

van Riet, Ad

Working Paper

Addressing the safety trilemma: a safe sovereign asset for the eurozone

ESRB Working Paper Series, No. 35

Provided in Cooperation with:

European Systemic Risk Board (ESRB), European System of Financial Supervision

Suggested Citation: van Riet, Ad (2017) : Addressing the safety trilemma: a safe sovereign asset for the eurozone, ESRB Working Paper Series, No. 35, ISBN 978-92-95081-94-9, European Systemic Risk Board (ESRB), European System of Financial Supervision, Frankfurt a. M., <https://doi.org/10.2849/206423>

This Version is available at:

<https://hdl.handle.net/10419/193542>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

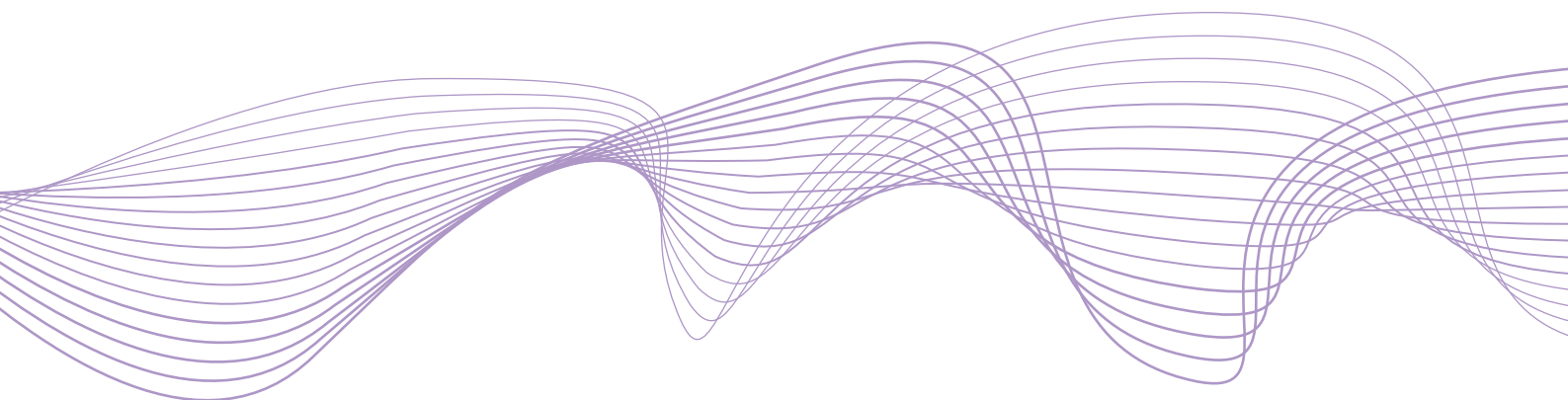
If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Working Paper Series

No 35 / February 2017

Addressing the safety trilemma:
a safe sovereign asset for the
eurozone

by
Ad van Riet



ESRB

European Systemic Risk Board

European System of Financial Supervision

Abstract

At the 25th anniversary of the Maastricht Treaty, this paper reviews the merits of introducing a safe sovereign asset for the eurozone. The triple euro area crisis showed the costly consequences of ignoring the ‘safety trilemma’. Keeping a national safe sovereign asset (the German bund) as the cornerstone of the financial system is incompatible with having free capital mobility and maintaining economic and financial stability in a monetary union. The euro area needs a single safe sovereign asset. However, eurobonds are only foreseen after full fiscal integration. To address the safety trilemma member countries must therefore act as the joint sovereign behind the euro and choose from two options. First, they could establish a credible multipolar system of safe national sovereign assets. For this purpose, they could all issue both senior and junior tranches of each national government bond in a proportion such that the expected safety of the senior tranche is the same across countries while the junior tranche would absorb any sovereign default risk. Additional issuance of national GDP-linked bonds could insure governments against a deep recession that might lead to a self-fulfilling default and thereby help to make the junior tranche less risky. The second option is that the member countries together produce a common safe sovereign asset for a truly integrated and stable monetary union by creating synthetic eurobonds comprising both a safe senior claim and a risky junior claim on a diversified portfolio of national government bonds. This appears a more effective solution to the safety trilemma – especially when euro area governments would also issue national GDP-linked bonds – but it requires flanking measures to control for moral hazard.

Key words: safety trilemma, capital mobility, safe sovereign asset, synthetic eurobonds

JEL codes: F33, F34, G15, H63, H7

Content:

1. Introduction and overview	2
2. Characteristics of a safe financial asset	6
2.1. The attributes of a safe asset	6
2.2. Public versus private safe assets	8
3. Coordinating sovereign safety beyond the core powers of the nation state	13
3.1. Competition between safe asset providers	13
3.2. The legal framework of safe sovereign assets	14
4. Coordinating sovereign safety after the regime change of EMU	16
4.1. The subsidiary status of euro area governments	16
4.2. The EMU legal framework for sovereign safety	17
5. The broken safety promise after the euro area sovereign debt crisis	19
5.1. From safe to risky sovereign assets	19
5.2. A stronger EMU legal framework for sovereign safety	25
5.3. Searching for yield in a world of ultra-low interest rates	28
6. Addressing the safety trilemma of the eurozone	31
6.1. The inconsistent triangle	31
6.2. The national safe haven curse	33
7. Sharing the safety premium of risk-free sovereign bonds	35
7.1. National tranches of safe sovereign debt	35
7.2. The safety benefit of GDP-linked bonds	37
8. Towards a synthetic euro area sovereign bond	38
8.1. Cost and benefits of eurobonds	38
8.2. The scope of European supranational debt	39
8.3. Constructing a synthetic eurobond	41
8.4. Dealing with moral hazard concerns	46
9. Concluding remarks	48
References	51

Risky assets do not cause crises. It is those perceived as being safe that do.

Richard Milne (2011)

You can define particular assets as “safe”, but you cannot wish away the list of economic and political contingencies that might some day cause large numbers of investors to dump them. If oil prices rise again, some borrowers will look less credit worthy. If one government defaults, investors might re-evaluate others. Serious doubts could return over the integrity of the eurozone.

Avinash Persaud (2015)

A failure to reconstruct a euro-wide safe asset would burden the single capital market with a permanent threat of disruption and instability.

Jean-Pierre Landau (2016)

1. Introduction and overview

The Maastricht Treaty, which was signed almost 25 years ago, established the legal foundations for the Economic and Monetary Union (EMU) of Europe and the introduction of its single currency called the euro.¹ The EMU architecture combined a single monetary policy conducted by the independent Eurosystem with sovereign national economic and financial policies of the participating Member States of the European Union (EU). As became clear during the euro area financial, economic and sovereign debt crises of 2008-2013, which even threatened the existence of the euro, the institutional framework for the single currency suffered from serious weaknesses. European leaders and institutions have since undertaken extensive repair works, pledging to ‘do whatever is required’ to safeguard the (financial) stability of the euro area as a whole (see van Riet, 2016a).

Several academics have argued that one of the building blocks still necessary to strengthen the architecture of EMU is a single safe sovereign asset that functions as the cornerstone of a stable and a truly single euro area financial system. Historically, before the start of EMU, national sovereign bonds performed the role of safe benchmark instrument for their domestic economy. With the start of EMU, however, the position of national governments has changed fundamentally. Participating Member States relinquished their monetary sovereignty and were thus no longer able to issue bonds in a currency under their own monetary control. This restriction of their sovereign powers made their new position comparable to that of subsidiary

¹ The Treaty on the European Union (henceforth: Treaty) was agreed by the European Council in its meeting on 9-10 December 1991 in the city of Maastricht in the Netherlands and was signed in the same city on 7 February 1992. The Maastricht Treaty entered into force on 1 November 1993.

governments like the American States that can only issue semi-safe debt and depend on federal stabilisers and guarantees for their full safety – supranational elements which in the EMU context were missing.

As argued in this paper, the EU legal framework in fact tried to promote euro area countries as safe sovereigns, despite the new monetary regime. The Maastricht Treaty and the Stability and Growth Pact sought to make national government debt safe by imposing EU budget rules on national fiscal policies. In addition, EU prudential legislation continued to label claims on euro area governments as safe without limits. A bailout by EU institutions or Member States of a country in distress was prohibited in order to expose governments to market discipline. After the start of EMU investors behaved as if the semi-safe debt of all member countries was equally safe. As national economies prospered during the first years of EMU, there was no apparent need to compare the economic fundamentals of for example Germany and Greece. Without a sovereign debt restructuring mechanism to resolve a national fiscal crisis the ban on bailing out a participating nation also lacked credibility. The monetary regime change thus contributed to the ‘Great Convergence’ of sovereign bond yields and facilitated substantial debt-based capital flows from core to periphery countries. The ample availability of relatively cheap funds fuelled a credit-driven boom and asset price inflation.

The common status as a safe sovereign turned out to be vulnerable in the wake of a big adverse shock. The global financial crisis of 2008 and the subsequent deep recession exposed the fiscal exuberance, banking sector weakness and structural rigidity of several euro area countries. Market participants realised again that only the German bund was really safe without question in a time of heightened uncertainty and political risk (apart from some lingering doubts as markets began to fear a euro break-up). This reassessment triggered a rapid reversal of capital flows, contributing to volatile sovereign bond markets, growing problems in the banking sector and substantial output losses in countries perceived as risky. The result was a deep financial fragmentation along national lines of creditworthiness, which in turn hampered the even transmission of monetary policy throughout the eurozone. Moreover, the contagion effects undermined financial stability in the euro area as a whole.

European leaders responded with a strengthening of the EU/EMU governance framework for crisis prevention, management and resolution. They reinforced economic surveillance and introduced official support facilities for distressed countries in an effort to restore financial stability as well as confidence in the ‘sovereign signature’ under their government bond contracts. The announcement of a European Banking Union and the commitment to

conditional interventions by the European Central Bank (ECB) proved essential in calming down sovereign bond markets and setting the stage for a gradual return of (foreign) investors and a re-convergence of bond yields towards the German level. However, negative news still translates in a (temporary) uptick in sovereign bond spreads of some member countries vis-à-vis Germany, indicating that – despite very low market interest rates – their debt securities are still perceived as relatively risky.

The crisis experience showed the high costs of ignoring the ‘safety trilemma’ of the eurozone. Keeping a national safe sovereign asset (the German bund) as the cornerstone of the financial system is incompatible with having free capital mobility and ensuring economic and financial stability in EMU, as it prevents sustainable financial integration. As Tonveronachi (2014, p.4) points out, “a currency union is a necessary but insufficient condition for the creation of a single financial market”. An embedded currency area that comprises a fiscal union naturally solves the safety trilemma by introducing a euro area fiscal authority that issues ‘risk-free’ eurobonds. Giovannini (2013, p.77) argues that a full pooling of sovereign risk is needed in order to create a single reference asset (akin to federal debt in the United States) with which a full integration of the euro area financial system and an even transmission of monetary policy can be ensured. Hence, in addition to supporting financial stability, eurobonds would also serve the objective of maintaining price stability for the euro area as a whole.

While national governments are aware of the costs and benefits of eurobonds many of them have so far been reluctant to accept the fiscal integration and centralisation of sovereign debt issuance and debt service payments that this building block of EMU would require. The alternative path followed so far is to ensure that all participating nations share rock-solid fundamentals and are equally safe, also as a way of preparing for a future fiscal union. A combination of reinforced EU/EMU governance and more effective market discipline in the future is expected to underwrite the safety of national government bonds. The euro area authorities have tried to implement this solution since the start of EMU. However, apart from the benchmark bonds of Germany, the debt securities of subsidiary governments cannot be more than semi-safe. Markets may accept the latter as a proxy for safe and liquid assets during quiet periods and investors may exploit them to build up cross-border exposures over long stretches of time. But these national sovereign bond markets remain vulnerable to adverse shocks that trigger a ‘flight-to-quality’ and destabilising capital flows that risk tearing EMU apart.

This paper reviews the merits of introducing a safe sovereign asset for the eurozone. A key question is how to address the safety trilemma of EMU in a situation where for the time being a supranational treasury is missing and the member countries must act as the joint sovereign behind the euro (Hoeksma and Schoenmaker, 2011).

Two main options have been suggested in the literature.

The first option is that each euro area country issues both senior and junior tranches of its government bonds in a proportion that reflects their respective fiscal soundness, meaning that they all achieve a maximum expected loss rate on the senior claim. The safety of the senior tranche would be guaranteed because the junior tranche would be expected to absorb any sovereign default risk. The objective of this option is to increase the total volume of safe assets in the eurozone and enable all euro area countries to issue some amount of safe securities that share at least partly in the safety premium that is currently attracted by Germany (and the other members with a high credit rating). Such a multipolar system of national safe sovereign assets would be more credible if combined with GDP-linked bonds to insure governments against a deep recession that might lead to a self-fulfilling default. This would also reduce the burden on the official sector and the ECB of having to stabilise the euro area after a big negative shock with major spill-over effects. However, this option foregoes the important benefits for financial integration from pooling national sovereign bonds in a diversified portfolio that serves as the basis for a tranching operation at the euro area level.

The second option is therefore that euro area countries together build the common safe sovereign asset that a truly integrated monetary union requires or create the legal conditions for the private sector to do so. For this purpose, they could create synthetic eurobonds that combine both a safe senior claim and a risky junior claim on a diversified portfolio of national government bonds. This appears a more effective solution – especially when euro area governments would also issue GDP-linked bonds to be held by the private sector – but it requires flanking measures to control for moral hazard. The European Systemic Risk Board (ESRB) has started to investigate the feasibility of this option because the common safe sovereign asset could promote financial stability in the euro area as a whole.² As it reduces the risk of financial fragmentation it could also support the implementation of the single monetary policy.

² On 29 September 2016 the General Board of the ESRB established a High-Level Task Force on Safe Assets, chaired by Philip Lane, to investigate the potential creation of sovereign bond-backed securities, which could comprise senior and junior claims on a diversified portfolio of national sovereign bonds.

The rest of this paper is organised as follows. Section 2 discusses the general characteristics of a safe financial asset and the comparative advantages of sovereign bonds vis-à-vis private label assets in this respect. Section 3 looks at the legal mechanisms which together foster the emergence of a safe sovereign asset. On this basis, Section 4 reviews how the provisions of the Maastricht Treaty and other EU legislation sought to ensure fiscal discipline and the safety of national government bonds. Section 5 describes how the sovereign debt crisis broke the perceived safety of national government bonds and how EU/EMU legal interventions tried to mend this broken promise again. Section 6 introduces the safety trilemma, which states that holding on to national safe assets is incompatible with full financial integration and euro area stability; a stable monetary union requires that the economic rent from a safe eurozone sovereign asset is fully shared. Section 7 reviews proposals to issue both senior and junior tranches of each national government bond and the possible complementary role of GDP-linked bonds. Section 8 examines academic proposals for creating synthetic eurobonds comprising both safe and risky tranches and the necessary flanking measures to control for moral hazard. Section 9 concludes.

2. Characteristics of a safe financial asset

2.1. The attributes of a safe asset

A safe financial asset is a marketable financial claim on public or private sector entities that investors consider to offer a convenience yield because of its special attributes in terms of moneyness, liquidity, volatility, and in particular its safety. A marketable risk-free financial instrument has cash-equivalent properties (i.e. earning a money premium), circulates in a high-volume market (i.e. no or very low liquidity risk), enjoys a high degree of market stability (no or very low volatility risk) and, in particular, has the highest credit quality (i.e. no or very low credit or default risk). Given the presence of this non-pecuniary convenience yield, the pecuniary return on safe debt securities is lower than that on non-safe assets reflecting the willingness of investors to pay a safety premium. These positive attributes are further extended if the return on a safe asset is stable in inflation-adjusted terms because the currency in which it is denominated has a stable purchasing power (characterised by a high degree of price stability). As a result, the value of safe assets will increase in volatile markets while the price of assets perceived as more risky fall, reflecting a flight-to-quality (i.e. to a ‘safe haven’) among risk-averse investors.

A safe asset commonly takes the form of debt securities since these include a contractual promise to return a fixed nominal amount at maturity (or at the time when a conversion option is exercised) as well as regular interest payments (unless the coupon is zero) in the interim period (see Gorton, 2016, p.9). The attributes of *moneyness* and *liquidity* are especially assigned to short-term debt instruments, issued by the treasury or a financial institution. Their short maturity limits investors' exposure to the arrival of new information on the creditworthiness of the issuer, for example in unsecured money market transactions. Moreover, in a liquid market, they can always be exchanged for cash, i.e. the ultimate liquid and safe asset that offers immediate payment services guaranteed by the central bank. The conveniences of *safety* and *stability* are frequently attached to long-term government bonds or corporate bonds from large companies that pay off at par with a very high probability despite the longer horizon. They serve as a secure store of value over time, also in volatile markets, and earn an almost risk-free nominal return.

Considering the advantages of liquidity, the transaction volume in a safe asset is normally so large that investors can easily roll over their holdings at maturity, so that their roll-over risk is low (which is also of interest to the issuers). As the market is liquid, they also have the possibility to sell out any time at a negligible discount and without significantly affecting the market price. Accordingly, investors generally do not need to be concerned about their ability to find a buyer for their safe asset in case they suddenly wish to exchange it for money. Brunnermeier and Haddad (2014) refer to this feature as the "good friend analogy".

Dang et al. (2011) and Holmström (2015) emphasise the information sensitivity of debt instruments, i.e. the incentive an agent has to produce private information about the payoff of a debt security. A safe asset can be taken at face value with 'no questions asked', meaning that buyers need to spend little if any time, effort or cost to discover its price. The creditworthiness of the issuer is expected to ensure a full debt payoff in every state of the world. In other words: the intrinsic qualities of a safe debt instrument make it '*information insensitive*', similar to money. This desirable property also makes it a liquid asset, even in uncertain times.

However, placing trust in an opaque debt instrument may be dangerous in the presence of tail risks. The presumed safety of an asset may in fact be fragile, i.e. a particular adverse shock can suddenly make the debt claim '*information sensitive*', of questionable safety, and thus illiquid (cf. Holmström, 2015; Gorton, 2016; Moreira and Savov, 2016). For example, market participants may come to see credit ratings as a reliable indicator of an asset's safety

attributes, believing there is ‘no need to question’ the payoff of debt securities with the highest (AAA) rating. But an asset with this label that was considered to be safe under normal circumstances may still be vulnerable to changes in market sentiment. The arrival of negative news may undermine the certainty of future debt repayment and trigger a downgrade to well below AAA, making it information-sensitive. The time, effort and cost for market actors of then having to collect private information about the riskiness of the asset (beyond the general information contained in the lower credit rating) make the market much less liquid. The price of assets whose safety turns out to be fragile will decline, especially in a context of ‘fire sales’, and the consequent sharp deleveraging and repricing may spill over to other assets suddenly perceived as vulnerable. Depending on the magnitude of the valuation losses the owners of these opaque assets may themselves get into trouble.

The fragile safety of some debt claims argues in favour of strengthening the contractual terms beyond the unconditional promise of repayment and the reliable enforcement of property rights. As pointed out by Golec and Perotti (2015), safety could be enhanced in three ways. First, by giving claims a senior status by contract, i.e. priority of repayment over junior claims at default. Second, a short maturity of debt offers even more safety. This type of claim is less susceptible to default risk, because investors can demand repayment relatively quickly after dangers arise. Third, by giving creditors full assurance of repayment, which requires securing debt with sound and tradeable collateral as an insurance against possible negative events. This option allows creditors to take possession of the collateral upon default in all contingencies, while the priority of senior claims may be violated among unsecured debtors.

2.2. Public versus private safe assets

Traditionally, the safe asset universe has been dominated by sovereign debt, which therefore has assumed the role of financial system cornerstone (IMF, 2013). Historically, bonds issued by large private firms have sometimes functioned as a point of reference for capital markets, in particular when price discovery in government bond markets was constrained and/or an excess demand for high-quality instruments existed. More recently, the (shadow) banking industry has been very active in producing quasi-safe assets to meet a growing demand. However, the use of private sector instruments as an alternative market benchmark often made the financial system vulnerable, especially when short maturities were involved. For example, in the late 1990s, the US federal budget recorded a surplus and the amount of US treasuries held by the public declined markedly. To meet the high demand, the US financial industry then created its own quasi-safe assets by securitising low-quality instruments, such as

sub-prime mortgages, acquiring a high credit rating for these securities and selling them on in the market to investors unaware of the risks hiding in the underlying portfolios. This recipe was copied in Europe. As became clear during the global financial crisis of 2007-08, the boom created by (shadow) banks that funded risky productive assets with these liquid securities exposed the world economy to a panic in the financial system (Caballero, 2009; Moreira and Savov, 2016).

A funding structure based on a large amount of short-term private debt instruments is vulnerable to investors suddenly wishing to turn them into cash. This forces a cash-constrained financial intermediary to reduce its leverage through ‘fire sales’ of the collateral, which likely will have fallen in price in a volatile market. Some observers therefore argue that by supplying a sufficient amount of safe and liquid treasury bills the government can avoid too much issuance of quasi-safe short-term private debt as a substitute and thus support a more stable financial system. This benefit needs to be traded off against the rollover risks associated with a decreasing average maturity of government debt (Gorton, 2016; Golec and Perotti, 2015).

Government debt enjoys a distinct comparative advantage over private label securities in connecting safety with the desirable properties of moneyness, liquidity and stability. This comparative advantage is associated with the *core powers of a nation state* which allow the sovereign to steer the allocation of resources, support economic stability and arrange a distribution of wealth in line with its presumed focus on the interests of society, if needed with the force of arms.

The intrinsic qualities of government debt appear to reflect first of all the nation state’s authority to tax its citizens, repress the financial sector or impose a one-off capital levy on the rich. These three options for extracting revenues for debt service payments are nevertheless subject to important economic, legal and reputational constraints, as the tax burden may already be very high, privileged access to finance could be ruled out by law and exceptional wealth taxes often lead to capital flight. Moreover, the expectation that the government will service its debt rather than default assumes that it is not only able but also willing to honour its debt obligations (Buiter and Rahbari, 2013). Continued debt service requires that politicians always keep in mind the future ability of the state to access capital markets and therefore also care about the government’s reputation as a trustworthy debtor and value the property rights of creditors (including foreigners) more than the income and wealth of their electorate. There is always a political risk that, after elections, a new government might

decide to restructure or repudiate the debt accumulated by its predecessors if it wants to relieve the debt service burden for its citizens or start with a clean slate.

Second, a nation state in principle has the power of control over the issuance of money. To safeguard debt service, at least in nominal terms, the government could expand its revenues from monetary seigniorage and the inflation tax, or draw on the national central bank's capacity to cap government bond yields and to act as lender-of-last-resort. Access to the printing press also means that in the end the government can always order the central bank to repay in cash any public debt that is denominated in the national currency. At the same time, interfering with monetary policy undermines the credibility of the government's presumed stability orientation and could not only lead to permanently higher inflation but also to escalating nominal interest rates due to additional inflation risk premia. Jurisdictions where the central bank has been awarded legal protection from political interference have relinquished the monetary financing option often used in the past to secure the repayment of public debt at par.

Third, a nation state may be able to draw on debt guarantees and financial assistance from partner countries or international institutions to survive a period of liquidity stress and prevent a debt restructuring. Arguably, strong countries have a moral duty to provide this type of insurance to troubled members of an international partnership in order to preserve regional or global economic and financial stability, which may also be in their own interest given close trade relations and large bank exposures. This potential call for assistance in turn raises the question of how to prevent moral hazard on the side of the beneficiary countries and how to ensure an appropriate contribution from private investors. Hence, the existence of an official rescue mechanism offers no guarantee that government debt is safe.

Given these attributes of sovereignty, a nation state with a strong and credible commitment to service its debt if necessary has the 'deep pockets' and 'strong arms' to prevent a default on its nominal debt, distinct advantages that private agents cannot offer. Although throughout history advanced economies have occasionally defaulted, since World War II this has been a seldom occurrence. This favourable experience of modern times tends to suffice for government debt securities to be perceived by market participants as having the necessary qualities of risk-free instruments. Any investor that buys government debt implicitly receives a claim on future government revenues. Although the value of this claim is opaque, the fact that the government can use its fiscal capacity and coercive powers to access the resources in the economy to honour its debt obligations makes investors believe that public debt is de facto

collateralised and hence safe. As a consequence, sovereign debt is information-insensitive and potential buyers normally have no reason to dig deeper into the credit risk. As long as all market participants adhere to the same belief that the debt securities are safe, the sovereign bond market is stable and liquid – until news arrives that raises concern about the value of the claim, making it information-sensitive (cf. Holmström, 2015).

The public sector can also perform a special role in providing liquidity services when there are market frictions in financial intermediation and some private agents are liquidity-constrained. The market of government bills and bonds tends to be large and deep, which allows investors to buy and sell at any point in time or to use these sovereign instruments as collateral for loans. A higher government debt implies more liquid assets in the hands of the private sector and increases economic efficiency – up to the point where the market friction is neutralised – because it enhances the flexibility of households in responding to income opportunities and eases financing constraints for investment (see Woodford, 1990).

The public sector is also best equipped to introduce a large-scale and continuous issuance programme based on standardised and transparent contracts (Brunnermeier et al., 2011; Giovannini, 2013). With a wide range of maturities on offer, the issuance programme of high-quality sovereign assets also establishes a risk-free yield curve. When the government pursues a credible stability-oriented fiscal policy, it will also reduce volatility in the government bond market.³ This is important for investors holding sovereign securities marked-to-market prices on their balance sheet. In addition, a stable value avoids margin calls on posted collateral.

Given these outstanding features sovereign debt instruments serve as high-quality liquid assets, for example on bank balance sheets for meeting prudential liquidity and capital standards and as a stable store of value for institutional investors wishing to minimise credit risk in nominal terms. Moreover, they function as a credible form of collateral in both derivatives and repurchase markets and as a benchmark for pricing other securities (see IMF, 2012; Castro and Mencía, 2014). All the above attributes make sovereign assets also of great value for central banks' tender and outright operations as well as for the security of their payment and settlement systems. Moreover, the yield curve created by risk-free sovereign debt securities functions as the benchmark vehicle for monetary transmission to financing conditions throughout the economy (see European Central Bank, 2014).

³ Of course, limiting market volatility also requires a broader public sector commitment to support price stability, financial stability and sustainable output growth.

Finally, the special features of public over private debt have implications for fiscal policy. As Tobin (1971, p.2) argued, government borrowing from the public engineers a change in the composition of private balance sheets. On the one hand, it forces on taxpayers a long-term liability of some uncertainty while on the other hand it provides bondholders with safe and highly liquid assets. The net effect is that, within limits, the private sector will perceive an increase in government debt as augmenting their net wealth (unless expected income variations lead to such high expected tax variability as to raise the overall amount of risk in private balance sheets; see the discussion by Barro, 1974). As a result of the non-neutrality of safe and liquid government debt, the treasury might be able to roll over part of a public debt expansion forever rather than having to raise taxes for its repayment (see also Woodford, 1990). A fiscal stimulus financed with safe debt will therefore likely have a positive effect on domestic demand, whereas funding with non-safe debt could be offset by higher private savings.

The capacity of a government to issue safe debt also enables it to alleviate a chronic shortage of safe assets that is pushing risk-free interest rates towards the zero lower bound and weakens the effectiveness of conventional monetary policy, a situation which Caballero et al. (2016) describe as a ‘safety trap’. A scarcity of safe assets will also spread from one country to the other via international capital flows as investors search for quality worldwide. An increase in the quantity of safe government debt therefore creates private wealth and raises aggregate demand with positive international spill-over effects on output.

Barro and Mollerus (2014) argue, however, that a government which issues more safe assets will also create more “safe liabilities” in the form of the present value of future tax payments. The amount of safety provided by an increase in public debt is therefore reduced to the extent that private agents factor in their corresponding tax obligations. Only when the government is superior to the private sector in creating and honouring safe debt (as has been argued above) the net quantity of safe assets and the risk-free interest rate will increase (provided that the public sector does not crowd out the production of quasi-safe assets by the private sector so much that the net supply of safety becomes zero or even negative). At the same time, the higher the public debt-to-GDP ratio rises, the higher the risk that its status as a safe instrument is lost, the fiscal stimulus becomes contractionary and a full backing of public spending by taxes will be required in order to prevent a destabilising rise in sovereign bond yields.

3. Coordinating sovereign safety beyond the core powers of the nation state

3.1. Competition between safe asset providers

Since no financial claim is absolutely risk-free, the definition of a safe asset must be understood as referring to an asset that provides *relative safety* compared to other financial claims. Sovereigns in fact compete not so much with the private sector but rather with each other so as to claim the benchmark role for their debt in the regional or global financial system in order to capture the economic rent of a relatively low interest rate that they can derive from this status.

The question is what exactly makes a sovereign asset safe in relative terms. He et al. (2016b) emphasise the importance of an effective coordination mechanism for backing-up a sovereign financial instrument, beyond the attributes of a nation's sovereignty. An asset designed to be safe will in their view attract investors and the more successful this construction is, the more other investors will follow suit. The authors add that the outstanding amount of a sovereign's debt instruments (the 'float') must be sufficiently large to attract the minimum number of investors needed for these to gain the status as safe assets and to maintain this position when the claims have to be rolled over. Once this threshold has been reached, however, regional competition with other safe sovereign asset providers based on their relative fundamentals will become the main coordination device. This is because each market actor expects that other investors prefer to store their funds in instruments of the highest quality issued by the sovereigns with the best credentials.

The safest of them all at the global level will enjoy the 'exorbitant privilege' of its national currency debt being the cornerstone of the global financial system, since the government is then essentially able to supply as much debt denominated and repayable in its domestic currency as it needs to finance its deficits (see Gourinchas et al., 2010). This privileged position often falls on a large country with a relatively sound fiscal position issuing a large amount of marketable debt securities that in case of need may also be backed-up by military force. The United States (US) have assumed this position at least since the late 1920s, taking it over from the United Kingdom. Since there is a high appetite from the international financial community to hold safe US treasury securities as foreign reserves (taking account of exchange rate risk) and they have "nowhere else to go" (He et al., 2016a), a high demand is effectively ensured. Yet, this privilege also entails the 'exorbitant duty' to meet a heightened international demand for reserves in a liquidity crisis. The demand for the global safe asset

may rise dramatically during market turmoil when a flight-to-quality occurs and the US is called upon to issue more of its safe sovereign assets.

A safe asset provider can also be vital for the proper functioning of regional financial systems (see Gourinchas and Rey, 2016). Together with other regional safe asset producers it can develop a multipolar system of safe assets at the global level (Gourinchas and Jeanne, 2012). Such a more symmetric global financial system is less dependent on a dominant provider of potentially scarce international liquidity. In addition, it supports the stability of financial intermediation between different countries and regions (Landau, 2016).

3.2. The legal framework of safe sovereign assets

Gelpert and Gerding (2016) observe that the law plays an important role in making investors believe that specific assets are safe, even if reality is different. National policymakers will use their powers of legislation, regulation and contract design to anchor market expectations and coordinate market participants towards selecting the benchmark asset promoted by law and to act as if it was safe. The authors conclude that relatively safe assets, both with a public and a private label, are legally constructed. Applying their framework specifically to sovereign debt, the law provides three key elements that have the ability to promote safety, namely regulation, labelling and guarantees.

First, the law can make claims on the government less risky. This may be achieved for example by constitutional property rights which exclude the expropriation of assets. A legally binding balanced-budget rule could prevent politicians from engaging in fiscal profligacy. Contractual design could further enhance confidence in future repayment, in particular by issuing government bonds under foreign rather than domestic law to exclude ex post changes in the contractual terms.

Second, the law can label claims on the government as safe. Prudential legislation may for example allow financial institutions to consider their sovereign bond portfolio as free from credit risk when assessing the adequacy of capital buffers. This sort of legal instrument enhances the safety of sovereign bonds by imposing a convention on financial actors rather than asking them to look at objective economic facts. Supervisors will need to enforce this legal convention, which seems possible on a durable basis only when it is based on supportive past evidence.

Third, the law can underwrite the continued safety of claims on the government through explicit guarantees against potential losses. For example, a federal government may specify in

legislation that it assumes final responsibility for debt issued by ‘sub-sovereign’ regional governments or public sector agencies. This legal category broadens the reach of safe federal bonds to the general government or the public sector as a whole.

These three legal tools strengthen each other and taken together they are very powerful in coordinating investors towards selecting (general) government debt as a safe benchmark for a country’s financial system. Gelpern and Gerding (2016) see them as having the potential to create a virtuous cycle, whereby in this case high-quality sovereign debt, labelled as safe and supplied in sufficient quantity through guarantees across the public sector, raise investor demand, boost bond market liquidity and lower the cost of financing for the government. Following He et al. (2016b), the debt issued by the most creditworthy sovereign may then be established as the benchmark safe asset at the supranational level.

However, as noted by Gelpern and Gerding (2016), the three legal categories may also be misaligned, which occurs in this case when a sovereign’s safety label is not underpinned by a strong fiscal position and guarantees spread the credit risks across the whole public sector. Moreover, market actors may expect that in stressful times the government will always bail out domestic troubled banks and strategic companies, creating a sovereign-bank-firm nexus that exposes the financial sector, the real economy and the taxpayer to dangerous feedback loops. Under such a misaligned legal framework, market participants may be attracted to invest in government debt securities labelled as safe but what in reality are risky sovereign bonds, especially when they appear to offer a relatively high return. When the fiscal risks unexpectedly materialise, for example after a big negative shock, all public debt instruments of the country concerned become information-sensitive. As a result, sovereign bond yields jump to reflect the emerging default risk. Given the sovereign-bank nexus this reappraisal of fiscal sustainability could potentially lead to financial instability and an economic downturn.

The repricing of the sovereign benchmark asset affects the financial system and the rest of the economy through two channels (see Altavilla et al., 2016, on the transmission of sovereign stress through bank exposures). First, it directly causes valuation losses for banks and other investors holding government debt which in turn raises their own solvency risk. A vicious feedback loop could emerge in which they collectively try to dump the now risky government bonds in favour of alternative ‘safe havens’ which amplifies the sovereign’s default risk. The government could even be at risk of losing access to the capital market. Second, higher sovereign bond rates transmit to the corporate bond and equity markets and cause both high valuation losses and a sharp increase in the cost of capital. Banks will respond by tightening

credit conditions, cutting back new lending and making extra loan-loss provisions, forcing households and non-financial corporations to deleverage their balance sheets. The consequent drop in durable consumption and private investment could lead to a deep recession. As a weakened state would have no fiscal space left to step in with economic and financial support measures, official sector assistance might ultimately be the only way out.

Against this background it is of interest to study how the legal framework applicable to euro area governments, as laid down in the Maastricht Treaty, EU directives and secondary legislation attempted to create safe assets out of national sovereign debt securities but rather masked their fundamental fragility.

4. Coordinating sovereign safety after the regime change of EMU

4.1. The subsidiary status of euro area governments

Member States adopting the euro gave up their sovereignty over monetary and exchange rate policy and once and for all ruled out the options of national devaluation and monetary financing to deal with episodes of severe fiscal stress. This regime change made their new position comparable to that of ‘subsidiary governments’ or ‘sub-sovereigns’ like the American States; while these also have their own budget authority, they are equally unable to issue bonds in a currency under their own monetary control (see McKinnon, 1997; Goodhart, 1998).⁴ Contrasting with the United States where the Federal Government may step in to provide temporary liquidity support to the States, euro area countries remained fully responsible for their own public finances. Given the Maastricht Treaty, there is no central fiscal authority in EMU that could levy taxes, make transfer payments, absorb asymmetric shocks, bail out banks or rescue strategic firms.

The funding of euro area governments in open capital markets became thus dependent on the willingness of investors to roll over the outstanding stock of national sovereign debt that, after the regime change of EMU, was characterised by a higher risk profile (McCauley and White, 1997; Arnold and Lemmen, 2001; Gros, 2012). The regime change was much smaller for ‘safe haven’ countries accustomed to open capital markets and with a history of central bank independence and successful stability-oriented policies; it was more significant for those Member States with a tradition of protected financial markets and the reputation of monetary financing of high public deficits and regular currency devaluations. Especially for the latter

⁴ Gelpert (2012, p.891) refers in this context to ‘quasi-sovereigns’ (or also ‘part-sovereigns’). These are states that remain sovereign but have ceded important aspects of their sovereignty to a central government in the name of economic and political integration and as a result face distinct challenges as public debtors.

group of countries the changeover to the euro raised the default risk on national public debt (van Riet, 2015). One would expect bond yields to have shifted upwards for euro area countries with weaker fundamentals and higher sovereign default risk, with the most indebted governments seeing the largest increase. But in practice a rapid compression of sovereign bond yields was observed.

4.2. The EMU legal framework for sovereign safety

Several European legal instruments explicitly aimed to secure the fragile status of euro area governments as safe creditors and a downward convergence of long-term interest rates with the endogenous effect of deepening financial integration and facilitating monetary transmission across EMU.

First, the Maastricht Treaty included many provisions to make claims on national governments safe by ensuring sound fiscal policies. Prospective euro area countries had to comply on a sustained basis with deficit and debt restrictions on general government as a precondition for joining the eurozone. After euro adoption, the participating countries had to avoid excessive deficits and they faced financial sanctions in case of persistent non-compliance with this Treaty obligation. The EU surveillance process for ensuring continued compliance with these fiscal constraints was based on the Stability and Growth Pact. This agreement also set the achievement of a close to balanced budget or a surplus as a medium-term objective. The Treaty further ensured that public sector entities would have to fund themselves in the open capital market, subjecting them to the discipline from ‘bond market vigilantes’. This was achieved by opening up the European capital market, forbidding privileged access of governments to financial institutions (other than for prudential purposes), excluding a bail-out by other Member States, banning monetary financing and making the central banking system independent from political interference.

Examining the period 1993-2008, Ehrmann et al. (2011) find that the monetary regime change implied by the Maastricht Treaty was the primary driver of the anchoring of long-term inflation expectations and the convergence of government bond yields of the main euro area countries. By contrast, the adaption of more restrictive fiscal policies in large countries with weak public finances was not a major factor in bringing their interest rates closer to those of members with a strong fiscal record. De Groot et al. (2015) show that the Maastricht Treaty did have a significant impact on the fiscal reaction functions of euro area countries. After the Treaty was signed in 1992, they responded to a rising cost of borrowing with a stronger fiscal

adjustment of the primary balance than before. The fiscal response to capital market pressure nevertheless often occurred with a delay and was insufficient to prevent that rising interest payments would lead to a higher debt-to-GDP ratio. Rommerskirchen (2015) contemporaneously studies both sides of market discipline between 1992 and 2007. She concludes that euro adoption weakened the reaction of debt service costs to fiscal developments. Apparently, investors perceived EMU membership as reducing sovereign credit risk. At the same time, fiscal policies became more responsive to market signals as reflected in debt service costs. This suggests a greater awareness among national politicians of the public finance constraints implied by their decision to adopt the single currency.

Taken together these empirical findings demonstrate that above all euro participation and capital market exposure as laid out in the Maastricht Treaty promoted fiscal discipline, while investors took the continued safety of subsidiary government bonds for granted. By contrast, EU fiscal rules did not seem effective in bringing about sound public finances.

Second, European prudential legislation for financial institutions generally labelled claims on national governments as safe (see van Riet, 2016b). Following the Basel Accord of 1988, the EU capital requirements directive for credit institutions allowed national regulators to equally treat the central government bonds of all Member States as very low or zero-risk assets and to exempt them from large exposure limits that applied for bank claims on the private sector. Similarly, the EU directives governing pension funds and insurance companies exempted the government bonds of all Member States from asset diversification requirements. For regulatory purposes these European directives, which were transposed in national law and implemented by domestic supervisors, treated the public sector bonds from all EU countries as if they were equally safe.

As discussed by van Riet (2016b), the introduction of the euro effectively enhanced this EU preferential regulatory treatment of sovereign debt for the Member States participating in EMU. As from 1999, exchange rate risk no longer acted as an investment barrier, transaction costs were lower and the banking industry could make full use of the legal incentive to buy government bonds of other euro area countries. In addition, regulatory requirements for institutional investors were revised to allow them to match the currency denomination of their assets and liabilities in terms of the euro. This was an incentive for them to expand their domestic government bond portfolios to sovereign issuers from the whole euro area. Hence, EU prudential legislation interacted with the introduction of the euro in making investors

believe that virtually all debt issued by euro area governments was safe regardless of the actual creditworthiness of the country of issuance and their new subsidiary status.⁵

Third, the Maastricht Treaty explicitly excluded the possibility for both the European Community and the EU countries to guarantee or take over the obligations of (other) Member States. This reflected the basic principle of continued national responsibility for economic and financial policies and a fear that EMU might otherwise turn into a ‘transfer union’ in favour of profligate members. Lacking political integration EMU was not meant to comprise a fiscal union which would balance risk-sharing with risk-control at the supranational level. The Treaty also banned the European central banking system from purchasing government bonds in the primary market or to provide other forms of direct financial assistance to the Member States, as this could undermine price stability and the status of the euro as a stable currency. These explicit no bail-out rules were expected to strengthen market-based fiscal discipline.

Hence, the third legal element of an explicit debt guarantee to back up the continued safety of claims on national governments that had become subsidiary governments upon joining the euro was missing. Market expectations appear to have been anchored instead by an implicit debt guarantee associated with the political commitment to the euro and the very high economic and financial costs of a potential break-up.⁶ The facts as they emerged during the euro area sovereign debt crisis proved that this presumption was basically right.

5. The broken safety promise after the euro area sovereign debt crisis

5.1. The regime switch from safe to risky sovereign and bank assets

Before the creation of EMU, the Deutsche mark played the role of nominal anchor within the European exchange rate mechanism (ERM) as the currency of the country with the most credible stability orientation. This allowed other Member States to ‘import’ monetary stability by pegging their currency to the mark. As argued by McKinnon (2002), this currency asymmetry reinforced itself: the Deutsche mark’s role of centre currency facilitated debt financing and macroeconomic management in Germany, whereas the pegging countries faced

⁵ Some academics argued that also the ECB’s criteria for accepting collateral for refinancing purposes, which treated the public debt securities from euro area countries on an equal footing for specific credit rating baskets and liquidity categories, signalled to market actors that national government bonds were broadly similar in nature. However, in practice, the ECB’s risk control measures implied a significant differentiation of sovereign bonds pledged as collateral in terms of their credit quality and liquidity.

⁶ Empirical evidence for a variety of federal systems in Beck et al. (2016) shows a similar result: on aggregate a higher level of the sub-sovereign debt/GDP ratio goes along with a higher sub-sovereign bond spread, suggesting the operation of market discipline. But this relationship breaks down for sub-sovereigns with relatively bad fiscal fundamentals, which may reflect market perceptions of an explicit or implicit bail-out by the central government or from other sub-sovereigns within the federation.

more volatile capital flows that contributed to higher bond yields and complicated their economic and financial adjustment.

After the introduction of the euro in 1999, all borrowers had the opportunity to access a much wider capital market, enhancing their capacity to absorb shocks; at the same time, all lenders could achieve a more efficient risk-sharing through international portfolio diversification, without intra-area exchange rate risk standing in the way. The German bund naturally assumed the role of pricing benchmark in the national sovereign bond markets with national corporate borrowing costs in turn connected to the yield on national sovereign bonds.

The strong convergence of long-term interest rates in the run-up to EMU and between 1999 and 2007 to a common low level (see Figure 1) suggested that national government bond markets were integrated (see Ehrmann et al., 2011). Public debt managers targeted their bond supply at international investors, seeking to minimise the cost of government borrowing while reducing roll-over risk by extending the average maturity of outstanding debt. This attracted buy-and-hold investors such as euro area pension funds and life insurers as well as foreign official institutions (central banks and sovereign wealth funds) interested in expanding their assets across the whole single currency area.⁷ As long as national economies prospered, market actors perceived the semi-safe sovereign bonds of all euro area countries as high-quality and liquid assets, as was also indicated by EU prudential law. This presumption in turn also made financial intermediaries appear to be relatively safe, since the large stock of sovereign bonds on their balance sheets would no doubt keep their value. Moreover, should an individual credit institution get into problems the national government surely would have the fiscal capacity to rescue it from bankruptcy. The same public sector support could be expected for strategic corporations that borrowed abroad.

However, the European legal instruments used for producing safe assets out of subsidiary government debt turned out to be misaligned in various ways with fiscal practice. As Gelpert and Gerding (2016, p.175) write, “there never had been a risk-free asset, but rather a political project enshrined in law and institutions”.

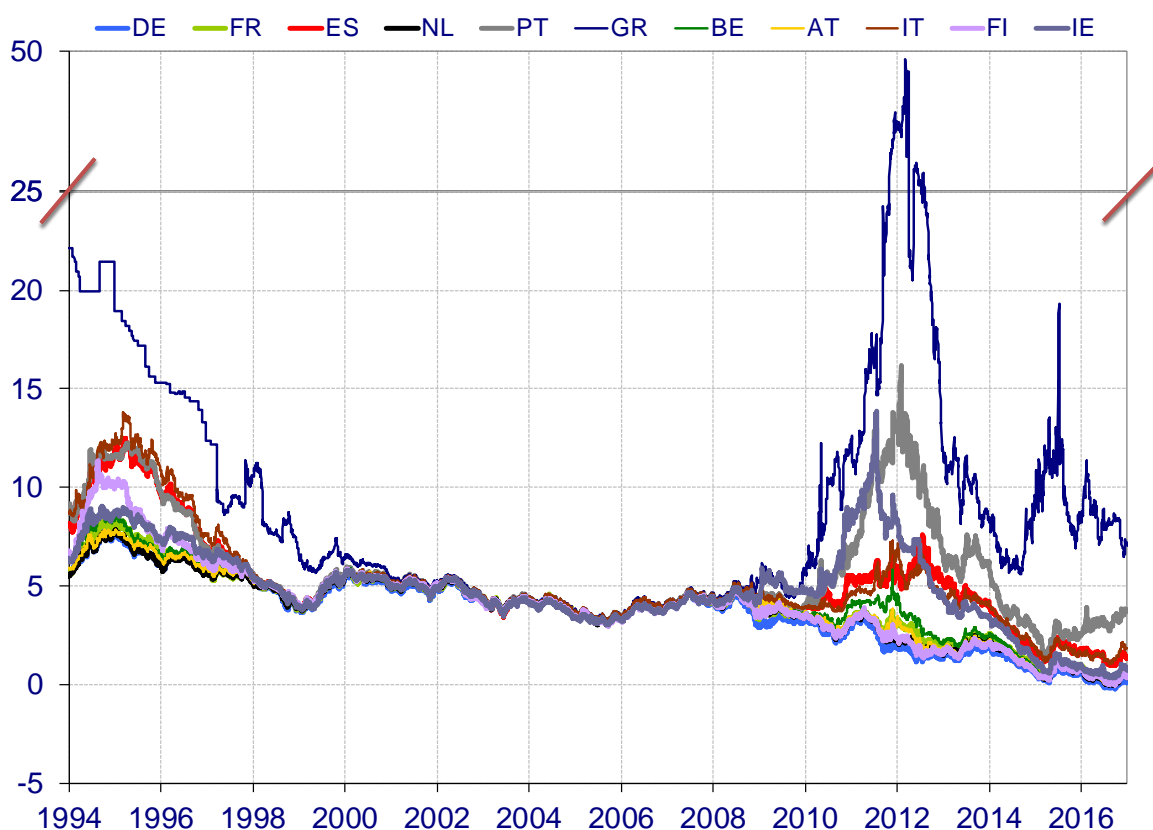
First, the Stability and Growth Pact was undermined when in 2003 Germany and France refused to correct their excessive budget deficits on a timely basis, setting a bad example for other member countries. The mechanism described in the Maastricht Treaty to sanction

⁷ Calculations by Blattner and Joyce (2016) show that the share of foreign official holdings in the total of euro area central government bonds (covering the four largest countries) rose from around 7% in 2000 to 18% in 2008. This also involved a shift in the composition of reserve assets from a focus on Deutsche mark debt before EMU to a broader portfolio of euro-denominated debt issued by Germany, France, Italy and Spain.

excessive deficit countries for persistent non-compliance with the fiscal rules was never applied in practice. Hardly any euro area country ever reached and maintained a balanced budget or a surplus and as a consequence government debt-to-GDP ratios remained high.

Figure 1 - Government bond yields of the euro area countries, 1994-2016

(daily data in percentages)



Sources: Datastream and ECB.

Note: Ten-year government bond yields of the EU countries that adopted the euro in 1999 (excluding Luxembourg but adding Greece). Last observation: 30 December 2016.

Second, for a long time, the equal preferential treatment of national government bonds as zero-risk without limit for EU prudential purposes appeared in agreement with favourable sovereign credit ratings and effectively coordinated a ‘hunt for yield’ across the eurozone with capital flowing into higher-yielding public and private debt. Many core country banks intermediated global savings into a credit boom in periphery countries by expanding both sides of their external balance sheet with little regard to country-specific credit risks (see Chen et al., 2013; Lane, 2013; Gourinchas and Rey, 2016; Hale and Obstfeld, 2016). These debt-based capital flows resulted in a further compression of long-term bond yields, bringing

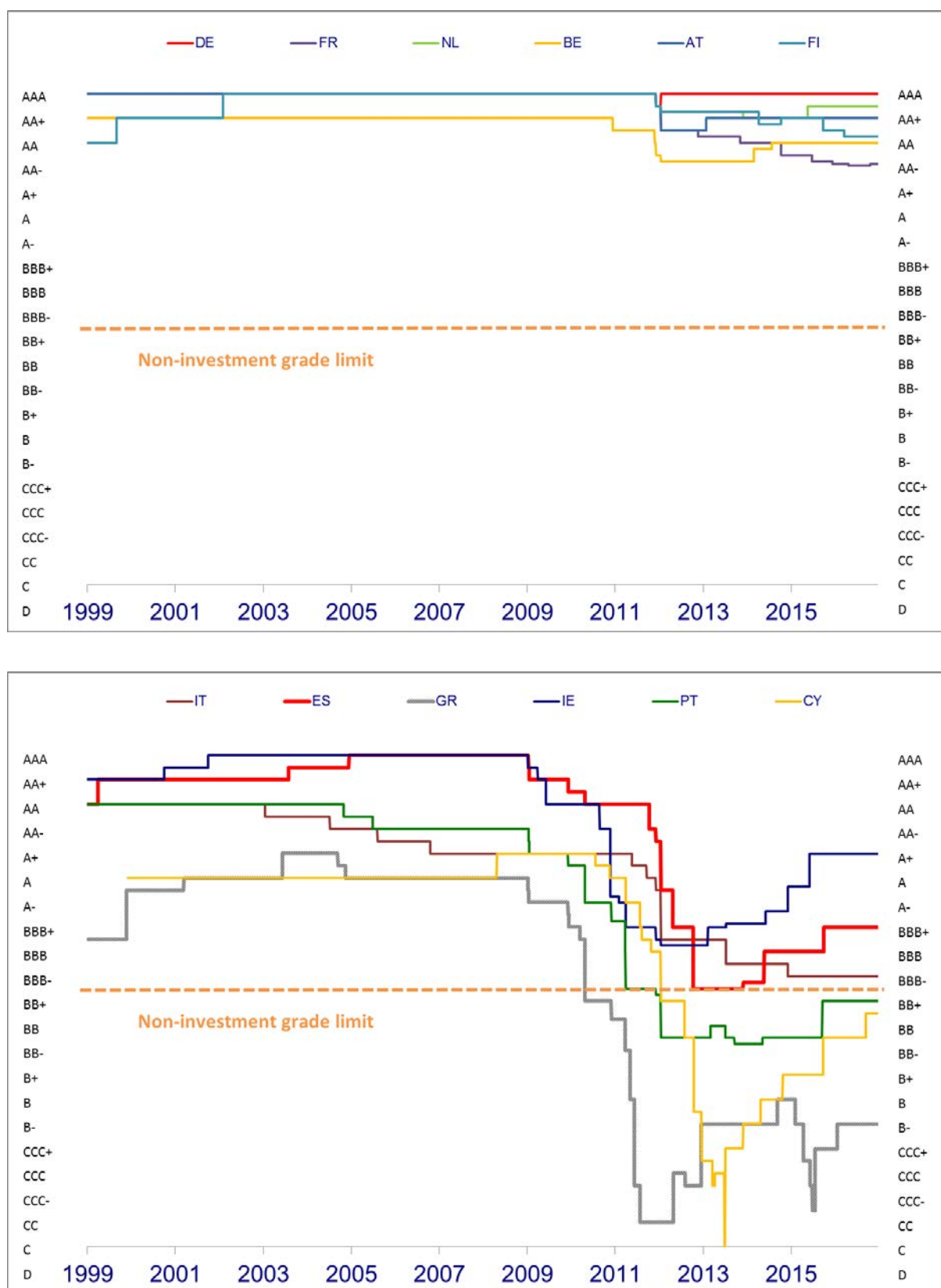
them close to the low level of Germany (see Figure 1). Yield-hungry investors may have acted on the implicit assumption that troubled member countries would simply have to be bailed out. The economic damage and danger of contagion from a possible default event in an integrated capital market would give EU institutions, the ECB and euro area partners little choice but to step in with supporting measures so as to ensure economic and financial stability and preserve the euro (see also Eijffinger et al., 2015).

Third, the euro area countries on the receiving side of the capital flows took insufficient action to redress the misallocation of credit and the growing economic and financial imbalances showing up in growing deficits on the current account of the balance of payments. These vulnerabilities were masked by the rise in asset prices, the strong growth performance and the regulatory under-pricing of country risk. Moreover, the credit boom eroded the national governance institutions supporting reforms. While the supply of cheap credit from abroad might have helped to fund the costs of structural reforms, in reality it allowed politicians to ‘kick the can down the road’ (Santos, 2015). An effective EU governance framework for preventing and correcting macroeconomic imbalances was badly missing.

The first concerns were already appearing in the mid-2000s. For example, while Standard & Poor’s then raised the credit rating for Spain to the highest level, around that time it downgraded Greece, Italy and Portugal (see Figure 2). When the global financial crisis broke out and spilled over to Europe, governments stepped in to rescue their banks and counter the deep recession, setting the stage for unexpected negative feedback loops between fragile banks and overburdened sovereigns at the national level. Markets and rating agencies quickly lost confidence in the ability and willingness of the governments concerned to secure the credibility of their “sovereign signature” in economic and financial policies (Trichet, 2013, p.476).

With the onset of the sovereign debt crisis the earlier indifference of market participants about sovereign-specific default risk (‘no need to ask questions’) changed abruptly. When the newly elected Greek government revealed, in autumn 2009, that the country’s deficit and debt-to-GDP ratios were much higher than previously thought, investors increasingly began to doubt its fiscal capacity to service the outstanding debt. The dire fiscal situation of Greece was moreover confirmed by falling sovereign credit ratings (see Figure 2). Meanwhile, other Member States were very hesitant to provide financial assistance to Greece, pointing to the no bail-out rule of the Maastricht Treaty.

Figure 2 - Sovereign credit ratings of 12 euro area countries, 1999-2016



Source: Standard & Poor's. Last observation: 30 December 2016.

As a result, investors' earlier beliefs were shattered; they suddenly found themselves critically exposed to sovereign risk. This 'regime switch' made the government bonds of all vulnerable euro area countries and by implication the claims on their financial intermediaries and corporate sector information-sensitive.⁸

Market participants tried to assess the nature of their sovereign exposures and demanded corresponding risk premia in interest rates. Their change in attitude turned into extreme risk aversion following the Franco-German Declaration of Deauville of October 2010, which demanded a private sector involvement in resolving the Greek sovereign debt crisis. The German bund naturally emerged as the preferred destination of investors looking for safety, liquidity and stability in volatile euro area markets. Also foreign official institutions drastically cut their reserve holdings of euro area government debt at the turn of 2011/2012 while keeping German bonds in their portfolios (see Blattner and Joyce, 2016).

This general flight-to-safety had the effect of easing relative financing conditions for both the public and private sector in Germany as well as in other high-rated nations that were still deemed safe. By contrast, the most vulnerable countries were confronted with a rapid rise in their bond yields, which in interaction with falling credit ratings aggravated their fiscal situation. Without effective backstop mechanisms the prospect of ever-rising public debt seemed to escalate into an unstoppable default as foreign investors retreated, a situation described as the "systemic fragility" of the eurozone (De Grauwe, 2012). Ireland and Portugal lost access to capital markets in late 2010 and early 2011, respectively, while Italy and Spain struggled with high interest rates, despite ECB interventions in their government bond markets. Greece finally entered into a large public debt restructuring in early 2012.

Since rising government bond yields served as a pricing benchmark for domestic loans and securities, also the financing conditions for households and firms tightened markedly, thereby hitting private consumption and investment. The banks in crisis-hit countries that previously had loaded up on own government bonds to profit from higher yields (especially poorly

⁸ Binder (2013) draws a parallel between the euro area sovereign debt crisis and the American State debt crisis in the early 1840s. As she explains, in the 1830s, State government bonds were considered safe assets and information-insensitive because it seemed inconceivable that a State government could default. On the one hand, their infrastructure investments were expected to be profitable; and even if they weren't, the States could increase their tax revenues, especially since the value of land and property was rising. On the other hand, as mentioned by Frieden (2016), many States could borrow beyond their means because of the expectation that State debts were backed by the Federal government. But after the panic of 1837 and the collapse of 1839, the strength of the States' fiscal reserve was challenged and creditors expecting a Federal bailout were disappointed. As land values and property taxes fell, the quality of the States' investments in canals, roads and railroads suddenly mattered for their ability to service their debt and their debt became information-sensitive.

capitalised and public sector banks) saw the value of their sovereign bond portfolios diminish dramatically, which raised serious questions about their own health and the ability of national governments to rescue them once again (see Altavilla et al., 2016). The initial Eurogroup proposal of spring 2013 to impose a levy on insured retail bank deposits in Cyprus, a country lacking the fiscal space to rescue its two largest failing banks, added deposit risk to country risk (Orphanides, 2014). This necessitated the national authorities to introduce temporary capital controls to prevent massive capital flight.

Overall, the sudden regime switch from safe to risky sovereign and bank assets resulted in a deep fragmentation of euro area financial markets along national lines of creditworthiness (see also Ehrmann and Fratscher, 2015). This in turn severely hindered the even transmission of monetary policy across the euro area. Market participants even began to contemplate the possibility of a euro area break-up, which triggered a general repatriation of funds focused on matching domestic assets and liabilities to address the emerging currency redenomination risk.

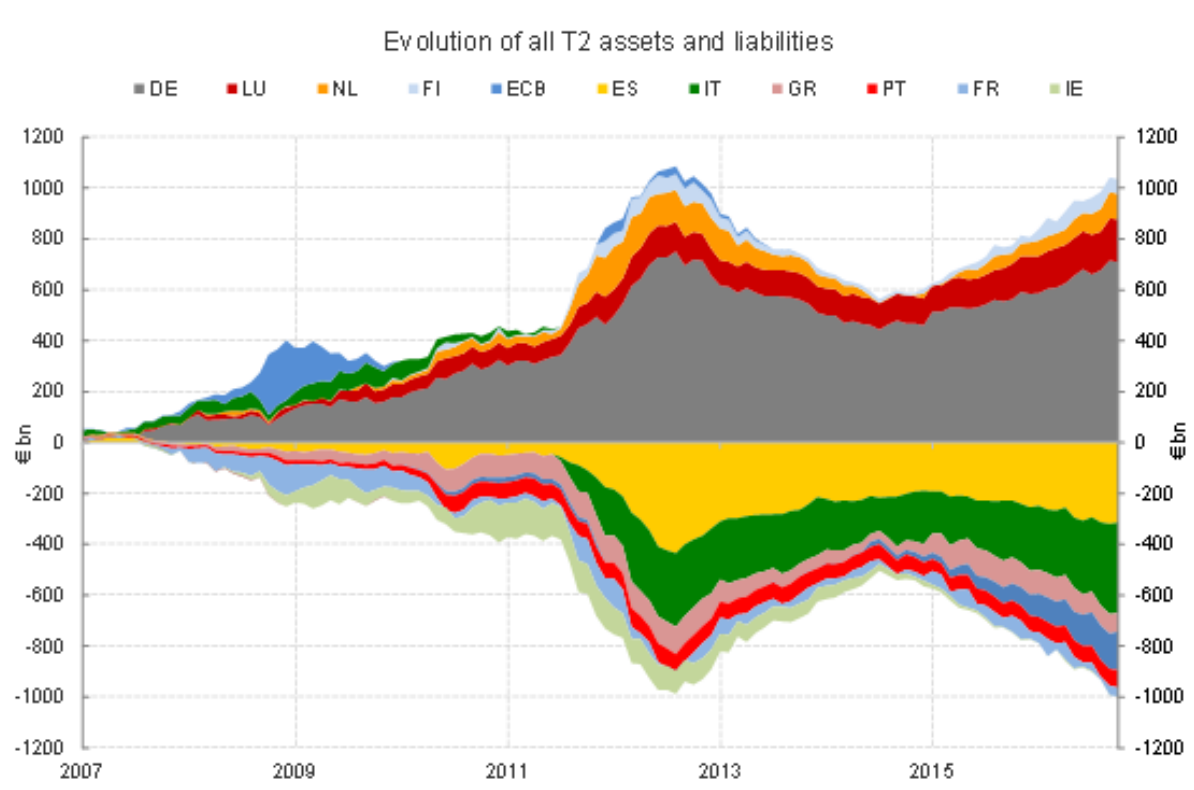
The growing recourse of fragile banks to Eurosystem refinancing and its uneven distribution across euro area countries manifested itself in a rise in net liabilities (or claims) of the National Central Banks of current account deficit (or surplus) countries vis-à-vis the ECB in the so-called TARGET2 system through which cross-border payments are settled using central bank money (Figure 3). The Eurosystem effectively substituted for the private financing of current account deficits and in so doing bridged the diverging credit risk perceptions since the eruption of the tensions inside EMU (Cour-Thimann, 2013). Private capital flowing out of the crisis-affected countries was also replaced by substantial EU/IMF financial assistance (Lane, 2013). Taken together, these official sector claims and liabilities showed the extent of financial fragmentation between safe and risky sovereigns and their respective banks.

5.2. A stronger EMU legal framework for sovereign safety

Only from mid-2012 onwards (foreign) investors regained confidence in the future of the euro and sovereign bond markets gradually calmed down. This positive trend was supported by a range of confidence-building legal measures and central bank interventions at the supranational level that were successful in coordinating markets around a return to financial stability in the euro area as a whole (see van Riet, 2016a for details).

First, a strengthening of European economic governance sought to make claims on national governments truly safe again in terms of their fiscal fundamentals. As from end-2011 European leaders reinforced the Stability and Growth Pact, introduced a new Macroeconomic Imbalance Procedure and provided for an annual European Semester for more effective coordination and surveillance including sanctions for non-compliance. A Fiscal Compact, signed in February 2012, further required signatory parties to include a structural balanced budget rule in binding national legislation and gave more prominence to reducing high public debt.⁹ Moreover, it required the introduction of independent national fiscal councils with a monitoring role. The European Commission later added a European Fiscal Board. This tightened the EU legal framework for sound public finances although in practice it was weakened again by a more flexible interpretation and non-application of the fiscal rules.

Figure 3 – TARGET2: net positions of selected National Central Banks and the ECB
(EUR billions; end-of-month data)



Source: ECB. Last observation: October 2016.

Note: TARGET2 balances are the assets and liabilities of euro area National Central Banks vis-à-vis the ECB that result from cross-border payments settled in central bank money. Total assets and liabilities sum to zero. The ECB figure comprises the position vis-à-vis central banks of non-euro area countries participating in TARGET2.

⁹ Binder (2013) and Frieden (2016) point out that the American State debt crisis of the early 1840s led to similar legal changes. States initiated constitutional restrictions on debt issuance and legal requirements to make new spending match new taxes.

Second, the EU preferential regulatory treatment of claims on national governments was expanded. After the global financial crisis, the EU authorities proposed and/or introduced many new supranational financial sector laws, including a common financial transaction tax. This European financial legislation, apart from tightening prudential requirements or preventing speculation, often labelled national government bonds as high quality and liquid assets by definition or gave them some other form of preferential market treatment. The extended scope of this label may again have stimulated the demand for sovereign bonds irrespective of their actual safety while undermining the role of markets in imposing fiscal discipline (van Riet, 2016b).¹⁰

Third, new official fiscal backstop facilities effectively guaranteed the continued safety of claims on national governments, albeit under strict conditions. The euro area authorities created in mid-2010 a temporary European Financial Stability Facility (EFSF) and opened recourse to a European Financial Stability Mechanism (EFSM) to provide conditional financial assistance to member countries that lost market access. The permanent European Stability Mechanism (ESM) became operational in October 2012, after Member States had added a statement to the EU Treaty that euro area countries could establish such a mechanism to preserve financial stability in the euro area as whole. The ESM offers various tools to address a temporary liquidity crisis hitting individual countries and it may ultimately recapitalise fragile banks directly, although its available resources are subject to a ceiling.¹¹

Finally, in June 2012 European leaders initiated steps towards a European Banking Union in order to break the vicious feedback loop between vulnerable sovereigns and fragile banks. This led to centralised banking supervision and resolution mechanisms, whereas a common retail deposit insurance scheme and a necessary fiscal backstop have been proposed but are still under discussion. Furthermore, over the summer of 2012 the ECB pledged to undertake conditional, yet unlimited purchases of government bonds (so-called Outright Monetary Transactions or OMTs) in dysfunctional secondary markets, if this was needed for monetary policy purposes. One of the conditions for activating the OMT was that the country concerned had accepted an EU/IMF adjustment programme which improved its economic prospects and

¹⁰ The capital exercise undertaken by the European Banking Authority (EBA), requiring the largest banks in late 2011 to maintain a temporary capital buffer against their sovereign exposures valued at market prices, was a notable exception.

¹¹ Note that a common coordination mechanism to implement an orderly and transparent sovereign debt restructuring to restore a country's solvency position (other than activating the collective action clauses now being included in euro area government bonds) is still missing in the EMU architecture (for a detailed discussion see Deutsche Bundesbank, 2016b). This reduces the credibility of the no bail-out clause of the Maastricht Treaty.

reduced the likelihood of sovereign default.¹² The credible ECB commitment to act as a potential ‘buyer of last resort’ removed market fears of a euro area break-up, “satisfying in one blow the aggregate demand for safety” (Golec and Perotti, 2015, p.22) and was successful in lowering sovereign bond yields, notably for the crisis-hit countries, which saw their interest rate spreads relative to Germany decline. The increase after mid-2012 in the market value of these sovereign bonds on the balance sheet of fragile banks improved their financial health and restored private funding flows towards the banking sector (see Acharya et al., 2016). This recovery in turn made countries with weak public finances less exposed to additional bank rescue operations and mitigated the bank-sovereign nexus.

As a result of these supranational legal and central bank interventions markets saw a clear and transparent official commitment to preserving the safety of sovereign bonds and hence financial stability in the euro area as a whole (Gourinchas and Jeanne, 2012; Eijffinger et al., 2015; van Riet, 2016a). The tighter post-crisis economic and financial governance framework of EMU and the new back-up mechanisms reinforced the safety of national sovereign bonds in terms of their fundamentals. On the one hand, this has limited the original misalignment with the safe asset labels in EU prudential legislation for financial institutions. On the other hand, the growing scope of the preferential regulatory treatment of public relative to private debt at the European level may undermine market-based fiscal discipline.

5.3. Searching for yield in a world of ultra-low interest rates

Despite the convergence of long-term bond yields since mid-2012 and the diminishing stress in bank funding markets, as also reflected in gradually declining TARGET2 balances, bank lending rates remained considerably higher in the crisis-affected countries. This mainly reflected a still low bank capitalisation, high exposure to non-performing loans and a cautious bank attitude towards extending credit to the private sector. The ECB’s additional monetary accommodation since June 2014 (to bring very low euro area inflation back to a level close to but below 2% over the medium term) were successful in further relaxing credit conditions, reviving credit growth, and correcting financial fragmentation both on the side of public and private sector borrowers.

The negative interest rate that applied to the ECB’s deposit facility since June 2014 and the Eurosystem’s large-scale purchase programme of public sector securities (which was started

¹² The European Court of Justice (2015) confirmed that the ECB had the discretionary powers to establish such a monetary backstop for fulfilling its mandate and that it was compatible with the EU Treaty given the OMTs monetary policy objective and the strict conditions attached.

in March 2015) lowered the yield curve and made investors search for higher returns on sovereign bonds further along the term structure as well as across the eurozone in order to rebalance their portfolios. As a result, a large share of national sovereign bonds with medium- to long-term maturities recorded negative yields which also made public debt appear more sustainable. ‘Safe haven’ countries saw their bond yields falling towards the negative deposit rate and in some cases even somewhat below. German 10-year bond yields reached negative territory in June-September 2016. But also the vulnerable euro area countries witnessed record low bond yields and in some cases these dropped below zero even for tenors up to five years. Hence, the return of sovereign bond yields to narrow spreads relative to Germany occurred on the backdrop of a renewed ‘search for yield’ with less attention being paid to credit quality. Sovereign bond yields were compressed in an unusual euro area capital market environment of ultra-low or negative interest rates and subdued market volatility, driven by the Eurosystem’s continuous public sector bond purchases rather than improving fiscal positions.

Looking at economic and financial fundamentals, some investors probably were still concerned about the safety of the banking sector in the former crisis-hit countries, also in view of the high share of non-performing loans in many of their credit institutions. In addition, they may have been worried about political risks. The various concerns were visible to some extent in the uneven expansion of the excess reserves of the banking sector across euro area countries associated with the implementation of the Eurosystem’s large-scale asset purchase programme and the subsequent rebalancing of investors’ portfolios. This resulted first of all from the technical fact that many non-resident investors (including international banks, notably those located in London) who sold their securities to a particular National Central Bank settled and/or placed the money received on a bank account in Germany or another core country (Deutsche Bundesbank, 2016a). The choice of non-residents to locate their main euro area bank account in a core country is in itself an asset allocation decision in favour of a ‘safe haven’. Second, a number of investors decided to transfer the proceeds of their asset sales after their settlement in a vulnerable country on to bank accounts in a core country as they favoured a lower risk exposure (De Nederlandsche Bank, 2016). The process of portfolio rebalancing towards financial assets with a higher risk exposure apparently also took place largely in favour of core countries.

All these cross-border liquidity flows manifested themselves again in rising TARGET2 balances. As a result, in the autumn of 2016, the claims (liabilities) of the National Central

Banks of the core (periphery) countries vis-à-vis the ECB reached a similar high level as during the peak of the sovereign debt crisis in late-2011/early-2012 (see Figure 3). At that time they stood for bank funding stress in the crisis-hit countries; this time the rise occurred mostly for technical reasons, although market concerns about political risks and/or the safety of large bank deposits may also have played a role. The concentration of excess central bank liquidity in the core countries may be indicative of lingering doubts about placing money in the riskier member countries.

The renewed convergence of public and private sector borrowing costs notwithstanding, cross-border investments in the euro area are still information-sensitive, possibly due to a fundamental lack of trust in the future of the euro. The return of a crisis in the vulnerable countries (characterised by high sovereign debt, many non-performing bank loans and a large exposure of financial institutions to own government bonds) and the risk of contagion to other weak nations remains an ever-present threat to economic and financial stability in the euro area as a whole. A big negative shock could again trigger destabilising capital flight, rising bond spreads and financial disintegration of the eurozone, even with the EMU's reinforced governance framework, the ESM's fiscal support facilities and the ECB's monetary backstop represented by the OMT now being in place.

This was evident in mid-2015 when markets were gripped by renewed fears about Greece leaving the eurozone. The Greek government suddenly announced a referendum about accepting the tight policy conditions of a third euro area rescue programme with uncertain prospects about a possible write-down of unsustainable Greek bonds in the hands of the official sector. Government bond spreads of vulnerable euro area countries relative to Germany temporarily increased due to contagion effects, but the Eurosystem's large-scale monthly purchases of public sector securities (which excluded those of Greece) presumably helped to contain the divergence in bond yields.

Another large shock occurred in June 2016, as the UK electorate narrowly voted in favour of leaving the EU in a referendum. The Brexit news immediately led to a sharp drop in German sovereign bond yields and a rise in corresponding Italian, Spanish and Portuguese long-term interest rates. The widening of sovereign bond spreads was however quickly corrected (with the exception of those for Portugal), which again might be partly related to the Eurosystem acting as a large buyer of national government bonds.

However, the Eurosystem's public sector purchase programme will not last forever. Once a sustained adjustment in the path of euro area inflation has been achieved back to a level in line with medium-term price stability this monetary policy operation will come to end. From that moment on, government bond yields will respond more directly again to changing economic fundamentals, although the EU's preferential regulatory treatment of sovereign debt may still dampen the impact of adverse shocks in normal times.

6. Addressing the safety trilemma of the eurozone

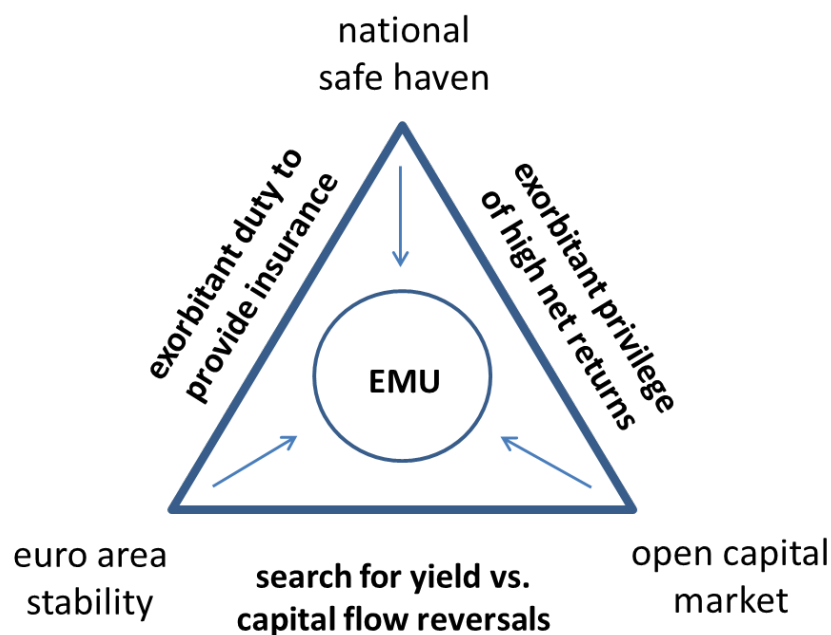
6.1. The inconsistent triangle

Akin to the financial trilemma described by Schoenmaker (2011),¹³ this paper puts forward the 'safety trilemma' of the eurozone, which states that keeping a national sovereign asset as 'safe haven' is incompatible with having free capital mobility and maintaining economic and financial stability in EMU, as it prevents sustainable financial integration; one of these three features has to be given up (Figure 4). A national safe asset functioning as a nominal anchor for the whole financial system causes a threefold segmentation within the currency zone in terms of the cost of domestic credit, the ability to diversify portfolios and the vulnerability to destabilising capital flows.

Bolton and Jeanne (2011) present a model with an asymmetry in cross-country incentives to control sovereign credit risk in a monetary union without a supranational government. On the one hand, weaker member countries will tend to supply an excessive amount of risky public debt, since they do not sufficiently internalise the possible contagion effects of their financial fragility to other members. The 'bond market vigilantes' will normally demand a relatively high interest rate to absorb this supply, also for corporate bonds issued in these jurisdictions. On the other hand, wealthy countries perceived as creditworthy will tend to supply an excessively low amount of their safe government debt in order to exploit the economic rent from being a 'safe haven' for investors across the whole monetary union. The relatively high price to be paid for their sovereign bonds will translate in a comparatively low nominal yield and reduce the interest costs on the country's public and private debt.

¹³ According to the financial trilemma, the three objectives of financial stability, financial integration and autonomous national financial policies are incompatible. One of the three objectives has to be given up.

Figure 4 – The safety trilemma of the eurozone



Mundell (1973) emphasises the benefits of a common currency area with full capital market integration for the ability of participating countries to cushion idiosyncratic disturbances, as the availability of foreign capital could weaken the domestic impact of these shocks. The other side of an integrated capital market is, however, the risk of contagion to shocks originating abroad. McKinnon (2002), building on his analysis, argues that countries without ‘safe haven’ status are impeded in attracting foreign investors from across the monetary union. This hampers their ability to share risk through international portfolio diversification and absorb asymmetric shocks in the most efficient way. Hence, they will have to rely on the safe asset provider of the monetary union to provide them with risk insurance and to maintain its exposure as other investors scramble for safety in a crisis. By contrast, the ‘risk-free’ country can more easily finance itself abroad without having to fear for capital flow reversals and thus realise an optimal shock absorption in a single currency area. Moreover, it can exploit its overall low cost of capital by taking advantage of higher-yielding investment opportunities across the currency zone.

A monetary union as the eurozone with free capital mobility and a national ‘safe haven’ asset will therefore see investors from the safe country searching for a higher yield across the risky member countries in quiet times while they will quickly return to the safety of their home country when it appears as if the negative risks could materialise. At the aggregate level, the safe country builds up large cross-border risk exposures during tranquil episodes (promising

high net returns on low-cost capital), but it is understandably not keen to absorb adverse shocks hitting the risky countries (given the loss of net wealth that this implies) (cf. Gourinchas and Rey, 2016). The sharp reversal of capital flows triggered by a major shift in market sentiment back to safe countries could each time trigger financial fragmentation along national lines and destabilise the monetary union.

Taking the objective of a stable monetary union based on free capital mobility as given, these consequences of ignoring the safety trilemma can be solved either by more effectively sharing the ‘safe haven’ role among all member countries or by introducing a supranational sovereign benchmark security. The first option of making national public debt equally safe requires a strong and credible commitment of all participating countries to honour their debt obligations in most, if not all states of the world. For a monetary union like the euro area consisting of member countries with heterogeneous endowments (i.e. the implicit collateral of public debt) this may not be a realistic option in the medium run. The second option of pooling national sovereign risk would effectively address the existing uneven incentives among core and periphery countries regarding the supply of their (safe respectively risky) government debt and their unequal scope for cross-border risk sharing while internalising a substantial part of volatile capital flows. These advantages indicate that the stability of a common currency area such as the eurozone is better served by a common safe asset (see also Landau, 2016).

6.2. The national safe haven curse

For Germany, as predicted by the safety trilemma, the role of providing the safe sovereign asset for the whole eurozone (with those of other core countries being close substitutes) turned out to be a mixed blessing – Gourinchas and Rey (2016) even describe it as “the curse of the regional safe asset provider”.

On the one hand, the German government was able to finance itself in the international capital market at the lowest possible interest rate, an advantage that extended to domestic private borrowers. Before the crisis, reflecting a ‘search for yield’, these low-cost funds were invested all across the eurozone, in particular in fixed-income securities and bank loans in periphery countries that promised the highest rewards. This enabled Germany to generate a positive net return on its net international investment position. Bastasin described this unique advantage as an ‘exorbitant privilege’ (Figure 4).¹⁴

¹⁴ This statement can be found in the 1st edition of Bastasin (2015). On this point see also Hale and Obstfeld (2016, p.120) and Pisany-Ferry (2014, pp.161-162).

On the other hand, this growing foreign exposure also made German investors vulnerable to valuation losses when negative shocks affected its eurozone partners, as became clear in the wake of the global financial crisis. According to Gourinchas and Rey (2016), as the regional safe asset provider, Germany then had to make a choice between two evils: either the ‘exorbitant duty’ of rescuing the system and seeing its net wealth decline, or shunning this responsibility and accepting a real appreciation.

Regarding the first choice, German investors could decide to absorb the capital losses on their periphery assets, knowing that together they also stood to benefit from a stabilisation of the value of their risky assets. As for the second choice, German investors could prefer to sell out and repatriate their funds while foreign investors would do the same and also bring their savings into the ‘safe haven’. The excess supply of capital would push down interest rates, stimulate domestic demand, raise inflation and cause a real appreciation in Germany. The concomitant real depreciation in the periphery countries would help them to restore their competitiveness at the price of Germany losing net exports. Gourinchas and Rey (2016) explain that the second option was mostly preferred but that the zero lower bound in nominal interest rates kept German real interest rates too high and prevented the necessary rise in domestic demand, inflation and the necessary real appreciation. Moreover, the flight-to-safety caused a fragmentation of financial markets in the eurozone.

A euro area fiscal authority issuing its own safe asset could enlarge the risk absorption capacity in a crisis and combine this with a real appreciation through an upward adjustment of the nominal euro exchange rate and/or higher euro area inflation, as appropriate. The non-standard monetary policy measures of the ECB would be available to overcome any constraints posed by the zero lower bound in nominal interest rates at the euro area level. As a main benefit, EMU countries would enjoy a more equal cost of capital and acquire an equal opportunity to absorb asymmetric shocks when their citizens are able to share portfolio risk more efficiently across the eurozone. At the same time, it represents a loss of the economic rent pocketed by Germany and other high-rated countries that especially since the crisis have performed the role of ‘safe haven’ in the eurozone (Bolton and Jeanne, 2011; Pisani-Ferry, 2014). Yet, while Germany would stand to lose its ‘exorbitant privilege’, the introduction of a common safe sovereign asset would limit its own cross-border risk exposure and relieve the burden from its ‘exorbitant duty’ to act as the main insurer for euro area stability.

7. Sharing the safety premium of risk-free sovereign bonds

7.1. National tranches of safe sovereign debt

As mentioned above, one solution for solving the safety trilemma of EMU is to share the ‘safe haven’ role in a multipolar system of safe national sovereign bonds. This appears to have been the original intention of the Maastricht Treaty: achieving and maintaining sound fiscal positions across the board would support a stable EMU and create the pre-condition for advancing towards a fiscal union without the need for persistent (unidirectional) financial transfers between its members.

One proposal that would realise safe national assets more quickly is when each country would issue their government bonds in two tranches that investors may trade separately: a junior tranche that is subject to sovereign credit risk and a senior tranche that keeps its safety – at least, until the loss absorption capacity of the junior component of the bond has been exhausted (see Brunnermeier et al., 2016b; Deutsche Bundesbank, 2016b). The average cost of sovereign funding would remain the same but it would be lower for the senior tranche and higher for the junior tranche of debt securities. Thanks to this contractual innovation the total volume of safe assets in the eurozone would increase, while euro area countries would continue to be responsible for their own debt. Giving the senior claims on governments a preferential treatment in EU prudential legislation would then be legitimate, while it should evidently be abolished for the junior tranches. Changes in risk sentiment towards a particular country would lead investors to rearrange their portfolios between the safe and risky tranches issued by the affected government rather than having to make cross-border adjustments towards bonds from other euro area governments, although that option would remain.

Although the national safe bond tranches would have different countries of origin, they would be characterised by similar credit risk profiles and broadly aligned interest rates to the extent that their expected loss rates are equivalent. The wide dispersion in the creditworthiness of euro area governments makes meeting this objective a challenge. The relative size of the senior and junior tranches depends on the selected subordination level and the corresponding expected loss rates. The stronger a country’s fiscal soundness, as measured for example by its sovereign credit rating, the larger the senior tranche can be and the smaller the junior tranche that needs to absorb any credit losses. Since Germany and a few other core countries enjoy the highest credit rating, all their sovereign debt can already be regarded as safe and in their case a tranching operation is superfluous. By contrast, the sovereign credit rating for Italy stands just above investment-grade reflecting inter alia its high level of public debt to GDP.

Simulations by Brunnermeier et al. (2016b) indicate that it requires a subordination level of 77% in order to realise a five-year expected loss rate of at most 0.5%, i.e. the safety threshold met by the core countries. Only 23% of every Italian government bond could thus be turned into a safe senior tranche – which given the size of its public debt still results in a significant supply of safe assets that can function as a ‘safe haven’. The circulation of senior tranches enables Italy to attract part of the safety premium in interest rates enjoyed by the core countries but at the price of a relatively high credit risk premium in the bond rate applicable to the junior tranches. The cross-country asymmetry in the feasible ‘float’ of safe relative to risky government debt tranches would furthermore lead to deviating liquidity risk premia in the respective national safe bond yields. Together with other asymmetries, such as the bank-sovereign nexus and political risks, this would constitute a persistent source of financial fragmentation in the euro area capital market.

As argued by Cœuré, B. (2016), an advantage of being able to issue safe tranches of national government debt is that it gives countries the capacity to pursue a countercyclical fiscal policy in a crisis, when otherwise its access to capital markets could become prohibitively expensive and the only alternative was to take fiscal austerity measures. Yet, the favourable impact on domestic demand assumes that households do not raise their savings to account for their higher future tax payments and/or investors do not move their capital abroad (see Section 2.2).¹⁵ Moreover, any debt-financed fiscal expansion that increases a country’s default probability will reduce the proportion of the senior tranche that can be placed in the market, unless a higher expected loss rate is accepted for the junior tranche that must be issued in parallel. When markets are volatile, investors may become risk-averse and refuse to buy any newly issued junior tranches as they prefer to shift their funds into safer instruments. This shows that the relative volume and price of safe and risky assets would still depend on each country’s public debt sustainability.

Staying with national senior and junior tranches would leave it to international investors to create a diversified portfolio of safe debt tranches issued by EMU member countries and to maintain a liquid market for each of them. As discussed in Section 8.3, this foregoes the significant benefits from a pooling of bonds across member countries to issue a common safe

¹⁵ Nickel and Vansteenkiste (2013) show that an increase in fiscal spending in a ‘safe haven’ country (United States, Germany) increases domestic (risk-free) government bond yields, presumably due to the improving economic outlook, with similar spill-over effects on long-term interest rates in other countries. An increase in fiscal spending in a periphery country (Italy, Spain) also increases government bond yields at home, but in this case it lowers government bond yields in the countries perceived as safe. The rise in their long-term interest rate spreads indicates some capital outflows in response to the rise in public debt and would undermine output growth.

sovereign asset for EMU characterised by a large ‘float’, such that in terms of safety and liquidity it can be compared with the treasury bonds issued by a large monetary union like the United States (Brunnermeier et al., 2016a,b).

7.2. The safety benefit of GDP-linked bonds

A specific issue is also that issuing two tranches of each government bond just gives investors a dual portfolio per country: their bonds are either safe or risky. They may prefer to diversify into government securities with a symmetric economic risk profile, notably GDP-linked bonds which for longer maturities offer an equity-like exposure (cf. Moreira and Savov, 2016). Growth-linked bonds have so far only been introduced as part of a sovereign debt restructuring, as in the cases of Argentina and Greece (see Griffith-Jones and Hertova, 2013). Brooke et al. (2013), Barr et al. (2014) and Blanchard et al. (2016) argue in favour of advanced economies issuing growth-indexed government bonds as a complement to inflation-indexed debt and non-indexed nominal bonds.

The main advantages of this GDP-contingent debt instrument are that it reduces the procyclicality of interest expenditure and the probability of public debt dynamics becoming unsustainable in bad economic times. A clause in the bond contract enables the government to lower or suspend the payment of interest when output growth falls below a specified threshold. This contractual arrangement helps to stabilise fiscal policy at a time of rising primary public spending, falling tax revenues and higher sovereign bond yields and reduces the risk of sovereign default which otherwise could quickly escalate. This additional safeguard in turn should make it more attractive for investors to purchase the risky tranches of national government bonds (see Section 7.1).¹⁶

By contrast, in an economic upturn, the contract foresees that the interest payments on GDP-linked bonds will be raised when output growth exceeds the threshold. But then the government will also receive more revenues to finance the extra debt service costs and needs to spend less on unemployment etc. The price to pay for a lower default premium in interest rates is that investors will demand compensation for the novelty of growth-linked debt securities, its lower market liquidity and the more volatile return compared to non-indexed nominal bonds. These extra risk premia in interest rates could diminish over time when

¹⁶ Governments could still selectively default on these junior claims, irrespective of whether the GDP contingency is triggered or not. After all, there are also non-economic factors which determine sovereign default risk.

growth-indexed bonds gain more acceptance, their markets become more liquid, and investors are better able to absorb or spread the growth risks.¹⁷

GDP-linked bonds appear particularly suitable as an automatic shock absorber and a market-based risk-sharing vehicle for EMU countries that have no monetary policy tools and few fiscal policy options (Brooke et al., 2013; Barr et al., 2014). Blanchard et al. (2016) undertake a number of simulations and argue that the ability of growth-indexed bonds to limit the upper tail of debt dynamics is useful above all for euro area countries with a rather high but not dramatic post-crisis legacy of public debt. When the times are rough, they help them to stabilise the public debt-to-GDP ratio and reduce the likelihood of liquidity stress turning into a self-fulfilling solvency crisis. Governments would furthermore realise a more efficient international sharing of domestic economic risks when investors would hold a portfolio of GDP-linked bonds that is diversified across member countries. GDP-linked bonds thus contribute to economic and financial stability and reduce the need for official financial assistance or the monetary backstop of the ECB. Given these positive externalities growth-linked bonds can be called a European public good (cf. Griffith-Jones and Hertova, 2013).

8. Towards a synthetic euro area sovereign bond

8.1. Cost and benefits of eurobonds

An embedded currency area including a fiscal union (as favoured by McNamara, 2015, and De Grauwe, 2016) would be the most natural way to address the safety trilemma. A euro area fiscal authority would then be able to issue ‘risk-free’ eurobonds, based on a joint and several guarantee from all participating countries or its own tax capacity. This would establish a stable benchmark asset for the euro area financial system that also facilitates an even monetary transmission across the whole eurozone. Such a euro area instrument would offer an extra safety, liquidity and stability premium compared to any national anchor and this economic rent would henceforth be shared equally.

A euro area sovereign bond regarded as safe would help to meet the financial sector’s rising demand for high-quality and liquid assets needed to comply with the EU’s prudential capital and liquidity requirements. Furthermore, it is an effective tool to break the ‘diabolic feedback loop’ between national governments being exposed to systemic banks in their jurisdiction and weak banks in turn being dependent on rescues by their own sovereign. A ‘risk-free’ euro area

¹⁷ For a discussion of practical problems associated with growth-linked bonds, such as the ex post revision of GDP statistics, see Griffith-Jones and Hertova (2013).

sovereign instrument would also be an attractive form of collateral for secured interbank lending and may be pledged by banks drawing on the ECB's refinancing facilities. Such a safe instrument would also be very suitable as the preferred monetary policy tool for the Eurosystem to engage in non-standard large-scale open market operations in government bonds (see Brunnermeier et al., 2011 and 2016a,b; Bastasin et al., 2014; Garicano and Reichlin, 2014; Tonveronachi, 2014; Corsetti et al., 2015; Corsetti et al. 2016).¹⁸

However, there are serious moral hazard concerns to consider when engaging in common issuance of government debt at the euro area level. Subsidiary governments might show less budgetary discipline and the euro area fiscal authority would be subject to a 'soft' budget constraint to the extent that it might be able to more effectively repress savers, get preferential access to sovereign bond markets and/or assume political influence over the ECB (cf. McKinnon, 1995; van Riet, 2015). After all, the 'risk-free' nature of sovereign bonds derives from the ability of the government to generate exceptional revenues beyond ordinary taxation and determine the means of settlement of the interest-bearing debt that it issues. This shows the crucial importance of designing eurobonds in a way that prevents both EMU countries and the euro area sovereign from free-riding and destabilising the euro.¹⁹

While recognising its advantages, many policy makers have excluded the introduction of eurobonds at this stage, seeing debt mutualisation as the final building block of EMU in conjunction with a political union. This cornerstone can be put in place only after a level fiscal playing field has been achieved and a significant part of fiscal sovereignty has been transferred to the eurozone level with both national and supranational fiscal policies subjected to strict constraints. The political consensus for such fiscal integration is still out of sight, reflecting the diverging interests of creditor and debtor countries and the prevailing divergences in fiscal soundness and banking sector health.

8.2. The scope of European supranational debt

Over the past few years, the European multilateral financial institutions as well as the European Union (EU) have stepped up their securities issuance either to finance official assistance programmes (EFSF, ESM) and/or to carry out a specific mandate assigned to them under the EU Treaty (European Investment Bank, EIB; and EU). Given the explicit fiscal

¹⁸ Central banks are nowadays also able to construct a risk-free benchmark curve based on overnight index swaps (the so-called OIS curve) and use swap interventions to steer market interest rates without having to undertake open market operations in safe financial instruments. However, as this does not create an investable instrument, it would not overcome the destabilising capital flows between safe and risky countries inside EMU. See also European Central Bank (2014).

¹⁹ For a survey of various euro area sovereign bond proposals, as well as their costs and benefits, see Claessens et al. (2012).

backing from all the euro area countries, all Member States, or the EU budget, these European institutions tend to have a very high if not the highest credit ratings (see Table 1). The combined stock of their debt securities in issue at end-December 2015 amounted to about EUR 766 bn. This compares with a non-consolidated stock of outstanding debt securities issued by the 19 euro area governments of EUR 7285 bn. (excluding the EFSF's debt securities since these are reallocated to its shareholding countries). This implies that the European supranational issuers together stand for just below 10% of the total sovereign debt securities of about EUR 8 trillion (not counting the government debt securities of non-euro EU countries).

Table 1 – European supranational debt securities in issue

EU/EMU institution	Stock of end-2015 (EUR billion)	Maximum capacity (EUR billion)	Credit rating (Fitch)
EFSF	186	440 ²⁾	AA
ESM	72	500	AAA
EU	54 ¹⁾	110 ³⁾	AAA
EIB	454	690	AAA
Total	766	1300 (excl. EFSF)	

1) EU includes the EFSM (EUR 46.8 bn.), the Balance of Payments Facility (EUR 4.2 bn.) and the Macro-Financial Assistance Programme (EUR 3 bn.).

2) The maximum capacity of the EFSF has expired.

3) Consists of EUR 60 bn. for the EFSF and EUR 50 bn. No ceiling for the MFA.

Sources: Public information from European Commission, EFSF, ESM, EIB.

Given the guarantees and callable capital their potential debt issuance is much higher. However, this gives an exaggerated picture of the possible 'float' of European supranational debt securities. The capacity of the EFSF has expired as its tasks have been taken over by the ESM. Although the other limits add up to EUR 1.3 trillion, the official support facilities are only to be used on a temporary basis in a crisis (although repayment of assistance may take a long time and their debt may have to be rolled over). The investment programmes of the EIB also serve to finance a number of transitory projects. Moreover, the EIB issues debt instruments denominated in euro as well as in other major currencies. From this perspective, the actual and theoretical 'float' of these supranational safe assets is too small to anchor the euro area financial system.

8.3. Constructing a synthetic eurobond

A key question is therefore whether and how, in the absence of further fiscal integration, the euro area countries can together design a supranational safe asset for the eurozone. As long as there is no euro area fiscal authority issuing its own bonds, national authorities will need to find an alternative coordination mechanism to address the market demand for an essential common public good that should underpin the longer-term stability of the euro. Given the complex governance issues that need to be solved and because the financial benefits accrue to all investors, the public sector will either itself need to provide the single safe asset or provide the framework conditions for a successful private sector initiative.

Brunnermeier et al. (2011; 2016a,b) put forward the idea of using the techniques of securitisation, diversification and tranching to engineer a common safe sovereign asset that commands an extra safety and liquidity premium in the market, without resorting to debt mutualisation. Following their proposal, a Special Purpose Vehicle (SPV) – which could be administered by a public or private sector entity – acquires a maximised portfolio of government bonds from all euro area countries with market access in a fixed proportion.²⁰ Against this portfolio as collateral, it issues two tranches of a synthetic eurobond in a sufficiently large volume: a relatively large tranche of European Safe Bonds (called ESBies) that are secured by a senior claim on the cash-flow from this pool of government bonds; and a relatively small tranche of European Junior Bonds (EJBies) with a junior claim on these payments. Any losses on the SPV's diversified portfolio of national government bonds would first be borne by the private holders of EJBies; taxpayers would never bear the brunt. The SPV should be able to generate a 'risk-free' yield curve if the ESBies (and the corresponding EJBies) are offered with a range of maturities. Moreover, the private sector is likely to create derivative markets for the corresponding Credit Default Swaps.

Simulations by Brunnermeier et al. (2016b) suggest that a subordination level of 30% would be sufficient to achieve a five-year expected loss rate on the junior tranche that would be comparable to those for bonds issued by vulnerable euro area countries (with Greece and Cyprus in the securitised portfolio this corresponds to a credit rating below investment grade). The five-year expected loss rate for the senior tranche would in that case be slightly lower than that of the German bund. Taking a portfolio of national general government bonds²¹ of

²⁰ The country weights could be derived from relative GDP or the ECB's capital key. A debt-based weighting scheme is to be avoided, as it could reward countries that increase their public debt with a higher share of the EDA's portfolio.

²¹ Note that this wide coverage of the public sector includes debt securities issued by central, state or regional and local governments as well as social security funds and further includes general government loans.

for example EUR 6 trillion for the securitisation, the ESBies would then represent EUR 4.2 trillion (70%) after full phasing-in of the issuance programme. This constitutes a substantial ‘float’ of a common sovereign-backed safe asset for the eurozone and almost doubles the supply of safe assets in the euro area compared to the total amount of EUR 2.43 trillion of high-rated general government debt of Germany, Netherlands, Austria, Finland and Luxembourg. Major shifts in risk sentiment should then be expected to trigger portfolio adjustments between the senior and junior tranches of the synthetic eurobond rather than between the bonds of safe and risky countries and effectively solve the safety trilemma.

To further protect the safety of the ESBies in the unlikely case that the EJBies would be wiped out and to gain the highest possible credit rating, it was initially suggested that the participating nations could be asked to provide a capital guarantee. However, this could undermine the safety of their national bonds which anyhow might suffer from a lower demand and liquidity. As Brunnermeier et al. (2016a,b) show, such a credit enhancement is not needed, since the ESBies nearly double the total supply of safe assets and hence their creation reduces systemic financial risk.

To attract sufficient investors, a credit enhancement might be necessary for the risky EJBies, since these are highly information-sensitive assets rated below investment grade.²² Prospective investors would have to examine not just the default risk of one country but those of the whole group of euro area countries represented in the securitised portfolio and take account of possible cross-country contagion effects – similar to a standard portfolio composed of national government bonds. Brunnermeier et al. (2016b) argue that thanks to the pooling of country risks in the EJBies and the lower costs for investors of the embedded leverage the market should have the capacity to absorb the EJBies, in particular as these would take the place of low-rated sovereign bonds in current portfolios.

However, the market liquidity of the EJBies may quickly evaporate when economic or political risks increase and contagion effects arise. An ESM capital guarantee could enhance the stability and hence the attractiveness of EJBies but would amount to a risk insurance by the official sector. To put the responsibility for risk reduction back at the national level, all euro area governments could agree to issue GDP-linked bonds in addition to nominal bonds, to be held exclusively by the private sector. Barr et al. (2014) see them as a form of market-

²² For the case given above, a subordination level of 40% instead of 30% would be required to reduce the expected loss rate sufficiently for the EJBies to just acquire an investment-grade rating. However, this would reduce the share of the ESBies to 60%, thereby reducing the new supply of safe assets.

based self-insurance against the debt impact of a deep recession and its interaction with rising interest rates. Since GDP-linked government bonds limit as well as diversify the corresponding tail risk of uncontrollable national debt dynamics, they also reduce the residual credit risk falling on the EJBies. Other sources of credit risk such as an exit from the euro or political uncertainty may of course still lead to escalating interest rates, push a country into a default and hit the junior tranche. On balance, however, the national issuance of growth-indexed government bonds provides each country with an equity-like protection and should make the EJBies less risky and thus more attractive for investors.²³

Brunnermeier et al. (2016a,b) present another way to limit the riskiness of EJBies. They highlight the contribution of ESBies in breaking the diabolic feedback loop between bank and sovereign credit risk, which played a key role in fuelling the euro area crisis. Euro area banks could be restricted to holding ESBies (and not the EJBies) in their government bond portfolios. Thanks to this prudential requirement euro area credit institutions would have a diversified senior claim on their balance sheet and hence enjoy a double protection against a sovereign default. Any losses would be carried first by non-bank investors such as pension and funds insurance corporations holding the junior tranche of the synthetic eurobonds. On the one hand, to protect their solvency these institutional investors may have to hold more capital as a consequence. On the other hand, their longer horizon may give them more scope to balance a higher risk exposure with higher expected returns. The requirement that euro area banks only hold the safe senior tranche of the synthetic eurobonds virtually eliminates the nexus between the health of a country's banks and the solvency of their domestic sovereign. This enhances financial stability for the whole euro area, provided the systemic risks are not simply shifted from the banking industry to other financial sectors. This positive externality from bank regulation also makes the EJBies held by non-banks much safer.

Corsetti et al. (2016) prefer a private sector initiative to create synthetic eurobonds.²⁴ The feasibility of their proposal depends in their view on the ECB or the BIS setting up a registration scheme that encourages the private sector to create collateralised debt obligations (CDOs) backed by a portfolio of risk-weighted sovereign bonds issued by the euro area

²³ Brunnermeier et al. (2016b) examine the option of creating two sub-tranches for the EJBies to cater for investors with different risk appetites. For example, the first-loss junior tranche could offer an equity-like high risk exposure while the mezzanine junior securities entail a more moderate riskiness.

²⁴ Their proposal builds on Garicano and Reichlin (2014) and Corsetti et al. (2015) and is similar to that of Bastasin et al. (2014). These authors all argue that the private sector could be relied upon to create a synthetic safe eurobond backed by a portfolio of national sovereign bonds, provided that the ECB defines the necessary features of this asset-backed security and favours it for monetary policy purposes. This arrangement would in their view align the authorities' commitment to do "whatever it takes" with the interests and engagement of the private sector.

countries. Each EMU country would be represented in the aggregate portfolio according to the ECB's capital key or its share in euro area GDP. The risk weights attached to each country's debt would be assigned on the basis of fiscal positions and a debt sustainability exercise. The CDOs would then be divided in (for example) three tranches with different credit risk characteristics to serve investors with specific risk preferences. The most senior securities attracting a zero-risk weight qualify as safe synthetic eurobonds and risk-free high-quality liquid assets for the purpose of fulfilling EU prudential capital and liquidity requirements.

According to Brunnermeier et al. (2011, 2016b) and Corsetti et al. (2015), the ECB should also allow for market-determined haircuts on national sovereign bonds and prefer safe synthetic eurobonds as adequate collateral to be pledged by banks in its refinancing operations. Moreover, the ECB should announce that it will use synthetic eurobonds for quantitative monetary easing purposes. The monetary stimulus would then transmit across a single risk-free yield curve to the whole euro area. To quickly create a critical mass, Brunnermeier et al. (2016b) propose that after a trial period the public or private body issuing the synthetic eurobonds could offer banks the opportunity to swap their national sovereign bonds for the senior and junior tranches.²⁵

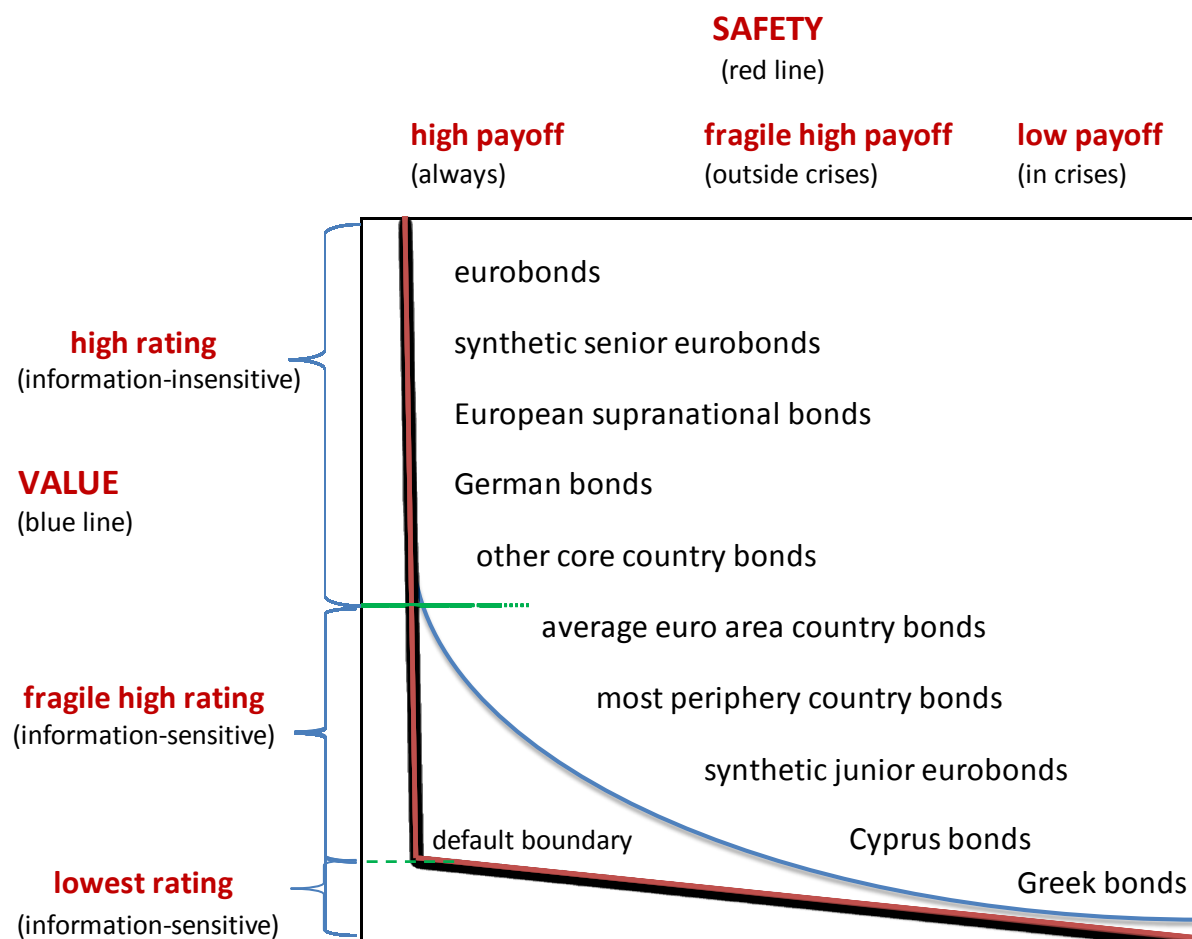
Overall, a synthetic senior eurobond created by a public or private sector entity offers an attractive alternative to true eurobonds for solving the safety trilemma of EMU. The proposal has the advantage of underpinning financial integration and the stability of the euro, while avoiding debt mutualisation and changing the EU Treaty. The synthetic senior eurobonds rank very high in terms of value (proxied by the credit rating) and safety (in terms of expected payoff) in the universe of sovereign debt instruments in EMU. Thanks to their seniority and large-scale introduction they are information-insensitive and would end up just above bonds issued by AAA-rated European institutions and Germany (see Figure 5, inspired by Holmström, 2015, and Golec and Perotti, 2015).

By contrast, the synthetic junior eurobonds are known to be an information-sensitive below-investment grade instrument. They rank relatively low, although their exact position would depend on the design of synthetic eurobonds. As discussed above, specific prudential measures could be taken to cut the bank-sovereign nexus and enhance systemic stability. The

²⁵ Tonveronachi (2014) suggests that banks should be given the opportunity to swap their national sovereign bonds for ECB debt certificates covering the entire maturity spectrum. While these ECB liabilities are free from credit risk, the mutualisation of sovereign credit risk on the ECB's balance sheet however implies a fiscal union by the back door.

introduction of GDP-linked national bonds would also reduce the tail risk of a national government default. Both credit enhancements could give these junior claims a higher value and safety in the information-sensitive region.

Figure 5 - Safety and value of sovereign debt securities in EMU



Source: inspired by Holmström (2015) and Golec and Perotti (2015).

Most EMU countries find themselves in the middle of this universe, as their high ratings as issuers of semi-safe bonds are fragile and only maintained in tranquil times. They face the ever-present danger that steady debt-based capital inflows in search for yield might eventually lead to ‘sudden stops’ and a debt run upon the arrival of negative news. This could easily push them towards or across the default boundary, as happened for Greece and Cyprus (see Figure 5).²⁶ However, their positions would become more secure once a significant part of the destabilising capital flows could be captured by investors simply shifting between ESBies and

²⁶ A downgrade from a high to a lower fragile high credit rating can be interpreted as a transition from information-insensitive to information-sensitive sovereign debt (the horizontal green line of Figure 5). A further sliding of the credit rating brings the debt close to or across the default boundary (the kink in the red line). See also Gorton (2016, p.12).

EJBs (or their CDO equivalents) as market sentiment alternates between risk-on and risk-off modes. This enhanced stability of national sovereign bond markets also makes it less likely that the ECB ever has to deploy the OMT as monetary backstop, since the risk of a renewed financial fragmentation along national lines and/or an adverse sovereign-bank feedback loop is much smaller and hence an even transmission of monetary policy across the eurozone is better ensured. Moreover, it relieves the financial capacity constraints of the fiscal backstop of the ESM.

One option is therefore to charge the ESM with the additional mandate to act as a European Public Debt Agency, which may require an adjustment of the ESM Treaty. The alternative of charging the ECB with the task to issue synthetic eurobonds, for example by converting its PSPP portfolio, would unduly mix its temporary outright monetary policy interventions with the permanent obligation of securitising national public debt for financial integration purposes.

8.4. Dealing with moral hazard concerns

The introduction of synthetic eurobonds should be expected to soften the budget constraint of euro area countries. Brunnermeier et al. (2011) note that governments will continue to be subject to market discipline, since they will still need to place their marginal bond issues in the private capital market. The marginal interest rate on their new bond issues will depend on the prevailing market conditions. These in turn are affected by the expected demand from a big market operator as the SPV, which constantly needs to roll over a considerable part of its holdings in order to maintain a diversified portfolio of national sovereign bonds of different maturities on which the synthetic eurobonds are built.

When the ultimate size and maturity of the SPV's portfolio is announced, market participants will know the amount of large-scale purchases that is planned for each government issuer. Their forward-looking response will tend to reduce credit risk and term premia at the national level, in particular for vulnerable countries, and are likely to have an upward impact on national bond prices. The subsequent continuous flow of actual bond purchases made by the SPV will mostly reduce liquidity risk. Over time, the country-specific liquidity risk premia could also turn out higher because a large stock of national sovereign bonds would be held until maturity by the SPV which lowers transaction volumes in secondary markets. Furthermore, there is a risk of distorting price formation in small countries' bond markets with only a limited debt supply. Even with the SPV operating as a price taker, it would be

advisable for it to observe a blackout period around the dates when national public debt managers are accessing the primary market (similar to the ECB's public sector purchase programme). On balance, the risk premia in national sovereign bond markets will probably be lower for most member countries and national bond prices accordingly higher. Over time, these advantages will translate itself in lower average debt service costs on the outstanding stock of national sovereign debt (see also De Grauwe, 2016, in the context of eurobonds).

Separately, all participating nations would equally benefit from the liquidity and stability premium from pooling national sovereign bonds as well as the endogenous safety bonus offered by the ESBies. Yet, Germany and other high-rated member countries will see the economic rent from their own 'safe haven' status diminish. At the same time, the ESBies reduce their exposure to risks in other member countries and the EJBies take over their role of ultimate shock absorber. The vulnerable nations with a high public debt, fragile banks and weak economic fundamentals enjoy considerable protection from market discipline under a common 'risk-free' bond. Since capital flows in response to changing national performance will be smaller, market-based incentives to address their economic and financial imbalances will be more muted.

A partial solution to address this moral hazard concern is to build a synthetic eurobond on the basis of an SPV portfolio comprising only the safe senior tranches of national sovereign bonds bought according to the specified key (cf. Section 7.1). As the tranching of bonds takes place at the national level, the SPV just pools the safe components at the euro area level. These constructed safe eurobonds would offer above all superior safety, liquidity and stability without pooling the risky tranches of the participating countries. However, undertaking the actual tranching between senior and junior claims at the euro area level allows for a more effective diversification of country risks.

Taking the regulatory route to address the moral hazard issues, de Haan et al. (2016) propose to make a country's participation in eurobonds conditional on continued observance of the recently strengthened EU rules for sound fiscal and structural policies. The weak application of the SGP and the MIP so far raises some doubts about the effectiveness of this remedy. Moreover, to achieve the objectives of synthetic eurobonds it is important that all euro area countries are represented in the securitised portfolio of national government bonds. An exception could be made for stressed countries that have lost market access and receive EU/IMF financial assistance, making a continuation of debt purchases conditional on strict compliance with the adjustment programme.

Going beyond the EU surveillance framework, the additional elements of the proposals of Brunnermeier et al. (2011, 2016a,b) and Corsetti et al. (2016) are essential. As noted above, EU prudential legislation assigns to holdings of euro-denominated government debt a preferential treatment, as commercial banks do not need to hold risk capital against such claims and these assets are regarded as liquid by definition. Moreover, the large exposure limit effectively does not apply to the sovereign bonds of Member States. To restore market-based fiscal discipline, a phasing in of synthetic eurobonds could therefore be accompanied by gradually limiting and carefully phasing out of this sovereign subsidy for euro area countries, which would also be facilitated by the lower national credit risks in the presence of synthetic eurobonds.

Another matter is whether such a regulatory privilege should indeed be maintained for the ESBies and safe CDOs themselves in order to maintain a level playing field in international capital markets where the SPV would compete for funds with non-euro area governments. Maintaining this sovereign funding privilege for the senior tranche of synthetic eurobonds would recognise its characteristics as a truly safe asset that unifies the euro area financial system and is very suitable to function as a store of value in international portfolios.

9. Concluding remarks

At the 25th anniversary of the Maastricht Treaty EMU is still a half-built house. One of the missing building blocks is a single safe sovereign asset. European leaders assumed that the EU/EMU legal framework would be effective in enhancing market discipline and promoting stability-oriented policies. This would make all euro area government bonds equally safe financial instruments, irrespective of their country of origin. However, the architects of the euro overlooked that national sovereigns without monetary powers and in the absence of fiscal and monetary backstops are in effect subsidiary governments. The safety of their bonds is fragile and vulnerable to an uncontrollable debt run, in particular for those member countries with a weak reputation of fiscal soundness.

The pre-crisis convergence of sovereign bond yields to the low level of Germany, considered to be the benchmark state, reflected the monetary regime change implied by euro participation and the integration of capital markets. A continued observance of the economic convergence criteria after joining EMU, extended with broad-based structural reforms, an effective harmonisation of national financial regulation and strict financial supervision, would have been conducive towards stronger country fundamentals and a greater resilience to shocks.

This would have broadened the group of 'safe haven' nations and ensured sustainable financial market integration. This effective risk reduction could have been the stepping stone for agreeing to a wider risk sharing and ultimately a fiscal union. However, after the initial convergence of fiscal and macroeconomic positions before the start of EMU, country fundamentals steadily diverged. Many core country banks intermediated large capital inflows from outside the eurozone into equally large capital exports to the periphery countries to finance their booming domestic demand with relatively cheap and abundant credit. This process fuelled economic and financial imbalances in the weaker member countries and exposed core countries to growing credit risk.

As long as national economies showed a strong growth performance, investors were happy to treat all euro area sovereigns as if they were safe creditors and to search for the highest yield among them. This behaviour was consistent with the zero-risk label assigned to government bonds in EU prudential legislation. The global financial crisis exposed the build-up of fragilities inside EMU and made investors flee to 'safe haven' countries. The group in which markets placed a high degree of trust in a time of crisis turned out to be small, with Germany at the centre, and only the joint crisis-related actions organised by the official sector and the ECB in the end managed to restore market confidence in the longer-term future of the euro.

The crisis experience showed that a safe asset concentrated in the German bund is incompatible with having free capital mobility and economic and financial stability in a monetary union. One necessary building block of a financially integrated EMU is a single safe sovereign asset that functions as the cornerstone of the financial system, mitigates the risk of destabilising intra-area capital flows and facilitates monetary transmission across the eurozone. European leaders have a common responsibility for safeguarding the longer-term stability of the euro. Assuming no further steps towards a fiscal union in the foreseeable future, they will need to implement a politically acceptable alternative for addressing the safety trilemma. As the joint sovereign behind the euro, they have two basic options.

First, they could all issue both senior and junior tranches of each national government bond in a proportion that reflects their respective fiscal soundness and results in an equal maximum expected loss rate on the senior claim across countries. The safety of the senior tranche would be guaranteed because the junior tranche would be expected to absorb any sovereign default risk. This multipolar system of safe national tranches of government bonds would support financial integration and financial stability in the euro area. Since the supply of safe versus risky securities in each country depends on its own creditworthiness, the functioning of EMU

would nevertheless continue to be hampered by (the risk of) financial fragmentation along national lines.

The ‘carrot’ for semi-safe euro area countries of participating in this option is that they may be able to share on a more sustainable basis in part of the safety premium that is currently attracted by Germany. Germany in turn would be a little less exposed to credit risk in other member countries and face fewer calls to perform as their lender of last resort. GDP-linked bond tranches could function as an additional market-based safety device to protect member countries against a debt explosion in a deep recession. This would reduce the burden on the ESM and the ECB of having to step in and stabilise the euro after a big negative shock. Yet, this option foregoes the important benefits from creating common safe sovereign bonds as cornerstone of the EMU financial system, notably for the implementation of the single monetary policy and area-wide financial stability.

A second, more effective option to resolve the safety trilemma is that euro area leaders charge the ESM (possibly assisted by the ECB as its agent) with the task of pooling national sovereign bonds and supplying both a safe and a risky tranche of each synthetic eurobond built on this diversified portfolio; or else create the legal conditions for a similar private sector initiative. The synthetic eurobonds would internalise a substantial part of the destabilising intra-area capital flows and generate a safer EMU financial system, especially when euro area governments would also issue national GDP-linked bonds and the banking industry would invest above all in the senior tranches.

To contain the moral hazard for the member countries associated with this second option, participation in synthetic eurobonds could be made conditional on full compliance with the EU economic governance framework. Moreover, the preferential treatment of national government bonds in EU prudential legislation could be gradually limited and carefully phased out for the subsidiary governments of the euro area as the senior and junior component of the common sovereign asset would take their place on bank and non-bank balance sheets.

References

- Acharya, V., D. Pierret and S. Steffen (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. 19.
- Altavilla, C., M. Pagano and S. Simonelli (2016), “Bank exposures and sovereign stress transmission”, ESRB Working Paper, No. 11, May.
- Arnold, I. and J. Lemmen (2001), “The Vulnerability of Banks to Government Default Risk in the EMU”, *International Finance*, Vol. 4, No. 1, pp. 101-125.
- Barr, D., O. Bush and A. Pienkowski (2014), “GDP-linked bonds and sovereign default”, Bank of England Working Paper, No. 484, January.
- Barro, R.J. (1974), “Are Government Bonds Net Wealth?”, *Journal of Political Economy*, Vol. 82, No. 6, November/December., pp. 1095-1117.
- Barro, R.J. and A. Mollerus (2014), “Safe Assets”, NBER Working Paper, No. 20652, October.
- Bastasin, C. (2015), *Saving Europe: Anatomy of a Dream*, Brookings Institution Press, Washington, D.C., extended 2nd edition.
- Bastasin, C., L. Bini Smaghi, M. Messori, S. Micossi, F. Passacantando, F. Saccomanni and G. Toniolo (2014), “A silver bullet for the ECB: The European Quantitative Easing Intermediated Programme (EQUIP)”, CEPS Commentary, 14 November.
- Beck, R., G. Ferrucci, A. Hantzsche and M. Rau-Goehring (2016), “Determinants of sub-sovereign bond yield spreads: the role of fiscal fundamentals and federal bailout expectations”, ECB Working Paper, No. 1987, December.
- Binder, C. (2013), This Time is Not So Different: The Euro Crisis and the 1840s, carolabinder.blogspot.com, 28 May.
- Blanchard, O., P. Mauro and J. Acalin (2016), “The Case for Growth-Indexed Bonds in Advanced Economies Today”, Peterson Institute for International Economics, Policy Brief No. 16-2, February.
- Blattner, T.S. and M.A.S. Joyce (2016), “Net debt supply shocks in the euro area and the implications for QE”, ECB Working Paper, No. 1957, September.
- Bolton, P. and O. Jeanne (2011), “Sovereign Default Risk and Bank Fragility in Financially Integrated Economies”, *IMF Economic Review*, Vol. 59, No. 2, pp. 162-194.
- Brooke, M., R. Mendes, A. Pienkowski and E. Santor (2013), “Sovereign default and state-contingent debt”, Bank of England, Financial Stability Paper, No. 27, November.
- Brunnermeier, M.K., L. Garicano, P.R. Lane, M. Pagano, R. Reis, T. Santos, D. Thesmar, S. van Nieuwerburgh and D. Vayanos (2011), “European Safe Bonds (ESBies)”, Economics Group, 30 September.
- Brunnermeier, M.K., L. Garicano, P.R. Lane, M. Pagano, R. Reis, T. Santos, D. Thesmar, S. van Nieuwerburgh and D. Vayanos (2016a), “The Sovereign-Bank Diabolic Loop and ESBies”, *American Economic Review: Papers and Proceedings*, Vol. 106, No. 5, pp. 508-512.
- Brunnermeier, M.K. and V. Haddad (2014), “Safe Assets”, manuscript, 17 October.
- Brunnermeier, M.K., S. Langfield, M. Pagano, R. Reis, S. van Nieuwerburgh and D. Vayanos (2016b), “ESBies: Safety in the tranches”, ESRB Working Paper, No. 21, September.
- Buiter, W.H. and E. Rahbari (2013), “Why do governments default, and why don’t they default more often?”, CEPR Discussion Paper, No. 9492, May.
- Caballero, R.J., E. Fahri and P.-O. Gourinchas (2016), “Safe Asset Scarcity and Aggregate Demand”, *American Economic Review: Papers and Proceedings*, Vol. 106, No. 5, pp. 513-518.
- Castro, C. and J. Mencía (2014), “Sovereign risk and financial stability”, Banco de España, *Financial Stability Journal*, No. 26, May, pp. 75-107.

- Chen, R., G.M. Milesi-Ferretti and T. Tressel (2013), “External imbalances in the eurozone”, *Economic Policy*, Vol. 28, No. 73, pp. 101-142.
- Claessens, S., A. Mody and S. Vallée (2012), “Paths to Eurobonds”, IMF Working Paper, No. 172, and Bruegel Working Paper, No. 10, July.
- Cœuré, B. (2016), “Sovereign debt in the euro area: too safe or too risky?”, Keynote address at Harvard University’s Minda de Gunzburg Center for European Studies in Cambridge, MA, 3 November.
- Corsetti, G., L.P. Feld, P.R. Lane, L. Reichlin, H. Rey, D. Vayanos and B. Weder di Mauro (2015), *A New Start for the Eurozone: Dealing with Debt*, Monitoring the Eurozone, No. 1, CEPR Press, London.
- Corsetti, G., L.P. Feld, R. Koijen, L. Reichlin, R. Reis, H. Rey and B. Weder di Mauro (2016), *Reinforcing the Eurozone and Protecting an Open Society*, Monitoring the Eurozone, No. 2, CEPR Press, London.
- Cour-Thimann, P. (2013), “Target balances and the crisis in the euro area”, *CESifo Forum*, Special Issue, Vol. 14, April.
- Dang, T.V., G. Gorton and B. Holmström (2011), “The Information Sensitivity of a Security”, manuscript, June (revised: March 2015).
- De Grauwe, P. (2012), “The governance of a fragile eurozone”, *Australian Economic Review*, Vol. 45, No. 3, pp. 255-268.
- De Grauwe, P. (2016), *Economics of Monetary Union*, Oxford University Press, Oxford, UK, Eleventh Edition.
- de Groot, O., F. Holm-Hadulla and N. Leiner-Killinger (2015), “Cost of borrowing shocks and fiscal adjustment”, *Journal of International Money and Finance*, Vol. 59, December, pp. 23-48.
- de Haan, J., J. Hessel and N. Gilbert (2016), “Reforming the architecture of EMU: Ensuring stability in Europe”, in H. Badinger and V. Nitsch (eds.), *The Routledge Handbook of the Economics of European Integration*, Routledge, Oxon, UK, pp.408-432.
- De Nederlandsche Bank (2016), “Target2 imbalances reflect QE and persistent fragmentation within the euro area”, *DNBulletin*, 16 June.
- Deutsche Bundesbank (2016a), “The impact of Eurosystem securities purchases on the TARGET2 balances”, *Monthly Report*, March, pp. 53-55.
- Deutsche Bundesbank (2016b), “Approaches to resolving sovereign debt crises in the euro area”, *Monthly Report*, July, pp. 41-62.
- Ehrmann, M. and M. Fratzscher (2015), “Euro Area Government Bonds: Integration and Fragmentation During the Sovereign Debt Crisis”, CEPR Discussion Paper, No. 10583, May.
- Ehrmann, M., M. Fratzscher, R.S. Gürcaynak and E.T. Swanson (2011), “Convergence and anchoring of yield curves in the euro area”, *Review of Economics and Statistics*, Vol. 93, No. 1, February, pp. 350-364.
- Eijffinger, S.C.W., M. Kobielarz and B.R. Uras (2015), “Sovereign debt, bail-outs and contagion in a monetary union”, CEPR Discussion Paper, No. 10459, March.
- European Central Bank (2014), “Euro area risk-free interest rates: measurement issues, recent developments and relevance to monetary policy”, *Monthly Bulletin*, July, pp. 63-77.
- European Court of Justice (2015), Judgement of the Court in Case C-62/14, Gauweiler and Others, 16 June.
- Frieden, J. (2016), “Lessons for the euro from early American monetary and financial history”, Bruegel Essay and Lecture Series, May.
- Garicano, L. and L. Reichlin (2014), A safe asset for Eurozone QE: A proposal, VoxEU column, 14 November.

- Gelpern, A. (2012), "Bankruptcy Backwards: The Problem of Quasi-Sovereign Debt", *Yale Law Journal*, Vol. 121, No. 4, January, pp. 888-942.
- Gelpern, A. and E.F. Gerding (2016), "Rethinking the Law in "Safe Assets", Chapter 9 in R.P. Buckley, E. Avgouleas and D.W. Arner (eds), *Reconceptualising Global Finance and Its Regulation*, Cambridge University Press, New York, pp. 159-189.
- Giovannini, A. (2013), "Risk-free assets in financial markets", in BIS Papers, *Sovereign risk: a world without risk-free assets?*, No. 72, July, pp. 73-78.
- Golec, P. and E. Perotti (2015), "Safe Asset Demand: A Review", University of Amsterdam, Risk and Macro Finance Working Paper, No. 2, 14 September.
- Goodhart, C.A.E. (1998), "The two concepts of money: implications for the analysis of optimal currency areas", *European Journal of Political Economy*, Vol. 14, pp. 407-432.
- Gorton, G.B. (2016), "The History and Economics of Safe Assets", NBER Working Paper, No. 22210, April.
- Gourinchas, P.-O. and O. Jeanne (2012), "Global safe assets", BIS Working Paper, No. 399, December.
- Gourinchas, P.-O. and H. Rey (2016), "Real Interest Rates, Imbalances and the Curse of Regional Safe Asset Providers at the Zero Lower Bound", NBER Working Paper No. 22618, September.
- Gourinchas, P.-O., H. Rey and N. Govillot (2010), "Exorbitant Privilege and Exorbitant Duty", Bank of Japan, IMES Discussion Paper, No. 2010-E-20, August.
- Griffith-Jones, S. and D. Hertova (2013), "Growth-Linked Bonds", CESifo DICE Report, No. 3, September, pp. 33-38.
- Gros, D. (2012), "On the Stability of Public Debt in a Monetary Union", *Journal of Common Market Studies*, Vol. 50, Supplement s2, pp. 36-48.
- Hale, G. and M. Obstfeld (2016), "The euro and the geography of international debt flows", *Journal of the European Economic Association*, Vol. 14, No. 1, February, pp. 115-144.
- He, Z., A. Krishnamurthy and K. Milbradt (2016a), "What Makes US Government Bonds Safe Assets?", *American Economic Review: Papers and Proceedings 2016*, Vol. 106, No. 5, pp. 519-523.
- He, Z., A. Krishnamurthy and K. Milbradt (2016b), "A Model of Safe Asset Determination", NBER Working Paper, No. 22272, May.
- Hoeksma, J. and D. Schoenmaker (2011), "The Sovereign Behind the Euro", Duisenberg School of Finance, Policy Paper, No. 15, September.
- Holmström, B. (2015), "Understanding the role of debt in the financial system", BIS Working Paper, No. 479, January.
- IMF (International Monetary Fund) (2012), "Safe Assets: Financial System Cornerstone?", Chapter 3 in *Global Financial Stability Report: The Quest for Lasting Stability*, Washington, D.C., April.
- Landau, J.-P. (2016), "Capital flows, debt and growth: Dilemmas and tradeoffs in the global agenda", column on VoxEU.org, 24 November.
- Lane, P.R. (2013), "Capital Flows in the Euro Area", European Commission, European Economy, *Economic Papers*, No. 497, April.
- McCauley, R.N. and W.R. White (1997), "The Euro and European financial markets", BIS Working Paper, No. 41, May.
- McKinnon, R.I. (1997), "Market-Preserving Fiscal Federalism in the American Monetary Union", in M.I. Blejer and T. Ter-Minassian (eds.), *Macroeconomic Dimensions of Public Finance: Essays in Honour of Vito Tanzi*, Routledge, London and New York, pp. 73-93.
- McKinnon, R.I. (2002), "Optimum currency areas and the European experience", *Economics of Transition*, Vol. 10, Issue 2, July, pp. 343-364.

- McNamara, K.R. (2015), "The Forgotten Problem of Embeddedness: History Lessons for the Euro", in M. Matthijs and M. Blyth (eds.), *The Future of the Euro*, Oxford University Press, Oxford, UK, pp. 21-43.
- Milne, R. (2011), "Beware of perceived safe havens: Favouring triple A government debt increases systemic risks", *Financial Times*, 28 July.
- Moreira, A. and A. Savov (2016), "The Macroeconomics of Shadow Banking", manuscript, 29 April.
- Mundell, R. (1973), "A Plan for a European Currency", in H.G. Johnson and A.K. Swoboda (eds.), *The Economics of Common Currencies*, George Allen & Unwin Ltd, London, pp. 143-172.
- Nickel, C. and I. Vansteenkiste (2013), "The international spillover of fiscal spending on financial variables", Chapter 12 in F. di Mauro and M.H. Pesaran (eds.), *The GVAR Handbook: Structure and Applications of a Macro Model of the Global Economy for Policy Analysis*, pp. 182-192.
- Orphanides, A. (2014), "The Euro Area Crisis: Politics over Economics", *Atlantic Economic Journal*, Vol. 42, Issue. 3, September, pp 243-263.
- Persaud, A. (2015), The assets made combustible when regulators call them 'safe', *Financial Times*, printed edition, 2 June.
- Pisani-Ferry, J. (2014), *The Euro Crisis and Its Aftermath*, Oxford University Press, New York.
- Rommerskirchen, C. (2015), "Debt and Punishment: Market Discipline in the Eurozone", *New Political Economy*, Vol. 20, No. 5, pp. 752-782.
- Santos, T. (2015), "Credit booms: implications for the public and the private sector", BIS Working Paper, No. 481, January.
- Schoenmaker, D. (2011), "The financial trilemma", *Economics Letters*, Vol. 111, Issue 1, April, pp. 57-59.
- Tobin, J. (1971), *Essays in Economics: Volume 1 Macroeconomics*, North-Holland, Amsterdam, Netherlands.
- Tonveronachi, M. (2014), "The ECB and the Single European Financial Market: A Proposal to Repair Half of a Flawed Design", Levy Economics Institute of Bard College, Public Policy Brief, No. 137.
- Trichet, J.-C. (2013), "International policy coordination in the Euro area: Toward an economic and fiscal federation by exception", *Journal of Policy Modeling*, Vol. 35, No. 3, pp. 473-481.
- van Riet, A. (2015), "Market-preserving fiscal federalism in the European Monetary Union", Oesterreichische Nationalbank, *Proceedings of Workshop No. 21 'Toward a Genuine Economic and Monetary Union'*, 11-12 September 2015, pp. 101-140.
- van Riet, A. (2016a), "Safeguarding the euro as a currency beyond the state", ECB Occasional Paper, No. 173, May.
- van Riet, A. (2016b), "Government funding privileges in European financial law: making public debt everybody's favourite?", Tilburg University, CentER Discussion Paper Series, No. 2016-045.
- Woodford, M. (1990), "Public Debt as Private Liquidity", *American Economic Review: Papers and Proceedings*, Vol. 80, No. 2, pp. 382-388.

Imprint and acknowledgements

An earlier version of this paper was presented at the CASE 25th Anniversary Conference: The Future of Europe - Central and Eastern Europe in a Comparative Perspective, Warsaw, 17-18 November 2016. I am grateful to Sam Langfield for insightful discussions and to Sam Langfield, Francesco Mongelli, Philipp Rother and Thomas Werner for helpful comments and suggestions.

Ad van Riet

Senior adviser at the European Central Bank (ECB), Frankfurt am Main, Germany; email: ad.van_riet@ecb.int

© European Systemic Risk Board, 2017

Postal address 60640 Frankfurt am Main, Germany

Telephone +49 69 1344 0

Website www.esrb.europa.eu

All rights reserved. Reproduction for educational and non-commercial purposes is permitted provided that the source is acknowledged.

Note:

The views expressed in ESRB Working Papers are those of the authors and do not necessarily reflect the official stance of the ESRB, its member institutions, or the institutions to which the authors are affiliated.

ISSN 2467-0677 (online)

ISBN 978-92-95081-94-9 (online)

DOI 10.2849/206423 (online)

EU catalogue No DT-AD-17-002-EN-N (online)