Diabolic Loop or Incomplete Union? Sovereign and Banking Risk

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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]

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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.

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