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Sovereign risk in the euro zone and its treatment in banking regulation

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Summary

The crisis has brought with it a notable increase in public debt in the countries affected, especially intense in the peripheral countries of the euro zone. The Greek crisis has fuelled a debate on the treatment of debt holdings in banking regulation and its consideration as a risk-free asset. In this article we deal with the recent dynamics of public debt in Spain and its link with both the special configuration of the euro zone and the recent debate on the treatment of sovereign debt in prudential regulation. The main conclusion is that there are formulas that would allow incentives to diversify debt portfolios without negative effects on financial stability.

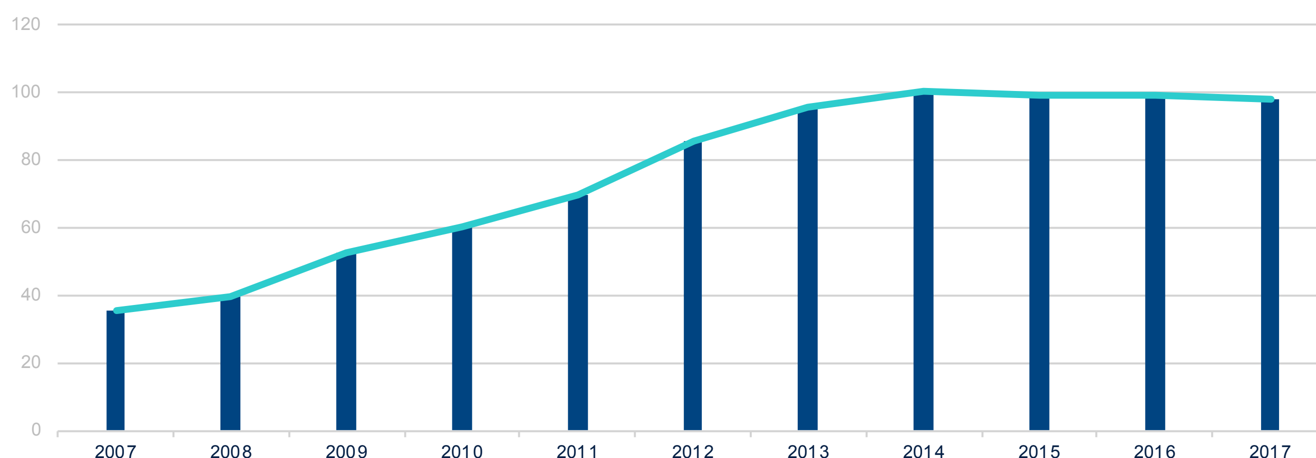
Key words: Financial crisis, sovereign risk, Eurozone

1. The recent dynamics of public debt in Spain

The dynamic of public debt has been one of the most discussed issues since the financial crisis began in 2007, and is still under discussion. At the time of the outbreak of the crisis, Spain was starting from a relatively favourable position, with public debt levels of 35% of GDP and a deficit of 3% in 2007, which comfortably complied with the European Union's stability and growth pact.

Since then, public debt has grown explosively. Between 2007 and 2013 the ratio of debt to GDP increased by more than 60 percentage points (pp), peaking in 2014 at 100.4% of GDP. Since then it has remained at levels close to 100% of GDP, well above the benchmark set by the European Union (60%), with the consequent risk of coming into the sights of the financial markets each time turbulence occurs in one of our neighbouring countries.

Figure 1 Evolution of public debt in Spain as a percentage of GDP between 2007 and 2017



Source: BBVA Research based on figures from datosmacro.com

Ratios of debt and public deficit to GDP are often used as indicators of debt sustainability. Although they are not the most suitable indicators for measuring the strength of a country's finances or sovereign risk, the transparency and simplicity of their calculation are such that they remain in favour as indicators of a jurisdiction's fiscal robustness and have an impact on such important parameters as the risk premium.

According to the classic debt sustainability equation, its rate of increase depends on the debt of the previous period (dt-1), the difference between the nominal interest rate and nominal GDP growth (i-g), the GDP growth rate (g) itself, the primary surplus (s) and a term that captures one-off adjustments in the debt stock, such as debt acquired as a result of banking crises (a).

$$\Delta d_t = \frac{i-g}{1+g}\, d_{t-1} - s_t + a_t$$

This analysis is often simplified by using a debt-to-GDP threshold as a sustainability indicator, although there is no specific value that can serve as an early warning. Reinhart and Rogoff (2010) conclude that 80% is a reasonable indicator (although this result has been subject to some controversy, as some errors have been detected in the

calculations on which it is based). In any case, it must be borne in mind that this threshold would be different for different economies, higher for developed economies and lower for emerging countries.

It is also necessary to bear in mind that there are certain factors that affect the levels of sustainability of public debt and that are not directly reflected in the aforementioned ratios. This is the case for contingent liabilities, such as those relating to pension obligations, which are not included in the total debt figure but significantly influence its sustainability, especially in the current context of an ageing population.

The financial crisis arrived in Spain a little later than in other countries, but it showed that the structural situation of the Spanish economy was not as good as it seemed, uncovering some latent structural imbalances. Over-exposure to the real estate sector had inflated tax revenues in the bubble years, leading to an upward adjustment in spending which later proved extremely difficult to correct, especially when the automatic stabilisers, which widen the deficit in the recessionary phase, started to operate. Sharp declines in consumption and activity weighed down revenues, while rising unemployment, problems in the banking sector and the actual interest on public debt (which increased because of the rise in the risk premium) increased expenditure. As a result, public debt increased by 14 pp in just two years (2008 and 2009).

In addition to the imbalances of the Spanish economy, there was the contagion of problems in other countries on the periphery, such as Greece, Portugal and Italy. The risk of the euro breaking up (the so-called redenomination risk) caused great volatility in the risk premiums of peripheral countries, especially in the period 2010-2012, as the Greek crisis worsened and the very survival of the euro was called into question. For the first time a European sovereign was unable to pay its debt issued in the common currency. The assumption of losses by the private sector (mainly banks) opened the door to debate on the extent to which public debt was actually a risk-free asset, and its privileged treatment in bank capital requirements began to be questioned. The parallel deterioration of debt sustainability and bank solvency in many European countries highlighted the channels of contagion that exist between banks and the sovereign.

The Greek case illustrates only one of the two ways that contagion can occur between the public sector and the banking sector, where imbalances in public finances can end up affecting the banking system. But this is not the only channel. The other side of the coin is the problems in the financial systems that could end up affecting the sovereign through bailouts, as was the case in Ireland and also, although to a lesser extent, in Spain, where the crisis of the savings banks, in a delicate situation for the public finances, triggered the request for financial assistance from our European partners.

The risk of Spanish public debt, like that of the other euro zone countries, is also affected by a series of special characteristics of euro zone public debt, which are discussed in the following section.

2. The peculiarities of the euro zone

State financing can take the form of different types of liabilities, with very different implications for debt sustainability. For the purposes of this analysis, the most relevant distinction is between debt issued in domestic or foreign currency (ECB, 2012):

- Debt issues in national currencies are usually carried out in the relevant national jurisdiction. In this case, the sovereign has numerous mechanisms for meeting this debt in the event of difficulties: it can establish taxes to finance the debt; it can reduce its real value by generating inflation (through the issuance of currency by the central bank); it can keep interest rates artificially low, or it can establish capital controls that force residents to buy assets in national currency. All these mechanisms are known in the literature as “financial repression”

(Reinhart, 2012). In an extreme case the sovereign can even establish by law a “haircut” on the public debt issued in national currency and jurisdiction.

- Alternatively, the sovereign can issue debt in foreign currency. This is often done by countries with less developed domestic markets and limited access to international capital markets, as it means renouncing the privileges of issuing in national currency. It usually involves issuing in a foreign jurisdiction, typically in the United States or the United Kingdom, and submitting to the courts of these countries to resolve any disputes with debt holders. In other words: countries are forced to issue in foreign currency if they do not have credibility to attract international capital to their domestic market, which in the literature is called “original sin” (see Eichengreen, Hausmann and Panizza (2003)).

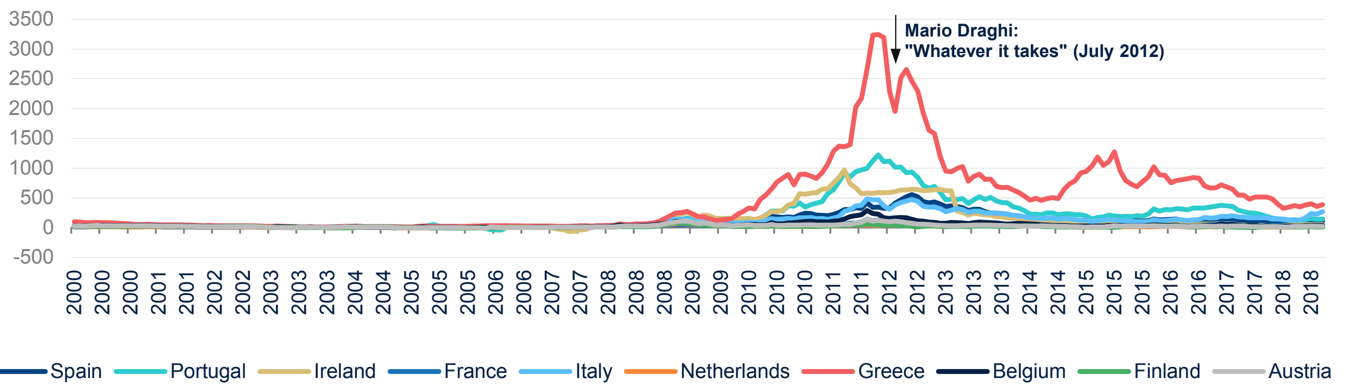
It should be noted that there is a category of countries that are especially privileged, because in addition to issuing in domestic currency, this same currency is an international reserve currency, used for investments of central bank reserves, private issues in international financial markets and the denomination of international contracts for commodities and international trade. These countries have a double privilege: to the advantages of the sovereign that issues in its own currency are added further advantages of access to international investors. The dollar has a central role as a reserve currency, inherited from the old Bretton Woods system, but other currencies such as the yen and the pound also have this role. That is why the adoption of the euro had a great attraction for the countries that did not have a reserve currency (all the euro zone countries except Germany and, to a lesser extent, France). By moving from the peseta to the euro, Spain achieved this status as an international reserve currency.

The peculiarities of the euro zone derive from the fact that its member countries issue in an international reserve currency, but with limitations that other countries with full monetary sovereignty do not have:

- On the one hand, a common central bank that has strong statutory limitations on financing national treasuries, as opposed to the close connection between the central banks and treasuries of countries with full monetary sovereignty. It should be noted that although independent central banks generally have strict limits for financing their treasuries, there are in practice numerous mechanisms by which the two institutions can support each other, as evidenced for example by the Lehman Brothers crisis in the United States in 2008.
- Also, the so-called no-bail-out rule, whereby euro zone countries cannot take over the debts of other countries in the zone.
- And finally, some rules of fiscal discipline included in the Stability and Growth Pact which, as has been mentioned previously, limit the public deficit and the level of debt in relation to GDP.

Despite all these constraints, in the early years of the euro, markets were extremely complacent and spreads among euro zone countries’ debt yields were surprisingly low, not reflecting the different fundamentals of the euro zone countries. This situation changed radically in May 2010, when the Greek crisis broke out. Markets began to consider the possibility of sovereign default in the euro zone, and this affected spreads in peripheral countries, which had large current deficits, real estate bubbles or vulnerable banking systems (or a combination of all these things (Fernández de Lis and Ontiveros, 2010)).

Figure 2 Evolution of risk premiums compared with Germany 2000-2018



Source: BBVA Research based on Bloomberg figures

The Greek crisis and its contagion to other peripheral countries revealed that the euro had major design deficiencies. To address these problems, the euro countries have implemented reforms and new institutions:

- The European Stabilisation Mechanism (ESM) was created to provide financial assistance to sovereigns in difficulty, a function that was then potentially extended to some banking crises.
- Mechanisms for fiscal discipline and detection of macroeconomic imbalances were strengthened (Fiscal Compact, Six Pack etc.)
- The Banking Union was launched with the creation of a Single Supervisory Mechanism (SSM), a Single Resolution Mechanism (SRM) and a Single Resolution Fund (SRF).
- The ECB also launched an ambitious programme to support sovereign debt and adjusted monetary policy operations to enable a variety of exceptional liquidity supply mechanisms to address the liquidity problems arising from the collapse of interbank markets.

Despite all these advances, there are still important steps to be taken to complete the banking union, the main one of which is the creation of a single European Deposit Insurance Scheme (EDIS), which ensures the harmonisation of deposit cover in the euro zone, and that the risk of each bank depends on its intrinsic quality and not on the contagion of its sovereign. It is also necessary to implement a resolution liquidity mechanism that links the provision of Emergency Liquidity Assistance (ELA) by the central bank with the provision of liquidity in resolution cases (Fernández de Lis and García, 2018).

It has become clear that in the final analysis monetary union is not possible without certain elements of fiscal union, and that this demands much stronger mechanisms of national fiscal discipline, requiring substantial surrendering of sovereignty.

Today we are in ambiguous territory, with an incomplete monetary union, in which the euro zone countries, when they issue in euros, do so in a currency that does not exactly have the usual characteristics of issuing in national currency, but nor does it have those of a foreign currency. All of this affects the channels of contagion between banking and sovereign crises, as well as the debate on the prudential treatment of sovereign risk, issues that are addressed in the following sections.

3. The relationship between sovereign risk and banking risk

Banks have traditionally been large investors in public debt. In 2017, the financial sector had approximately one third of Spain's public debt on its balance sheet, most of it in the hands of banks. The connections that are the source of contagion between banks and sovereigns are two-way:

- On the one hand, from the point of view of banks, public debt is a fundamental asset within their risk management, mainly because it is considered a risk-free asset. In addition, banks need to maintain public debt portfolios to comply with regulatory (mainly liquidity) requirements. They are also the main asset admitted as collateral or guarantee in monetary policy operations with central banks. Banks are also key players in the primary and secondary public debt markets. They are the main financial agents through which public debt instruments are placed and a fundamental part of the market, whose liquidity they guarantee as market makers

- On the other hand, the government has traditionally provided an implicit guarantee for bank deposits. The banks' fractional reserve system, with volatile and relatively illiquid assets and fixed nominal value liabilities, has made banks vulnerable to losses in confidence. In the event of a bank run, central banks may react by providing emergency liquidity (last resort loans), but if the problem persists it may be necessary to activate bank deposit insurance. Although deposit insurance is usually provided by the industry, the amounts necessary to ensure public confidence mean that in practice they require a government guarantee, implicit or explicit, in order to be credible, without prejudice to the Treasury subsequently recovering these funds through contributions from banks.

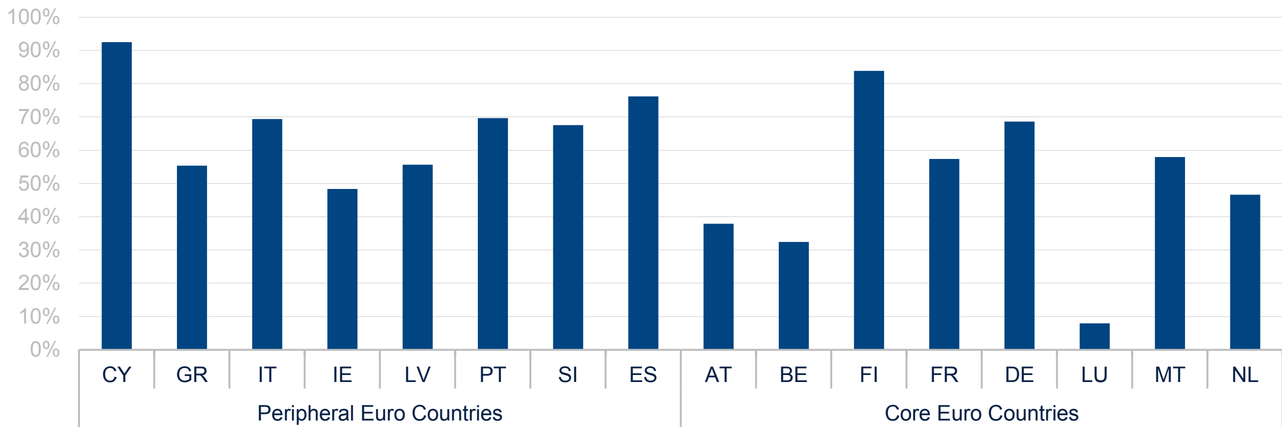
Whether one or the other source of contagion predominates depends on the type of crisis. In the euro zone, for example, the case of Greece is often cited as a crisis stemming from a fiscal problem that ended up affecting banks; in the case of Ireland, on the other hand, it was the vulnerability of banks that ended up causing problems of public debt sustainability. Once this type of loop is set in motion the feedback is mutual, within a vicious circle.

There has been much discussion of the kind of measures needed to tackle this circle, something that obviously depends on where the fundamental source of contagion comes from. If the root problem is banking, mechanisms must be designed to ensure that banking crises do not fall on governments and ultimately on taxpayers. That is why one of the main lines of reform after the crisis has been the resolution of banks: how to ensure that the losses of a banking crisis are absorbed by creditors, without the need for public money. The idea is that, in addition to the shareholders, bondholders can absorb the losses that correspond to them, through the so-called "bail-in", while at the same time protecting the depositors on whom the retail payment system depends.

If, on the contrary, the basic contagion line is believed to go from the sovereign to the banks, then other measures are considered, such as avoiding an excessive concentration of domestic debt in the banks' balance sheets, or eliminating the zero weight of the debt in the capital requirements. Indeed, the fact that banks are important holders of public debt has traditionally been linked to its special regulatory treatment, which recognises its risk-free asset status, which is translated into a zero weighting of domestic currency debt in capital requirements.

Specifically, this treatment has been linked to the so-called "domestic bias", according to which banks tend to maintain an exaggerated proportion of national debt on their balance sheet compared to that of other countries, which has been attributed to the privileged regulatory treatment of domestic debt in capital requirements. In the case of the euro countries, this bias is particularly striking, since, unlike other countries that are not part of a monetary union, in their case it is possible to diversify portfolios within their own currency and the regulatory treatment is homogeneous for all countries of the monetary union.

Figure 3 National bias in euro zone sovereign debt holdings



Source: BBVA Research based on EBA 2017 transparency exercise

However, this domestic bias has implications that can be stabilising. One of the problems detected in the recent expansionary phase and subsequent crisis is that market discipline tends to be excessively procyclical, exacerbating bubbles in boom phases and deepening the downturn in the recessionary phase. The zero weight of public debt in the capital requirements means that there are buyers at the adverse time of the cycle, softening fluctuations.

In fact, although the Greek crisis has provided powerful arguments to advocates of reviewing the prudential treatment of public debt, before taking this step, the causes of contagion between banks and sovereigns need to be carefully analysed and the effects of some of the proposed measures studied, which is addressed in the next section.

4. The debate on the prudential treatment of public debt

As noted above, the Greek crisis put on the table the debate on the special treatment of public debt within banking regulation. This privileged treatment is based on the idea that public debt issued in national currency is a risk-free asset, something that was called into question in the Greek episode. Specifically, the assumption of losses by the private sector (mainly by banks, which lost about 50% of their investment in Greek bonds) opened the debate on whether these assets are appropriately recognised in regulation.

Banking regulations currently recognise these assets as risk-free and therefore give them preferential treatment in various regulatory areas:

- On the one hand, in terms of credit risk, public debt securities denominated in domestic currency are guaranteed a 0% weighting in capital requirements, in the vast majority of cases, reflecting their consideration as risk-free assets.
- In terms of liquidity, these assets are considered to be among the most liquid in the market and are therefore an essential part of the short-term liquidity ratio.

- On the other hand, sovereign bond holdings are not affected by the limit on large exposures that affects other exposures and requires them to be limited to a certain percentage of capital.
- Finally, they also receive special consideration within the monetary policy operations of the central bank, with assets receiving a lower penalty or cut when provided as collateral.

But, as noted above, this beneficial treatment is reserved for debt issued in domestic currency. Debt issued in a currency other than the national currency receives different treatment, with credit risk recognition according to the sovereign issuer's rating, which will also determine their status as liquid assets of higher or lower quality. These foreign currency bonds are subject to the limit of large exposures and face further cuts in order to be used as collateral in monetary policy operations.

However, the treatment of the sovereign is not an exclusively European issue, but a global one. It seems reasonable that, since this is a central aspect of international banking regulatory standards, the Financial Stability Board (FSB) and the Basel Committee are the bodies responsible for reviewing their treatment. However, the sovereign crisis of the euro zone and the special configuration of the European architecture have placed a special focus on the euro zone, due to the ambiguity regarding the consideration of debt issued in euros as national or foreign currency, as discussed in the previous section.

Thus, although the debate has always been in the two areas (global and European), the Basel Committee created a first working group that has been studying the subject for three years, without reaching an agreement, given the discordant opinions of the different members. This lack of agreement is a clear symptom of the complexity of the debate and underlines the doubts held by most of the Committee's member countries about the real need for such a change.

At the same time, a debate has taken place in the euro zone, where a series of lines of work have been outlined to reform the sovereign debt regime. The main measures being considered to bring about this possible change include:

- A change in the risk weights of sovereign debt, linking them for example to the sovereign's external rating, or to some objective indicators of debt sustainability.
- The application of a limit to large exposures, or incentives to diversify euro-denominated debt portfolios on bank balance sheets.
- A hybrid option, which includes a limit above which sovereign debt may carry a small risk weight, in order to encourage diversification in banks' portfolios.

However, there is no clearly supported or predominant option, as all of them could cause major disruptions both to the banking system and, ultimately, to financial stability.

The loss of consideration of public debt as a risk-free asset raises the question of whether we can live in a world without risk-free assets. These assets have many uses in financial markets. They are a secure source of value deposits, are used as collateral in repo and derivative markets and are used as a reference in pricing in financial markets. They are also a key element in meeting regulatory requirements, such as liquidity requirements. In fact, some of the proposed measures are inconsistent with the current regulatory framework, which requires maintaining a high proportion of the short-term liquidity ratio in this asset class.

The possible effects on financial stability of capping large exposures on this asset class have also been studied -- see for example the reports of the European Systemic Risk Board (ESRB (2015)) and the European Stabilisation Mechanism (ESM (2016)). This limit would oblige the sale of the proportion of public debt exceeding a certain threshold of the bank's own resources. Even without knowing exactly what the calibration of this threshold might be, this measure has given rise to concern, as it could involve the sale of significant quantities of sovereign bonds, with the consequent downward pressure on their price and a widening of yield spreads.

The elimination of the zero weighting of debt in prudential requirements may also have highly destabilising effects on third countries. European banks are the parent companies of major subsidiaries in emerging countries. Such a measure would be applied to the consolidated balance sheets, which would mean that these banks would no longer be able to compute with zero weighting the debt holdings of their subsidiaries denominated in local currency, which are also normally financed with deposits in local currency. This extraterritoriality, which does not make sense and which even the most ardent supporters of this measure do not want, highlights the great practical difficulties in the more simplistic approaches.

The elimination of domestic bias, while it may have some positive effects, could prove pro-cyclical. However, there are solutions that can encourage greater diversification in banks' sovereign portfolios without causing financial stability problems, for instance by introducing incentives in prudential regulation that reward this diversification. There are some proposals along these lines, such as that of Veron (2017), which proposes to introduce capital surcharges for excessive concentrations in the domestic sovereign. With these kinds of hybrid measures (between limits to large risks and capital measures), and always based on their calibration, incentives to diversification can be introduced, thus limiting their destabilising impact.

Other proposals point to the creation of a genuine European risk-free asset. In recent months, an idea has been developed to generate a low-risk euro asset by securitising a pool of sovereign bonds from across the euro zone (see Brunnermeier et al (2016)) and European Commission (2018)). These assets, known as Sovereign Bond Backed Securities (SBBS) would incorporate a small portion of the risk of each of the participating states. In addition, being a securitisation, the credit risk is divided into several tranches. In this way, low risk is achieved without the need to mutualise risks among Member States.

The development of these assets could lead to the creation of a low-risk euro-denominated asset for the entire European Union, reducing excessive reliance on higher credit quality bonds, such as German bonds, which is behind some of the euro zone's financial fragmentation problems. It could also encourage diversification in banks' sovereign debt portfolios. However, there is no clear political support to encourage the creation of this new asset class and for now it seems that the proposal has limited legislative traction.

5. Conclusions

The crisis has led to a very significant increase in public debt in a number of developed countries, raising concerns about its sustainability, especially in a context of ageing populations and prospects for financial imbalance as regards pensions.

This concern has been particularly acute in the euro zone, where the Greek crisis has highlighted the ambiguity about the extent to which the euro is, for its member countries, a domestic or a foreign currency.

The feedback loop between sovereign risk and banking risk has been one of the most worrying features of the crisis. This contagion has a different origin depending on the crisis (in some cases in the sovereigns, in others in the banks), although once the feedback processes are triggered they work in a circular manner. Depending on where they have their origin, the remedies may be different:

- Where the problem has its origin in the banking system, it is essential to cut off the expectation of public rescue of entities. Hence the emphasis that the regulatory reform has placed on the area of bank resolution.
- Where the problem stems from sovereign risk, options must be carefully considered so as not to create more serious financial stability problems than those which they are intended to solve. The debate on the prudential treatment of public debt has shown that simplistic options must be avoided.

In Europe, this debate has been particularly intense due to the traumatic effects of the Greek crisis and the particular institutional configuration of the euro zone. There are solutions that would allow a healthy diversification of risks consistent with progress towards banking union, without involving costly measures which are destabilising for financial stability and the fragmentation of the euro zone.

Bibliography

ECB (2012). Analysis of debt sustainability in the euro zone, Monthly Bulletin, April 2012.

Bunnermeier et al (2016). ESBies: Safety in the tranches. European Systemic Risk Board Working Paper No. 21.

European Stability Mechanism - ESM (2016). Tackling sovereign risk in European Banks. Discussion paper series, March 2016.

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

European Commission (2018). Proposal for a regulation on sovereign-bond backed securities.

Fernández de Lis and García (2018). Funding before and in resolution: A proposal for a funding in resolution mechanism, BBVA Research.

Fernández de Lis and Ontiveros (2010). The Euro Crisis, Opex Memorandum No. 139/2010, Fundación Alternativas.

Eichengreen, Hausmann y Panizza (2003). "Currency Mismatches, Debt Intolerance and Original Sin: Why They Are Not the Same and Why it Matters". NBER Working Paper No. 10036.

Reinhart and Rogoff (2010). Growth in the time of debt. NBER Working Paper No. 15639

Reinhart (2012). The return of financial repression. CEPR Discussion Paper No. DP8947

Veron, N. (2017). Sovereign concentration charges: A new regime for bank's sovereign exposures. European Parliament Study (PE 602.111), November 2017.

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