwilling to lend to their peripheral counterparts. Betz et al. (2016) show that bank interconnections, i.e. density, varied with the intensity of the crisis. Paltalidis et al. (2015) find that the sovereign credit risk channel amplifies the contagion effect through the European banking system. The variation between northern and southern banks in terms of their response to systemic risk were more pronounced for the formers.

Another broad insight is that financial institutions may create complementarity between public and private finance. Although there is strong evidence that the risk of defaulting is low in developed economies (see Reinhart and Rogoff, 2008, 2009, 2010), the mechanisms and consequences on credit supply and the real sector are still under debate. Uncertainty over possible government defaults is found to reduce bank lending provision, in particular, in countries where bank exposures to sovereign bond are stronger (Gennaioli et al., 2014). Indeed, higher leverage allows banks to increase their level of investment but it also magnifies the effects of shocks in their balance sheets. Thus, possible government defaults and bank holdings of sovereign debt may reduce the supply of credit and exacerbate the disruption in real activity, particularly relevant for agents involved with more leveraged banks (Correa, 2012a).

On zero risk-weighted assets and preferential regulatory treatment

Government debt securities receive a special treatment in the Basel requirements (see the Institution article of this Issue). The view that government bonds are risk free may increase the appetite for this sort of assets. In particular, liquidity and capital requirements may encourage banks to acquire sovereign bonds.

Farhi and Tirole (2015) advocate that banks might strategically take domestic sovereign risk in order to condition governments to refrain from actions that may lead to default, opening up strategic interactions between banks and governments. This bank's behaviour may have a twofold repercussion on the public sector: (i) disciplining implicitly the sovereign, and (ii) favouring public support, i.e. a bailout.[11]

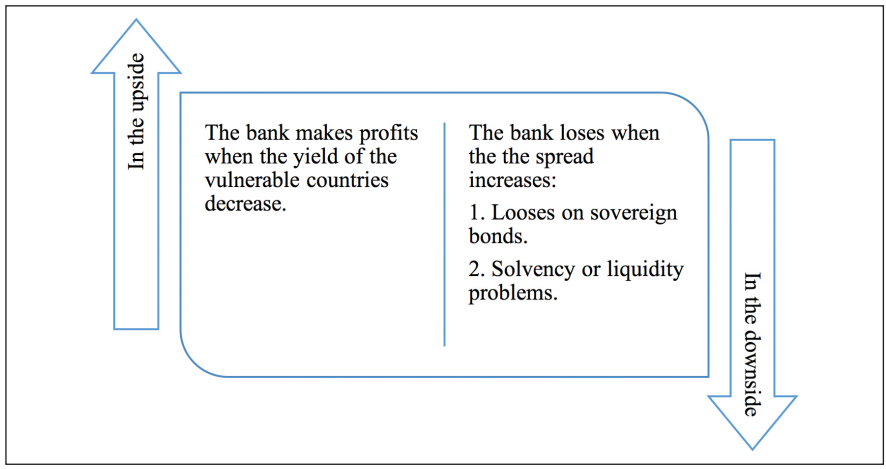
Likewise, "vertical" discriminations are being proposed (Brunnermeier et al., 2011 and 2016, Corsetti et al. 2015 and Altavilla et al., 2016) as possible alternatives to consider some extent of risk derived of the holdings of sovereign debt.[12] In particular, these proposals consider the creation of the European Safe Bonds (ESBies) at the European level, as discussed in the Editorial and the article by Marco Pagano in this issue.

Carry-trade, home bias and other hypothesis: determinants and consequences

The foremost financial literature has focused on the so called "carry-trade" behaviour of banks to explain the risk assumed by banks between 2007 and 2013. On the upside, the bank can pocket the "carry" when the spread between long-term peripheral sovereign bonds and bank's short-term cost. On the downside, the spreads between both legs of the trade diverge, resulting in significant losses for the bank leading to concerns about liquidity and solvency (Acharya and Steffen, 2015). See Diagram 1. Indeed, this carry & trade may be viewed as a bet for the survival of the Eurozone. Indeed, the high and significant correlations between the bond yields of Germany and France, and those of the peripheral countries, demonstrates that markets were more reluctant to finance banks' investment in risky sovereign debt. This provoked a flight into long-term core countries sovereign bonds. Acharya and Steffen (2015) present empirical evidence that European banks have used the carry & trade to obtain profits.

11. Similarly, Acharya and Steffen (2015) and Acharya et al. (2016) also identify risk-shifting and regulatory arbitrage as one of the transmission channel of the sovereign crisis to the banking sector. In particular, regulatory arbitrage which assign zero risk-weighted assets for in investment in sovereign debt allow banks to continue to borrows. Furthermore, banks may also practice risk-shifting as a survival strategy.
12. See the 'Editorial' section.

Diagram 1: The carry-trade behaviour in the Eurozone sovereign debt crisis



Source: Own elaboration

A further distinct feature is the home bias hypothesis according to which banks particularly increase their exposure to their home country. Battistini et al. (2013, 2014) supported this hypothesis showing that in the Eurozone periphery banks indeed showed a home bias by disproportionally increasing exposure to national sovereign risk.[13] The premise behind this observation is that a "moral suasion" mechanism operates in peripheral countries that forces domestic banks to absorb more of their own sovereign debt because of a weak demand and to reduce sovereign bond yields (Acharya and Steffen, 2015). De Marco and Macchiavelli (2015) show that government-owned banks or banks with politicians in the board of directors display higher home bias in sovereign debt compared to privately-owned banks throughout the 2010-2013 period and also that only government-owned banks increased the home bias during the sovereign crisis (moral suasion).

Domestic banks may also act as "buyers of last resort", thus reducing fiscal stress by stabilizing yields and spreads (Ongena et al., 2016). Consequently, Eurozone banks have responded to greater systemic risk by increasing home bias again and it contributed to the segmentation of the European sovereign

13. Visco (2016) argue that banks' home bias might reduce market volatility, and exposure limits might also have undesired effects.

bond market (see Blundell-Wignan and Slovik, 2010, 2011).[14] In the vulnerable countries, publicly owned banks, those which were previously bailed out, and the less capitalized banks were more affected by moral suasion (Altavilla et al., 2016). Importantly, the consequences of the differentials with the 10-years BTP-Bund spreads raised the cost of funding and were transmitted to the real sector depending on the characteristics of the bank's balance sheet with which each firm or household operates (Albertazzi et al., 2014; Delatte et al., 2016).

Other authors advocate that the carry & trade is closely related to banks' level of capitalization. The tendency of undercapitalized banks, mainly located in the peripheral countries, was to bet for resurrection by engaging high-yield sovereign bonds (Battistini et al., 2014). This hypothesis has been also supported by Drechsler et al. (2013) who find that weakly-capitalized banks use lender of last resort financing to invest in risky assets, those whose downside is correlated to bank's owns default. They do find that this use of lender of last resort is highly correlated to investment in distressed sovereign-debt.

Drechsler et al. (2013) also suggest that central banks should address risk shifting incentives when providing further liquidity. For a sample on German banks Buch et al. (2016) show that banks which are less capitalized and more dependent on external markets invest more in sovereign debt than the others. Indeed, banks choose the composition of their portfolio based on risk models and forecast. German banks reduced their exposition insofar as the bond-yield of peripheral countries were increasing.[15] At the same time, they were showing preference for German sovereign debt, indicating a "flight-to-safety" and to the home market akin.

Finally, the consequences of the carry-trade behaviour reflected into the real sector through the bank lending channel (Arteta and Hale, 2008; Correa et al., 2012a; Popov and Van Horen, 2015). Correa et al. (2012a) documents a reduction in lending provision of US branches of the European banks to US dollar funding owing to liquidity shocks provoked by sovereign risk of their countries of origin. As a result, the liquidity shock impacted negatively the corporate investment of

14. Giannetti and Simonov (2013) show that the collapse in the loan market may be in part explained by a flight home effect. This effect is motivated by previous negative shocks to investors' net wealth, which make banks to prefer domestic risk. Investors' risk aversion, the probability of bailout and lower expected return from diversifications are found to be associated with low appetite for foreign loans.
15. Savings Banks and credit unions in Germany did not have a significant exposure to the Eurozone debt crisis (see Buch et al., 2016).

the US firms borrowing from them. These results are supported by Ivashina et al. (2015) who find that during the Eurozone sovereign debt crisis dollar lending was reduced by Eurozone banks relative to their euro lending, and their customers had a more difficult time in borrowing. In the context of the European banking system, De Marco (2014) and Popov and van Horen (2015) show that lending to non-financial firms may have been reduced by a carry & trade behaviour by a number of banks which increased their exposure to peripheral sovereign debt.

References

Acharya, V., and Steffen, S., (2015). The "greatest" carry trade ever? Understanding eurozone bank risks. Journal of Financial Economics, 115, 215-236.

Acharya, V.V., and Yorulmazer, T. (2008). Cash-in-the-market pricing and optimal resolution of bank failures. Review of Financial Studies, 21, 2705–2742.

Acharya, V., Drechsler, I., and Schnabl, P. (2014). A pyrrhic victory? Bank bailouts and sovereign credit risk. Journal of Finance, 69, 2689-2739.

Acharya, V., Pierret, D., and Steffen, S. (2016). Lender of last resort versus buyer of last resort –The impact of the European Central Bank Actions on the bank-sovereign nexus. ZEW Discussion Paper No. 16-019. Available at: http://ftp.zew.de/pub/zew-docs/dp/dp16019.pdf

Albertazzi, U., Ropele, T., Sene, G., and Signoretti, F.M. (2014). The impact of the sovereign debt crisis on the activity of Italian banks. Journal of Banking and Finance, 46, 387-402.

Altavilla, C., Pagano, M., and Simonelli, S. (2016). Bank exposures and sovereign stress transmission. European Systemic Risk Board. Working Paper Series No. 11 / May 2016.

Arteta, C., and Hale, G. (2008). Sovereign debt crises and credit to the private sector. Journal of International Economics, 74, 53-69.

Battistini, N., Pagano, M., and Simonelli, S. (2013). Systemic risk and home bias in the Euro Area. European Economy - Economic Papers 494.

Battistini, N., Pagano, M., and Simonelli, S. (2014). Systemic risk, sovereign yields and bank exposures in the Euro crisis. Economic Policy, 29, 203-251.

Berger, A.N., Bouwman, C.H.S., Kick, T., and Schaeck, K. (2016). Bank liquidity creation following regulatory interventions and capital support. Journal of Financial Intermediation, 26, 115-141.

Betz, F., Hautsch, N., Peltonen, T.A., and Schienle, M. (2016). Systemic risk spillovers in the European banking and sovereign network, forthcoming.

Blundell-Wignall, A., and Slovik, P. (2011). A market perspective on the European sovereign debt and banking crisis. OECD Journal: Financial Market Trends, 2010 (2).

Blundell-Wignall, A., and Slovik, P. (2010). The EU stress test and sovereign debt exposures. OECD Working Papers on Finance, Insurance, and Private Pensions, No. 4.

Brunnermeier, M. K., Garicano, L., Lane, P., Pagano, M., Reis, R., Santos, T., Thesmar, D., Van

Nieuwerburgh, S., and Vayanos, D. (2011), "European Safe Bonds (ESBies)," The Euronomics Group.

Brunnermeier, M. K., Garicano, L., Lane, P., Pagano, M., Reis, R., Santos, T., Thesmar, D., Van Nieuwerburgh, S., and Vayanos, D. (2016), "The Sovereign-Bank Diabolic Loop and ESBies," American Economic Review Papers and Proceedings 106, May 2016.

Buch, C., Koetter, M., and Ohls, J. (2016). Banks and sovereign risk: A granular view. Journal of Financial Stability, 25, 1-15.

Correa, R. Sapriza, H., and Zlate, A. (2012a). Liquidity shocks, dollar funding costs, and the bank lending channel during the European sovereign crisis. Board of Governors of the Federal Reserve System. International Finance Discussion paper Nº 1059.

Correa, R., Lee, K-H., Sapriza, H., and Suarez, G. (2012b). Sovereign credit risk, banks' government support and bank stock returns around the world. Board of Governors of the Federal Reserve System. International Finance Discussion paper Nº 1069.

Corsetti, G., Feld, L., Lane, P., Reichlin, L., Rey, H., Vayanos, D., and di Mauro, B. W. (2015). A new start for the eurozone: Dealing with debt. CEPR report.

Dam, L., and Koetter, M. (2012). Bank bailouts and moral hazard: Evidence from Germany. Review of Financial Studies, 25, 2343-2380.

De Marco, F. (2014), "Bank Lending and the Sovereign Debt Crisis," Boston College working paper.

De Marco, F. and M. Macchiavelli, (2015), The Political Origin of Home Bias: the Case of Europe, mimeo.

Delatte, A.-L., Fouquau, J., and Portes, R. (2016). Regime-dependent sovereign risk pricing during the euro crisis. European Systemic Risk Board. Working Paper Series No. 9 / May 2016.

Drechsler, I., Drechsel T., Marques-Ibañez, D., and Schnabl, P. (2013). 'Who borrows from the lender of last resort?', Mimeo. Available at: http://people.stern.nyu.edu/idrechsl/WhoBorrowsLOLR.pdf

Farhi, E., and Tirole, J. (2015). Deadly embrace: Sovereign and financial balance Sheets doom loops. Harvard University Working Paper. Available at: http://scholar.harvard.edu/farhi/publications/deadly-embrace-sovereign-and-financial-balance-sheets-doom-loops

Giannetti, M., and Simonov, A. (2013). On the real effects of bank bailouts: Micro evidence from Japan. American Economic Journal: Macroeconomics, 5, 135-167.

Gennaioli, N., Martin, A., and Rossi, S. (2014). Sovereign default, domestic banks, and financial institutions. Journal of Finance, 69, 819-866.

Ivashina, V., Scharfstein, D.S., and Stein, J.C. (2015). Dollar funding and lending behavior of global banks. Quarterly Journal of Economics, 130, 1241-1281.

Li, J., and Zinna, G. (2014). How much of bank credit risk is sovereign risk? Evidence from the Eurozone. Bank of Italy Working Papers Nº 990.

Ongena, S., Popov, A., and Van Horen, N. (2016). The invisible hand of the government: "Moral suasion" during the European sovereign debt crisis. DNB Working Paper Nº 505.

Paltalidis, N., Gounopoulos, D., Kizys, R., and Koutelidakis, Y. (2015). Transmission channels of systemic risk and contagion in the European financial network. Journal of Banking and Finance 61, supplement 1, S36-S52.

Popov, A., and Van Horen, N. (2015). Exporting Sovereign Stress: Evidence from Syndicated Bank Lending during the Euro Area Sovereign Debt Crisis. Review of Finance, 19, 1825-1866.

Reinhart C. M., and Rogoff, K. S. (2008), "The forgotten history of domestic debt." NBER Working Paper 13946

Reinhart, C. M., and Rogoff, K. S. (2009). The Aftermath of financial crises. American Economic Review, 99, 466-472.

Reinhart, C. M., and Rogoff, K. S. (2010). Growth in a time of debt. American Economic Review, 100, 573-578.

Visco, I. (2016). "Banks' Sovereign Exposures and the Feedback Loop Between Banks and Their Sovereigns," Concluding Remarks presented at the Euro50 Group Conference on The Future of European Government Bonds Markets, 2 May.

Articles

Sovereign Risk: Black Swans and White Elephants[16]

By Andrea Enria, Adam Farkas and Lars Jul Overby[17]

Abstract

It can be argued that sovereign risk refers to 'black swan' events as characterised in Taleb (2008), rare and extreme events with retrospective (though not prospective) predictability. In addition since banking risk is intrinsically linked to sovereign risks, it can also be denoted as a 'white elephant' type of risk, i.e. a risk that although it has the potential to be costly, it is also difficult, if not impossible, to dispose of. While both views have some wisdom, the truth probably lies in between. Sovereign risk has for long been highlighted as an issue, but perceived as unlikely to crystallise in Europe and too difficult to address effectively, given the strong interlinkages between governments, monetary policy and banking systems. Nonetheless, the current preferential treatment of sovereign risk in the banking regulatory framework was clearly challenged during the financial crisis. The lack of risk sensitivity and incentives in the prudential framework to manage sovereign risk actively may have led to complacency prior to the EU sovereign debt crisis, as empirical evidence illustrates limited diversification and significant home-bias in the holdings of sovereign assets. Consequently, increased reliance on mark-to-market valuations of sovereign exposures, standardised disclosure and regulatory incentives to diversify sovereign risk would lead to a more robust

16. We would like to thank Marina Cernov, Mario Quagliariello and Massimiliano Rimarchi for valuable considerations and comments. The views expressed are ours and do not necessarily reflect the views of European Banking Authority.
17. European Banking Authority

framework that, although it may not eliminate the risk of sovereign black swan events, will mitigate the impact and hopefully make the white elephant smaller.

The banking regulatory reforms initiated as a result of the financial crisis are drawing to an end. The Basel Committee of Banking Supervision (BCBS) has committed to close the remaining regulatory proposals by the end of 2016. While it will still take time to implement the reforms, banking regulation will have been substantially reshaped taking into account the lessons learned from the financial crisis. There is, however, one notable exception: sovereign risk. As the BCBS itself puts it: "*the Committee has initiated a review of the existing regulatory treatment of sovereign risk and will consider potential policy options*" in "*a careful, holistic and gradual manner*".[18] Hence, as it currently stands, sovereign debt will see its preferential regulatory treatment in the prudential framework untouched, even strengthened in some aspects, with reforms and revisions only being introduced gradually and over a longer time horizon.

The BCBS has rightly identified sovereign risk as a type of risk that deserves careful consideration. The crisis illustrated that banks' sovereign exposures can be subject to losses, as was observed with the haircut imposed on international creditors in the Greek debt-restructuring deal in 2012; soon after that, in 2013, according to the European Stability Mechanism (ESM) Treaty, collective action clauses (CACs) became mandatory for all new euro area government securities with maturity above 1 year, giving wider possibilities for restructuring. Most importantly, the European sovereign debt crisis exposed systemic risk that can arise from banks' home-bias in their sovereign investments, i.e. an excessive concentration of banks' exposures towards their domestic sovereign. The adverse bank-sovereign loop transmitted turbulence in sovereign debt markets directly into bank funding markets and lending conditions to the real economy, breaking down the Single Market for banking services along national lines. Hence sovereign defaults have the potential to be black swan events, see Taleb (2008), i.e. rare events with extreme impact and some element of unpredictability that prevents efforts to limit the risk before it happens. Despite the potential impact of sovereign exposures, the current capital regulation still applies a wide-ranging preferential treatment of sovereign exposures.

18. See BCBS work programme at http://www.bis.org/bcbs/about/work_programme.htm.

One of the reasons behind the current unchanged situation is what we call the 'white elephant' issue[19]. The argument runs as follows: a sovereign default can be very costly, but it is an event that happens so rarely and is very difficult, if not impossible, to remove given the magnitude and necessity of sovereign exposures in the banking system – especially for liquidity management. It is hence a risk that if fully covered - and that is what matters most from a regulatory perspective - would lead to disproportionately high requirements and a disruptive impact on both banks' balance sheets and sovereign debt markets. Given that it is not possible to solve this issue, it is then argued that the risk must be accepted and limited tools are available to address it. According to this line of reasoning, the issue of sovereign risk is so pervasive and rare that it cannot be addressed properly – hence better to accept this conclusion and avoid any regulatory reform.

To some extent we sympathise with the logic behind this argument, especially the fact that fully addressing the issue would have wide-ranging repercussions, and hence understand the subject needs to be treated with great caution. However, one should also be aware that the *status quo* is not tenable in light of the recent experience: despite the white elephant is likely to always linger in the background and capital set aside for this risk is likely to be insufficient to fully cover default events, the behavioural incentives introduced by the preferential treatment granted to sovereign exposures in our view exacerbated the problems observed in the financial crisis. This incentive issue can and must be mitigated. We will therefore argue in this article that a gradual introduction of more risk sensitive metrics is the right way to go in order to remove this deficiency in the prudential framework.

The preferential treatment of sovereign exposures is particularly relevant in the credit risk framework, where two elements should be highlighted. First, international standards allow banks' exposures to the domestic sovereign denominated in local currency to be considered risk-free, i.e. they are subject to a zero risk weight in the capital requirements calculation under the standardised approach (SA). In the EU legislation this preferential treatment is extended to exposures towards any of the 28 Member States, even in presence of a currency

19. According to Merriam-Webster, a white elephant is "something that requires a lot of care and money and that gives little profit or enjoyment".

mismatch. The internal ratings-based (IRB) approach introduces non-zero risk weights, but at the cost of significant - and difficult to justify - variation in capital requirements across banks, as shown in EBA (2013a). Second, sovereign exposures are granted a full exemption from requirements limiting concentration risk in the EU, i.e. the large exposures framework. All in all, limited measures are in place to cover for sovereign risk in the current regulatory framework for credit risk.

Among the preferential treatment of sovereign risk in the prudential framework, the zero risk weighting has probably received most criticism - see for instance Nouy (2012) and ESRB (2015). While there is merit in these observations, implementing an alternative framework for sovereign risk does not come without complications, especially considering the need to ensure consistency with other elements of the regulatory framework. In particular, the interaction with the liquidity regulation, which requires banks to hold significant amounts of sovereign securities as a buffer to withstand funding shocks, will have to be carefully considered. The main objective should be to prevent excessive concentration risk towards a specific sovereign issuer, which for banks almost always is the domestic sovereign. Furthermore, banks should be induced to manage their sovereign risk actively and a non-zero risk weight may not be sufficient to incentivise such behaviour. We argue that more attention needs to be paid to the allocation of sovereign exposures to different accounting books; in particular, regulators should ensure that a significant portion of bank sovereign holdings are valued according to market prices, especially to the extent sovereign securities are held to meet short term liquidity requirements. This, in combination with a framework that addresses excessive concentration risks and a standardised disclosure framework, will provide positive incentives for an active risk management of sovereign positions.

This paper is structured in three sections. Firstly, it looks at the lessons learned and importantly the regulatory measures taken during the European sovereign debt crisis, which illustrate the concerns about the current framework. Secondly, a selective overview of the current regulatory framework – focusing on the rules pertaining to liquidity risk, credit risk and large exposures - is provided. Finally, we argue for the development of a more risk-sensitive framework which provides sounder incentives for banks to manage their sovereign risk more actively.

1. The lessons from the European sovereign debt crisis – an EBA perspective

The outbreak of the European sovereign debt crisis in 2011 exacerbated the market turmoil and increased the concerns about the already fragile balance sheets of European banks. As sovereign spreads in several Member States widened, banks in those countries became under significant pressure: investors started assessing banks' resilience on the basis of the credit standing of the sovereign providing them with an implicit safety net; also, as market analysts and investors increasingly focused on banks' holdings of sovereign debt, the lack of reliable and comparable information on actual exposures and on their valuations in the bank's books allowed significant concerns and market uncertainty to take root.

The timeline of the crisis is described elsewhere - see for instance Lane (2012) for an overview. We will thus not focus here on the activation of assistance programmes and on the emergency measures to address the fiscal aspects of the crisis. Rather, we will look back at the events that had an impact on the performance of EU-wide regulatory and supervisory tasks under the EBA's mandate, as this could hopefully provide useful insights into the debate on the regulatory treatment of sovereign exposures.

During the spring of 2011 the Greek sovereign crisis took a turn for the worse while the EBA, established few months before, was running its first stress test on a significant sample of EU banks. Markets were very uncertain about the size and market value of banks' exposures to Greek sovereign debt, as well as towards other Member States whose sovereign spreads were widening, in particular Portugal, Ireland, Italy and Spain. The issue of the treatment of sovereign exposures in the stress test was extensively discussed at the EBA Board. On the one hand, it was difficult for the EBA to apply any other treatment than the one envisaged in the rulebook. Also, it was not easy for a regulator to introduce capital charges to cover for credit risk, while the EU had just set up a facility at the European Financial Stability Fund (EFSF) to prevent the default of any Member State. At the same time, the preliminary results of the stress test raised serious questions of consistency and reliability in the treatment of sovereign exposures. More than half of the banks in the sample used internal models to assign risk weights to their sovereign portfolio. It was apparent that

the higher the exposures towards sovereigns under stress, the lower the banks' estimates of risk parameters and, therefore, the lower the risk weights and the capital charges. The latter were significantly different from zero (and sometimes very high) only in cases in which the exposures towards that specific sovereign were not material. In order to address this issue, the EBA Board of Supervisors agreed after very controversial discussions to introduce floors to the loan loss provisions for sovereign exposures in the stress test. The floor was defined on the basis of a methodology that extrapolated risk parameters from information contained in external ratings for the corporate sector. As a result, the capital impact in the stress test for an exposure towards the Greek sovereign, for instance, was at least 17% of the nominal value of that exposure. Also, the EBA decided to give full and very granular disclosure of information on individual banks' exposures to each sovereign.[20] A few months later, one week after the results of the stress test were published, the ECOFIN Council agreed on private sector involvement (PSI) in the restructuring of Greece. As a result, banks had to agree to a 20% haircut of their exposure - not so far away from the EBA's preliminary estimates.

However, it was immediately clear that market participants were not satisfied with the treatment the EBA applied in the stress test. They wanted to see sovereign exposures fully written down to reflect the prevailing market values. Using the very granular information provided by the EBA, analysts calculated the capital position of each bank participating in the stress test when all sovereign exposures were valued at market prices. The first casualty was Dexia, which had shown a robust capital position in the stress test, but had significant exposures to sovereigns and municipalities in stressed countries. According to some calculations, once such exposures was revised to reflect market valuations, the stressed capital ratio of the bank once such exposures was barely positive, at 0.5%. The bank started experiencing difficulties in accessing market funding and the liquidity problems led very fast to a crisis that quickly drove the bank into resolution. The EBA paid a significant price in terms of reputation, as the crisis of Dexia was widely interpreted as a failure of the stress test. However, we could argue that the disclosure provided by the EBA allowed market discipline to exercise fully its effects and was instrumental to addressing the problems

20. See http://www.eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing/2011.

of Dexia's business model in the run-up to sovereign debt crisis. Nonetheless, this sequence of events made the EBA very alert to the worrisome link between stressed sovereign exposures and access to market funding.

The sovereign debt crisis was rapidly turning into a funding market squeeze for European banks, not only in stressed countries. As a significant amount of bank liabilities was reaching maturity, banks grew increasingly concerned and started to disorderly deleverage. The EU was facing a very high probability of an imminent credit crunch, which would have further aggravated the crisis. EBA staff quickly realised that the regulatory response had to include capital buffers against sovereign risk, as well as public support to bank funding.

This is the background of the EBA's policy proposals in autumn 2011: a requirement to significantly strengthen banks' capital positions on the basis of the market valuations of sovereign exposures, and the introduction of EU guarantees on newly issued bank liabilities.

The EBA issued the recommendation asking banks to raise their risk-weighted Core Tier 1 capital ratio to 9%, including a sovereign buffer that was designed to capture the effect of the depressed market valuations of government debt on the banks' capital position.[21] *De facto,* the requirement was equivalent to imposing a one-off adjustment of valuations to reflect market prices at the peak of the crisis. In particular, banks were required to remove the so-called prudential filters on sovereign assets in the Available-for-Sale (AfS) portfolio and prudent valuation of sovereign debt in the Held-to-Maturity (HtM) and Loans and receivables (L&R) portfolios, in order to reflect current market prices. Effectively both measures aimed at providing market valuation of the sovereign exposures. This choice was also necessary in light of the very diverse allocation of sovereign exposures in accounting books across the banks covered in our recommendation - in some cases more than 90% of the sovereign portfolio was classified in the HtM and L&R books and carried risk weights close or equal to zero, so the recommendation would have been completely ineffective without a specific requirement reflecting market valuations. Furthermore, the mark-to-market component of the recommendation was essential to put all banks on the same footing, irrespective of their choices as to the allocation of sovereign exposures to different accounting books.

21. See http://www.eba.europa.eu/-/the-eba-details-the-eu-measures-to-restore-confidence-in-the-banking-sector

The EBA recommendation was subject to some criticism for being procyclical and penalising countries under stress. In particular, some argued that it would have led to a significant deleveraging, even to the very credit crunch that it tried to avoid, and that it would have led to a sell-off of sovereign debt in stressed countries. However, it accomplished its objective: banks' capital positions were significantly strengthened - the shortfall originally identified was EUR 115 billion, the final increase in the banks' capital positions was in excess of EUR 200 billion; the requirement did not allow banks to comply by reducing risk weighted assets and thus did not lead to any disorderly deleveraging; banks in countries under stress did not reduce their investment in domestic sovereign - on the contrary, as the recommendation was calibrated on the sovereign holdings at the end of September 2011, they significantly expanded the exposures to their domestic sovereign.

The EBA's concurrent proposal to introduce EU guarantees on newly issued bank debt was not supported by the ECOFIN Council. This was very disappointing, as the proposal had been carefully designed to avoid any mutualisation. The guarantees would have been issued by a EU vehicle and, from an investor perspective, it would have been backed by all Member States. This EU-wide scope of the guarantee was essential to cut the link between individual sovereigns and bank liabilities. But at the same time, an inter-guarantor agreement would have determined the allocation of losses, so that each Member State would have covered the losses generated by the banks under its jurisdiction.

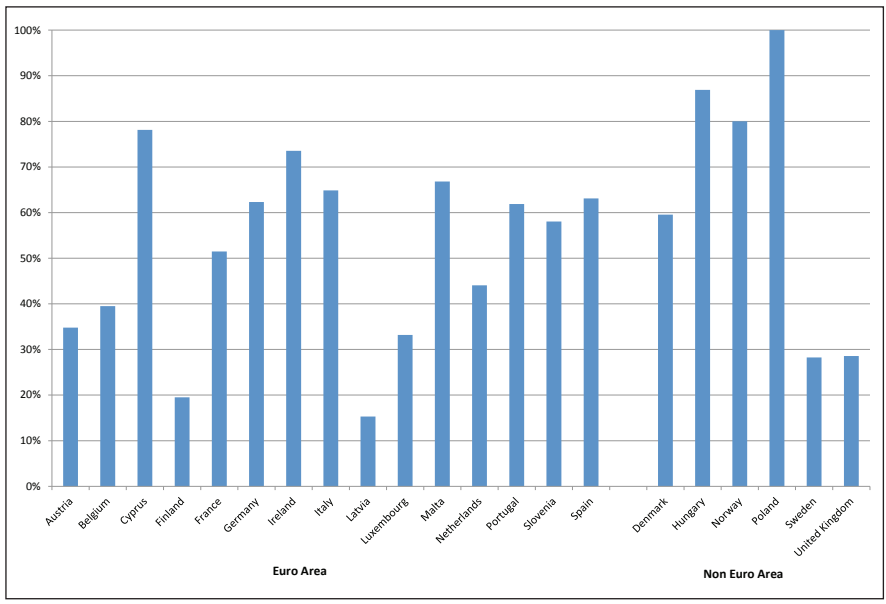
At the time, EBA staff was unsure whether to push ahead with the recapitalisation requirement in the absence of the guarantee on the liabilities, as the two elements were essential to address the funding squeeze being experienced by banks and avoid a credit crunch. With hindsight, the decision to proceed with the capital recommendation was the right one, as the ECB soon launched the first Long Term Refinancing Operations (LTROs), thus providing the necessary access to funding.

The recapitalisation exercise was the first European attempt to require market valuation of sovereign assets, but the exercise was not only focused on capital. Equally important was the objective to further enhance transparency about the actual size of sovereign exposures and the valuations used by banks. The in-depth, very granular disclosure of data was an essential element of the policy action aimed to restore confidence in the EU banking sector and dispel

the uncertainty about the level and pricing of sovereign holdings. Hence the stress test results from July 2011 were accompanied by detailed disclosure of the sovereign holdings and the October capital exercise provided clarity on the bank-level accounting treatments of sovereign assets. The disclosure of the actual level of exposures was consequently an equally important goal of the overall exercise.

Fast-forwarding to the situation today, a significant home bias seems to remain a key feature of EU banks' holdings of sovereign debt. Figure 1 shows net direct holdings of domestic sovereign exposures as a share of net direct holdings of total (i.e. domestic and non-domestic) sovereign exposures. The home bias in the sovereign portfolio of EU banks is apparent. The information is based on the latest EBA transparency exercise, which covers on the largest 105 banking groups in the EU. As these players are typically more geographically diversified than smaller banks, the data probably represent a lower bound of the home-bias behaviour of EU banks.

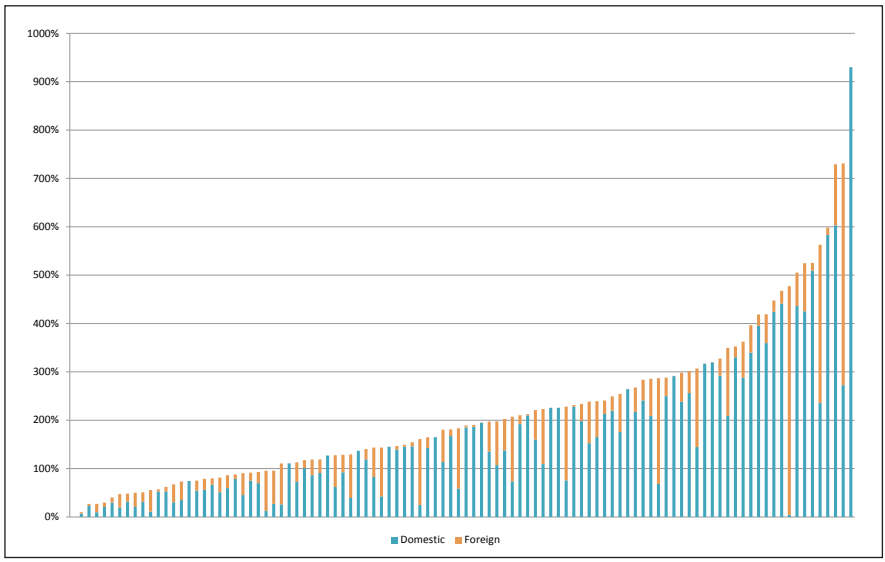
Figure 1: Share of sovereign holdings held by domestic banks of overall bank holdings (June 2015)



Source: EBA Transparency Exercise 2015
Note: Measure used is net direct holdings.

It is generally difficult to identify any significant country trends. A lower home-bias seems to prevail in Member States with low government debt-to-GDP ratios[22], i.e. with limited sovereign issuance (such as Latvia, Luxembourg and Sweden – all with government debt-to-GDP ratios below 45%), although this is not always the case. A limited home-bias is shown by banks in Finland and the Netherlands, which have government debt-to-GDP ratios in excess of 60%, while higher home-bias is visible in Norway, which has one of the lowest debt-to-GDP ratios in the EU, at 31.6%. Similarly it is difficult to identify a clear pattern between euro area and non-euro area countries, contrary to the expectation that the home bias should be lower within the euro area, where banks may invest in several sovereigns without any need to engage in currency hedging strategies. It is however clear that on average at least half of the sovereign holdings of EU banks are towards the home government. The bank-sovereign link within Member States remains very strong.

Figure 2: Bank exposures to sovereigns as a proportion of Tier 1 capital



Source: EBA Transparency Exercise 2015

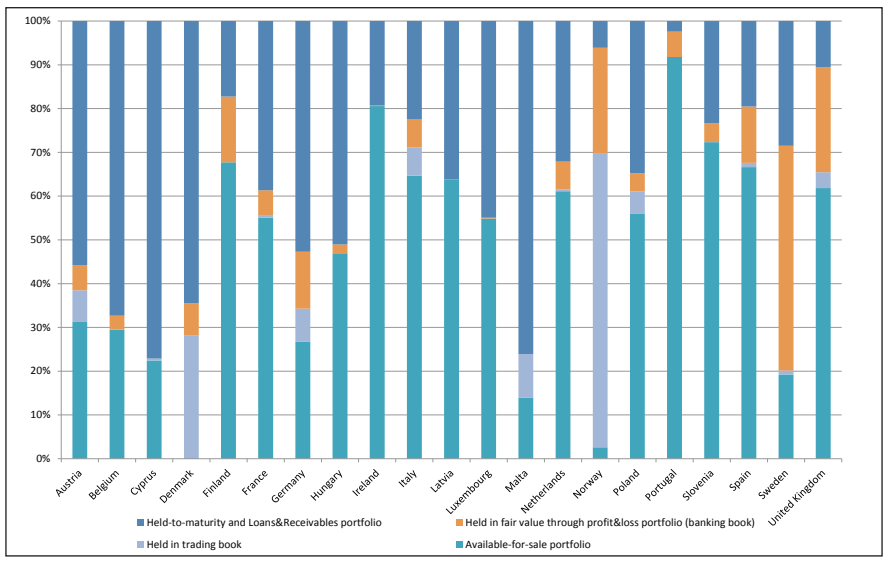
Note: Measure used for bank exposures is gross direct long exposures. 4 banks with overall sovereign exposures exceeding 1000% are not included.

22. 2015 data from Eurostat. See http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=teina225&plugin=1.

From the prudential point of view, the home bias translates into excessive concentration risk. Figure 2 shows that domestic sovereign exposures are on average equal to 100% of Tier 1 capital in our sample of 105 banks under consideration - and the figure moves closer to 200% for smaller banks in the sample; 36 banks have exposures in excess of 200% of their Tier 1 capital, 11 banks are above 400%. Although some reluctance to diversify into non-domestic holdings may be understandable, the very high level of concentration observed is a source of concern for supervisors and represents direct channel for contagion in case of turbulence in sovereign debt markets.

As discussed above, the valuation methods used for sovereign exposures are also important. The market uncertainty surrounding both the magnitude and the valuation of sovereign exposures represented one of the main drivers of market turmoil. There is a wide diversity in practices across banks and countries, reflecting also the lack of regulatory guidance. Large parts of sovereign

Figure 3: Valuation methods used for sovereign holdings



Source: EBA Transparency Exercise 2015

Note: Measure used is net direct holdings according to accounting classification. More specifically, according to IAS 39, financial securities have to be classified into four categories: i) Financial assets at fair value through profit or loss (FVPL) - this category relies on fair value and has two sub-categories, which are used in the above chart, which are respectively Held for Trading (HfT) and Fair Value Option (FVO), 2) Available-for-sale financial assets (AfS) - this category relies on fair value, 3) Held-to-maturity investments (HtM) - this category relies on amortised cost and 4) Loans and receivables (L&R), which relies on amortised cost.

exposures are still kept in accounting books (HtM and L&R) that rely on valuation at amortised cost, rather than at fair value. This implies that swings in market prices are not reflected in the bank balance sheets and in measures of capital adequacy. Should a bank need to dispose some of its sovereign holdings during a phase of falling prices, in order to for instance address a short-term liquidity stress, regulatory capital would not be have been set aside to absorb these losses.

Figure 3 illustrates the current valuation practices. The reliance on amortised costs is still widespread today for sovereign exposures. While there is some evidence that banks have shifted towards a greater reliance on fair value for sovereign exposures, a significant and in some countries predominant share of holdings is still classified in the HtM and L&R categories. This is difficult to justify when a large share the very same sovereign assets is used to comply with the newly introduced liquidity requirements. In fact, in order to comply with the liquidity coverage ratio banks are required to establish large buffers of high quality liquid assets, including sovereign holdings, to withstand a liquidity stress for a period of at least one month. Hence, banks are expected to be ready to promptly sell these assets at the prevailing market price in case of a liquidity shock, a condition that does not seem compatible with valuations at amortised cost. Therefore as a minimum sovereign assets used to fulfil the LCR requirements should always be measured at fair value, also for accounting purposes.

The sovereign buffer based on market valuations that the EBA introduced in 2011 was a one-off measure and has not become a permanent feature of the regulatory framework. Also, no specific requirements are now in force to ensure adequate and regular disclosure of information on sovereign exposures, although the EBA has continued to make available detailed data on sovereign exposures, in a standardised format, at least once a year for the largest banks. Concentration risk towards sovereign exposures is also not addressed in the current regulatory framework.

Summing up, these are main takeaways from an EBA perspective of the recent experience: (i) sovereign risk may be a significant source of disruptions for banks and is not adequately covered in the current regulatory framework; (ii) calibrating a capital charge is challenging, because of the "white elephant" and lumpy nature of sovereign risk - in normal times nobody notices it, in times of stress no capital charge seems to adequately reflect the rapidly changing

perception of risk and it becomes highly costly; (iii) although some home bias in the composition of the sovereign portfolio is probably unavoidable, the regulatory treatment should embody some disincentives to excessive concentration of exposures; (iv) any regulatory treatment cannot ignore valuation, i.e. how changes in market values are reflected in banks' balance sheets and in their capital position; and (v) transparency has to be part of the solution - detailed information on sovereign exposures should regularly be made available to market participants in order to allow market discipline to play its role.

2. The current regulatory framework

The purpose of this section is not to give a complete overview of the regulatory framework and of the preferential treatment it grants to sovereign exposures - a thorough description can be found in ESRB (2015). We would like to focus our attention on three aspects, namely the treatment of sovereigns in the regulatory framework for liquidity risk, large exposures and credit risk.

A harmonised regulatory framework for liquidity risk has been introduced in the EU for the first time in response to the crisis, implementing the international standards developed by the BCBS. The regulatory reforms focused on two issues: first, the lack of sufficient buffers of liquid assets allowing banks to survive long enough to design viable solutions to the crisis - a shortcoming that made government bail-outs the only available option for policy makers; second, structural imbalances in business models, with significant mismatches between the liquidity features of assets and liabilities - a problem epitomised by the failure of Northern Rock, see Shin (2009), which relied on securitisation and volatile wholesale funding to finance its long term mortgage business.

In response to these concerns, the new prudential framework introduced two liquidity metrics in the prudential framework, namely the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR) requirements. Whereas the NSFR focuses on structural aspects of the bank business model, the LCR[23] is a short-term measure that requires banks to keep in place a liquidity buffer to cover outflows under a pre-defined stressed 30-day scenario. At least 60% of the

23. See for instance EBA (2013b) and EBA (2015) for a description and impact assessment of the LCR metric.

liquidity to fulfil the LCR requirements must be held in so-called Level 1 assets, i.e. liquid assets of the highest quality. In particular, only central government exposures, other exposures towards (or guaranteed by) public entities, such as central banks, regional governments, government development banks and high quality covered bonds qualify as Level 1 assets. Hence, the current regulatory framework recognises the high liquidity of debt issued by governments and other public administrations and *de facto* requires banks to hold a significant amount of sovereign bonds. In order to maintain a consistent framework, any changes to the requirements for sovereign exposures will need to keep this regulatory interaction in mind. It is also interesting to notice that in order to comply with the requirement, banks have to use the market value of their liquid assets, subject to a haircut to adjust for price volatility and liquidation costs. Again, in recognition of the high liquidity of sovereign debt markets, no haircuts are included on sovereign exposures.

The large exposures framework is set in place in order to prevent banks from building up excessive concentration of their exposures towards a single counterparty. Specifically, a large exposure is defined with reference to any client or group of connected clients, where the value of the exposure exceeds 10% of eligible capital. Eligible capital comprises of Tier 1 and Tier 2 capital, but the latter can be computed only up to one third of Tier 1 capital. Any lending to a client or group of connected clients above 25% of eligible capital or EUR 150 million is prohibited. These rules are consequently intended to prevent the bank's solvency to be put into jeopardy as a result of a default of a single counterparty. There is however a provision explicitly exempting sovereign exposures from the large exposures regime. Given the central role sovereign assets play in liquidity management, and also in light of the LCR requirement, there is surely logic to this exemption. Nonetheless, the lack of any requirements on concentration risk in the sovereign portfolio – in combination with the preferential treatment for credit risk – implies the absence of any regulatory incentives for banks to actively manage the concentration risk of their sovereign exposures.

Finally, the regulatory framework for credit risk has traditionally embodied a preferential treatment for sovereign exposures. The original Basel Accord (1988), now better known as Basel I, introduced standardised risk weights for sovereign exposures, which were calibrated at a lower level for developed countries (as proxied by participation in the OECD). Most importantly, Basel I intro-

duced discretion for national supervisors to apply zero risk weights for domestic sovereign exposures denominated in national currency. While the origins and reasons behind this approach has to our knowledge never been articulated clearly[24], it is reasonable to assume that the origin of the zero risk weight is to be found in the fundamental role sovereign securities play in monetary policy operations - a role which has evolved through time, but has remained central for a long time across all relevant jurisdictions. In turn, this determined the key function sovereign paper plays in money markets and for liquidity management at financial institutions. As long as central banks through their monetary policy operations were willing to act as a backstop and at the same time co-existed together with predominantly domestic banking systems, the preferential treatment given to domestic sovereigns appeared well-founded.

Looking at today's setting for monetary policy operations, it is however clear that the old arguments are less robust, given that sovereign assets are no longer automatically converted into cash. The use of Value-at-Risk considerations influenced central banks and lead to the introduction of differentiated haircuts on assets received as collateral. For instance, the Eurosystem applies haircuts to the sovereign collateral posted by banks to access central bank liquidity. The haircuts reflect the credit standing of the issuers and are based on external ratings, but appear calibrated to reflect market risk, i.e. the risk for the Eurosystem of having to sell those exposures and bear losses, in the short term, due to adverse price movements.

The regulatory framework also evolved in response to developments in risk management techniques, as supervisors wanted – correctly in our view – to move to a more risk-sensitive approach, providing banks with incentives to improve their ability to measure and actively manage risks. The regulatory paradigm moved towards allowing banks to rely on their internal models to determine regulatory capital requirements, first for market risk and then, with the so-called Basel II framework, also for credit and operational risk. Banks were consequently expected to move towards modelling of all portfolios, including sovereign portfolios. This solution was expected to address the lack of a risk-sensitive treatment of sovereign exposures. Basel II however retained the

24. The Capital Accord of July 1988, later known as Basel I, has a number of careful considerations on the matter, but does not clearly articulate the rationale for a zero risk weight, just noting that "*individual supervisory authorities should be free to apply either a zero or a low weight to claims on governments*".

national discretion of a zero risk weight, which was expected to be used by smaller credit institutions, which would not develop internal models. However, in the EU implementation of Basel II banks were allowed to adopt internal models while keeping the standardised approach (SA) for some portfolios - the so-called permanent partial use (PPU). This deviation from the Basel standards allowed many banks, with supervisory approval, to continue applying a zero risk weight on the sovereign portfolio, while internal models were used for other exposures. The PPU for sovereign exposures was part of the BCBS's assessment of the EU as materially non-compliant with the international standards on capital, see BCBS (2014).

The benefits of the internal modelling approach however never materialised for sovereign exposures. The limited number of sovereigns and the even lower amount of loss and default observations made it very difficult to develop robust models. The risk weights calculated with banks' internal models led to a wide dispersion of results (EBA, 2013a). In the absence of data, IRB models typically rely on a substantial amount of judgement and biases may consequently be introduced – for instance a reluctance to set high risk weights for domestic sovereign exposures. Therefore the current regulatory framework embodies either a lack of risk sensitivity, as is the case for the zero risk weight under the SA, or a subjective assessment in the case of IRB models.

The choice between SA and IRB also left supervisors with a dilemma: either accept the lack of regulatory capital backing sovereign exposures or rely on imperfect models. Also in the EU, supervisors followed different routes: in Sweden and Belgium, for instance, the competent authorities require banks to use IRB models for sovereign exposures; in most other Member States they chose to allow the use of the SA. Consequently no tools, except a specific supervisory assessment under the Pillar 2 framework, are available to ensure that capital to cover the sovereign risk is available. The BCBS has already signalled that the possibility to use IRB approaches for sovereign portfolios should be eliminated and is currently discussing possible improvements to the standardised approach.

Overall, the conclusion that we draw is that the current regulatory framework provides banks with no incentives to actively monitor and manage sovereign risk. While the argument can be made that sovereign risk needs a specific treatment, that takes due account of the general low-risk nature of the instrument, its impor-

tance for liquidity management policies, in addition to the special role given to sovereigns in the monetary policy framework, the complete absence of requirements on the level and composition of sovereign exposures is difficult to justify.

3. Some suggestions to address sovereign risk in the prudential framework

We are very much aware that changes to the regulatory treatment of sovereign exposures could lead to major adjustments in the banks' balance sheets and to potentially significant impact on still fragile European sovereign debt markets. It is clear that in some sense sovereign risk will always remain a white elephant, which is difficult to fully protect against. Hence any reform will have to be carefully designed and gradually implemented. The arguments developed in the previous sections however also lead us to the conclusions that a new regime should be built around few basic principles, which should aim at providing the right behavioural incentives to manage sovereign risk and thereby possibly even contain the impact of sovereign black swan events in the future.

First, *low but positive risk weights should be introduced for domestic sovereign exposures.* This principle was already included in the original Basel Accord (BCBS, 1988), although it was never adopted, with most countries using the national discretion for zero risk weights. With Basel II it was followed by the largely unsuccessful move towards internal modelling. Low, non-zero, risk weights would force banks to more actively manage the risk in their sovereign exposures. As argued by Acharya and Steffen (2015), the lack of risk sensitive capital requirements was one of the drivers leading banks to hold riskier EU sovereign assets prior to the crisis. Introducing positive risk weights is consequently an important starting point, but probably not the most important change that is needed in the framework.

In fact, we have to acknowledge that there is a need to have substantial sovereign exposures on the balance sheet of banks – not only for the purpose of liquidity buffers, but as part of monetary policy operations and collateral transactions. Sovereign securities represent an essential element in a variety of banking operations and, albeit not risk-free, they remain at least low-risk expo-

sures with highly liquid markets. What is necessary is to give banks incentives to actively manage this risk and especially avoid excessive concentration of exposures towards the domestic sovereign. Some diversification of the sovereign portfolio is essential to alleviate the adverse bank-sovereign loop that we saw at play during the crisis. However, looking at the composition of bank balance sheets, as described in Figure 2, it is clear that rigid and conservative large exposure limits - e.g., the same 25% limit applicable to exposures to private counterparties - may have very disruptive consequences. Banks would be forced to conduct a massive reallocation of their sovereign holdings; they would not benefit from the flexibility needed to manage their portfolio of liquid assets and support their capital market activity; furthermore, tightly calibrated concentration limits would clash with the liquidity requirements. Rigid concentration limits would be particularly challenging for EU banks headquartered outside the euro area, as diversifying the sovereign portfolio would entail additional currency risk on a significant scale.

Hence in our view the second ingredient of a workable policy solution would be to design *capital requirements increasing with concentration risks, according to a metric compatible with the liquidity requirements*. For instance, very low risk weights could be applied to domestic sovereign exposures below a threshold defined with reference to the average high quality liquid assets necessary to comply with the LCR requirements. In order to give a very tentative order of magnitude, should a bank use solely a single-name sovereign exposure to fulfil the minimum required level 1 assets, this exposure would, according to internal EBA estimates, correspond to on average around 100% of Tier 1 capital. Then a gradual and increasingly steep increase in risk weight could be envisaged when concentration of exposures towards a sovereign rises above that threshold. With increasing capital requirements, banks would not be forced to diversify, but would become more resilient to potential disturbances in sovereign debt markets.

The issue of excessive concentration risk could probably be successfully addressed also through other mechanisms. For instance, Brunnermeier et al (2011) proposed the use of securitisation structures to create liquid multi-country sovereign exposures, so-called European Safe Bonds (ESBies). Using an approach based on pooling of different sovereign exposures according to pre-defined rules, but without liability across countries, the problem of insuf-

ficient diversification would be directly addressed already at the issuance. As a matter of fact, regulatory disincentives to excessive concentration and diversified securitisation structures such as the ESBies could be part of a solution to address sovereign concentration risk, without generating excessive transitional adjustment challenges in sovereign debt markets and bank balance sheets.

The third element of a workable regulatory reform should be the introduction of a *requirement to include a significant portion of the sovereign portfolio in accounting books that entail mark-to-market valuations*. As mentioned above, it would make sense to require that at least all the sovereign holdings that are considered to comply with the LCR requirements are included in the trading or the AfS accounting portfolios, as banks are expected to be ready to sell these assets at short notice in case of liquidity shocks. Today, the LCR requirements is computed on the basis of market values, but the securities could still be placed in the HtM or L&R books, so that changes in market prices would not have any impact on the banks' capital. A greater reliance on mark-to-market valuations would provide a powerful incentive for banks to actively manage sovereign risk, while also addressing concerns that were the exclusive focus of market participants during periods of stress.

Would market valuation of sovereign assets make capital requirements more pro-cyclical? Laux and Leuz (2010) consider this aspect and conclude that fair-value accounting did not add to the severity of the financial crisis; quite the contrary, it contributed to creating more stability. In addition, if a standardised disclosure framework is in place, containing information about the valuation of sovereign exposures, it would very likely be considered by investors – regardless of the actual accounting treatment chosen by banks. Finally, valuation criteria disregarding market price developments may lead to complacency in bank risk management or allow regulatory arbitrage trades. Requiring banks to ensure that the bulk of their sovereign exposures are classified in accounting categories measured at fair value would be a well justified change, as such assets are typically the most liquid and easiest to price.

A final ingredient of the reform would be *a mandatory disclosure framework for banks' sovereign holdings*. The EBA already publishes a significant amount of information, but for a limited sample of EU banks, on a voluntary basis and without a robust legal framework. Opaqueness of risk exposures and uncertainty on valuation criteria have been a powerful crisis accelerator. If market

participants cannot rely on reliable and comparable information they tend to think the worst of each and every bank, thus penalising also banks that have low exposures and a proper risk management framework in place. In a crisis situation, transparency dispels uncertainty, while at normal times it introduces some elements of market discipline.

The EBA transparency exercises also had other positive effects. Bischof and Daske (2013) illustrate the increase in market liquidity generated by EBA-driven disclosure, but also as a consequence of subsequent voluntary disclosures; the decrease in market liquidity during the European debt crisis can be attributed mainly to those banks that did not maintain frequently updated disclosure on sovereign risk, in the absence of a specific regulatory request. Making the EBA transparency exercise, enhanced in its coverage and frequency, a permanent feature of the regulatory framework would therefore be a significant step forward as also argued in Enria (2016).

In our assessment, these proposals, if appropriately calibrated, would not lead to disruptive adjustments in bank balance sheets or sovereign debt markets. Nevertheless, a careful impact assessment should be conducted, in order to ensure that any regulatory change considers not only the prudential benefits, but also the possible effects in the pricing and availability of sovereign financing, as well as on the functioning of money markets, including the system of primary dealers, in which banks play a very significant role. The transition to a new regime should be sufficiently gradual, and possibly include an exception for programme countries[25]. The likely attitude of investors to front load the requirements in their calculations and, therefore, the possible implications on a wider financial stability perspective, should also be taken into due account.

The proposals could also be implemented in a sequential fashion. A standardised transparency regime and a requirement to widen the scope of mark-to-market valuations could be the right starting point. In fact, the former is already under way, although not embedded in the legislative framework, while the latter would be better finalised under the current low interest rate environment, as it would not imply any significant capital impact. The grad-

25. See http://ec.europa.eu/economy_finance/assistance_eu_ms/index_en.htm for a list of the current countries the receive financial assistance in EU member states, so-called programme countries.

ual introduction of a framework that introduces non-zero risk weights and limits concentration risks could then be considered at a later stage, following a careful impact assessment.

References

Acharya, V. V., and Steffen, S. (2015). The "Greatest" Carry Trade Ever? Understanding Eurozone Bank Risks. Journal of Financial Economics, 115 (2), 215-236.

Basel Committee of Banking Supervision. Regulatory Consistency Assessment Programme (RCAP): Assessment of Basel III regulations – European Union. December 2014. Available at: http://www.bis.org/bcbs/publ/d300.pdf

Bischof, J., and Daske, H. (2013). Mandatory Disclosure, Voluntary Disclosure, and Stock Market Liquidity: Evidence from the EU Bank Stress Tests. Journal of Accounting Research, 51 (5), 997-1029.

Brunnermeier, M. K., Garicano, L., Lane, P., Pagano, M., Reis, R., Santos, T., Van Nieuwerburgh, S., and Vayanos, D. (2011) ESBies: A Realistic Reform of Europe's Financial Architecture. VoxEU.

EBA (2013a). Interim results update of the EBA review of the consistency of risk-weighted assets – Low default portfolio analysis. Available at: https://www.eba.europa.eu/documents/10180/15947/EBA+Report+-+Interim+results+update+of+the+EBA+review+of+the+consistency+of+risk+weighted+assets.pdf

EBA (2013b). Report on the impact assessment for liquidity measures under Article 509(1) of the CRR. Available at: https://www.eba.europa.eu/documents/10180/16145/EBA+BS+2013+415+Report+regarding+LCR+impact.pdf

EBA (2015), Second report on impact assessment for liquidity measures under Article 509(1) of the CRR. Available at: https://www.eba.europa.eu/documents/10180/950548/2014+LCR+IA+report.pdf.

Enria, A. (2016). Ensuring transparency in the European financial system. OMFIF City Lecture, May 2016. Available at: http://www.eba.europa.eu/documents/10180/1454310/Andrea+Enria+-+City+Lecture+at+OMFIF%2C%204+May+2016.pdf.

ESRB(2015). ESRB report on the regulatory treatment of sovereign exposures. Available at: http://www.esrb.europa.eu/pub/pdf/other/esrbreportregulatorytreatmentsovereignexposures032015.en.pdf?c0cad80cf39a74e20d9d5947c7390df1.

Lane, P. R. (2012). The European Sovereign Debt Crisis. Journal of Economic Perspectives, 26(3), 49-68.

Laux C., and Leuz C. (2010). Did Fair-Value Accounting Contribute to the Financial Crisis? Journal of Economic Perspectives, 24 (1), 93-118.

Nouy, D. (2012). Is sovereign risk properly addressed by financial regulation?, April 2012, Banque de France Financial Stability Review, No. 16. Available at: https://www.banquefrance.fr/fileadmin/user_upload/banque_de_france/publications/Revue_de_la_stabilite_financiere/2012/rsf-avril-2012/FSR16-article-09.pdf

Shin, H. S. (2009). Reflections on Northern Rock: The Bank Run that Heralded the Global Financial Crisis. Journal of Economic Perspectives, 23(1), 101-119.

Taleb, N. T. (2008). The Black Swan: The Impact of the Highly Improbable (Paperback). Penguin Books, 2008.

Easier Said Than Done? Reforming the Prudential Treatment of Banks' Sovereign Exposures[26]

by Michele Lanotte, Giacomo Manzelli, Anna Maria Rinaldi,[27] Marco Taboga and Pietro Tommasino[28]

Abstract

In the aftermath of the euro-area sovereign debt crisis, several commentators have questioned the favourable treatment of banks' sovereign exposures allowed by the current prudential rules. In this paper, we assess the overall desirability of reforming these rules. We conclude that the microeconomic and macroeconomic costs of a reform could be sizeable, while the benefits are uncertain. Furthermore, we highlight considerable implementation issues. Specifically, it is widely agreed that credit ratings of sovereigns issued by rating agencies present important drawbacks, but sound alternatives still need to be found. Should a reform be implemented and a measure of sovereign creditworthiness become necessary, we argue that consideration could be given to the use of quantitative indicators of fiscal sustainability, similar to those provided by international bodies such as the IMF or the European Commission.

26. Keywords: sovereign risk, prudential regulation, sustainability of public finances. JEL classification: E580, G210, G280, H630.
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1. Introduction[29]

Until the euro-area sovereign debt crisis, sovereign defaults were regarded as a problem of emerging economies. According to Reinhart and Rogoff's (2011b) dataset, no OECD country defaulted on its domestic debt between 1950 and 2010. Therefore, it is not surprising that sovereign exposures benefit from a special treatment in the current prudential banking regulation, being de facto subject to no concentration limits (i.e. there are no limits on the size of banks' sovereign exposures as a share of their capital) and to a zero risk weight regime (i.e. there are no explicit capital requirements vis-à-vis credit risk related to exposures to the government).

The sovereign debt crisis has sparked an international debate on the close relationship between sovereign risk and banking crises. It has been argued that since sovereign exposures cannot be considered risk-free, their preferential prudential treatment should be amended accordingly.[30] Some commentators (e.g. Gros, 2013) have pointed out that the problem is particularly acute in the euro area, where governments can no longer order their central banks to inflate away public debt by creating money and purchasing government securities (an option that is instead available to countries that do not belong to monetary unions and retain full monetary sovereignty).

In this paper, looking at the recent literature as well as at real world experience, we provide reasons to be cautious about the balance between the expected benefits of a tighter regulation of banks' sovereign exposures and the related costs.

First of all, there are several mechanisms that link banks to their domestic sovereigns, and that make their fates strictly intertwined independently of banks' holdings of sovereign bonds (CGFS, 2011; Angelini et al., 2014).

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29. The opinions expressed in this paper are the authors' and do not necessarily reflect those of the Bank of Italy. We thank Paolo Angelini for reading several preliminary drafts, providing at each stage many insightful comments. We also thank Alessia Angelilli, Giuseppe De Martino, Vincenzo Cuciniello, Alessio De Vincenzo, Andrea Generale, Giorgio Gobbi, Giuseppe Grande, Francesco Mauro, Emanuela Piani, Andrea Pilati, Paolo Sestito, Federico Signorini, and Maurizio Trapanese. All remaining errors are our own responsibility.

30. For example, Nouy (2012), argued that 'More capital charge against sovereign risk and less incentives for the purchase of sovereign debt should especially be considered in a context where this asset class can no longer be considered as a low-risk or risk-free asset class'. Weidmann (2013) observed that 'a reassessment of the regulatory treatment of sovereign exposures of financial institutions is crucial' in order to break the inter-linkage between sovereigns and banks and to complement European banking union, and that 'the current regulation's assumption that government bonds are risk-free has been dismissed by recent experience'.

Second, the fact that banks' sovereign exposures tend to be large and biased towards the domestic sovereign is not necessarily an inefficiency to be corrected; instead, it could be explained by hedging motives or minimization of transaction costs (Coeudarcier and Rey, 2013).

Third, in a phase of tensions in the sovereign debt market, banks and other domestic intermediaries may have a stabilizing role, counteracting the effects of short-termism and panic selling: their contrarian role in the sovereign bond market may actually contribute to financial stability and reduce the probability of self-fulfilling crises. The Italian and Spanish experiences in recent years are two cases in point.

Fourth, it is too often overlooked that recent regulation has gone a long way towards breaking the perverse banks-sovereign loop that motivates the proposals of prudential regulation reform. The rules on leverage ratios and – in Europe – the supervisory exercises (e.g. the EBA Recommendation on Capital of December 2011 and the 2014 EU-wide stress tests) have already tightened, de facto, the prudential treatment of sovereign exposures. In Europe, the Bank Recovery and Resolution Directive imposes losses on private creditors before ailing banks can resort to any external financial support, substantially reducing the likelihood of government intervention, and several measures have been taken to strengthen the fiscal framework in order to reduce the likelihood and costs of sovereign crises. Furthermore, the Basel Committee's oversight body – the Group of Central Bank Governors and Heads of Supervision – while endorsing the new market risk framework stated that the Basel Committee will focus on not significantly increasing overall capital requirements [31].

In the paper, we also provide estimates of the costs of amending the current regulation, both from a microeconomic perspective, by analysing the impact on banks' balance sheets, and from a macroeconomic one, by considering the effects on sovereign bond markets. We find that the most significant negative unintended effects could stem from the revision of the large exposures regime. The introduction of binding limits on sovereign exposures could force banks to sell sizeable amounts of government bonds. The sheer magnitudes involved could make the exercise a daunting and risky one (see

31. See the BIS press release, http://www.bis.org/press/p160111.htm.

e.g. Constancio, 2015).[32] Should a new regulatory regime significantly impair domestic banks' ability to act as contrarian investors, there might be a higher risk of self-fulfilling crises, non-linear dynamics, and abrupt re-pricings of sovereign risk with adverse macroeconomic effects.

Concerning implementation, an obvious difficulty, often overlooked in the literature on this subject, is that, should the regulator decide to abandon the zero risk weight regime for sovereign exposures, it would need to find a method to assess sovereign risk. Finding an operational risk measure would be anything but simple because resorting to credit rating agencies is not in our view – for reasons discussed below – a viable option.

Should the need to address this last problem arise, we argue that a central role could be given to the fiscal sustainability measures released by several major international organizations. These measures, which we discuss in more detail below, are not perfect but they do have strong advantages: they capture the fundamental state of a country's public finances, they are based on sound economic theory, they are well-established and they rely on transparent methodologies.

Finally, in order to avoid pro-cyclical effects, any new regulation should be enforced in 'normal times'; in a situation in which risks for financial stability are still material, such as the current one in the euro area, one should be wary of taking action that may end up weakening the economy and re-igniting the bank-sovereign loop that we saw in action in 2011-13. The adoption of long phase-in periods may not be sufficient to assuage these concerns, as markets have shown a strong tendency to front-load any regulatory changes.

The paper is structured as follows: first we provide an overview of the special role given to sovereign debt in prudential regulation (Section 2). We then review the reasons put forward in the debate in favour of tighter regulation of sovereign exposures (Section 3), as well as its micro-prudential (Section 4) and macroeconomic impacts (Section 5). Section 6 discusses alternative ways to assess sovereign creditworthiness. Section 7 concludes.

32. Furthermore, new regulation could exacerbate the shortage of safe assets owing to the fact that the financial crisis has increased the demand for them and reduced their supply (e.g. Caballero and Fahri, 2014). In Europe, this could prolong the current slowdown. Indeed, while in normal conditions one could hope that banks would reinvest the resources obtained by selling government bonds in loans to firms and households, this would be no longer true in a 'safety trap' à la Caballero and Fahri (2014): banks would instead simply strive to hoard the fewer safe assets that are left in the market.

2. The prudential treatment of sovereign exposures for banks

The Basel rules envisage a special treatment for sovereign exposures, in terms of capital requirements as well as liquidity requirements.[33]

2.1 Capital regulation

How capital requirements vis-à-vis sovereign exposures are set depends on whether banks classify the exposures in the trading book or in the banking book. The requirements for exposures classified in the banking book are determined by their credit risk, while the requirements for exposures in the trading book are a function of their market risk.

Treatment of sovereign credit risk. - According to the Basel rules, the capital requirements for credit risk can be determined either with a standardized approach or an Internal Ratings-Based (IRB) approach developed by the bank itself and authorized by the supervisory authority.

In the standardized approach, the risk weight assigned to a given sovereign exposure depends on the rating assigned to the sovereign by a credit rating agency that is a recognized external credit assessment institution (ECAI) or by an export credit agency (ECA; for instance, COFACE in France, SACE in Italy); if a bank chooses not to use available ratings, or if no rating is available, a 100% risk weight is assigned.

However, there is a specific provision – the so-called carve-out rule – for domestic sovereign exposures: banks are allowed to assign a zero risk weight 'to exposures to central governments and central banks denominated and funded in the domestic currency of that central government and central bank'.[34]

In the IRB approach, each individual bank computes the capital requirement for the credit risk of sovereign exposures using its own estimates of the probability of default and loss given default. These parameters are fed into a regulatory formula provided by the Basel Committee, which yields the risk weight.

In the European Union, the Basel rules have been implemented through the Capital Requirements Regulation/Directive (CRR/CRD) package. These packages,

33. For a more thorough discussion of the regulatory framework of sovereign exposures, we refer the interested reader to Lanotte et al. (2016).
34. This approach can be extended to the risk weighting of collateral and guarantees.

the provisions of which are applicable to banks and investment firms regardless of size, mirror the special treatment developed at the international level.

However, when it comes to the sovereign, there are two important differences vis-à-vis the Basel rules, concerning the carve-out rule for banks using the standard approach, and the permanent partial use rule for banks adopting the IRB approach.

As to the carve-out rule, the European framework allows banks to assign a zero risk-weight not just to sovereign exposures denominated and funded in the currency of the corresponding member state, but also to the sovereign exposures denominated and funded in the currencies of *any other* member state. Consequently, the preferential treatment envisaged for domestic sovereign exposures is applicable to all other European member states.

The 'permanent partial use rule' (Article 150, CRR) allows banks adopting the IRB approach to apply the standardized approach to their sovereign exposures – subject to prior authorization by the competent authorities – provided that these exposures are assigned a 0% risk-weight under the standardized approach.

Treatment of sovereign market risk. - In the Basel framework, the treatment of market risks too depends on whether a bank uses internal models or a standardized approach to determine capital requirements.

In the standardized approach, financial assets held in the trading book are subject to two separately calculated charges: i) a capital charge for 'general market risks', namely interest rate risks, which is calculated at the portfolio level (where long and short positions in different securities or instruments can be offset); and ii) a capital charge for 'specific risks', which is calculated separately for each individual security and is designed to protect against an adverse movement in the price of an individual security owing to factors relating to the individual issuer. In measuring the risk, offsetting is restricted to matched positions in the identical issue (including positions in derivatives).

As far as general market risk is concerned, sovereign exposures are not subject to special treatment. Concerning specific risk, the risk-weight factor is identified using two risk-drivers: 1) external rating; and 2) residual maturity.

However, carve-out rules also apply to specific risks. Paragraph 711 of the Basel rules states that 'when the government paper is denominated in the domestic currency and funded by the bank in the same currency, at national discretion a lower specific risk charge may be applied'. This provision mirrors

the carve-out rule for sovereign credit risk. Accordingly, the risk-weight for these exposures is normally zero.

In the IRB approach, banks face no pre-set regulatory ratios and use their own internal models to compute the capital requirement for the market risk of sovereign exposures.

The European framework is aligned to the Basel framework as to the treatment of sovereign exposures. Unlike for credit risk, the permanent partial use approach is not applicable to positions classified in the trading book.

2.2 Large exposures

In 2014 the Basel Committee on Banking Supervision (BCBS) introduced harmonized rules on large exposures in order to reduce concentration risk (limiting the potential losses stemming from the default of a single client or a group of interconnected clients), overcome the existing divergences between the different national jurisdictions and complement the risk-based rules with a backstop.

Currently, banks are required to limit their exposures to a single counterparty at 25% of their 'eligible capital'.

However, sovereign exposures are exempt from the application of this limit, provided they receive a 0% risk-weight in the standardized approach for credit risk.

2.3 Liquidity requirements

Sovereign bonds are the main source of collateral for banks. Primary examples of their use are monetary policy operations with the central bank and repos with other commercial banks, including those cleared with a central counterparty (CCP). Therefore, the impact of sovereign strains on banks' conditions has also to be assessed with respect to liquidity and funding risk.

The Basel Committee has introduced two minimum standards to strengthen the liquidity of banks: i) the Liquidity Coverage Ratio (LCR), which aims to increase the short-term resilience of a bank's liquidity profile by ensuring that it has sufficient unencumbered high-quality liquid assets to withstand a 30-day stress scenario in the form of a severe net cash outflow; and ii) the Net Stable Funding Ratio (NSFR), which supplements the LCR and aims to provide a sustainable maturity structure of assets and liabilities.

The special treatment of government bonds arises in connection with the liquidity buffer: under the Basel III rules on the LCR, sovereign bonds with a standardised risk weight of 0% under the Basel framework (i.e. those rated AAA to AA-) will be eligible to classify as Level 1 liquid assets, without limits or haircuts.

In the EU, where the LCR was introduced as a minimum standard in 2015,[35] the delegated act of the European Commission on the LCR classifies as Level 1 liquid assets all securities issued or guaranteed by EU governments, without limitations or differentiations based on rating.

Within the monetary policy framework, government bonds are the most accepted and valuable type of collateral. In the Eurosystem collateral framework the credit quality of government bonds is considered sufficient if they have been rated by a recognized ECAI above the minimum threshold of BBB-. Following their acceptance as collateral, government bonds are priced and risk control measures apply (i.e. haircuts) in order to determine the amount of liquidity to give to the counterparty that is collateralizing its financing operation. Due to their high degree of liquidity, sovereigns fall into the best liquidity category and benefit from lower valuation haircuts compared with other marketable assets. In any case, as for all eligible assets, haircuts for government bonds differ according to the financial characteristics of the asset and its residual maturities, as well as on the basis of the credit quality (haircuts for bonds rated below A- are higher). Although ECAI's ratings are the most common instrument for assessing the creditworthiness of sovereigns, under the ECB's rules on collateral the Eurosystem retains the right to determine whether an issue, issuer, debtor or guarantor meets its credit standards on the basis of any information it may consider relevant.

***

Before concluding this section, it should be pointed out that sovereign risk is already considered – although not fully – in prudential regulation. The December 2011 formal Recommendation adopted by the EBA's Board of Supervisors asked national supervisory authorities to require banks to strengthen their capital positions by building up a capital buffer against sovereign debt exposures to

35. The LCR will be introduced in October 2015. The minimum requirement will begin at 60%, rising in equal annual steps of 10 percentage points to reach 100% on 1 January 2019.

reflect market prices as at the end of September 2011, at the peak of the sovereign crisis. Similarly, the exercise run in 2014 required banks to hold capital against sovereign positions classified in the banking book.

Moreover, realizing the imperfect nature of the available risk weighting methods, the Basel Committee has introduced a non-risk-based minimum leverage ratio (defined as the Tier 1 capital divided by a measure of exposures) to supplement and backstop the risk-based capital requirements. Under the leverage framework, sovereign exposures are considered at their nominal value; no specific derogation is envisaged. This amounts to introducing capital requirements against these positions: if a capital ratio of 8.5% is assumed, a leverage ratio of 3% is approximately equivalent to a 35% risk weight.[36]

3. Can the sovereign-banks loop problem be addressed via prudential regulation?

As we remarked in the introduction, several criticisms have been raised concerning the regulatory treatment of sovereign exposures. It has been argued that tighter rules would discourage banks to hold an 'excessive' amount of domestic sovereign bonds. In this way, the perverse feedback loop between the sovereign's health and that of the domestic banking system would be loosened.

In this section we subject to closer scrutiny the reasons in favour of tighter regulation of sovereign exposures.

i) *The home country bias in banks' holdings of sovereign bonds is not necessarily undesirable.* – It is not clear, from a theoretical standpoint, what the 'appropriate' share of domestic sovereign exposure in a banks' portfolio should be. It is certainly true that, on average, banks tend to hold a disproportionate amount of domestic sovereign debt with respect to its weight in the world market portfolio, but this is just an instance of the more general home bias phenomenon, 'a perennial feature of international capital markets' according to Coeurdacier and Rey (2013); indeed, the home

36. Since January 2015 banking groups disclose their leverage ratio. The final calibration and any further adjustments to the definition of the ratio will be completed by the Basel Committee by 2017, with a view to migrating to a Pillar 1 treatment on 1 January 2018. In the EU, the European Commission's delegated act on the leverage ratio, published on 10 October 2014, identifies all the components needed for its calculation. The monitoring period began on 1 January 2015 and will last 3 years before the final calibration.

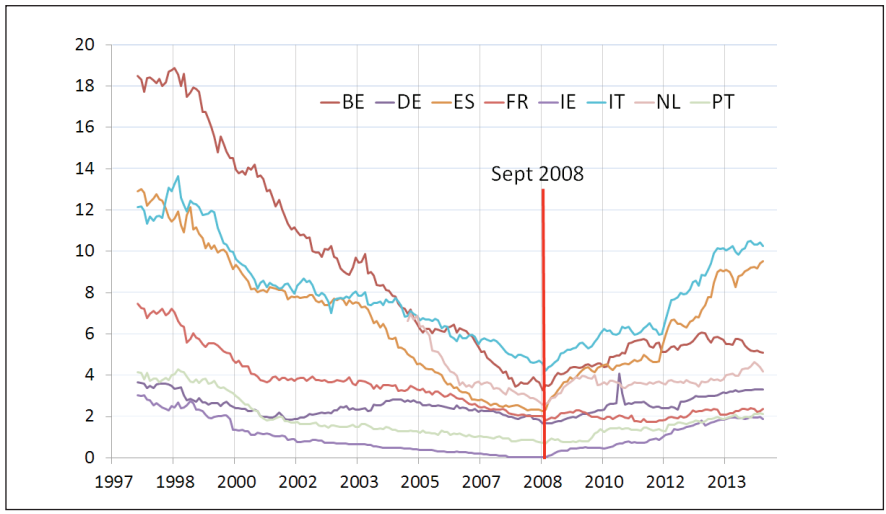
bias of domestic investors concerns several asset classes (most notably shares) and is by no means peculiar to sovereign bonds. Economic theory provides several explanations for this phenomenon; in particular, it can be argued the home bias does not necessarily represent an inefficiency to be corrected, but instead can be seen as a 'second best' solution to other market failures. For example, investing in domestic securities may be justified by hedging motives, relatively low information acquisition costs, and a reduced degree of asymmetric information (Coeudarcier and Rey, 2013; Lewis, 1999).

The European experience could also be read as providing a "second best" justification of the sovereign home bias. Indeed, in most European countries the exposure decreased significantly from the inception of the euro to the beginning of the financial crisis, and it increased afterwards (Figure 1). Angelini et al. (2014) and Battistini et al. (2014) argue that redenomination risk was among the key drivers of the pick-up in home country bias: fearing a break-up of the euro area, for financial institutions it made sense to begin to hedge their positions by country rather than by currency. The asymmetry of information argument (the difficulty of assessing correctly the actual financial conditions of foreign sovereign borrowers) may also have plaid a role.

ii) *There is no evidence that financial firms' purchases of domestic sovereign bonds during the crisis did cause or aggravate the Eurozone crisis; in some countries, they may have helped to contain it.* – Figure 1 suggests that the increase in home bias was a consequence – rather than a cause – of the crisis. Figure 2 shows that the increase in Italian banks' exposure to the domestic sovereign coincided with a reduction of the share of Italian government bonds held by non-residents. This evidence, consistent with the redenomination risk hypothesis, prompts the following question: what would have happened if Italian banks and insurance companies had not absorbed the excess supply of sovereign paper generated by the market overshooting at the height of the crisis, in turn driven by self-fulfilling beliefs about the instability of the monetary union? A similar question can be asked for other countries that experienced financial stress over the crisis.

While we clearly lack a counterfactual, possibly if financial institutions in the financially weak countries had not purchased large amounts of

Figure 1 - Banks' holdings of domestic government bonds



Source: based on Eurosystem data

domestic sovereign paper at a time when markets were clearly strongly under-pricing it, the euro area crisis could have been substantially worsened.

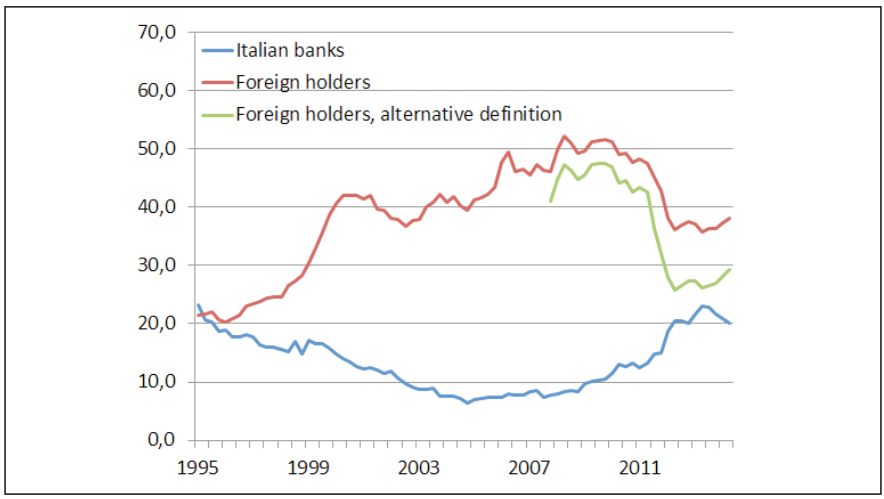
Remarkably, euro area banks' behaviour can be explained by pure market motives: they may have acted as 'fundamentalist' or 'contrarian' investors, making a profit and at the same time contributing to bring prices closer to their fundamental values.[37]

According to this interpretation, which is consistent with the timing and pattern of events documented in Figures 1 and 2, the increase in domestic sovereign exposures by banks in financially weak countries was a reaction to the crisis, and instrumental to preserving financial stability in the euro area.

iii) *The link between sovereigns and their banks cannot be severed only by changing the prudential regulation.* - The fate of banks will be most likely intertwined

37. At that time the ECB was unable to stabilize sovereign debt markets, depriving the countries under attack of a powerful stabilization mechanism. Indeed, it can be argued that the lack of a central bank with such powers in the euro area was among the reasons for the market overreaction (De Grauwe and Yi, 2013). This interpretation is supported by the effectiveness of the mere announcement of the Outright Monetary Transactions (OMT) programme in bringing the crisis to an end.

Figure 2 - Italian general government securities holdings by sector
(shares of total government securities outstanding; % points)



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

with that of their sovereign even if the link arising from banks' direct exposures to the domestic sovereign is severed, owing to the existence of multiple other indirect channels of contagion (CGFS, 2011; Angelini et al., 2014).[38] Sovereign distress is associated with macroeconomic turmoil, depresses the economy, and ultimately increases the insolvency rate of domestic households and firms (Bocola, 2015). According to Laeven and Valencia (2013), in the three years after a sovereign default, the median output loss with respect to the potential is over 40%. It is clear that an economic disruption of this proportion will inevitably have adverse consequences for the health of the banking system.[39] Therefore, the

38. For example, fears concerning the solvency of a sovereign borrower affect banks' cost of funding by reducing the value of both explicit and implicit public guarantees on bank liabilities. Moreover, as sovereign securities are typically used as collateral in repos with central banks and other counterparties, the depreciation of those financial instruments reduces banks' funding availability. Finally, since the sovereign rating de facto often represents a ceiling on the rating of domestic companies, a sovereign downgrade is generally followed by a lowering of the ratings of other domestic borrowers (Adelino and Ferreira, 2014).
39. Using their broad dataset (spanning 70 countries and more than two centuries of data), Reinhart and Rogoff (2011a) show that sovereign crises do not tend to be followed by banking crises. However, this lack of correlation should be interpreted with caution. For example, in their regressions the authors do not distinguish between externally-held and domestically-held public debt. Most default episodes in their sample concern the former, which is arguably easier for the domestic economy to withstand. The dataset includes only 8 domestic public debt default episodes in western Europe, none of which happened after 1948.

solution to the bank-sovereign loop problem is unlikely to be provided by micro-prudential tools.[40]

iv) *The problem must be tackled at its root, by reducing the likelihood (and the costs) of sovereign and bank distress.* Correcting fiscal imbalances and ensuring sound inter-temporal fiscal policy is a key precondition to financial stability and therefore the main route to severe the bank-sovereign link. On this front, important steps have been taken in Europe following the crisis. A threefold strategy has been adopted in order to 1) reduce fiscal imbalances;[41]2) change the bank supervisory and regulatory framework by establishing the single supervisory mechanism (SSM) and the single resolution mechanism (SRM); and 3) establish a sovereign crisis management system to safeguard financial stability within the euro area.[42]

Furthermore, there have been important steps, in Europe, in order to decrease the probability of bank failure - and protect the sovereign from liabilities in case of bank failure. The CRDIV/CRR is the main piece of legislation aimed at making banks more resilient: it introduces, among other things, strengthened capital and liquidity requirements. Besides the regulatory side, banks in the EU have been subject to heightened supervision, with initiatives such as EU-wide stress tests and the creation of the Single Supervisory Mechanism (SSM). A number of measures are aimed at reducing the size of a public intervention in the event of a bank failure. The relevant pieces of legislation are the Bank Recovery and Resolution Directive (BRRD), the revision of the Deposit

40. One could argue that macro-prudential instruments would be more useful. For example, one could impose a macro-financial capital buffer, which is independent of the sovereign bond holdings of each institution, but is proportional to some measure of the country's fiscal sustainability. While this approach appears promising, discussing and developing it is clearly outside of the scope of the present paper.

41. The European fiscal framework has been enhanced in several dimensions: for example, the Stability and Growth Pact has been amended, reinforcing both its preventive and its corrective arm (most notably, the 'Six pack' has given operational content to the debt rule already present in the Maastricht treaty). Furthermore, member countries have strengthened their national budgetary processes and institutions by means of the 'Fiscal compact' and the 'Six Pack' (see European Commission, 2013). The member countries have also put in place a surveillance mechanism to identify potential macroeconomic and financial risks early on and correct the imbalances that are already in place (the Macroeconomic imbalances procedure, MIP).

42. In particular, the European Stability Mechanism (ESM) will provide financial assistance to euro-area Member States experiencing or threatened by financing difficulties. Under certain circumstances a ESM programme may also be backed by ECB operations in secondary sovereign bond markets, with the goal of "safeguarding an appropriate monetary policy transmission and the singleness of the monetary policy" (Outright Monetary Transactions; OMTs). No ex ante quantitative limits are set on the size of Outright Monetary Transactions.

Guarantee Scheme Directive and the Single Resolution Mechanism at the Euro-Area level. The BRRD requires that, in case recovery or resolution is needed, private creditors have to be subjected to losses before the firm can resort to any external financial support. Also, this external financial support does not (or at least not exclusively) come from the public sector. The national resolution funds and national deposit guarantee schemes, privately funded, will play an important role in providing financing in the event of resolution. In the case of the Euro-Area countries, a mutualised, privately funded single resolution fund has been created.

Summing up, the benefits to financial stability that could stem from a tightening of the prudential treatment of sovereign exposures appear overstated. Furthermore, the idea that the bank-sovereign nexus can be severed in this way is questionable.

4. How large is the potential impact of tighter regulation? Micro-prudential effects

The international debate on the revision of prudential regulation on exposures towards central governments is currently under way and concrete proposals on this issue have not yet been put forward. In what follows we focus on possible revisions of the current regulation in two main fields: 1) capital requirements on credit risk; 2) large exposure discipline.

A first look at the data (see Table 1)[43] shows that Italian banks had the highest share of sovereign exposures in total assets (13.1%, more than twice the European average); Portuguese, German and Spanish banks follow, though at a distance (respectively 8.7%, 8.4% and 8%). Furthermore, for the banks in these countries, the share of 'domestic' sovereign to total sovereign exposure was especially high, ranging from 77% (Germany) to 93% (Spain), compared with the EU weighted average (72%; see Table 1).

43. We consider public data on sovereign exposures, referring to June 2013, for 39 European banking groups, belonging to 8 countries (Austria, France, Germany, Italy, Netherlands, Portugal, Spain and United Kingdom). We concentrate on banks' exposures exclusively towards euro-area countries and the United Kingdom. See Lanotte et al. (2016) for details.

Table 1 - Sovereign risk exposure of the main European banks

Millions of euros - June 2013	Total sovereign exposures	Sov. exp. / tot. assets (%)	Domestic sov. / tot. sov. (%)
Austrian banks	22,323	6.6	51.5
German banks	376,231	8.4	76.7
Spanish banks	191,313	8.0	92.5
French banks	172,099	2.8	58.8
UK banks	183,238	2.9	61.6
Italian banks	260,594	13.1	79.8
Dutch banks	119,543	6.0	41.1
Portuguese banks	28,515	8.7	85.8
Total	**1,353,856**	**5.6**	**71.8**

Note: exposures are exclusively towards euro-area countries and the UK.
Source: SNL Financial on EBA data.

4.1 Tighter capital requirements

As explained above, the European rules on banks' capital requirements allow banks to set aside no capital against sovereign exposures denominated and funded in the currencies of any member state (sovereign carve-out). To explore possible alternatives we carry out our analysis both on the standardized approach, by assuming different risk weights, and on the IRB methodology.

As regards the standardized approach, two alternative options are explored: (1) removing the sovereign carve-out, forcing banks to apply a risk weight for the calculation of RWA which reflects the actual rating assigned to that country;[44] (2) Applying a flat 10% weight to banks' sovereign exposures towards all countries, regardless of rating. [45]

Table 2 gauges the effect of the two alternative policy options on capital ratios. We start from the Tier 1 ratio as of June 2013 and then assess the effects stemming from the application of risk weights linked to effective ratings (hypothesis i) or a common flat weight of 10% (hypothesis ii).

44. We considered the ratings assigned by Standard & Poor's as of June 2013 (the same reference date as the data).
45. This hypothesis has been taken from ESRB (2015).

Table 2 - Sovereign risk prudential treatment revision: effects on the main European banks

Per cent *June 2013*	Tier 1 ratio (actual)	Tier 1 R HP i) sovereign rating	Tier 1 R HP ii) weight 10%
Austrian banks	11.2	11.1	11.1
German banks	15.1	14.8	14.6
Spanish banks	10.6	9.8	10.5
French banks	12.6	12.5	12.5
UK banks	13.4	13.4	13.3
Italian banks	11.9	10.7	11.6
Dutch banks	15.1	15.1	14.8
Portuguese banks	11.4	10.1	11.2
Weighted average	**12.9**	**12.5**	**12.7**

Note: exposures are exclusively towards euro-area countries and the UK.
Source: SNL Financial on EBA data

On an aggregate basis, both options would imply a modest reduction in the weighted average Tier 1 ratio (40 and 20 basis points, respectively).[46] However, aggregate figures hide significant cross-country heterogeneity. Under the first option, Portuguese, Italian and Spanish banks' average Tier 1 ratio would be reduced by 130, 120 and 80 basis points, respectively. Other jurisdictions would face smaller effects (for instance, Germany -30 basis points) or no effect at all (Netherlands, United Kingdom, France and Austria). The results for Portugal, Italy and Spain are due to their sovereign's rating, combined with the 'home bias' issue.

The alternative hypothesis (10% flat risk weight) would entail a large decrease in capital ratios for those banks whose sovereign exposure is higher in absolute amount; in particular, German and Italian banks would face a reduction in their average capital ratios of 50 and 30 basis points respectively.[47]

As regards internal models approach, we simulated the effects of IRB methodology approach on a subsample of Italian banks and – under different

46. Consistent results have been found by the ESRB (2015) though data refer to end-2011.
47. Data from the ECB Comprehensive Assessment, updated as of June 2014, show that the average Tier 1 ratio for the 15 main Italian banking groups would be reduced by 160 basis points under the first option and 40 basis points under the second. These effects are broadly in line with those displayed in Table 2.

hypotheses of losses given default and maturity – the results are quite similar to those under the standardized approach.

4.2 A tighter large exposures regime

To assess the impact of the large exposures rules on sovereigns we consider the same dataset used in paragraph 4.1, focusing on banks' domestic sovereign exposure.

We considered the nominal value of sovereign exposures and calculated the excess with respect to 100% (first option) and 200% (second option) of Tier 1.

As shown in Table 3, the application of large exposures limits would have a sizable impact for some countries. Notably, under the most restrictive option, German, Italian and Spanish banks would have to reduce their holdings of sovereign bonds by 157, 100 and 57 billion euros respectively[48] (note that these figures concern only the largest banks).

Table 3 - Large exposures rules on sovereign exposures: effects on a sample of European banks *(millions of euros)*

Banking group	Domestic sovereign	Tier 1	Dom sov. / Tier1	Excess exposure option i): 100%T1	Excess exposure option ii): 200%T1
Austrian banks	11,504	21,064	55%	-	-
German banks	288,612	159,216	181%	157,362	81,342
Spanish banks	176,943	119,838	148%	57,105	3,935
French banks	101,114	223,193	45%	-	-
UK banks	112,841	287,482	39%	-	-
Italian banks	207,830	107,772	193%	100,058	33,567
Dutch banks	49,091	95,691	51%	-	-
Portuguese banks	24,452	23,106	106%	4,660	-

Source: SNL Financial on EBA data as of 30 June 2013.

48. The excess exposures refer to some banks in the national banking system involved.

5. How large is the potential impact of tighter regulation? Macroeconomic effects

5.1 A revision of risk weights

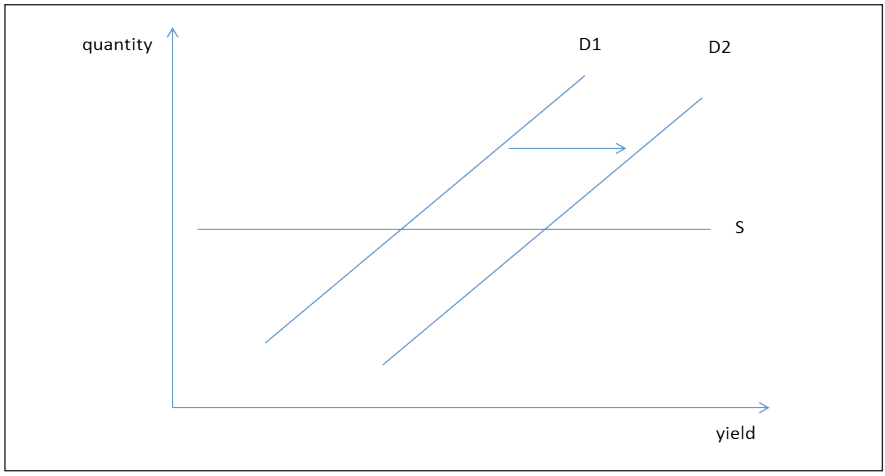
An increase in the prudential risk weights applied to sovereign exposures would also have an impact on the sovereign bond market.

Consider a stylized partial equilibrium model of supply and demand for sovereign bonds. On the demand side, we assume that sovereign bonds behave as a normal good, that is, the higher their yield (*ceteris paribus*) the higher the quantity demanded (this is not an innocuous assumption: experience gained during the sovereign debt crisis suggests that it may break down under exceptional circumstances). We also postulate that the supply of sovereign bonds is perfectly inelastic. This is plausible over the short run because institutional and political constraints often make it difficult for governments to adjust significantly their budgets and their cash needs within a short period of time. Recent empirical evidence suggests that, in any case, the supply of government bonds has a low interest rate sensitivity (Grande, Masciantonio and Tiseno 2014).

An increase in sovereign risk weights reduces the net yield a bank obtains on a sovereign bond. Such an increase forces the bank to hold more capital, that is, to tilt the composition of its liabilities towards more expensive sources of financing. The added cost of capital can be thought of as a parallel demand shifter: if a bank demanded a certain amount of sovereign bonds for a given gross yield before the rise in sovereign risk weights, it will keep demanding the same quantity of bonds only if their gross yield rises by an amount equal to the added cost of capital. In other words, the increase in risk weights will behave like a tax, as illustrated in Figure 3, where S is the inelastic government supply, D1 is the demand for bonds before the increase and D2 is the demand after the increase. As is well known from the microeconomic theory of taxation, the burden of a tax is higher for the more inelastic side of the market. Under our assumptions, the burden is entirely absorbed by the government.

If one wants to move from a qualitative to a quantitative assessment of a revision of regulatory risk weight one needs an estimate of the elasticity of demand and of the increase in the cost of capital (the additional yield required

Figure 3 - Increased risk weights are a demand shifter akin to a tax



by banks to compensate for the increase in their cost of financing government bond holdings).[49]

One can estimate a baseline elasticity of demand of around 40%, based on the assumption that demand by non-banks will be unaffected by the reform. However the latter hypothesis could prove excessively optimistic. In particular, the insurance sector could also be affected by prudential reforms and decrease its demand for domestic sovereign bonds, similarly to the banking sector (see below for more details). Furthermore, demand by other sectors could react very slowly to changes in yield. For example, there is ample empirical evidence that portfolio rebalancing by households is quite infrequent (e.g. Guiso et al., 2001). Consequently, the household sector could react to an increase in government bond yields only with a considerable lag. Overall, it is not possible to rule out that the demand by other sectors will be nearly inelastic, at least over the short-to-medium term. To take these risks into account, we consider the opposite scenario in which the demand by other sectors is assumed to be inelastic.

Concerning the additional yield, it is the product of three factors:

$$c = w \cdot \rho \cdot (r^E - r^D)$$

49. Details can be found in Lanotte et al. (2016).

where w is the increase in the risk weight applied to sovereign exposures, ρ is the target capital ratio (which is usually higher than the minimum enforced by regulations), r^E is the cost of equity and r^D is the return on debt.

We assume, in line with the existing evidence,[50] that the target capital ratio is ρ=14%, the cost of equity faced by the banking sector is $r^E = 11\%$ $r^E = 11\%$ and that the average cost of debt is around 4.5%. By putting these estimates together we obtain that the banks' demand shifter is

$$c = w\% \cdot 14\% \cdot (11\% - 4.5\%) = w\% \cdot 0.91\%$$

Given these figures, the estimated impact on Italian government bond yields, is reported in the following table – we present results for two different values of w (2% and 10%), but as c is linear in w it will suffice to rescale our figures to compute the effect of revisions with different magnitudes.

Table 4 – Estimated impact of a revision of risk weights
(basis points)

	Increase in risk weight	
	2%	10%
Optimistic scenario	0.7	3.6
Prudential scenario	1.8	9.1

Several caveats concerning these estimates are in order.

First, the estimates are derived from a comparative static exercise and therefore represent a comparison between two steady states. Our framework is silent about the transitional dynamics, which might be highly non-linear. Especially for those countries whose banking systems hold a high share of domestic sovereign debt, the key risk is that a change in regulation might feed-back on investors' beliefs about debt sustainability. In other terms, our comparative statics exercise assumes a partial equilibrium in which the riskiness of government bonds is exogenously given (does not change). This

50. Details can be found in Lanotte et al. (2016).

assumption would cease to hold if the reform and the ensuing portfolio adjustments increased the riskiness of government bonds. In this case, the impact of the reform could be much larger than in the prudential scenario. As already mentioned, the burden of the increase in risk weights falls mainly on the government because of its inelastic supply schedule. However, in the transition there would be capital losses for banks, as yields increase (and prices decrease). Banks might also decide to deleverage in order to address at least part of the capital shortfall arising from the revision of sovereign risk weights. Both effects would have significant macroeconomic implications, causing further credit tightening and reducing economic growth.

Second, even after the transition phase, the new equilibrium would probably be less stable than under the current rules, as banks would have less incentives to act as long-term investors, keeping prices in line with fundamentals. The probability of self-fulfilling crises, which is inherent in government bond markets (Calvo, 1988; Ardagna et al., 2007; Giordano et al., 2013; De Grauwe and Yi, 2013) would also increase. Coeteris paribus, exogenous tensions in market conditions would cause larger increases in sovereign bonds. This additional effects are not included in our calculations.

Third, even the relatively cautious assumption that non-banks will not alter their holdings of government bonds (the prudential scenario) could prove over-optimistic. In particular, the insurance sector, which also holds significant amounts of government bonds (especially domestic),[51] could be affected by the application of new rules (similar to those for banks) under the Solvency II regime. If this is the case, the bulk of the sovereign bonds sold by banks and insurance companies would have to be bought by the household sector, by foreign investors and by other financial intermediaries. This in turn could lead to a crowding out of households' demand for deposits and other bank liabilities, with negative effects on bank lending to the real economy – an effect that is not captured by the simple framework outlined above.

Fourth, estimates based on past data may be of limited help to forecast the impact of an increase in the supply of government bonds which is quite unprecedented in size.

51. Insurance companies held about 260 billion euros of Italian sovereigns bonds as of September 2014.

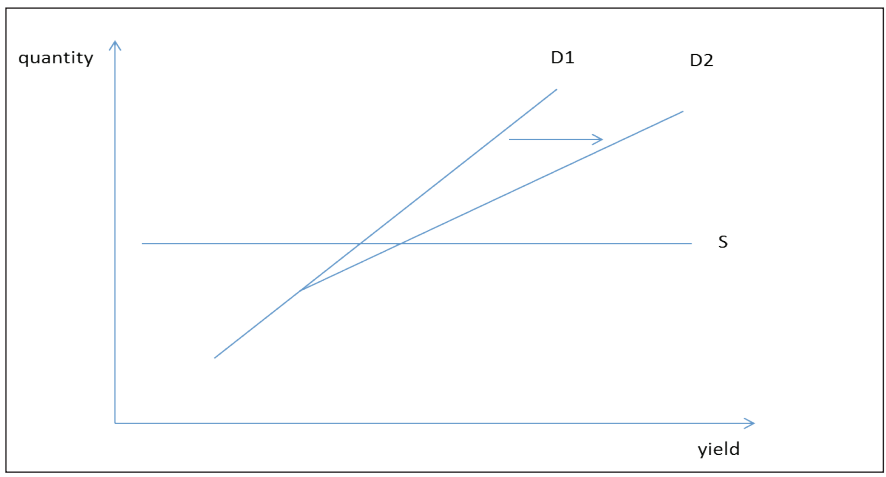
5.2 A revision of concentration limits

We now turn to the possible impact of the introduction of concentration limits on sovereign exposures. We analyse three hypothetical values for the cap on the ratio between the exposure towards a single sovereign and capital (100%, 150% and 200%).[52]

To do this we use the same conceptual framework laid out in Section 5.1: conceptually, the fact that the concentration limit is binding means that a kink is introduced in the demand curve (the curve becomes less steep above the kink;[53] see Figure 4).

The exposure of Italian banks to Italian sovereign bonds is around 200% of Tier 1 capital (see previous sections). So, for example, with a 100% concentration limit (one of the values in the range we consider), the introduction of the cap would force the banks to shed 50% of their holdings of sovereign bonds.[54] This would amount to around 200 billion euros, or 13% of GDP.

Figure 4 - Concentration limits introduce a kink in the demand curve



52. The cap could be introduced on risk-weighted exposures rather than on raw exposures.
53. Note that the slope is still positive after the kink because it is the sum of a flat demand by banks and an upward sloping demand by non-banks.
54. This, of course, is an approximation. An exact calculation should be done on a micro level and then aggregated. However, the 50% figure is also obtained from calculations done on a sample of large banks.

Using a methodology similar to the one adopted in Section 5.2, we obtain the estimated impact of the introduction of the cap on government yields under the same two scenarios discussed above. Results are reported in the following table.

Table 5 – Estimated impact of an introduction of concentration limits
(basis points)

	Concentration limit		
	100%	150%	200%
Optimistic scenario	32	16	0
Prudential scenario	51	26	0

As before, these estimates overlook potentially dangerous transitional dynamics and the increased risk – in the new equilibrium – of self-fulfilling changes in the riskiness of government bonds that could make the impact much greater.

Furthermore, there are factors that could bias the estimates, both to the upside and to the downside. On the one hand, our partial equilibrium approach does not allow us to take into account the fact that introducing concentration limits would force banks residing in other countries as well to hold more diversified sovereign exposures and thus the demand for Italian bonds from abroad would probably increase and partially offset the decrease in domestic demand. On the other hand, the estimated elasticity we have used could be too low. For example, Grande, Masciantonio and Tiseno (2014) highlight that under some model specifications the elasticity is estimated to be around 0.03% (instead of 0.02%); such an increase in elasticity would make the impact 50% greater.

6. Implementation issues

Reforming current prudential rules on sovereign risk would require, among other things, the development of a new methodology for quantifying capital requirements.

There would be a number of difficulties in relying on credit ratings to build plausible risk weights for sovereigns (IMF, 2010). First of all, downgrades are not timely: rating agencies prefer not to change ratings frequently and, when the downgrade arrives, it is often sharp (two or more notches). This 'too-late too-much' behaviour reduces the information content of ratings and induces pro-cyclicality in prices. Second, using ratings for regulatory purposes creates well-known 'threshold effects', especially when a bond exits from the investment grade category. This adds to the pro-cyclicality of rating changes. Indeed, a downgrade may abruptly reduce institutional demand and market liquidity, triggering further sales. Third, ratings do not provide a quantitative risk measure (i.e. a default probability or an estimated monetary loss in case of default), but an ordinal ranking. In the case of sovereign ratings, their accuracy is further undermined by the fact that a sovereign default is a rare event, so that extrapolation from the past is difficult.

It is therefore not surprising that national and supranational authorities currently tend to reduce reliance on ratings in regulation, along the lines suggested by the Financial Stability Board as a follow up to a specific request of the G20 Leaders (FSB, 2010).

Given the substantial limitations affecting credit ratings, it might be preferable to assess sovereign creditworthiness by means of standard fiscal sustainability indicators. As a matter of fact, several indicators have been developed to capture the size of the change in public policies that is needed in order to achieve long-run fiscal sustainability. [55] Some of them are endorsed by international institutions, such as the S2 indicator regularly computed by the European Commission (European Commission, 2012).[56]

Long-run fiscal sustainability indicators would have a series of advantages if used as a measure of sovereign risk: they are based on a country's fundamentals

55. Conceptually, a country's public debt is sustainable if it is not larger than the discounted value of the government's current and future primary surpluses, that is, if the current level of debt and the current fiscal stance are such that the inter-temporal budget constraint of the government is satisfied. A short introduction to the issue can be found in Balassone and Franco (2000), Balassone et al. (2009), Cottarelli (2014) and Cottarelli and Escolano (2014). Of course, the debt-to-GDP ratio per se is not a reliable sustainability indicator. As documented by Reinhart and Rogoff (2003), among others, several sovereign defaults happened at relatively low debt levels (e.g. below 50% of GDP) and there are cases in which very high debt levels (e.g. Japan today or in England in the 18th century) have been sustained without causing market tensions.

56. Put simply, S2 is equal to the immediate and permanent increase in a government's structural budget balance that is just sufficient to satisfy its inter-temporal budget constraint. This constraint, in turn, requires that the sum of the outstanding public debt and of the net present value of government primary expenditures be less than or equal to the net present value of government revenues.

and they are not influenced by short-run fluctuations of financial markets or of the economy; they (at least some of them) are firmly grounded in economic analysis;[57] they rely on very sophisticated and data-intensive demographic and macroeconomic projections; they are computed by independent bodies for several countries using a common methodology. Notice also that fiscal sustainability indicators are not more complex to compute than ratings: indeed, rating agencies use basically the same information and add difficult to assess qualitative judgments.

They also have their own shortcomings. First, they typically (even if not always) focus on a 'central' scenario, neglecting the risk that such a baseline scenario might not materialize. Among the more prominent risk factors are the negative shocks to growth or market interest rates, and the risks arising from a fragile and over-exposed financial sector (which could require financial support from the public sector in some circumstances). Even more difficult to quantify (but crucial in the case of sovereign borrowers, as noted above) is the political risk, which partly depends on institutional factors, including the presence, or otherwise, of appropriate budgetary rules and procedures.

Second, they are unable to capture liquidity risk. As remarked by the ECB (2014): 'governments can encounter the risk of a liquidity crisis even if they are not experiencing any solvency problems'. The events of 2011-13 have shown clearly that short-term fiscal risk may depend crucially on investors' beliefs. If investors coordinate on an 'unsustainability equilibrium', owing among other things to the perceived lack of a backstop by a central bank, the equilibrium may become self-fulfilling. A role may also be played by the maturity, indexation, and currency denomination of the outstanding debt (obviously, long-term domestic-currency-issued debt poses fewer refinancing risks in the short-to-medium run), as well as by the investor base (domestic lenders being probably a more stable source of funding than foreigners). These factors are not considered by standard sustainability indicators.

Early warning indicators of fiscal risk recently introduced by the IMF (for details on the methodology, see Baldacci et al., 2011; the latest application is in IMF, 2014) and by the EU commission (see Berti et al., 2012; European

57. For example, the S2 indicator is based on the inter-temporal budget constraint of the government, which has to hold in equilibrium in most theoretical micro-founded infinite-horizon macroeconomic models.

Commission, 2012) avoid the main pitfalls of credit ratings and may usefully complement the more established long-run fiscal sustainability indicators. Such indicators are supported by the ECB (2014), according to which 'early warning indicators for fiscal stress can be important tools for budgetary surveillance in order to allow economic policy time to counteract adverse developments and to help prevent the occurrence of major crises in the first place' and 'there is a strong case for the usefulness of such early warning indicators in general,' even if they have some limitations.

Early warning indicators are based on a wide array of variables. For example, the IMF indicators include variables that are frequently used in analyses of public debt sustainability: the cyclically-adjusted government deficit, the gross public debt, the gross financing needs of the public sector, the interest rate growth differential, and the long-run increase in pension and health spending. Compared with standard long-run sustainability analyses, the inclusion of the government's gross financing needs can be seen as providing a rough proxy of the short-term refinancing risks. The IMF indicator also includes measures of the impact on the debt-to-GDP ratio of lower than expected growth, an increase in market interest rates, and a bail-out of the banking sector multiplied by the probability of a banking crisis (computed from CDS prices).

For each variable, a threshold value is chosen to maximize the predictive power of the variable as a one-year-ahead leading indicator of a fiscal crisis. This is done by looking at the behaviour of the variable in the period before a crisis. A crisis is in turn identified as a period in which a default/restructuring happens, the country enters an IMF-supported programme, the inflation rate exceeds 35%, or the sovereign spread exceeds 1000 basis points or is more than 2 standard deviations from its historical country mean.

As a final step an aggregate indicator is built, which depends on how many variables are above their 'stress threshold' and by how much; variables with greater predictive ability have more weight in the final outcome. Table 6 shows the output of the procedure as taken from the IMF *Fiscal Monitor* of April 2014. The last column of the table displays the values for the aggregate indicator. The IMF indicator and the related sub-indicators are continuous variables, taking values between 0 and 1, even if the IMF summarizes this information in its publications using three different brackets, with integer values from 1 to

3 denoting low, medium and high risk. Of course, the number of buckets could be increased. A similar indicator for EU countries, called the S0, is regularly published by the European Commission (see Berti et al., 2012).

Indicators in this family are promising because they are more transparent, more oriented towards fundamentals and therefore far less pro-cyclical than credit ratings; if used together with long-run fiscal sustainability indicators, they can provide useful additional information. Moreover, as the indicators generally do not change abruptly, relating risk weights to these factors should be much less destabilizing than linking them to ratings, which sometimes jump by several notches at once.[58]

Table 6 – IMF fiscal risk indicators

	Underlying indicators (1)								Overall index
	Gross financing needs	Interest rate-growth differential	CAPB	Gross Debt	Increase in health and pension spending 2014-2030	Sensitivity to growth	Sensitivity to interest rate	Sensitivity to a banking crisis	
Italy	3	2	1	3	1	2	3	3	**3**
Germany	1	1	1	3	2	2	1	3	**2**
France	2	1	1	3	2	3	2	2	**2**
Spain	3	2	1	3	2	2	3	3	**3**
Netherlands	2	2	1	3	3	3	2	3	**3**
Belgium	2	2	1	3	3	2	2	1	**2**
Austria	1	1	1	3	3	2	2	3	**2**
Finland	1	2	1	2	3	1	1	3	**2**
Greece	2	2	1	3	2	3	3	3	**3**
Portugal	3	2	1	3	2	3	3	3	**3**
Ireland	1	2	1	3	2	3	2	2	**2**
UK	1	1	2	3	2	2	2	3	**2**
USA	3	1	1	3	3	2	1	1	**2**
memo item:									
Threshold values (2)	*17.2% of GDP*	*3.60%*	*4.2% of GDP*	*72.2% of GDP*	*3% of GDP*				

Source: IMF, Fiscal Monitor, April 2014.

(1): **3** if the indicator is above the threshold; **2** if it is less than one s.d. below the threshold; **1** if it is more than one s.d. below the threshold. (2) Taken from Baldacci et al. (2011).

58. The IMF indicator is not perfect: first of all, the indicator retains some elements of judgment when it comes to the last three indicators: these are based on definitions of 'negative shocks' with respect to the baseline that are somewhat arbitrary. Second, the indicator of the cost of bank bailout is a function of market data and therefore risks being biased and pro-cyclical. Finally, the way in which these shocks are translated into a value between 1 and 3 is model based but not very easy to explain. The first two limitations could be addressed by substituting the three 'fiscal risk' sub-indices with others that were included in a previous version of the indicator, namely, the fraction held by foreigners and the average maturity of debt. These variables are objective, publicly available, and clearly related to roll-over risk.

7. Conclusions

The debate on the reform of the prudential rules on banks' sovereign exposures is still under way. While current rules are of course neither perfect nor written in stone, the present paper provides a word of caution about the potential benefits and costs of tighter regulation in this area.

Concerning the benefits, one should keep in mind that increasing capital charges on sovereign exposures can hardly be a sufficient safeguard against 'tail events' such as sovereign defaults. Indeed, not only regulation does not seem to be a major cause of the observed 'home bias' of financial institutions, but also, at a deeper level, the role of the sovereign in a modern economy is so pervasive and crucial that sovereign debt turmoil inevitably translates into severe economic damage. Sovereign debt tensions usually cause widespread defaults in the household and corporate sectors, financial market tensions, and ultimately have a severe impact on the banking sector. Therefore, a change in regulation aiming at insulating a banking system from the default of its domestic sovereign is unlikely to achieve its target.

Furthermore, we highlight that there are already elements of the current prudential framework that take sovereign riskiness into consideration: the leverage ratio regime considers sovereign exposures; the 2011 EBA Recommendation on Capital asked banks to build capital buffers against their sovereign exposures; and stress testing exercises, such as those performed in 2014 in the European Union, explicitly considered stressed scenarios applied to sovereigns and asked banks to strengthen, where necessary, their capital buffers against sovereign exposures.

As to the possible costs, we provide estimates, for a wide sample of major EU banks and under different reform scenarios, of the possible effects of the revision of the current prudential treatment of sovereign exposures. We find that the effects of removing the current zero risk weight may be manageable if weights are moderate, but that imposing tight concentration limits on sovereign exposures could have significant effects.

The reduction in banks' sovereign exposures could lead to increases in sovereign yields. Our computations suggest that in normal times the effect could be moderate, but the estimates are highly uncertain, as they depend on several factors. First and foremost, we assume that the reaction of investors to the available supply of sovereign bonds is linear, whereas one cannot

exclude (as highlighted by several empirical and theoretical contributions) the possibility of non-linearities and multiple equilibria. These could materialize in the presence of market tensions. Historical experience has shown that the demand curve can suddenly invert its slope: during the eurozone debt crisis foreign investors fled certain sovereign debt markets in spite of rising yields. This suggests that impairing domestic financial institutions' ability to purchase domestic sovereign bonds during a panic-induced crisis, when bond prices tend to move suddenly away from fundamentals, may make the financial system more fragile. Another factor affecting the estimates is the dimension of the base of investors buying the bonds shed by banks. The role of the insurance sector would probably be limited. In many EU countries this sector already holds significant amounts of domestic government bonds and it could be forced also to sell sovereign bonds if new rules similar to those for banks were introduced.

In terms of policy implications, this leads to the conclusion that the net benefits of a reform are elusive and might well be negative. The main way to loosen the close ties between sovereigns and banks as much as possible is to strengthen the soundness of public accounts and, in Europe, to fully develop banking union. If, this notwithstanding, a revision of the current regulatory framework is pursued, it should be based on a comprehensive approach that captures all the relevant aspects, and utmost attention should be paid to its implementation. As is commonly acknowledged, even by advocates of tighter regulation, any new rules should be phased in very gradually, but the tendency of markets to frontload regulatory changes could undo even a long phase-in period.

Should rules on sovereign exposures be revised, it would be necessary to identify methodologies alternative to credit ratings to assess sovereigns' creditworthiness. Not only are the credit ratings applied to sovereigns subject to the well-known problems common to ratings in general (Financial Stability Board, 2010), but they also suffer from specific limitations. We therefore suggest that a measure of sovereign creditworthiness be based on well-established and analytically sound fiscal sustainability indicators, already published on a regular basis – and with a methodology that it is consistent across countries – by several international institutions (such as the IMF and the European Commission). The literature on public debt sustainability suggests several different quantitative approaches to building metrics of sovereigns' creditworthiness. Such approaches are worth pursuing from a regulatory policy standpoint as well.

References

Angelini P, Grande, G., and Panetta, F. (2014). The negative feedback loop between banks and sovereigns. Questioni di Economia e Finanza (Occasional Papers), n. 213, Banca d'Italia.

Ardagna S., Caselli, F., and Lane, T. (2007). Fiscal Discipline and the Cost of Public Debt Service: Some Estimates for OECD Countries. *B.E.* Journal of Macroeconomics, 7(1), 1-35.

Barclays (2014). Sovereign risk weights for European banks. Cross Asset Research.

Balassone, F., and Franco, D. (2000). Assessing fiscal sustainability: a review of methods with a view to EMU, in *Fiscal Sustainability - Essays Presented at the Public Finance Workshop Held in Perugia*, 20-22 January 2000, Banca d'Italia.

Balassone, F., Cunha, J., Langenus, G., Manzke, B., Pavot, J., Prammer, D., and Tommasino, P. (2009). Fiscal sustainability and policy implications for the euro area. ECB Working Paper, n. 994.

Baldacci, E., I. Petrova, N. Belhocine, G. Dobrescu, and S. Mazraani (2011). Assessing Fiscal Stress. IMF Working Paper, n. 11/100.

Battistini, N., Pagano, M., and Simonelli, S. (2014). Systemic risk, sovereign yields and bank exposures in the euro crisis. Economic Policy, 29, 203–251.

Berti, K., Salto, M., and Lequien, M. (2012). An early-detection index of fiscal stress for EU countries. European Economy - Economic Papers, n. 475.

Bocola, L. (2015). The Pass-Through of Sovereign Risk. Journal of Political Economy, forthcoming.

Caballero, R.J., and Farhi, E. (2014). The Safety Trap. NBER Working Paper, n. 19927.

Calvo, G.A. (1988). Servicing the Public Debt: The Role of Expectations. American Economic Review, 78(4), 647-61.

CGFS - Committee on the Global Financial System (2011). The impact of sovereign credit risk on bank funding conditions. CGFS Papers, n. 43.

Cottarelli, C. (2014). Fiscal sustainability and fiscal risk: an analytical framework, in Cottarelli, C., Gerson, P., Senhadji, A. (eds), Post-crisis fiscal policy, MIT press, Boston, Mass.

Cottarelli, C., and Escolano, J. (2014). Debt dynamics and debt sustainability, in Cottarelli, C., Gerson, P., Senhadji, A. (eds), Post-crisis fiscal policy, MIT press, Boston, Mass.

Coeurdacier, N., and Rey, H. (2013). Home Bias in Open Economy Financial Macroeconomics. Journal of Economic Literature, 51(1), 63-115.

De Grauwe, P., and Ji, Y. (2013). Self-fulfilling crises in the Eurozone: An empirical test. Journal of International Money and Finance, 34(C), 15-36.

European Commission (2012). Fiscal sustainability report. European Economy, n. 8, Brussels.

European Commission (2013). Vade mecum on the Stability and Growth Pact. European Economy Occasional Papers, n. 151, Brussels.

European Central Bank (2014). Early warning indicators for fiscal stress in European budgetary surveillance. Monthly Bulletin, November.

ESRB - European Systemic Risk Board (2015). Report on the regulatory treatment of sovereign exposures.

FSB - Financial Stability Board (2010). Principles for Reducing Reliance on CRA Ratings.

Giordano, R., Pericoli, M., and Tommasino, P. (2013). Pure or Wake-up-Call Contagion? Another Look at the EMU Sovereign Debt Crisis. International Finance, 16(2), 131–16.

Grande, G., Masciantonio, S., and Tiseno, A. (2014). The elasticity of demand for sovereign debt. Evidence from OECD Countries (1995-2011). Temi di Discussione (Working Papers), n. 988, Banca d'Italia.

Gros, D. (2013), Banking Union with a Sovereign Virus: The self-serving regulatory treatment of sovereign debt in the euro area. CEPS Policy Brief, n. 289.

Guiso, L., Haliassos, M., and Jappelli, T. (2001). Household portfolios: An international comparison, in Guiso, L., Haliassos, M. and Jappelli, T. (Eds.), Household Portfolios, MIT Press, Cambridge, Mass.

IMF (2010). Global Financial Stability Report, October.

IMF (2014). Fiscal monitor, April.

Laeven, L., and Valencia, F. (2013). Systemic Banking Crises Database. IMF Economic Review, 61(2), 225-270.

Lanotte, M., Manzelli, G., Rinaldi, A.M., Taboga, M., and Tommasino, P. (2016). Easier said than done? Reforming the prudential treatment of banks' sovereign exposures. Questioni di Economia e Finanza (Occasional Papers), n. 326, Banca d'Italia.

Lewis K. K. (1999). Trying to Explain Home Bias in Equities and Consumption. Journal of Economic Literature, 37(2), 571-608.

Nouy, D. (2012). Is sovereign risk properly addressed by financial regulation?. Banque de France Financial Stability Review, n.16, 95-105.

Reinhart, C. M., Rogoff, K. S., and Savastano, M. A. (2003). Debt Intolerance. Brookings Papers on Economic Activity, 34(1), 1-74.

Reinhart, C.M., and Rogoff, K.S. (2011a). From Financial Crash to Debt Crisis. American Economic Review, 101(5), 1676-1706.

Reinhart, C.M., and Rogoff, K.S.(2011b). The Forgotten History of Domestic Debt. Economic Journal, 121(552), 319-350.

Weidmann, J. (2013). Stop encouraging banks to load up on state debt. Financial Times, 1 October 2013.

Europe's Regulatory Treatment of Banks' Sovereign Exposures – How a Flawed Framework Was Put to Use in the Irish Financial Crisis

by Lars Frisell[59]

Abstract

Shortly after the default of Lehman Brothers in 2008 several Irish banks faced acute funding problems. In order to avoid a systemic crisis the Irish government extended a wide-ranging guarantee to its banks. As credit losses mounted in tandem with deteriorating economic conditions, the solvency of the Irish State itself became threatened and eventually compelled Ireland to enter an EU-IMF Programme of Assistance. This paper discusses the alternatives available to European policymakers regarding the regulatory treatment of banks' sovereign exposures in light of the Irish crisis. Of the various reform options, strict exposure limits seems to be the only regulation that would have materially affected Ireland's crisis management. However, it is doubtful whether consensus on reform can be achieved.

1. Ireland's debt crisis

Few countries have witnessed a sovereign debt crisis emerging so quickly and unexpectedly as Ireland did during the great financial crisis. Shortly after the default of Lehman Brothers in 2008 several of the Irish banks experienced

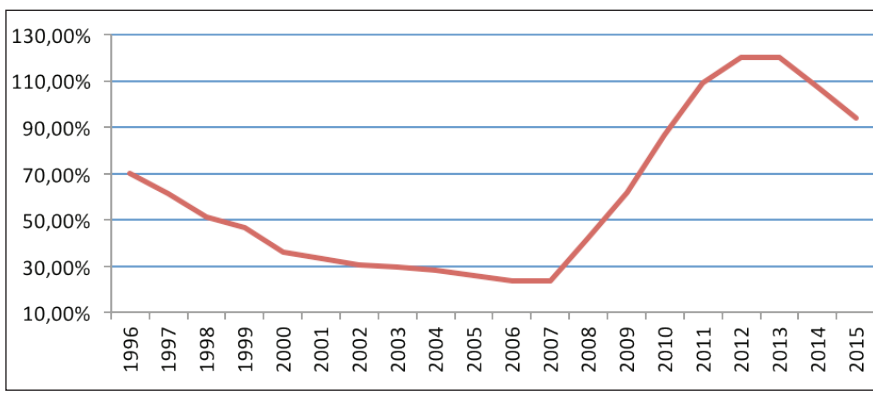
59. Advisor to the Governor at the Central Bank of Ireland. I thank Governor Philip Lane, Deputy Governor Sharon Donnery and Professor John Fitzgerald for helpful comments, and Sarah Lally for excellent research assistance. The views expressed in this paper are solely those of the author and do not represent the views of the Central Bank of Ireland or of the Eurosystem.

acute funding difficulties. Facing a systemic crisis, and convinced that the banking system was broadly solvent, the Irish government issued an extensive guarantee, covering senior debt and some of the existing subordinated debt and covered bonds. Two years later the mounting credit losses threatened the solvency of the Irish State and compelled Ireland to seek an official Programme Assistance from EU and IMF.

It is worthwhile to quickly recapitulate the scale of the Irish property and credit bubble in the decade preceding the crisis – the Celtic Tiger years. Between 1997 and 2007 domestic lenders' balance sheets grew fourfold, an expansion largely funded by foreign banks and investors. The loan-to-deposit ratio in domestic banks rose from 130 per cent to 220 per cent. Virtually all of the external funds went into the property sector, both commercial and residential. The annual construction of homes grew from a sustainable rate of about 30 thousand units in 1996 to more than 90 thousand ten years later. The stock of mortgage loans exploded from €16 billion in the first quarter of 2003 to a peak of €106 billion by the third quarter of 2008 and household indebtedness peaked at 120% of GDP in 2010.

Meanwhile the State's finances flourished. Despite public wages were inflating, full employment and tax revenues from the construction sector ensured recurrent budget surpluses. Ireland went into to the crisis with a gross debt-to-GDP ratio of just 24 per cent, one of the lowest in the European Union. Hence, it seemed that Ireland's public finances in 2007 could withstand any imaginable downturn in the economy.

Figure 1: Ireland's Gross National Debt as percentage of GDP

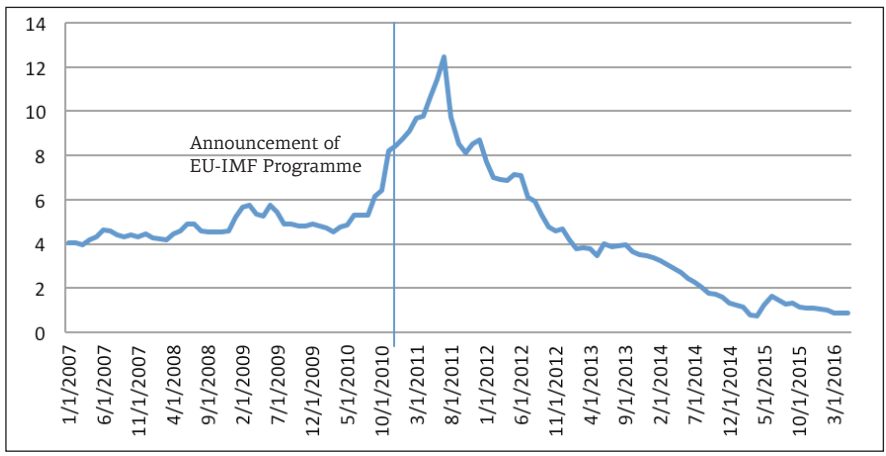


Source: Irish NTMA

Things reversed in a dramatic fashion as funding markets first trembled in 2007 and then imploded after the default of Lehman Brothers. Over the next four years, retail property prices fell by half in Ireland, and commercial real estate prices more than so. The blanket guarantee issued by the Irish government in September 2008 had shifted a stock of about 400 billion or 200 per cent of GDP of contingent bank liabilities to the State (including deposits already covered by the national deposit insurance). The guarantee temporarily restored confidence and reversed deposit outflows (partly at the expense of banks in other countries, in particular the UK) but by mid-2010 some 100 Billion euro in retail and wholesale funding had been withdrawn from the Irish banks, which was substituted by central bank lending.

At this point the revised loan loss estimates and mounting budget deficit had started to raise concerns over the State's ability to service its debts. Following the Deauville statement - in which Angela Merkel and Nicolas Sarkozy announced that private investors should be prepared to take losses in future bank bailouts – the Irish 10-year yield surpassed 8 per cent in November 2010 and Ireland was compelled to apply for an EU-IMF Programme of Assistance. A final assessment of the banks' credit losses was performed in 2011, which brought the State's total bank recapitalisation to 64 billion euro.[60]

Figure 2: Ireland's 10-year bond yield (per cent)

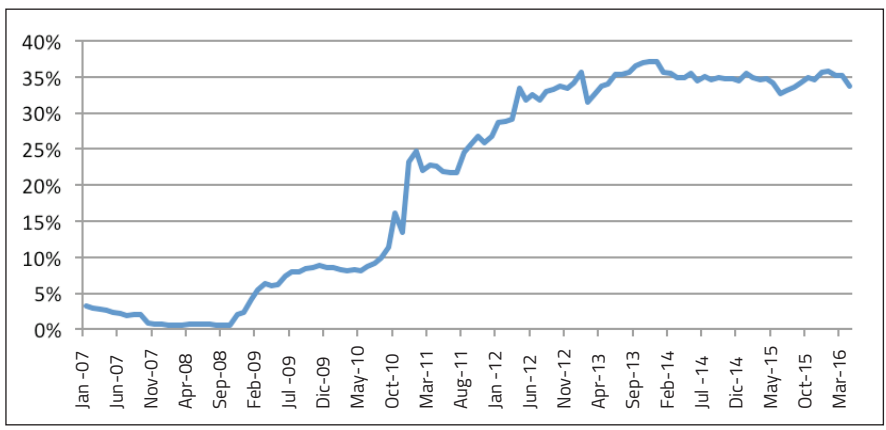


Source: Irish NTMA

60. For extensive reviews of the Irish financial crisis, see Honohan (2010) and Nyberg (2011).

Ireland's experience contrasts with that of other peripheral European countries during the great recession, and Greece in particular, where the bank-sovereign loop at least initially worked in the other direction - apprehensions over countries' fiscal position triggered outflows from their domestic (and sometimes foreign) banks. Although it is clear by now that Ireland's fiscal model during the Celtic Tiger had become unsustainable, it was undoubtedly the bank rescue that triggered the acute phase of the crisis and the need to seek external assistance.[61] In stark contrast to other stressed Eurozone countries, the amount of domestic government paper held by Irish banks before the crisis was negligible, but rose quickly after 2009. For example, in Italy, Greece and Spain the share of domestic debt of banks' securities portfolios was above 90% already before the onset of the crisis.[62] As in other peripheral countries, behind this on-loading of sovereign debt in Ireland, and off-loading of other securities, may be present both aspects of moral suasion and carry trade (as sovereign bonds were high-yielding, risk-weighted at zero and eligible as ECB collateral). However, the predominant reason is much less subtle: Irish government paper was the main instrument used to recapitalise its most loss-ridden lender, Anglo Irish Bank.

Figure 3: Domestic debt securities as proportion of all government debt held by Irish banks



Source: Irish NTMA

61. The indirect costs of the crisis are likely to be much larger still, probably more than 100 billion. See Honohan (2015).
62. For analyses of peripheral banks' holdings of sovereign debt, see, e.g.,Uhlig (2013), Acharya and Steffen (2015) and Altavillo, Pagano, Simonelli (2016) and Affinito, Albareto, and Santioni, (2016).

Anglo Irish Bank had been growing at a dramatic pace over the past years and had by the onset of the crisis become the third largest lender in Ireland. It was arguably of systemic importance at this point, both in its own right and through potential contagion effects, and was like other domestic banks covered by the blanket guarantee. It was the first bank to recognize major credit losses and was nationalised in January 2009, amidst a write-down of equity and subordinated instruments and a capital injection by the State of four billion euro. In December 2009 the new management of the bank signalled that losses had continued to increase and that they were likely to breach minimum capital requirements. The pressed Irish government, which was fearful of the effects of issuing more debt into the market, issued a Promissory Note - an IOU – with a notional value of 8.3 billion directly to the bank. The value of the Promissory Note was subsequently increased as loss estimates kept rising. In 2010 Anglo was merged with the smaller but equally defunct lender Irish Nationwide, which formed the Irish Banking Resolution Company (IBRC). After a final capital assessment in 2011 the final Promissory Note proffered to IBRC amounted to almost 30 billion euro, more than 15 per cent of Ireland's GDP, of which almost 26 billion covered incurred losses and loss provisions.[63,64]

A by-product of the recapitalization was that, since IBRC retained its banking license, the Promissory Note could be used as collateral for emergency lending from the central bank. However, this still proved insufficient to restore confidence in the State's finances and break the spiral of increasing bonds yields / default risk.

2. Limited prospects of regulatory reform

Much has been achieved to improve the fiscal and financial framework in Europe since the onset of the great recession: The fiscal compact – to strengthen budgetary discipline; the European Stability Mechanism – to act as a backstop

63. The around four billion left representing Tier 1 capital made IBRC well capitalized, with a core Tier 1 ratio of 15.1 per cent per December 2011. See the Irish Bank Resolution Corporation (2011).
64. In February 2013 IBRC was liquidated and the Promissory Note was exchanged for long-dated (marketable) bonds, to be amortized by the Irish government at a (minimum) pace agreed with the ECB. About one billion of the Note went to the recapitalisation of EBS as it was merged with Allied Irish Bank. The remaining 34 billion of the bank recapitalisation were done in cash, of which two thirds were taken from the National Pension Reserve Fund. See McArdle (2013).

lender; the Single Supervisory Mechanism - to strengthen and harmonize supervision of large banks; and the Bank Recovery and Resolution Directive and Single Resolution Mechanism – to enable orderly resolution of banks.

All this should work to reduce the probability of sovereign stress in the long term. But ultimately no degree of fiscal integration or financial sector reform can ever *guarantee* that sovereign defaults do not occur, only access to (unlimited) monetary financing could do this. When announced in 2012 the ECB's Outright Monetary Transactions Programme (OMT) was perceived to provide a sufficient backstop.[65] Despite that the programme would only make purchases of sovereign bonds in secondary markets under certain conditions, it was followed by a rapid decline in peripheral countries' bond spreads and ensured that no more countries had to seek official programmes of assistance alongside Greece, Ireland and Portugal. Although the OMT has not been activated various other lending and purchase programs undertaken by the ECB since 2008 have led to a substantial portion of Eurozone sovereign debt now being held by ECB. Any desire to reduce the ECBs and the European banking sector's exposure to sovereign debt should arguably start with the recognition that this debt is not risk-free.

One may recall that the preferential treatment of sovereign exposures have been a feature of capital regulation ever since the first Basel Accord in 1988, which provided for zero risk weight for sovereign debt of OECD member countries. Basel 2 and 3 do not include similar provisions but allow, at national discretion, for a lower risk weight to be applied to sovereign (or central bank) exposures that are denominated in domestic currency and funded in that currency. In addition however, the EU framework diverges from the Basel rules as it allows banks to assign zero risk weight to sovereign exposures denominated and funded in the currencies of *any* member state, while it also exempts EU sovereign debt from limits on large exposures.[66] Due to these deviations the Basel Committee on Banking Supervision (BCBS) has graded the European framework materially non-compliant with Basel III.

65. Executive Board member of the ECB, Benoît Cœuré (2013) has described OMT as "an insurance device against redenomination risk, in the sense of reducing the probability attached to worst-case scenarios".

66. Specifically, any euro area bank may apply a zero risk weight to any euro area sovereign. In addition, there is a transitional arrangement (Article 114(5)) that allows a zero risk weight for any bonds issued by any EU member state, irrespective of the currency, until 31 December 2017.

While official lenders were spared from the approximately 53 per cent write-down of Greek debt in 2012, virtually all outstanding debt is now held between Greek banks and official lenders. Regardless of whether another write-down of Greek bonds takes place and affects official lenders (as opposed to "merely" reductions of the bonds' real value), most observers would agree that the regulatory framework as regards banks' sovereign exposures needs to be changed.

Members of ECBs governing council expressed their frustration already in 2013, when Yves Mersch called the current practice an "illusion that should be stopped".[67] However, they also insisted that Europe should not go alone - any reform should be undertaken on a global basis by the BCBS. In March 2015 the European Systemic Risk Board (ESRB) published a report that called for a revision of the regulatory framework without advocating any specific alternative. In November 2015, a Five Presidents' Report was devoted to severing the link between banks and sovereigns. The report concluded that "zero-risk weighting of sovereign debt in the EU, as well as the exemption from existing large exposure requirements, are a source of vulnerability" (EPSC 2015). The Dutch Presidency has set up an Ad Hoc Working Party to review different options in 2016.

However, it is evident that a proposal to reform the regulatory treatment of (held-to-maturity) sovereign instruments will meet resistance. Let us quickly review the main options for reform.

i) Risk weights for European sovereign debt are determined in the same way as for other sovereigns, in accordance with the Basel framework.

Removing the carve-outs for European debt in the Capital Requirements Regulation would mean that, in the standardised approach, risk weights would be determined by external ratings – just as they are for sovereign debt of third-party countries and corporate bonds. However, such a proposal would likely face several objections. First, although the impact on the vast majority of banks would be insignificant, some banks would likely be compelled to raise capital.[68] More

67. "ECB policymakers say no going it alone for government bond risk weightings", Reuters, November 26, 2013.
68. For example, an external rating of BBB- implies a risk weight of 50%. Given, say, a target Tier 1 ratio of 10 per cent, it would add just 5 per cent to capital requirement of the nominal amount of sovereign debt held. See Lanotte et al (2016) for an impact assessment on European banks.

importantly, unless Europe could convince the BCBS to implement the reform on a global basis it would mean that European Union (and/or Eurozone) states would be disadvantaged relative to other jurisdictions. Furthermore, since the onset of the financial crisis, and the default of highly-rated mortgage derivatives in the US, it has been part of the policy agenda to decrease reliance on external ratings. Finally, research shows that market signals such as ratings are often imperfect indicators of actual default and tend to be procyclical - particularly so when it comes to sovereign debt (Gros and Mayer 2010).

ii) Non-zero, administratively set risk weights introduced on either a European or global basis.

This would constitute a compromise allowing policymakers to avoid relying on ratings and to have control over the underlying factors of risk weights – which could include a fixed risk weight for all EU or Eurozone countries. In a way, the leverage ratio introduced by Basel 3 already fulfils such a function. For example, for a bank with a target Tier 1 ratio of ten per cent a leverage ratio of 3 per cent implies a universal risk weight of 30%.

However, it is hard to see that such an approach would gain support. How and by whom would the sovereign ratings be set? Gros (2013) suggests that risk weights be linked to the Maastricht criteria. The risk weight would remain at zero as long as both debt and budget deficit as a percentage of GDP remained below 60 and 3 per cent, respectively, but would be increased if either the deficit or the debt ratio exceeds these values. This seems intuitive but the question is whether this measure would really capture default risk; for example, the proposed method implies that German Bunds would carry a higher risk weight than Lithuanian or Romanian debt. Second, it is hard to see what range of risk weights would be politically acceptable yet economically relevant. In the Basel 2 standardised approach, the lowest non-zero risk weight is 20% (for AAA-rated banks and corporates). Member states may insist that sovereign debt does not attain a higher risk weight than this. Even for the banks with largest holdings of sovereign debt the impact of a risk weight in the order of 10-20% would likely be quite manageable. However, for the very same reason, it would not materially alter the yield/capital trade-off and banks' incentives.

iii) Strengthening of Pillar 2 and/or Pillar 3 processes, including stress tests procedures.

In 2011 the European Banking Authority took the unprecedented step of guiding banks to hold additional capital for their hold-to-maturity sovereign debt holdings. However, I think similar procedures or a strengthened Pillar 2-treatment are unlikely to be viewed as a sufficient response on their own. It would certainly avoid a difficult political decision, but by delegating the risk assessment to supervisors it would create ambiguity and potentially subsequent disputes. Even if the ECB adopted a politically agreed, hard-wired approach to the banks under its supervision, non-eurozone banks are supervised by national regulators that may have quite differing views as to their own and other sovereigns' default risk - and how to mitigate it. As regards Pillar 3 measures, banks' holdings of sovereign bonds are by this stage fairly well known and this transparency (or lack thereof) is not likely to affect behaviours until sovereign default becomes a distinct possibility, as was the case in Greece.[69] The haircuts applied by the ECB, which range from 6 to 16 per cent for BBB-rated sovereign paper (as a function of residual maturity and coupons) are arguably too small to be a binding constraint on banks funding.

iv) Remove or revise the exemption for sovereign exposures from large exposure rules

An exposure limit would have several advantages. First, it would not put European banks at a capital disadvantage. It would also avoid an excruciating political process of reaching agreement on alternative risk ratings and risk weight mappings. Finally, it is a measure that would be relatively easy to phase in over an extended period of time. The Basel regulations limit single counterparty exposures to 25 per cent of a bank's own funds. For sovereigns Europe could decide on a higher limit, such as 50 or 100 per cent. One should also recall that the limit would apply to individual sovereigns, not to the aggregate level of a bank's sovereign debt holdings. Hence, banks that prefer to hold more sovereign debt (e.g. to meet liquidity buffer requirements) could do so by holding other countries' Diversification of banks' sovereign debt portfolios

69. As is well documented, banks in peripheral countries increased their stock of own sovereign bonds during the financial crisis, not the other way around. See Altavilla, C., Pagano, M., and Simonell, S. (2016).

could also be explicitly encouraged through the regulatory framework.[70] The drawback of exposure rules is of course that they do not differentiate with respect to (perceived) risk, but one can imagine a framework that combines exposure limits with credit risk ratings, so that the limits become stricter or kick in at lower amounts the riskier is the debt in question.

Exposure limits is also the recommendation of the Five Presidents' Report (EPSC 2015). The Report concludes that "[a] straightforward exposure regime would greatly limit systemic risk in the banking system, result in a well-diversified government debt portfolio and considerably weaken the doom loop between sovereigns and their banking systems". However, there is already resistance to this idea. Lanotte et al (2016) argue that a 100 per cent concentration limit would force Italian banks to shed about half of their holdings of domestic bonds, which would amount to around 200 billion euro, or 13 per cent of GDP. The authors argue that a long phase-in period of exposure limits may not mitigate the sell pressure on Italian bonds as "markets have shown a strong tendency to front-load any regulatory changes". They also argue that risks for financial stability are still material and any new regulation should be held off until "normal times". The ECB's Vice President Vitor Constâncio has also expressed his disagreement with the idea of introducing exposure limits.[71]

3. The European regulatory framework in light of the Irish crisis

The Irish experience illustrates the inherent instability of the current European framework and the single currency. The prohibition of monetary financing and lack of risk-sharing create very strong incentives for fiscal discipline among member states, which leads to a world with distinct equilibria: In the good equilibrium, which persisted until the default of Lehman Brothers, default risk was perceived as low by market participants even though many countries' economic fundamentals were deteriorating. When the hurdle was passed however, risk premia shot up and redenomination or default, which previously was unthinkable, quickly became a self-fulfilling prophecy.

70. ESRB (2015) suggests that a possible definition of a well-diversified portfolio relates to the corresponding country's GDP in the euro area GDP.
71. Constancio (2015).

When the failure of the Irish banks threatened both Irish and European financial stability in 2008, and lacking a mechanism to restructure systemic banks, the Irish government chose to step in as guarantor for its banking system. As the fiscal situation deteriorated in tandem with property prices and credit losses the solvency of Ireland itself became threatened. Since the State could no longer viably borrow in the market to meet the increasing capital needs of its banks it had to resort to recapitalization via direct injection of non-marketable government paper, ultimately amounting to almost 30 billion euro. These IOUs were in turn used as collateral for liquidity support from the central bank. Arguably, the only alternative for Ireland to break the spiral of higher bond yields and higher default risk at that point would have involved a European risk-sharing mechanism, palpably lacking at the time.

How would the management of the Irish crisis been affected by a different regulatory treatment of banks' holdings of sovereign debt? Before discussing this one may first note that the BRRD, the newly introduced bank resolution regime, would probably not, in itself, have changed the course of events as regards Anglo Irish Bank. For example, if the bank had been required to hold bail-inable debt and equity (MREL) equal to twice its capital requirement it would have increased the bank's loss absorption capacity by about four billion. Certainly helpful but small relative to its ultimate capital need.[72]

It is also clear that none of discussed reform options other than exposure limits would have stymied the government's resolution strategy. Suppose for example that Irish sovereign debt had carried a risk weight of 20 per cent (Ireland had an AA-rating in 2009). The same Tier-1 capital ratio of 15 per cent in IBRC that was achieved by a Promissory Note worth 30 billion would then have been achieved with one worth 31 billion instead.[73] On the other hand, even a fairly generous exposure limit would have prevented the recapitalization of IBRC: the resulting ratio of Irish sovereign debt to the bank's own funds became about 750 per cent. If a strict exposure limit had been in place it is anyone's guess how Irish and European authorities would have acted back in 2009. In order to avoid a bank failure at the time it is possible that Anglo Irish Bank would have been merged into one of the larger banks, which eventually would

72. Based on Anglo Irish Bank's accounts as of September 30, 2008.
73. With a target Tier-1 ratio of 15% and a risk weight of 20%, the 31 billion would have necessitated 960 million in additional equity.

have brought about an even bigger problem. It is also possible that some of the European mechanisms that were introduced later on, notably the EFSF, would have been put in place so as to avoid contagion from the Irish crisis. If not, it is likely that Ireland would have been compelled to apply for a Programme of Assistance already in 2009.

However, it is plausible that the recognition of sovereign risk would have induced both national and European policymakers to engage in necessary reforms much earlier. If the function of banks as "sovereign debt buyers of last resort" had been restricted at the outset, it is possible that insolvency procedures for both banks and sovereigns had been developed at the very inception of the Eurozone, thus lessening the likelihood of a debt crisis in the first place.

References

Acharya, V., and Steffen S. (2015). The Greatest Carry Trade Ever? Understanding Eurozone Bank Risks. Journal of Financial Economics, 115, 215-236.

Affinito, M., Albareto, G., and Santioni, R. (2016). Purchases of sovereign debt securities by Italian banks during the crisis: the role of balance sheet conditions. Banca d'Italia Occassional Paper 330.

Altavilla, C., Pagano, M., and Simonell, S. (2016). Bank exposures and sovereign stress transmission. ESRB Working Paper Series issue 11.

Bank for International Settlements (2014). Regulatory Consistency Assessment Programme (RCAP) – Assessment of Basel III regulations – European Union.

Capital Requirements Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 and Capital Requirements Directive 2013/36/EU.

Cœuré, B. (2013). Outright Monetary Transactions, one year on. Speech, September 2.

Constâncio, V. (2015). The Role of Stress Testing in Supervision and Macroprudential Policy. Speech, October 29.

European Political Strategy Centre (2015). Further Risk Reduction in the Banking Union. Five Presidents' Report Series, Issue 3.

European Systemic Risk Board (2015). ESRB Report on the Regulatory Treatment of Sovereign Exposures.

European Commission (2011). Green Paper on the feasibility of introducing Stability Bonds.

Gros,D., and Mayer T. (2010). Create the European Monetary Fund Now. CEPS Policy Brief 202.

Gros, D. (2013). Banking Union with a Sovereign Virus: The self-serving regulatory treatment of sovereign debt in the euro area. CEPS Policy Brief 289.

Honohan, P. (2010). The Irish Banking Crisis - Regulatory and Financial Stability Policy 2003-2008.

Honohan, P. (2015). Where did all the money channeled into property-backed lending go? Irish Times, January 31.

Irish Bank Resolution Corporation (2011). Limited Annual Report & Accounts.

Lanotte, M., Manzelli, G., Rinaldi, A.M., Taboga M., and Tommasino, P. (2016). Easier said than done? Reforming the prudential treatment of banks' sovereign exposures. Banca d'Italia Occassional Paper 326.

De Marco, F., and Macchiavelli, M. (2014). The Political Origin of Home Bias: the Case of Europe. Unpublished manuscript.

McArdle, P. (2013). Refinancing the Irish Bail-Out – The Options post the June 2012 Summit. IIEA Working Paper Series issue 12.

Nyberg P. (2011). Misjudging risk: Causes of the systemic banking crisis in Ireland. Report of the Commission of Investigation into the banking sector in Ireland.

Uhlig, H. (2013). Sovereign Default Risk and Banks in a Monetary Union. German Economic Review, 15(1), 23—41.

Risk-Weighting Sovereign Debt Is the Wrong Way to Go

by Erik F. Nielsen[74]

Abstract

The third leg of European banking union, the common deposit insurance scheme, has been postponed until an unspecified reduction in bank risk has been achieved. A reduction in banks' domestic sovereign exposure has (mostly rightly) been identified as an objective, potentially via risk-weighting sovereigns. However, risk-weighting sovereigns is the wrong way to go because it both undermines the most fundamental concepts of government and governance (trust), and would build a strongly pro-cyclical element into policy making. There are simpler and better ways to achieve standardised limits on banks' exposure to sovereigns.

1. The context: The doom-loop and the importance of banking union

Few people would question the desirability of reducing the interdependencies between sovereigns and banks. The eurozone debt crisis is an acute reminder of this. During the crisis, a number of systemically important banks were bailed out by their government, including in Greece and Ireland (each to the tune of about 35% of GDP), the Netherlands (about 17% of GDP), Germany and the UK (each about 12% of GDP) and Spain (some 8% of GDP), causing public debt to increase

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significantly, hence burdening future taxpayers and negatively impacting the creditworthiness of the sovereign itself. In the eurozone periphery, this led to a severe negative feedback loop.

So far the solution to break this doom-loop in the eurozone has been European banking union. The banking union is supposed to stand on three legs: common supervision, common resolution and common deposit insurance – these are the three responsibilities, that will be transferred from the national level to the common European level, thereby reducing the interdependencies between banks and their home-country sovereigns.

Specifically, the banking union will secure uniform supervision, thereby helping to level the playing field. With additional capital requirements, regulatory tightening and beefed-up supervision, it should reduce the risk of bank failures, and – when failures do happen (as they must occasionally in a well-functioning market economy) – private creditors would take the hit. Furthermore, in the extreme case where the cost exceeds bail-in-able liabilities, the cost to the home-country sovereign would be reduced by spreading the cost across all eurozone governments.

However, when it came to that (for society) most important group of creditors, the depositors, progress towards full banking union took a significant step back in mid-June, when the Eurogroup of finance ministers kicked the third leg of the banking union, the European Deposit Insurance Scheme (EDIS), firmly into the long grass.

Speaking ahead of the Eurogroup meeting, German Finance Minister, Wolfgang Schäuble, said that talks "will not start with a deposit insurance to strengthen banking union, but with reducing the risks in the banking sector step by step", a sentiment that was reflected in the post-meeting communiqué, which said that negotiations on the EDIS will start "as soon as sufficient progress has been made on the measures on risk reduction".

It is not entirely clear what specific risks in the banking sector the Eurogroup was referring to, or what degree of reduction in such risks they are seeking in order to allow the EDIS to go ahead, but earlier this year, the president of the Eurogroup, Dutch Finance Minister, Jeroen Dijsselbloem, included on the agenda of a Eurogroup meeting a proposal to introduce risk weights for sovereign bonds on banks' balance sheets, aimed at forcing a reduction in banks' holdings of their home-country domestic sovereign debt.

Why do the authorities want to reduce banks' holdings of their domestic sovereign debt? The answer is that the doom-loop between banks and their sovereigns works both ways:

When big (in the context of the local economy) – or politically connected – banks get into trouble, history shows that sovereigns step in, and not only when a major financial crisis is on the doorstep. As recently as in May 2016, the European Commission finally approved another EUR 3bn in guarantees for HSH Nord Bank in northern Germany, provided by the states of Hamburg and Schleswig-Holstein.

And, when sovereigns get into trouble in terms of their creditworthiness, banks suffer as well. Importantly, however, while it is a historical fact that sovereign states have restructured their debt in the past, it is a rare event, particularly outside emerging markets. In Europe, sovereign defaults have happened only in the aftermath of major political upheavals, including after WWII and in Central Europe following the transition from communism to market-based democracies, as well as in Greece, following the revelation of years of untruthful statistical reporting (a situation that might have been avoided if Eurostat auditing of national accounts throughout the EU had been approved years earlier, as proposed, but rejected by the Council).

Also importantly, historically, private-sector exposure, rather than sovereign debt, has been the weak point on banks' balance sheets. It was not excessive exposure to domestic sovereigns that caused trouble during the eurozone sovereign debt crisis (Greece is a special case because it was not being honest about its accounts). Rather, it was excessive exposure to real estate that necessitated bank bailouts in Ireland and Spain, and exposure to derivatives and US CDOs, which they basically had not understood, that caused the need to bailout banks in Germany and the Netherlands, both areas which – with the benefit of hindsight – could have been avoided relatively easily with proper supervision.

In other words, in reality the link between sovereigns and banks runs – the vast majority of the time – from banks to sovereigns, and very rarely the other way around. No measurable bailout was needed in France and Italy, but the vulnerability of Italian banks today, namely the NPLs, rests on exposure to the SME sector, not the sovereign.

Moreover, if the 2008-12 crisis holds any lesson, it is that domestic banks play an important stabilising, not a de-stabilising, role for their sovereigns. By

any measure, the peripheral sovereign debt crisis was severely exacerbated by the sudden and large withdrawals of exposure by non-domestic banks based in core Europe, often encouraged, if not outright dictated, by national supervisors. BIS statistics show that core European banks withdrew around a trillion euros from the periphery during the critical 2-3 years. Had domestic banks not held on to their sovereign securities, and at times even added to their holdings, it is almost inconceivable that a full-scale crisis with either substantially greater external official assistance and/or sovereign defaults could have been avoided.

If banking union with common supervision had been in place then almost certainly the withdrawals would not have been so large and politicians would not have had to worry to the same extent about depositors. The run on Northern Rock in 2007 ended only when then chancellor Alistair Darling announced on TV that all deposits in the UK were safe. And when Hypo Real Estate collapsed in Germany a year later, Angela Merkel announced that "we tell all savings account holders that your deposits are safe. The federal government assures it." In neither of these cases did the government have the fully funded resources to back the claims, or even an established parliamentary majority for the contingent liability, but the political commitment was sufficient to stabilise the situation.

2. Banks' exposure to the sovereigns

While history is important, regulators must not fight the last war, but rather look to the next one, and here – given the dramatic increase in sovereign debt-to-GDP ratios in recent years – it is unquestionably important to pay attention to banks' sovereign exposure.

To be sure, it is not the case at the moment that banks can hold unlimited amounts of sovereign debt on their balance sheets. Banks are heavily regulated and supervised businesses, with their supervisors signing off on the risk-weighting approach used by any bank – whether it's a simple standardized approach (used by most small banks), or the internal or advanced internal approach used by bigger banks – when assigning risk-weights to the various assets held on the balance sheet.

Of course, the implicit (ad hoc) limits currently in place could beneficially be replaced by a standardised ex ante approach, but doing so by introducing risk-

weighting of sovereign debt is misguided – and the fact that it now seems to be holding up the critical third leg of the banking union is deeply troublesome because we are left in a situation where the supervision and resolution authorities have been transferred away from the national level to the European level, while part of the risk (the deposit insurance), if anything goes wrong, has been left at the national level.

Nobody can be expected to transfer power away to another level of government, while keeping the risk – just as nobody can be expected to accept the assignment of new risk without also receiving the authority to manage it.

Constructing a three-legged stool, where the fitting of the third leg has become conditional on other, albeit related, issues, is a troublesome enterprise, which implies a significant risk of it being unable to function as intended. Indeed, the chances are that as long as this deficiency remains in place, the national supervisors will, with some justification, demand deep involvement in the ECB's supervisory work, and if or when bank resolution has to take place, the national authorities will lead, if not monopolise, the process because they know that if a run were to emerge, they, and they alone, would have to carry the cost. The Italian governments' handling of the trouble surrounding Banca Populare di Vicenza and Veneto Banca, and the establishment of Atlante, can be seen in this context.

In what follows, I'll first explain why risk-weighting of sovereign exposure is philosophically troublesome, then I'll discuss the huge practical obstacles if one were to get comfortable with the philosophical hurdles, and finally I'll outline the (better) alternatives.

3. The philosophical problems with risk-weighting sovereign debt

While sovereign defaults are historical fact, to institutionalise sovereign risks ex ante is troublesome on several fronts. First, it carries significant risk in terms of how the population and businesses see their elected governments.

The role of government is to provide a set of services to the population, including internal and external security, a judiciary function, education, infrastructure, etc, financed by taxes and (usually) periods of borrowing. In other words, virtually every government faces a set of obligations, ranging from legally contracted financial obligations (e.g. debt and procurements once

contracts have been signed), to politically contracted financial obligations (e.g. pensions in PAYG systems) and politically promised obligations (e.g. education.)

It is therefore not surprising that no government would support an institutionalised risk on its own legal claims (apart, apparently, from a very few eurozone governments seemingly trusting that whatever system they concoct would deem themselves virtually risk free - at least for the time being!) in return for what they (incorrectly) see as effective risk reduction among banks in other eurozone countries.

Indeed, it seems odd that a government – preaching the rule of law – should consider defaulting on its legally contracted obligations before having exhausted all other (non-legally binding) options, including raising taxes and cutting expenditure. But the political reality is more complex. While tax increases and spending cuts have been employed in all crises, as they evolve (sometimes with the help of IMF programs), there are, of course, limits to how far down this road any government would, or could, go.

More importantly, a sovereign debt restructuring is never an orderly and pre-designed process. Indeed, there is no example of a government restructuring its debt without having first run up arrears on their procurements, including medical and educational supplies, and fallen behind in public sector wage and pension payments. In other words, default on debt is always closely associated with – and trails – a broader decaying of government functions, if not an outright breakdown of governance. This is not a scenario any responsible government would want to institutionalise ex ante.

Specifically in the context of the EDIS, if indeed at some point in the future sovereigns were to become the weak point on banks' balance sheets, institutionalising a quantitative risk assessment of sovereigns – particularly at a time when they still underwrite each country's deposit insurance scheme – could be dangerous. You would basically be telling the population in several countries that **1.** the European authorities assign a risk of x% to a default of your country, and **2.** if you, and your fellow citizens, were to withdraw your money from your banks, then the only underwriter of those deposits would be... your government. Does that not imply a risk of a self-fulfilling disaster?

Finally, in addition to the profoundly political issue of trusted governance, there is a more technical, yet, very important, issue: If sovereign debt in the eurozone were to be risk-weighted, the euro would be a currency explicitly

without a "risk-free rate" (or an anchor for pricing securities), unless a new common "risk-free" (anchor) asset is created. This is a status "enjoyed" only by the poorest emerging markets, and indeed a factor holding them back from the market-based pricing of assets. To imagine a well-functioning market economy without a "risk-free rate" in its own currency would defy the finance theories underpinning any known market economy.

4. The practical issues of implementing risk weights

Suppose one could get comfortable with the issues discussed above, one would then have to decide who the judge would be for these relative probabilities of default among countries and the changes in them?

Three possibilities are being mentioned, none of them comfortable:

- The credit rating agencies: If you think that's a good idea, would ask you to read our paper from March 2014 (*The Damaging Bias of Sovereign Ratings*; since then also published – after proper academic review – in the academic journal *Economic Notes*[75]). In it, we document the disastrous overreaction by the agencies in terms of downgrades, well beyond the fundamental deterioration in the eurozone periphery during the crisis – a time when the agencies fell in love with the "Fragile Five" and upgraded them well beyond changes in fundamentals.
- A mark-to-market approach: This would be dangerously pro-cyclical. If markets worry about the creditworthiness of a country, it will sell that country's debt, thereby imposing a tightening of financial conditions in that country – on top of that you demand fiscal tightening, and hence still more drag on the economy. This is precisely what happened in Italy when Mario Monti took over as PM: markets sold BTPs and imposed severe monetary tightening on the Italian private sector, and – "dictated" by markets and credit rating agencies – Mr. Monti imposed massive fiscal tightening, thereby further punishing the real economy. But, rather than seeing through the hardship to the better future, markets began to

75. Vernazza, D., and Nielsen, E. F. (2015). The Damaging Bias of Sovereign Ratings. Economic Notes, 44(2), 361-407.

question whether Italy would ever grow again and the negative spiral – the true doom-loop – began (only to be broken when Mario Draghi promised to do whatever it takes, implemented as the OMT). This is particularly true in a monetary union where the FX cannot do the adjustment.

- You could impose politically-agreed sovereign-specific limits on banks' holdings, but it would be uncomfortably close to credit allocation by degree. Hardly a recipe for growth and healthy financial institutions.

Whichever way you do it, you'll get something pro-cyclical and ultimately dangerous. Imagine Europe being hit by another downturn (as happens every so often), and everyone, including Germany, sees their tax revenues drop and unemployment payments go up. Fiscal deficits rise, and rating agencies and markets get nervous, as they tend to do in these circumstances. As a result, in this new regime, banks will need to reduce their holdings of sovereign debt, including that of Germany, so the bund curve (and other sovereign curves) move higher, which means that financial conditions tighten. Is that really the policy response to a slowdown you want to build in?

5. Alternative ways of limiting the sovereign-bank nexus

In the long term, the key will be to lower the share of banks in credit intermediation. As is well-known, the vast bulk of lending in the eurozone is done by banks, far higher than in the US. Here the Capital Markets Union, which is complementary to banking union and already in train, is the right approach. Taxation could also be changed to encourage equity financing over debt financing. Importantly, however, given the structure of European businesses, with the important part played by SMEs, these are steps that would need to be calibrated carefully before being introduced.

Meanwhile, the following three measures should be considered:

1. Encourage geographical diversification of banks' private-sector lending and other financial services.

First and most importantly, sovereign exposure cannot be equated with private sector exposure because of the interconnectivities between the sovereign

and the private sector. After all, to a very large extent, the sovereign is a mirror imagine of the domestic private sector. Therefore, the focus should be on banks' exposure to the home-country sovereign as a share of total GDP. This would reflect both the totality of government and the connectivity between the sovereign and the private sector that generates GDP. (On this more appropriate measure, European banks look quite alike: German banks hold 8.7% of GDP in claims on the German general government; French banks hold 8.2% of claims on the French government; Italian banks hold 11.5% and Dutch banks 10.6%. Spain is a bit of an outlier with 18.1%.)

To illustrate the interconnectivities, imagine an extreme scenario in which Italian banks no longer hold any claim on the Italian government, and imagine a restructuring of the Italian government's debt – of which more than 50% is held by Italian entities (and let's even assume that the part of this holding previously held by Italian banks is now distributed to creditors outside Italy). Now work through an Italian sovereign debt restructuring scenario and consider how Italian banks (with no direct exposure to the sovereign) would fare. How would Italian households – presently holding 8% of the debt – react economically (let alone politically)? And how would non-bank Italian institutions, holding 40-50% of the debt, react? How far would GDP drop?

And with the remaining 40-50% of the debt held by foreign financial institutions, almost certainly in countries whose business sectors are deeply integrated with Italy, the impact on the rest of Europe would be measurable as well, with a feedback loop back to Italian GDP. Now consider what would happen to all other assets on Italian banks' balance sheets in this scenario. The point is that you may be able to take the home-country sovereign debt out of the banks, but you cannot eliminate the risk to banks of a domestic sovereign default.

The solution is to encourage, via regulation, and maybe even taxation, a greater degree of geographical diversification in banks' core business of servicing the non-bank private sector.

2. Consider incentives for banks to change their registration to national legislation to a European one.

To supplement the point above, Europe could consider the establishment of a framework for an "elite" group of banks e.g. by offering an advantageous

European license to banks that fulfil a certain number of criteria with respect to geographical distribution of their business and particularly solid capital ratios.

3. Cap sovereign exposure as a share of equity and/or GDP.

A straightforward way to reduce the link between the home-country government and banks is a simple cap on the sovereign bond holdings of banks as a share of capital, e.g. at 100%, and/or of GDP, e.g. at 15%. Crucially, the cap would be the same for all banks, irrespective of where they are registered. This could come with a bonus for diversification (assuming you properly account for the covariance of the sovereign bond yields). Such an approach would circumvent many of the problems I discussed above, but not all, as many banks will still be highly dependent on the economy of their home country.

The Sovereign-Bank Nexus and the Case for European Safe Bonds[76]

by Marco Pagano[77]

Abstract

During the euro debt crisis, banks' holdings of domestic sovereign debt amplified the transmission of sovereign stress to bank lending and solvency risk in stressed countries. Yet, current proposals to reform European banking regulation of bank sovereign exposures meet with obstacles, some structural-namely, the scarcity and asymmetric provision of safe assets-and others transitional-chiefly the danger that regulatory change may trigger instability in the sovereign debt market. But both types of obstacles can be overcome by introducing a synthetic security resulting from the securitization of euro-area sovereign debt – European Safe Bonds, or ESBies – and by providing regulatory incentives for banks to replace domestic debt holdings with this security.

1. Introduction

The nexus between governments and banks has been the hallmark of the euro-area sovereign debt crisis: in Greece, Ireland, Italy, Portugal and Spain,

76. JEL classification: E44, F3, G01, G21, H63. Keywords: sovereign exposures, sovereign risk, credit risk, diabolic loop, lending, euro debt crisis. Acknowledgments: Prepared for publication on *European Economy: Banks, Regulation, and the Real Sector*. I am grateful to Sam Langfield for providing very helpful comments and suggestions. This paper draws extensively on joint research with Carlo Altavilla, Markus Brunnermeier, Sam Langfield, Ricardo Reis, Stijn Van Niewerburgh, Saverio Simonelli and Dimitri Vayanos.

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indicators of sovereign and bank credit risk, such as CDS premia and bond yields, spiked together after the Greek bailout in 2010 and then subsided together in 2012 as the ECB committed to buy distressed sovereign debt. A growing amount of evidence shows that banks' holdings of domestic sovereign debt played a key role in exacerbating this nexus in stressed countries both during and after the crisis (Section 1). This begs the question of why European banking regulation is not reformed so as to encourage banks to reduce the strong home bias of their sovereign debt portfolio, by diversifying their sovereign holdings (Section 2). Currently, such reform proposals meet with obstacles, some of which are structural-namely, the scarcity of safe assets and their asymmetric provision in the euro area-and others transitional-chiefly the danger that regulatory change may trigger instability in the sovereign debt market. However, both types of obstacles can be overcome by introducing a synthetic security resulting from the securitization of euro-area sovereign debt – European Safe Bonds, or ESBies – and by providing regulatory incentives to banks to replace their domestic debt holdings with such as a security (Section 3).

2. Role of banks' sovereign holdings in the crisis

Banks' exposures to domestic sovereign risk via government bond holdings amplified the transmission of stress to the banking system: when the market value of sovereign bonds dropped due to heightened sovereign risk, banks that held these bonds suffered equity losses, which increased their default risk and hence their funding costs, forcing the most highly exposed ones to deleverage. This mechanism operated in reverse once the prices of stressed countries' debt recovered, after the famous "whatever it takes" speech by Draghi in July 2012: in this case, the banks that were most exposed to risky sovereigns experienced the largest capital gains, and this tacit recapitalization allowed them to expand lending more than other banks.

This account of the role of banks' sovereign holdings in the crisis is supported by an impressive amount of evidence. De Marco (2014) and Popov and van Horen (2014) show that the euro-area banks that turned out to have larger sovereign exposures in the European Banking Authority (EBA) stress tests participated less than less exposed banks in the syndicated loan market, and raised their

lending rates more sharply.[78] Acharya, Eisert, Eufinger and Hirsch (2015) combine syndicated loan data with company data, to investigate the real effects of the loan contraction triggered by the sovereign crisis. Altavilla, Pagano and Simonelli (2016) explore the role of sovereign exposures in the transmission of sovereign stress to euro-area banks by using novel monthly data on sovereign exposures, loans and lending rates for 226 euro-area banks from 2007 to 2015, which provide richer cross-sectional and temporal variation in bank sovereign exposures than the EBA stress test data used in earlier studies. They document that in stressed euro-area countries, the banks more exposed to the sovereign featured larger increases in solvency risk, sharper reductions in loans and more pronounced rises in lending rates than the less exposed banks. According to their estimates, this amplification effect is sizeable: in the vulnerable countries, a 100-basis-point increase in the domestic sovereign CDS premium translates into a rise of 31.5 basis points in the CDS premium of the bank with median exposure, while a 1-standard-deviation drop in the price of government bonds reduces the loan growth of the median domestic head bank by 1.4 percentage points, which is 20% of the standard deviation of loan growth.

Altavilla, Pagano and Simonelli (2016) also establish that sovereign exposures have a causal role in this amplification mechanism. This is important, as banks choose both loans and sovereign debt holdings. Hence, in principle causality could run from banks' loans to their sovereign holdings rather than the other way: sovereign distress may reduce loan demand by sapping entrepreneurial confidence, and may impair corporate creditworthiness, for instance for firms catering to the public sector. These drops in the amount or quality of loan demand may hit some banks more severely than others, and the worst-affected banks may end up substituting sovereign debt for corporate loans on the asset side. However, it turns out that the foreign subsidiaries of stressed-country banks cut back on lending in non-stressed countries in response to losses on their head banks' domestic sovereign portfolios, and these cuts were as large as those made by their head banks in lending at home, despite the resilience of loan demand in the more stable countries. Hence, reverse causality from changes in loan demand to sovereign exposures cannot be the whole story.

78. De Marco (2014) documents this finding also using yearly balance-sheet data on bank loans, besides syndicated loan data.

According to these studies, therefore, the domestic sovereign exposures of banks in fiscally vulnerable countries accentuated both the impact of sovereign stress until mid-2012 and that of its subsequent abatement, and thereby exacerbated the volatility of bank risk and lending in the euro-area periphery from 2008 to 2015. This evidence accords with the sovereign-debt feedback loop models of Acharya et al. (2014), Brunnermeier et al. (2016a), Cooper and Nikolov (2013), Farhi and Tirole (2014) and Leonello (2014), which show that sovereign exposures create the potential for inefficient equilibria, which have come to be known as "diabolic loops" or "doom loops": if banks are highly exposed to the domestic sovereign, pessimistic beliefs about government solvency that lead to sovereign debt repricing will inflict large losses on banks and trigger bailouts; these in turn increase the likelihood of government default, validating the initial pessimism. In these models, the larger the banks' sovereign exposures, the more extensive the region where these inefficient equilibria can arise.

In the euro-area context, the diabolic loop just described is aggravated by the highly asymmetric provision of safe sovereign bonds, owing to the strong differences in fiscal solvency of the national sovereigns. Germany supplies 83% of triple-A rated euro-denominated sovereign debt. This asymmetric provision of safe assets by one nation implies that when the diabolic loop is triggered within a country of the euro area, this triggers strong cross-border capital flows as investors seek safer sovereign bonds in which to invest, and correspondingly large spikes in sovereign yield differentials. While in the 2003-07 boom capital had flowed from non-vulnerable to vulnerable countries, since 2009 investors began to question the solvency of some euro area sovereigns, and short-term capital flows switched sign as investors sought safety above all else. This sudden reversal was exacerbated by a perceived risk that euro-denominated securities in certain countries would be redenominated into a new currency at a devalued rate of exchange. Cross-border flight-to-safety compressed non-vulnerable nations' borrowing costs, allowing them to enjoy a "safety premium", while it raised vulnerable sovereigns' borrowing costs correspondingly, and thereby hurt even more their fiscal solvency. The absence of a union-wide, symmetrically provided safe asset therefore amplified the diabolic loop triggered by the change of investors' perception of sovereign solvency since 2010.

3. Prudential regulation of bank sovereign exposures

Insofar as it affects the incentives to invest in domestic sovereign debt, the prudential regulation of banks is of paramount importance in determining the contribution of sovereign exposures to the transmission of sovereign stress to banks' risk and lending decisions. Currently, euro-area prudential regulation gives preferential treatment to sovereign debt compared to loans to firms and households: unlike the latter, debt issued by euro-area sovereigns entails no capital charge (it is zero risk-weighted in measuring bank assets' risk) and is not subject to any portfolio concentration limit. The absence of any capital charge and of any limit to sovereign exposures induces banks to invest in risky sovereign debt rather than other assets of similar riskiness. The effects of this distortion are amplified during financial crises when banks' capital requirements bind-thereby strengthening banks' incentives to economize on capital by substituting into holdings of euro-area sovereign bonds (and out of other domestic investment). Furthermore, the zero risk weights on sovereign debt enables politicians to encourage local banks to buy sovereign bonds. In sum, the regulatory status quo gives banks a strong incentive to load up on sovereign risk in a socially inefficient way.

The evidence discussed in the previous section is consistent with the view that such a preferential regulatory treatment of banks' sovereign exposures is questionable, since these exposures amplified the transmission of sovereign stress to bank risk and lending in stressed euro-area countries. And this amplification effect may be even larger going forward, as in stressed countries banks expanded their holdings of risky public debt during the crisis and trimmed them back only slightly afterwards: in the first quarter of 2015, these banks' domestic sovereign exposures still stood at 7% of their assets, compared with 4% in 2010-11. Hence, should there be a resurgence of sovereign stress comparable to that experienced in 2010-11, the amplification effects on bank lending to be expected in stressed countries would be proportionately greater.

In principle, banks could be encouraged to reduce the extreme domestic bias of their sovereign portfolio by imposing either positive risk weights on sovereign debt in computing banks' capital or limits on banks' exposure towards each single sovereign issuer, thus requiring them to diversify their sovereign portfolios. Indeed, a key Euro-area policy maker such as Danièle

Nouy, Chair of the Supervisory Board of the Single Supervisory Mechanism, favors adopting both of these measures, as stated in a recent interview:[79]

> "We learnt from the crisis that there is no such thing as zero credit risk for assets – so we have to address this issue regarding sovereigns. We have to have capital requirements based on risk weights for sovereign exposures ... For me, it is not only an issue of capital requirements for the sovereigns ... It is also a matter of large exposure risk. So, large exposure limits should be applied."

So what is holding back regulatory reform in this area? There are two types of obstacles: first, transitional problems; second, resistance by the policy-makers of the countries that experienced stress during the crisis, who are afraid of adverse consequences for their governments and domestic banks.

Phasing in new regulation in this area would have to face undeniable challenges. On the one hand, the response of banks' portfolio choices to risk weights on sovereign exposures is unknown, and these weights may themselves behave procyclically in response to changes in sovereign ratings, triggering procyclical behavior in banks' exposures and balance sheets. On the other hand, setting limits to exposures to each single sovereign may require most euro-area banks to undertake very large portfolio adjustments. In both cases, regulatory changes may result in unpredictable shifts in banks' sovereign debt portfolios, and equally unpredictable gyrations in relative yields in the euro-area sovereign debt market. For instance, applying larger risk weights on the public debt of more vulnerable countries may induce euro-area banks to engage in a generalized sell-off of this debt and in massive purchases of debt issued by fiscally solid countries, hence leading to a new euro-area sovereign debt crisis.

However, the concerns of the policy-makers in Italy, Spain and Portugal go beyond these transitional problems: they fear that such a reform, by reducing the demand for public debt by local banks, will face their sovereigns with a permanently higher cost of debt service, and deprive them of the option to lean on domestic banks to buy public debt at times of crisis. Moreover, insofar as local banks will retain a home bias in their sovereign portfolios, they would face

79. Interview of Danièle Nouy with Nihon Keizai Shimbun, Nikkei, 8 October 2015.

greater capital charges, or else deleverage, thereby triggering a drop in bank loans-another unwelcome prospect for these countries' policy-makers. These concerns stem from a structural problem in the provision of safe assets in the euro area: safe sovereign debt is relatively scarce and asymmetrically provided, with Germany supplying 83% of triple-A rated euro-denominated sovereign debt. Therefore a regime that encourages the holdings of safer sovereign debt by banks is seen by these policy-makers as favoring Germany at the expenses of their countries.[80]

But none of these problems is unsolvable. Indeed, the introduction of European Safe Bonds (ESBies) proposed by Brunnermeier et al. (2011, 2016a, 2016b) would provide a way to address both transitional and structural problems, as explained in the next section.

4. The case for ESBies

The idea at the basis of ESBies is simple: to create a synthetic euro-wide safe asset by securitizing a GDP-weighted pool of euro-area government bonds. ESBies would be the senior tranche obtained from the securitization of this diversified sovereign bond portfolio. More specifically, the issuers of these bonds-either financial institutions or public institutions such as the European Investment Bank-would buy a GDP-weighted portfolio of bonds from euro-area sovereigns, and use them as collateral to issue two securities. The first security, namely ESBies, would be a senior claim on the payments from the sovereign bonds held in the portfolio. The second security, European Junior Bonds (EJBies), would be a junior claim on these payments-that is, it would be first in line to absorb losses arising from the pool of sovereign bonds that back these issues.

Owing to the double protection stemming from diversification of country-specific risk and from their seniority, ESBies would have virtually no exposure to sovereign risk, and therefore would be an ideal asset for euro-area banks to diversify their sovereign portfolios. The baseline simulations reported by Brunnermeier et al. (2016b) show that ESBies with a subordination level of

80. See the remarks by the Governor of the Bank of Italy in Visco (2016) for a clear and detailed presentation of these (and other) concerns about current proposals to reform the regulation of banks' sovereign exposures.

20% (or more) would have an expected loss rate lower than German sovereign bonds. Accordingly, they should receive a zero weight in the calculation of banks' regulatory capital, and not be subject to any large exposure limit. This would encourage euro-area banks to hold ESBies, rather than the riskier bonds issued by their respective sovereigns. Hence, banks could avoid the diabolic loop between their own solvency and that of their sovereign. The availability of such securities would also ensure that flight-to-safety capital flows occur across the two tranches produced by the securitization (i.e. from EJBies to ESBies) rather than across national boundaries, thereby avoiding fire sales of national sovereign bonds.

At least as importantly, the availability of ESBies would overcome the above-mentioned structural problems that currently prevent a meaningful reform of the regulation of banks' sovereign exposures: being backed by sovereign bonds issued by all euro-area governments, they would enable fiscally vulnerable countries to participate in the supply of the safe asset that banks are encouraged to hold. The availability of ESBies would also overcome the current scarcity of safe assets in the euro area: according to the baseline simulations in Brunnermeier et al. (2016b), if the bonds underlying ESBies amounted to 60% of euro-area GDP, ESBies would generate € 2.7tn of additional safe assets-more than doubling the supply of AAA-rated safe assets generated by euro-area sovereigns relative to the status quo.[81]

The availability of ESBies would also help to address the transitional obstacles to reforming the regulation of bank sovereign exposures: they could be used to "guide" banks' portfolio reallocation in the wake of such a reform. Specifically, to ease the transition, policy-makers and issuers of ESBies could offer to "swap" a portfolio of sovereign bonds for ESBies and EJBies at pre-set prices. These prices should be set in accordance with the equilibrium market value of sovereign bonds. To avoid market manipulation, they could be set with reference to historical market values, for example over a specific time interval. To induce banks to participate in the swap and to avoid sudden

81. More specifically, consider that currently the amount of AAA-rated sovereign debt is € 2.6tn in the euro area. By securitizing a sovereign bond pool amounting to 60% of euro-area GDP, the issuers of ESBies would absorb € 2.1tn of this safe debt, thus leaving € 0.6tn safe debt directly from national sovereigns. Choosing a 20% subordination level, the securitization would produce ESBies with a face value of € 4.8tn, according to Brunnermeier et al. (2016b). Therefore, the issuance of ESBies would increase the supply of safe assets from € 2.1tn to € 4.8tn.

increases in capital requirements, regulators could apply a zero risk-weight to EJBies received from the swap, but this risk-weight exemption would be a transitional arrangement to be applied to EJBies received from the swap. On any additional amounts of EJBies bought after the initial swap, banks would be subject to positive risk weights-indeed, such risk weights would have to be set at a sufficiently high level to prevent any regulatory arbitrage by banks, as explained by Brunnermeier et al. (2016b).

Last but not least, ESBies could be introduced without any change in EU legislation, and do not imply any joint liability by euro-area member states. In this sense, they are very different from all proposed types of Eurobonds or Eurobills, which do imply such joint liability. Hence, there is no substantial political or legal obstacle to their creation. Their successful issuance requires however euro-area governments to set common standards for ESBies and encourage their issuance. A key incentive to their issuance would be to reform the treatment of sovereign exposures in banking regulation, which currently is not sensitive to risk, and recognize their status of "safe asset" in the context of such a reform. Hence, the introduction of ESBies and the reform of the treatment of bank sovereign exposures are complementary policies: on one hand, the availability of ESBies will allow a smoother diversification of banks' sovereign bond holdings, easing the transition to the new prudential regime; on the other hand, the new regime will raise banks' demand for safe sovereign debt securities, thus boosting the demand for ESBies.

References

Acharya, V., Drechsler, I., and Schnabl, P. (2014). A Pyrrhic victory? Bank Bailouts and Sovereign Credit Risk. Journal of Finance, 69, 2689-2739.

Acharya, V., Eisert, T., Eufinger, C., and Hirsch, C. (2015). Real Effects of the Sovereign Debt Crises in Europe: Evidence from Syndicated Loans, unpublished.

Altavilla, C., Pagano, M., and Simonelli, S. (2016). Bank Exposures and Sovereign Stress Transmission. Working Paper 11, European Systemic Risk Board.

Brunnermeier, M. K., Garicano, L., Lane, P., Pagano, M., Reis, R., Santos, T., Thesmar, D., Van Nieuwerburgh, S., and Vayanos, D. (2011). European Safe Bonds (ESBies). The Euronomics Group.

Brunnermeier, M. K., Garicano, L., Lane, P., Pagano, M., Reis, R., Santos, T., Thesmar, D., Van

Nieuwerburgh, S., and Vayanos, D. (2016a). The Sovereign-Bank Diabolic Loop and ESBies. American Economic Review Papers and Proceedings, 106, May 2016.

Brunnermeier, M. K., Langfield, S., Pagano, M., Reis, R., Van Nieuwerburgh, S., and Vayanos, D. (2016b). ESBies: Safety in the Tranches, unpublished.

Cooper, R., and Nikolov, K. (2013). Government Debt and Banking Fragility: The Spreading of Strategic Uncertainty. NBER Working Papers 19278.

De Marco, F. (2014). Bank Lending and the Sovereign Debt Crisis. Boston College working paper.

Fahri, E., and Tirole, J. (2014). Deadly Embrace: Sovereign and Financial Balance Sheets Doom Loops. Harvard University, unpublished.

Leonello, A. (2014). Government Guarantees and the Two-Way Feedback between Banking and Sovereign Debt Crises, unpublished.

Popov, A., and Van Horen, N. (2013). The Impact of Sovereign Debt Exposure on Bank Lending: Evidence from the European Debt Crisis. DNB Working Paper No. 382.

Visco, I. (2016). Banks' Sovereign Exposures and the Feedback Loop Between Banks and Their Sovereigns. Concluding Remarks presented at the Euro50 Group Conference on The Future of European Government Bonds Markets, 2 May.

Removing Privileges for Banks' Sovereign Exposures – A Proposal

By Jochen Andritzky, Niklas Gadatsch, Tobias Körner, Alexander Schäfer, and Isabel Schnabel[82]

Abstract

The sovereign-bank nexus continues to endanger the stability of the euro area. We present a proposal how to mitigate spillovers of risks from sovereigns to banks. It encompasses risk-based large exposure limits and risk-adequate capital requirements, with the large exposure limits being most important – both conceptually and empirically. Based on a recent snapshot of banks' sovereign exposures, our analysis shows that the introduction of large exposure limits would necessitate substantial portfolio shifts. In contrast, additional capital requirements would imply rather small additional capital buffers. Our proposal also suggests how to mitigate procyclicality, inherent to large exposure limits.

1. Motivation

The close interconnection between sovereigns and banks is said to be one of the main reasons for the severity of the euro area crisis. In the global financial crisis, large-scale bail-out packages for banks raised many

82. Schnabel is a member of the German Council of Economic Experts, Andritzky is its Secretary General, and Gadatsch, Körner, and Schäfer are staff members. The Council is politically independent and stipulated by law to support all decision-makers in the economic and political sphere as well as the general public in Germany in forming their views about economic policy and its potential risks. This article is based on a proposal made in the Annual Report of 2015/16 (GCEE, 2015, Chapters 1 and 5) and on Andritzky et al. (2016c).

countries' debt levels substantially, bringing even countries like Ireland that had followed sound fiscal policies before the crisis to the brink of sovereign default (Acharya et al., 2014). Reversely, sovereign risk spilled over to banks holding high levels of sovereign debt, endangering these banks' solvency. Such risks became particularly apparent in Greece, where the haircut on sovereign bonds induced large losses at domestic banks.[83]

Breaking the sovereign-bank nexus has been one of the central aims of the European Banking Union (European Council, 2012). In particular, the Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM) can mitigate the effects of banking crises on home countries. However, these reforms cannot break the reverse channel running from sovereigns to banks. In fact, this channel has been reinforced in the years after the global financial crisis because the home bias in banks' bond portfolios has soared in many European countries (Acharya and Steffen, 2015; ESRB, 2015). It has been argued that banks in countries like Italy or Spain were using cheap liquidity from the European Central Bank in order to invest it in their home countries' sovereign debt (Acharya and Steffen, 2015). This served both the states and the banks: It stabilized sovereign bond markets and allowed banks to earn a margin without even having to take account of underlying risks due to the privileged treatment of sovereign exposures in banking regulation. However, this came at the cost of strengthening the link between banks and sovereigns, thereby countervailing the intention of the Banking Union.

In addition to mitigating the sovereign-bank nexus, a removal of regulatory privileges is a prerequisite for other reforms of the euro area architecture envisaged to make the currency union more stable. One is the introduction of a mechanism to facilitate the restructuring of sovereign debt, which is necessary in order to render the no bail-out clause enshrined in the European Treaties credible (see Andritzky et al., 2016a; Andritzky et al. 2016b; Feld et al., 2016). Given the high levels of domestic sovereign debt in banks' balance sheets, a restructuring of sovereign debt is hardly possible at the moment as it would jeopardize the stability of the banking sector. Another open issue is the hotly debated introduction of a European Deposit Insurance Scheme

83. There is another channel through which sovereign risk can spill over to banks: Doubts about public debt sustainability may lower expectations about a country's ability to bail out its banks (Barth and Schnabel, 2013; Schäfer et al., 2016).

(EDIS). A change in the regulatory treatment of banks' sovereign exposures is a prerequisite for common deposit insurance. If the regulatory treatment of sovereign exposures remains unchanged, an agreement on EDIS is very unlikely.

2. Status Quo

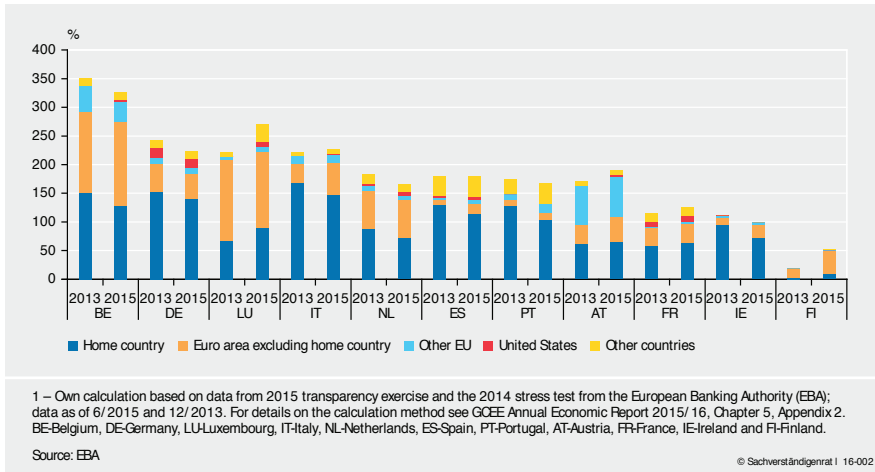
Under current banking regulation in Europe, exposures of banks to European sovereigns are privileged in several ways. Whereas exposures to private debtors must not exceed 25 % of a bank´s eligible capital, such a limit does not apply to sovereign borrowers. In addition, there are no capital requirements for sovereign exposures in domestic currency. Finally, sovereign exposures are considered safe and liquid (level 1 assets) under the new liquidity regulation, while non-sovereign, non-high-quality exposures are subject to haircuts and caps under the liquidity coverage ratio.

In order to assess the impact of a policy reform, calculations are made based on individual bank data provided by the European Banking Authority (EBA). We rely on data from the stress test conducted in 2014 (referring to the end of December 2013) and from the transparency exercise in 2015 (referring to the end of June 2015). A total of 123 banks participated in the 2014 stress test, and 105 in the 2015 transparency exercise. The calculations focus on countries from the euro-12 Group except for Greece, since Greek banks were not included in the 2015 transparency exercise. The sample comprises 95 banks in 2014 and 2015. As of 2013, the aggregated assets of these banks comprised 77.3 % of total euro-12 bank assets (on the basis of the ECB's consolidated banking statistics in 2013). For Germany, France, Italy and Spain, the ratios were 67.4 %, 99.1 %, 86.6 % and 89.3 %, respectively. Further details on the calculation method can be found in the Appendix to Chapter 5 of the Annual Report of 2015/16 by the German Council of Economic Experts (GCEE, 2015, item 473 et seq.).

Figure 1 depicts banks' sovereign exposures for 2013 and 2015. The overall picture varies greatly from country to country. The largest share of sovereign exposures (in percent of own funds) is found in Belgium where banks' sovereign exposures amount to more than 300 percent of own funds,

followed by Germany, Luxembourg, and Italy where sovereign exposures are still above 200 percent. Banks in France, Ireland, and Finland have relatively small exposures towards sovereigns. The dark blue parts of the bars show the exposures towards domestic sovereigns. In some countries these exposures are substantial, being above 100 percent of own funds (Belgium, Germany, Italy, Portugal and Spain) or represent more than 60 percent of the overall exposure towards sovereigns (Germany, Ireland, Italy, Portugal and Spain). Hence, there is a significant home bias, particularly in the southern European countries, Ireland and Germany. Moreover, the exposure to other euro area countries is also substantial, whereas the exposure to other EU countries or non-EU countries is rather small (an exception is Austria). Whereas sovereign exposures had changed rapidly in the years after the euro area crisis, changes between end-2013 and mid-2015 are relatively small in most countries. The evolution is not homogenous: Some countries reduced their exposures (e. g., Belgium, Germany, and the Netherlands), whereas other increased them (such as Austria and Luxembourg). In most countries the share of domestic exposures in total sovereign exposures declined mildly, with stronger declines experienced in Ireland, Italy, Portugal and Spain (around 10 percentage points).

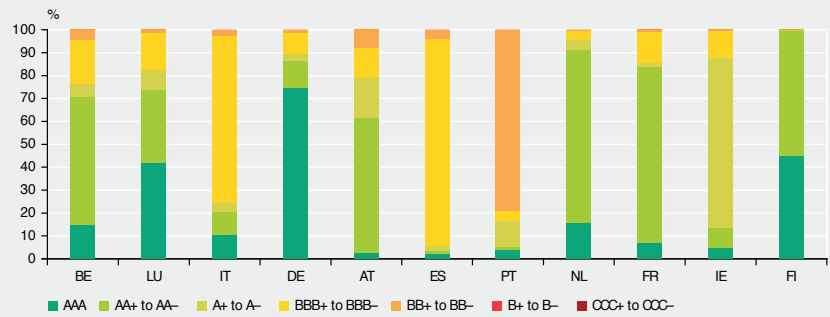
Figure 1:
Sovereign exposures of banks in selected euro area member states[1]
relative to own funds



1 – Own calculation based on data from 2015 transparency exercise and the 2014 stress test from the European Banking Authority (EBA); data as of 6/2015 and 12/2013. For details on the calculation method see GCEE Annual Economic Report 2015/16, Chapter 5, Appendix 2. BE-Belgium, DE-Germany, LU-Luxembourg, IT-Italy, NL-Netherlands, ES-Spain, PT-Portugal, AT-Austria, FR-France, IE-Ireland and FI-Finland.

Source: EBA

Figure 2:
Sovereign exposures of euro area banks to EU member states by credit rating[1]



1 – Own calculation based on data from the 2015 transparency exercise from the European Banking Authority (EBA); data as of 30 June 2015. For details on the calculation method see GCEE Annual Economic Report 2015/16, Chapter 5, Appendix 2. BE-Belgium, LU-Luxembourg, IT-Italy, DE-Germany, AT-Austria, ES-Spain, PT-Portugal, NL-Netherlands, FR-France, IE-Ireland and FI-Finland. 2 – Credit ratings of Standard & Poor's as of 30 June 2015.

Sources: EBA, Standard & Poor's

The risks associated with sovereign exposures vary across countries because sovereign ratings differ sharply. Figure 2 depicts the shares of different rating classes for different countries. The overall riskiness of banks' sovereign exposures depends greatly on the rating of the home country. This explains why the overall risk from German banks' sovereign exposures are relatively small, with around 90 percent being rated between AAA and A- according to Standard & Poor's, whereas for Italian banks the same ratio is only around 25 percent. Even smaller numbers are found for banks from Spain and Portugal. Hence, a home bias in sovereign exposures has very different implications for bank risk, depending on where the bank is located. Nevertheless, current banking regulation treats all these assets as free of risk.

3. The Proposal: Risk-adjusted large exposure limits and risk-adequate capital requirements

A reform of the regulatory treatment of sovereign exposures should serve three objectives: It should

- *reduce concentration risks* on bank balance sheets in order to prevent the insolvency of a member state from bringing about the insolvency of a bank;

- *increase banks' loss absorption capacity* in order to be able to better cope with a sovereign default;
- *reduce price distortions* in order to mitigate incentives for sovereigns to borrow excessively and for banks to lend preferentially to governments.

The German Council of Economic Experts (GCEE) has developed a proposal for removing privileges for sovereign exposures that rests on two key elements (GCEE, 2015): risk-adjusted large exposure limits and risk-adequate regulatory capital requirements. Large exposure limits are crucial to reduce the sovereign-bank nexus by limiting concentration risks directly and enforcing diversification. In addition, regulatory capital requirements increase banks' loss absorption capacity and reduce price distortions. Capital requirements are to be based on the Basel sovereign risk weights. These are lower than the risk weights for corporate borrowers (see Table 1). Hence, sovereign exposures are still privileged relative to private ones. It should be noted that the Basel III leverage ratio, expected in 2019, already implies a regulatory capital requirement for sovereign exposures. For example, given a risk-weighted capital requirement of 8 %, a leverage ratio of 3 % would imply a fixed risk weight of 37.5 %.

Large exposure limits are to vary with the sovereign's default risk because concentration risks in bank balance sheets primarily endanger financial stability in the event of a significant threat to a sovereign's solvency. All sovereign exposures, even the safest ones, should be subject to a large exposure limit. For relatively safe sovereigns, the probability of default is very small but the impact of default for systemic stability would be huge. Moreover, given banks' needs for holding a sufficient amount of liquid assets, risk-adjusted large exposure limits help to avoid that banks from countries with high credit ratings have to shift too strongly into riskier assets. The default risk could be determined by country ratings or alternative indicators that are less prone to subjectivity or manipulation, such as debt-to-GDP ratios. Different levels of government (i. e., state, federal, and municipal) should be viewed as a single unit if default risks are strongly correlated or a separate treatment would enable regulatory arbitrage.

For the countries with the lowest credit standing, the GCEE proposes the same large exposure limit as that for corporate exposures (25 % of eligible capital). The limit gradually increases to up to 100 % of eligible capital for countries with the

best credit standing, using relative distances between risk categories as in the Basel sovereign exposure risk weights (Table 1).

Table 1:
Proposed large exposure limits and risk weights for sovereign exposures

Standard & Poor's credit ratings[1]	Member states[2]	Basel risk weight for sovereigns	Large exposure limit[3]	Basel risk weight for corporations
		%		
AAA	DE, LU	0	100	20
AA+/ AA/ AA–	AT, FI, NL/ BE, FR/ EE			
A+/ A/ A–	IE/ SK/ LT, LV, SI	20	90	50
BBB+/ BBB/ BBB–	MT/ ES/ IT	50	75	100
BB+/ BB/ BB–	–/ PT/ –	100	50	
B+/ B/ B–	CY/ –/ –			150
CCC+/ CCC/ CCC–	–/ –/ GR	150	25	

1 – As of 1 July 2015. 2 – DE-Germany, LU-Luxembourg, AT-Austria, FI-Finland, NL-Netherlands, BE-Belgium, FR-France, EE-Estonia, IE-Ireland, SK-Slovakia, LT-Lithuania, LV-Latvia, SI-Slovenia, MT-Malta, ES-Spain, IT-Italy, PT-Portugal, CY-Cyprus and GR-Greece. 3 – Own calculation.

Sources: Basel Committee on Banking Supervision, Standard & Poor's

4. Mitigating procyclicality

An important lesson from the recent crisis is that regulatory measures should not induce adjustment reactions that deepen a crisis. For instance, in the presence of large exposure limits, banks could be forced to divest sovereign exposures if their capital base contracts in a crisis. This procyclical effect could in turn increase governments' financing cost and inhibit countercyclical fiscal policy. In addition, there could be abrupt credit rating adjustments in a crisis triggering sales of sovereign exposures to comply with exposure limits.

To dampen this effect large exposure limits should be based on long-term averages of sovereign ratings (or alternative measures, such as debt-to-GDP ratios) and of own funds, which would smooth any portfolio adjustments required under the regulation.

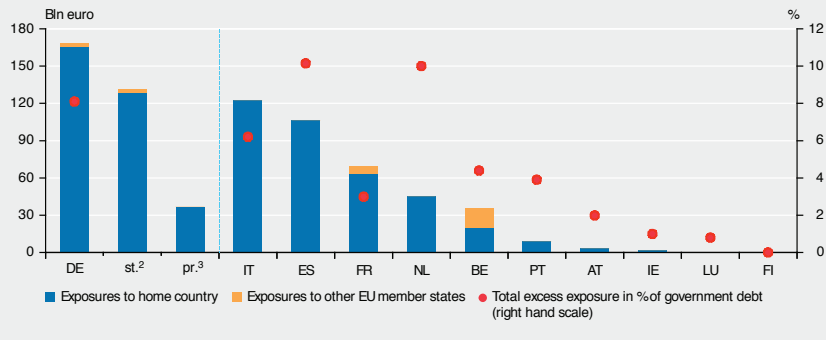
Risk-weighted capital requirements have, conceptually, the same procyclical effect for sovereign exposures as they have for private ones. This problem should therefore be solved within the existing macroprudential toolkit, i. e., via time-varying buffers.

5. Quantitative impact of the reform

To gauge the quantitative impact of the proposed reform, we are using banks' balance sheet data from the EBA transparency exercise (see Figures 3 and 4). The current snapshot of euro-12 banks' sovereign exposures suggests that the risk-adjusted large exposure limit as proposed by the GCEE is exceeded by about €562 billion of sovereign debt. Hence, substantial portfolio shifts would be needed to satisfy large exposure limits immediately. Excess exposures are distributed very unevenly across countries. In absolute terms, Germany, Italy and Spain are most affected. Interestingly, German excess exposures are driven mostly by publicly owned banks, whose excess exposures are substantial (in fact, larger than Italy's total excess exposures). In relative terms (relative to total outstanding government debt), Spain, the Netherlands, and Germany are most affected, with maximum excess exposures being around 10 % of the respective country's outstanding sovereign debt (see the red dots in Figure 3).

The effect of additional capital requirements is less dramatic. Given mid-2015 exposures, additional capital requirements for euro-12 banks in the EBA sample would amount to €33.6 billion, which corresponds to about 2.6 % of total own funds. This volume seems manageable compared to previous capital build-

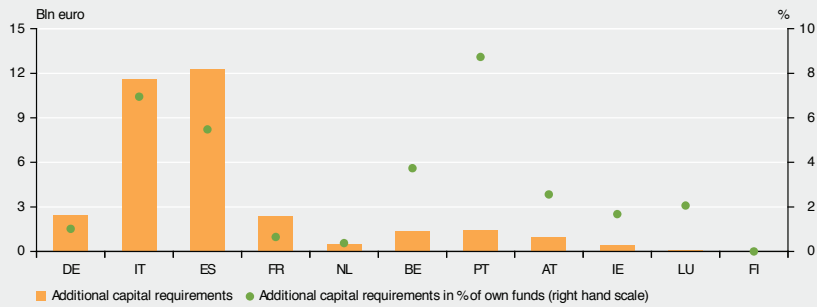
Figure 3:
Sovereign exposures of banks exceeding risk-adjusted large exposure limits[1]



1 – Own calculation based on data from the 2015 transparency exercise from the European Banking Authority (EBA); data as of 30 June 2015. For details on the calculation method see GCEE Annual Economic Report 2015/16, Chapter 5, Appendix 2. DE-Germany, IT-Italy, ES-Spain, FR-France, NL-Netherlands, BE-Belgium, PT-Portugal, AT-Austria, IE-Ireland, LU-Luxembourg, FI-Finland. 2 – State-owned banks. 3 – Private banks.

Sources: EBA, Eurostat, Standard & Poor's

Figure 4:
Additional capital requirements of banks due to risk weighting[1]



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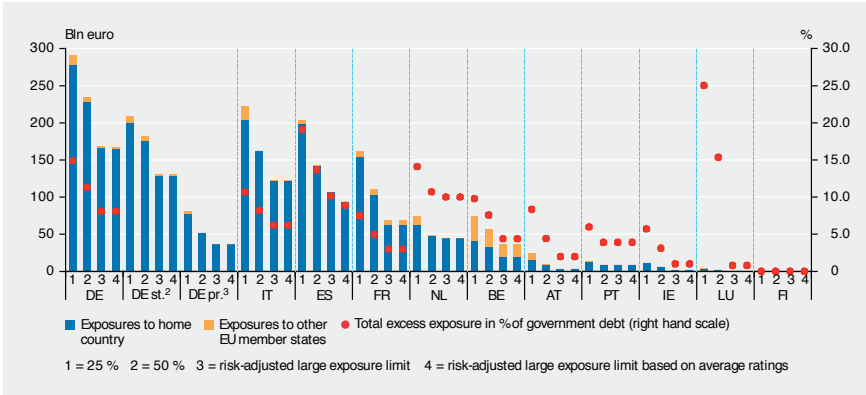
Sources: EBA, Standard & Poor's

ups, such as in the run-up to the Comprehensive Assessment, which amounted to around €50 billion of common equity tier 1 (ECB, 2014). The largest capital needs are identified for Spain and Italy, amounting to around €12 billion each, which corresponds to 5.5 % and 7 % of own funds, respectively. In relative terms, Portugal is also affected rather strongly, amounting to 8.7 % of own funds. But overall the additional capital buffers are small implying that only a small additional loss absorption capacity would be generated. In the event of a sovereign debt crisis, such buffers would be no more than a drop in the ocean. This reinforces the point that exposure limits, rather than capital requirements alone, are key to severing the sovereign-bank nexus.

6. Comparison to fixed large exposure limits

In order to assess the effects of our proposal compared to alternative models, we reran our calculations using four different specifications of large exposure rules (see Figure 5 for a summary of results). The first assumes a 25 % limit, as that for private exposures. The second prescribes a 50 % maximum exposure. The third model is our baseline. The fourth model is our baseline but additionally accounts for procyclicality by using average ratings over 5 years.

Figure 5:
Sovereign exposures exceeding large exposure limits[1]



1 – Own calculation based on data from the 2015 transparency exercise from the European Banking Authority (EBA); data as of 30 June 2015. For details on the calculation method see GCEE Annual Economic Report 2015/16, Chapter 5, Appendix 2. DE-Germany, IT-Italy, ES-Spain, FR-France, NL-Netherlands, BE-Belgium, AT-Austria, PT-Portugal, IE-Ireland, LU-Luxembourg, FI-Finland. 2 – State-owned banks. 3 – Private banks.

Sources: EBA, Eurostat, Standard & Poor's

Figure 5 shows that our proposal leads to much milder exposure limits than the other models. Under a 25 % fixed large exposure limit, excess exposures would amount to €928 billion at euro-12 banks, which corresponds to up to 25 % of total government debt. Hence, our proposed model requires only roughly one half of portfolio shifts compared to a 25 % limit. A difference between models 3 and 4 arises only if sovereign credit ratings have changed within the considered time period. This is the case, for example, for Spain, which exhibits slightly smaller excess exposures under model 4 due to a rating downgrade in recent years.

7. Transition to the new regime

A change in the regulatory treatment of sovereign exposures requires a long transition phase. If the new rules were to be phased in over, say, ten years, it is likely that banks could achieve compliance by allowing their exposures to mature rather than disposing them actively. This would mitigate potential market disturbances. Regarding large exposure rules, an adjustment path could be specified for the phase-in period, starting, for example, from three times the final limits, which are then gradually reduced. Capital requirements could be

introduced with a grandfathering clause so that only new exposures would be subject to the requirements. Then no deleveraging would be needed when the new rules are introduced. The cut-off date would have to be in the immediate past in order to avoid an incentive to stockpile still privileged sovereign exposures. With these provisions for the transition, it is also unlikely that the market would require banks to fulfill the additional requirements immediately.

In case of a fast implementation of the reforms, one could take advantage of the effects of quantitative easing (QE) on government bond yields. If QE were still in place, price effects for sovereign debt would be muted, which would facilitate the implementation of the reform. In the long run, however, prices will have to reflect different regulatory treatment.

8. Possible objections and alternative models

Our analysis shows that the reduction of concentration risk through large exposure limits is much more important than the introduction of capital requirements. Therefore, proposals relying on capital requirements alone should be discarded. Some opponents of large exposure limits have argued that their introduction would destabilize sovereign debt markets because banks can no longer play a stabilizing role in a crisis (Lanotte et al., 2016). While it may be true that banks have stabilized sovereign debt markets in some countries, it is doubtful that the benefit of such actions overcompensates the costs – namely the strengthening of the sovereign-bank nexus.

A more sophisticated version of capital requirements are soft large exposure limits to avoid cliff effects. For example, capital requirements could be zero below the given limit. If the limit is crossed, however, there would be increasing capital charges. The judgment of such proposals hinges crucially on their exact calibration. Our proposal with fixed exposure limits can be seen as the limit case of soft exposure limits with prohibitively high capital requirements once the limits are crossed. In their pure form, such soft exposure limits are likely to suffer from procyclicality: If bank capital falls, for example in a recession, the ratio of sovereign bonds over own funds would rise, implying higher capital requirements if the limit is crossed. This in turn would force the bank to deleverage.

Another issue is the question whether the regulation of sovereign exposures has to be dealt with at EU or even global level. While a more comprehensive approach would be clearly desirable, the situation in the euro area justifies a distinct approach. The major difference between euro area countries and Sweden or the US is that the former do not have the option of monetizing sovereign debt through their national printing press. Therefore, the euro area countries should not wait for a global agreement, which may never come about. An approach only in the euro area may seem as a disadvantage for euro area banks. However, the resulting stabilization of the euro area should overcompensate the costs of tighter regulation.

Our proposal is in principle compatible with proposals regarding the introduction of safe assets at the euro area level, the most important being the proposal of European Safe Bonds (ESBies) by Brunnermeier et al. (2011) and specified further by Brunnermeier et al. (2016) (see also Corsetti et al., 2015, 2016). These proposals attempt to create a safe European asset by bundling and tranching euro area sovereign bonds. In order to incentivize banks to hold such bonds, they could receive preferential treatment with regard to capital requirements and large exposure rules. Therefore, such proposals require a proper regulation of sovereign debt exposures in the first instance.

9. Conclusion

A removal of regulatory privileges for sovereign exposures is crucial to mitigate the link from sovereigns to banks. It is also an important prerequisite for the introduction of a mechanism facilitating the restructuring of sovereign debt and of a European deposit insurance scheme, which otherwise would be politically unfeasible. Our proposal encompasses risk-based large exposure limits and risk-adequate capital requirements, with the large exposure limits being most important – both conceptually and empirically. Any proposal has to deal with the problem of procyclicality in order to avoid destabilizing effects in crises. Moreover, the design of the transition process is crucial.

At the moment there seems to be a tendency to wait for decisions being taken in Basel, which may never happen due to the strong opposition from countries like the US or the UK. Therefore, the euro area should act on its own. It will be

important to find political packages, including agreements on the regulation of sovereign exposures, common deposit insurance, sovereign debt restructuring, and the harmonization of insolvency law, that have sufficient benefits for all participating countries. Together these measures would have the potential to improve the stability of the euro area substantially. This gain should be priced in when weighing the pros and cons of such proposals.

References

Archarya, V., Drechsler, I., and Schnabl, P. (2014). A Pyrrhic Victory? Bank Bailouts and Sovereign Credit Risk. The Journal of Finance, 69 (6), 2689–2739.

Acharya, V., and Steffen, S. (2015). The "Greatest" Carry Trade Ever? Understanding Eurozone Bank Risks, Journal of Financial Economics, 115 (2), 215–236.

Andritzky, J., Christofzik, D., Feld, L. P., and Scheuering, U. (2016a). A Mechanism to Regulate Sovereign Debt Restructuring in the Euro Area, mimeo, German Council of Economic Experts, Wiesbaden.

Andritzky, J., Feld, L. P., Schmidt, C. M., Schnabel, I., and Wieland, V. (2016b). Creditor Participation Clauses: Making No Bail-Out Credible in the Euro Area, in: Filling the Gaps in Governance: The Case of Europe, edited by F. Allen, E. Carletti, J. Gray, and G. M. Gulati, European University Institute, Florence.

Andritzky, J., Gadatsch, N., Körner, T., Schäfer, A., and Schnabel, I. (2016c). A proposal for ending the privileges for sovereign exposures in banking regulation, VoxEU, 4 March 2016.

Barth, A., and Schnabel, I. (2013). Why banks are not too big to fail – Evidence from the CDS market. Economic Policy, 28(74), 335–369.

Brunnermeier, M.K., Garicano, L., Lane, P.R., Pagano, M., Reis, R., Santos, T., Thesmar, D., Van Nieuwerburgh, S., and Vayanos, D. (2011). European Safe Bonds (ESBies), Euro-nomics.com

Brunnermeier, M.K., Langfield, S., Pagano, M., Reis, R., Van Nieuwerburgh, S., and Vayanos, D. (2016). ESBies: Safety in the tranches. Economic Policy, forthcoming.

Corsetti, G., Feld, L. P., Lane, P. R., Reichlin, L., Rey, H., Vayanos, D., and Weder di Mauro, B. (2015). A New Start for the Eurozone: Dealing with Debt, Monitoring the Eurozone 1. London: CEPR.

Corsetti, G., Feld, L. P., Koijen, R. S. J., Reichlin, L., Reis, R., Rey, H., and Weder di Mauro, B. (2016). Reinforcing the Eurozone and Protecting an Open Society, Monitoring the Eurozone 2. London: CEPR.

ESRB (2015). ESRB report on the regulatory treatment of sovereign exposures, European Systemic Risk Board, Frankfurt /Main.

European Council (2012). Euro area summit statement, Brussels, 29 June 2012.

Feld, L. P., Schmidt, C. M., Schnabel, I., and Wieland, V. (2016). Maastricht 2.0: Safeguarding the future of the Eurozone, in Rebooting Europe - How to fix Europe's monetary union. VoxEu.org Book, edited by R. Baldwin and F. Giavazzi.

GCEE (2015). Focus on Future Viability, Annual Economic Report 2015/16, German Council of Economic Experts, Wiesbaden, Chapters 1 and 5.

Lanotte, M., Manzelli, G., Rinaldi, A., Taboga, M., and Tommasino, P. (2016). Easier said than done? Reforming the prudential treatment of banks' sovereign exposures. Questioni di Economia e Finanza, Banca d'Italia.

Schäfer, A., Schnabel, I., and Weder di Mauro, B. (2016). Bail-in Expectations for European Banks: Actions Speak Louder Than Words. CEPR Discussion Paper No. 11061, 2016.

ISSN 2421-6917

PUBLISHED BY
Europeye srl
via Gregorio VII 368 - 00165 Roma
t. 06 3700556 - www.europeye.com