

4.1 EU PUBLIC DEBT MANAGEMENT AND EUROBONDS

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Abstract

A common Eurobond making each participating issuer liable only for its own share could be agreed upon by the Member States with the lowest credit risk premia: Finland, France and Germany. However, the efficiency gains from this weak form of cooperation in terms of market integration and liquidity would be limited if not offset by the higher costs of an inflexible debt management. To reap the liquidity benefits of a unified market, the Eurobonds should be issued by all euro-area Member States or by an EU Institution. But only a common bond jointly guaranteed by all euro-area Member States could reach the "safe-haven" status and the size needed to compete with the US Treasury market. The mutualisation of credit risks faces however strong political opposition, because of fears of relaxed fiscal discipline and inequitable sharing of its benefits and costs. Although solutions to these problems can be found, more evidence is needed on the benefits and costs of a common Eurobond to convince potential issuers. This paper makes a first step in this direction.

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1. Introduction

Notwithstanding the important steps taken towards market integration and greater efficiency, euro-area government bond markets remain fragmented as witnessed by persistent and, more recently, widening interest-rate differentials. This has led economists to reconsider the possibility of a European government bond jointly issued by euro-area Member States.¹⁰⁷ While the timing of the new proposals reflects the pressures on weaker and/or smaller sovereign issuers who have found their funding costs increase as a result of the US financial and euro-area crises, the potential benefits from a common issuance program are known since the Giovannini Group Report (2000). A common Eurobond is a strong form of debt management cooperation with the potential of promoting further market integration, greater liquidity and lower borrowing costs. New proposals also contend that a common Eurobond would satisfy the global demand for a risk-free asset and better compete with US Treasuries for the global financial flows in search of a “safe-haven”, thereby strengthening the use of the euro as a reserve currency. The argument that Eurobonds could provide insurance and continued market access to weaker Member States during crises is instead rarely made, but Eurobonds could reduce exposure to crisis transmission from contagion and interdependence. In this paper, we first investigate the determinants of interest-rate differentials between euro-area Member States and between US and Germany in order to provide the relevant stylized facts needed to evaluate the rationale for a common Eurobond. Then, we discuss the benefits and the costs of three possible types of Eurobonds that encompass the various proposals. Finally, we consider the legal obstacles and the political opposition to a common issuance program.

2. Stylized Facts

In this section we provide the relevant stylized facts to assess the potential benefits from a European government bonds issued by euro-area Member States. First, we assess the degree of integration in the European government bond market by examining the behavior of interest rate differentials. Second, we examine the potential for a larger European market to better compete with the US market, by estimating the liquidity premium on German relative to US bonds. Finally, we look at the interest rate on bonds issued by the European Investment Bank (EIB) to evaluate the performance of a bond issued by an EU Institution.

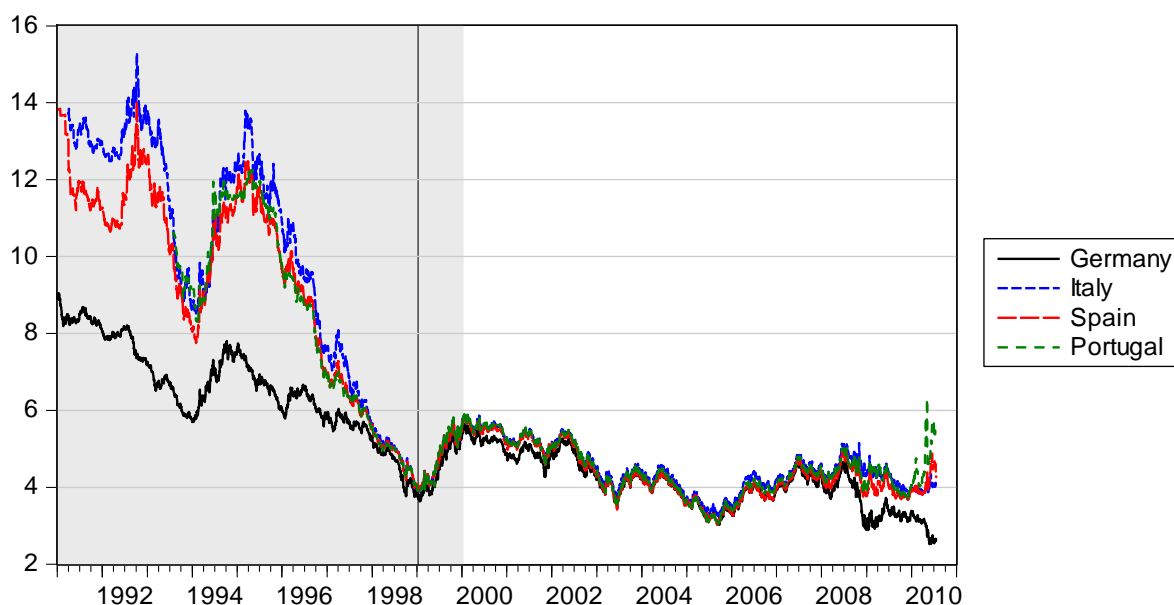
2.1 The Interest-Rate Spreads on German Bunds

The European Monetary Union (EMU) brought to life an integrated market for fixed-income government securities in the euro-area. Common euro denomination made bonds issued by euro-area Member States close, but not perfect, substitutes. Figure 1 reports the yields to maturity on 10-year bonds issued by Germany and by high yield Member States: Portugal, Italy, and Spain. The Figure shows that 10-year yields converged significantly, narrowing from highs in excess of 300 basis points in the pre-EMU period to less than 30 basis points about one year after the introduction of the euro. Yet, bonds issued by euro-area Member States have never been regarded as perfect substitutes by market participants: non-negligible interest rate differentials have remained and become sizeable during the course of 2008, 2009 and especially 2010.

¹⁰⁷ See, e.g. Gros and Micossi (2009), Mayordomo et al. (2009), De Grauwe and Moesen (2009), ELEC (2010), Jones (2010).

Figure 1:

Yields convergence after monetary union



There are two possible explanations for these interest rate differentials. The first one is **credit risk**; sovereign issuers that are perceived as having a greater solvency risk, must pay investors a credit risk premium. The second explanation is **liquidity risk**, that is, the risk of having to sell (or buy) a bond in a thin market and, thus, at an unfair price and with higher transaction costs. Small issuers with low volumes of bonds outstanding and thus small markets must compensate investors with a liquidity premium (see the BOX at the end of this section).

Distinguishing the credit risk premium from the liquidity premium is important because, while the former results from a low credit standing due to weak fiscal fundamentals, the latter reflects an inefficient national market. To solve this identification problem we use the Credit Default Swap (CDS) as a proxy of the credit risk premium. A CDS is a swap contract in which the protection buyer of the CDS makes a series of premium payments to the protection seller and, in exchange, receives a payoff if the bond goes into default. The difference between a CDS on a Member State bond and the CDS on the German Bund of the same maturity is a direct measure of the credit risk premium of that State relative to Germany.

Figures 2 and 3 report interest-rate differentials for euro-area Member States (blue line) - i.e. the spreads of 10-year government bond yields on German Bund yields- along with the associated CDS spreads (red line); their difference is a measure of the liquidity premium differential. We group the interest-rate spreads on Bunds and the associated CDS into high yielders (Figure 2) and low yielders (Figure 3).¹⁰⁸

The following facts emerge from the data:

- i) There is a clear tendency of all spreads on Bunds in the euro-area to comove (i.e. move in parallel) but, as shown in Figures 2-4, the nature of the comovement is not constant over time;
- ii) The liquidity premium component of the interest-rate spread is very small for all Member States with only few exceptions: Finland, France and, perhaps, the Netherlands;

¹⁰⁸ We do not present data for Cyprus, Malta, Slovenia and Slovakia because times series are not long enough given the short spell of time these countries have spent within the EMU. Data for Luxembourg are also not reported.

iii) The case of Finland where the credit risk premium is always close to zero, makes it clear that in a crisis the liquidity premium rises to determine a positive comovement between the Finnish spread and all other euro-area spreads.

Figure 2:

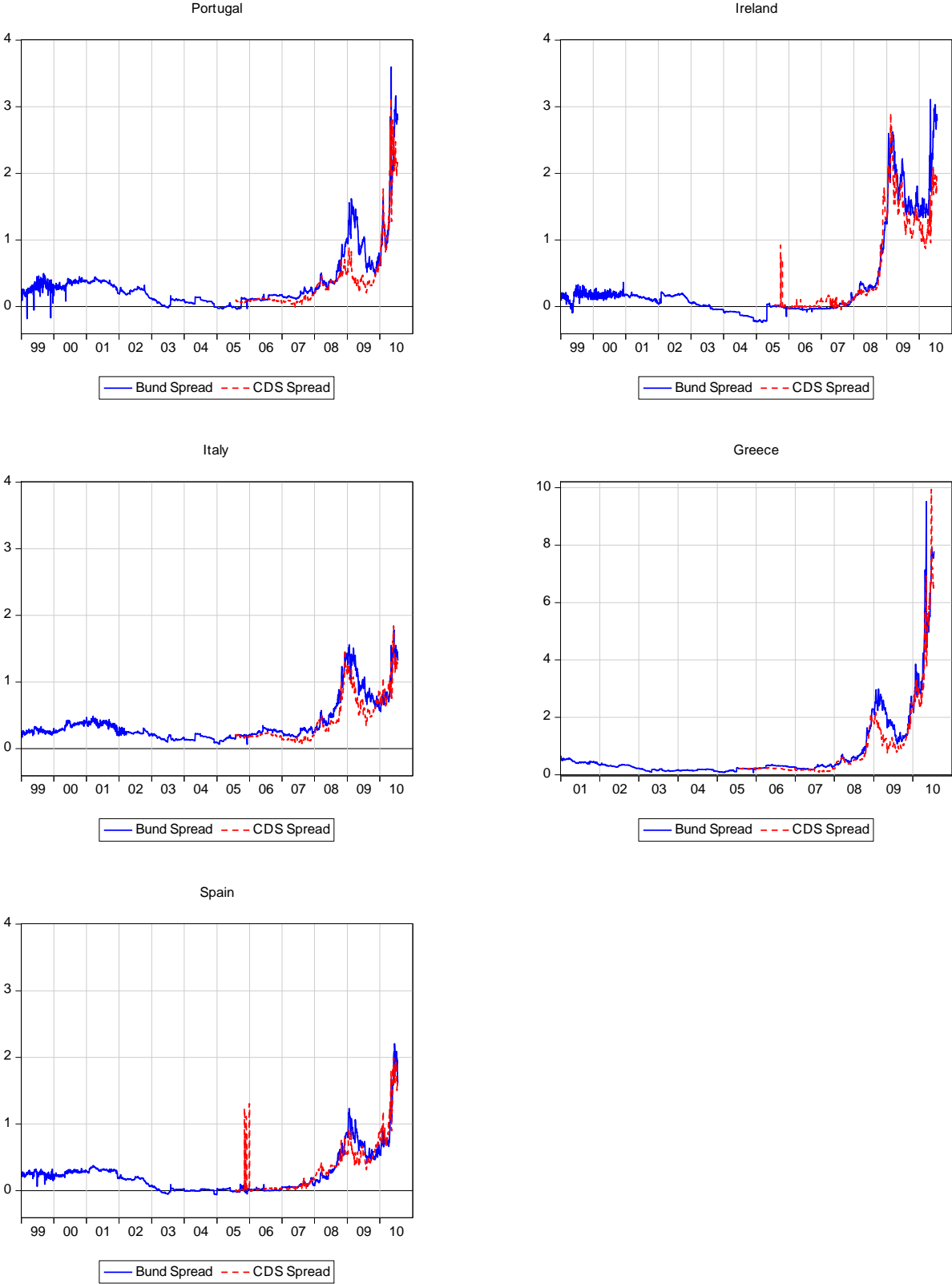
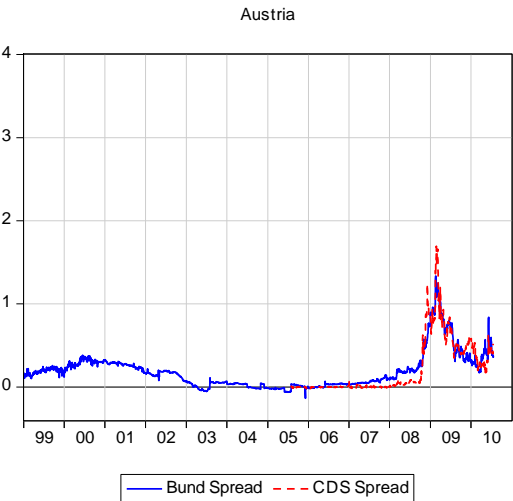
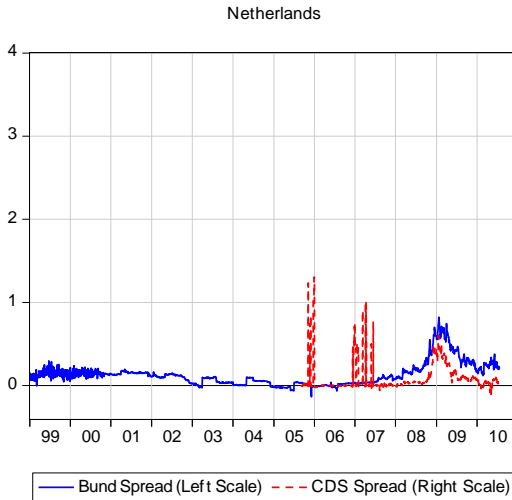
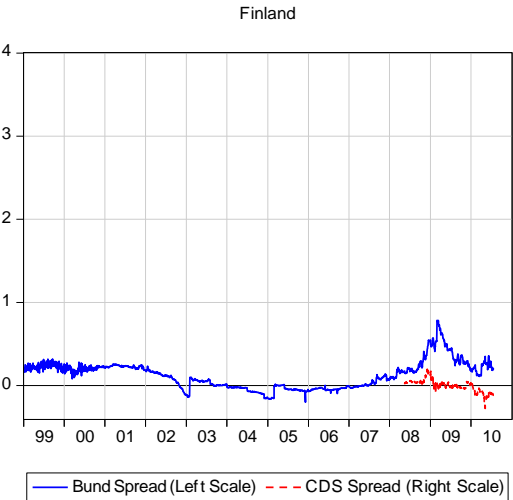
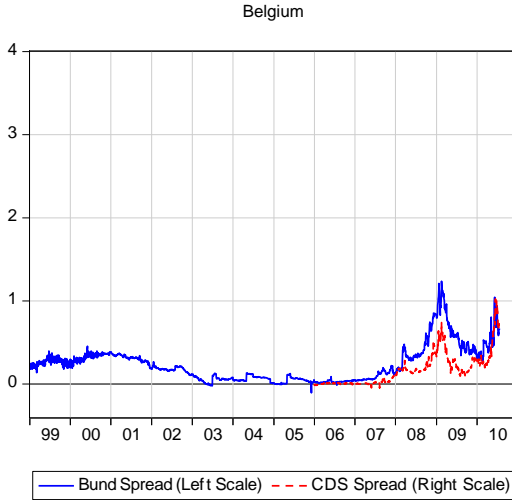
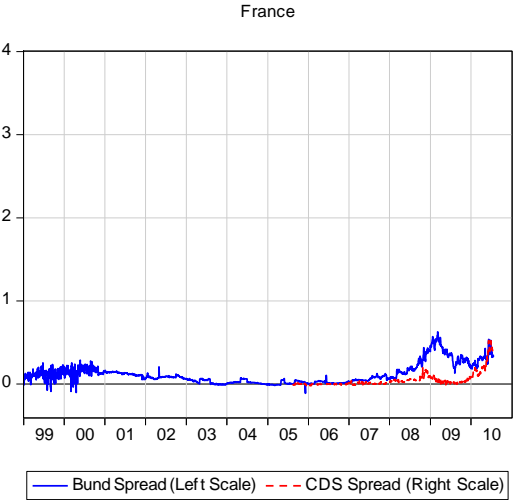


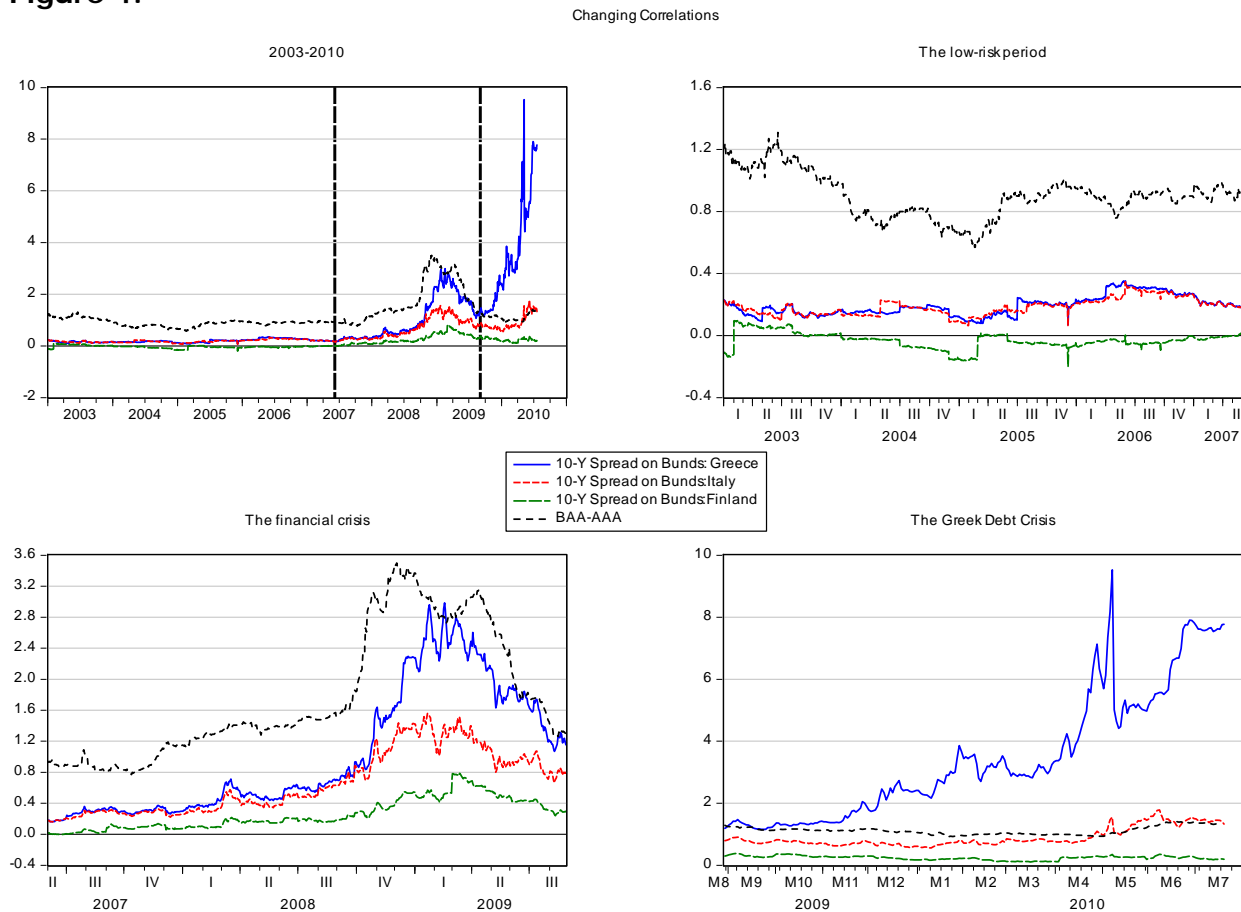
Figure 3:



2.2 Contagion

There is an important fact about the comovements of interest-rate spreads in the euro area: their interdependence is not constant over time but it is subject to structural breaks, a phenomenon often referred to as “contagion”. To illustrate this phenomenon we consider two high-yielders, Greece and Italy, and one low-yielder, Finland. We report in Figure 4 the Greek, the Italian and the Finnish 10-year spreads on Bunds along with the spread between yields on US BAA and AAA corporate bonds, a variable often used to describe the market attitude toward risk. We consider the full sample 2003-2010 and three subsamples, the low-volatility period (2003-2007), the Financial Crisis (May 2007-August 2009) and the Greek Debt Crisis (September 2009-July 2010).

Figure 4:

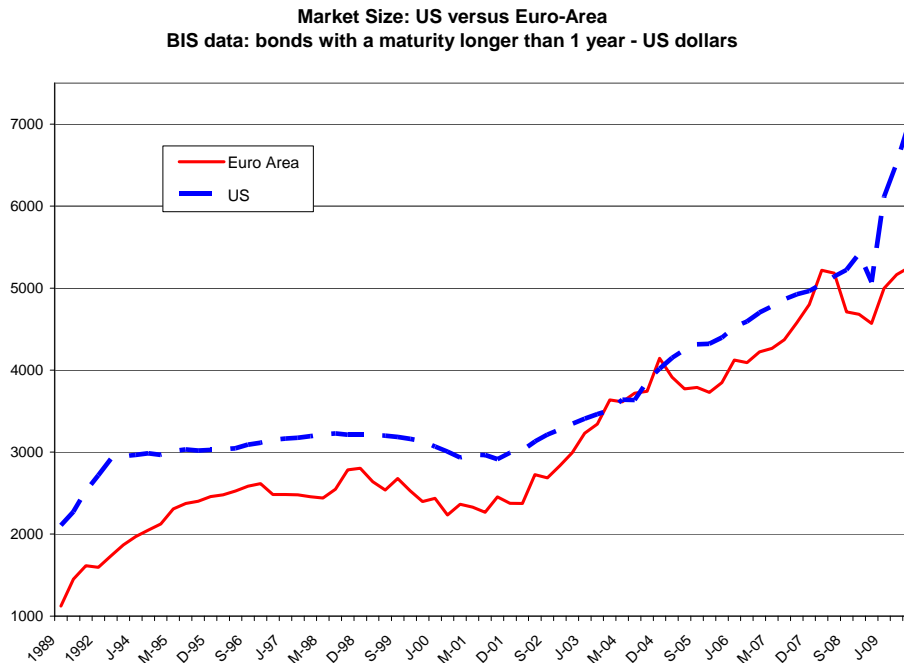


A changing correlation pattern clearly emerges from the data. Over the low-volatility period Italy and Greece are placed in the same class of risk by the market and their spreads on Bunds are very highly correlated. During the financial crisis the credit risk of the two high-yielders diversify. In fact, both the Italian and the Greek spread positively react to the increase in the BAA-AAA spread but their response is different; the Greek spread reaches a peak of about 300 basis points, while the Italian spread peaks at 150. Interestingly, during the financial crisis also the Finnish spread on Bunds responds slightly to international risk because of an increase in the liquidity premium. Finally, during the Greek crisis, the surge in the interest rate on Greek bonds, not only leads the Greek spread to a value of nearly one-thousand basis points, but, strongly affects the Italian spread that even rises above the US BAA-AAA spread to reach almost 200 basis points. This evidence clearly points to a significant “contagion” effect.

2.3 The interest rate differential between German Bunds and US Treasuries

The euro-area bond market is very close in size to the US market; Figure 5 shows that the difference in the volumes of bonds outstanding with a maturity longer than one year is negligible until the end of 2008. However, the German Bund market represents only 23% of the euro-area market and is thus much smaller than the US one. A natural question arises on the possibility that German Bunds have to pay a liquidity premium due to their smaller market size and the lack of international benchmark status enjoyed by US Treasuries.

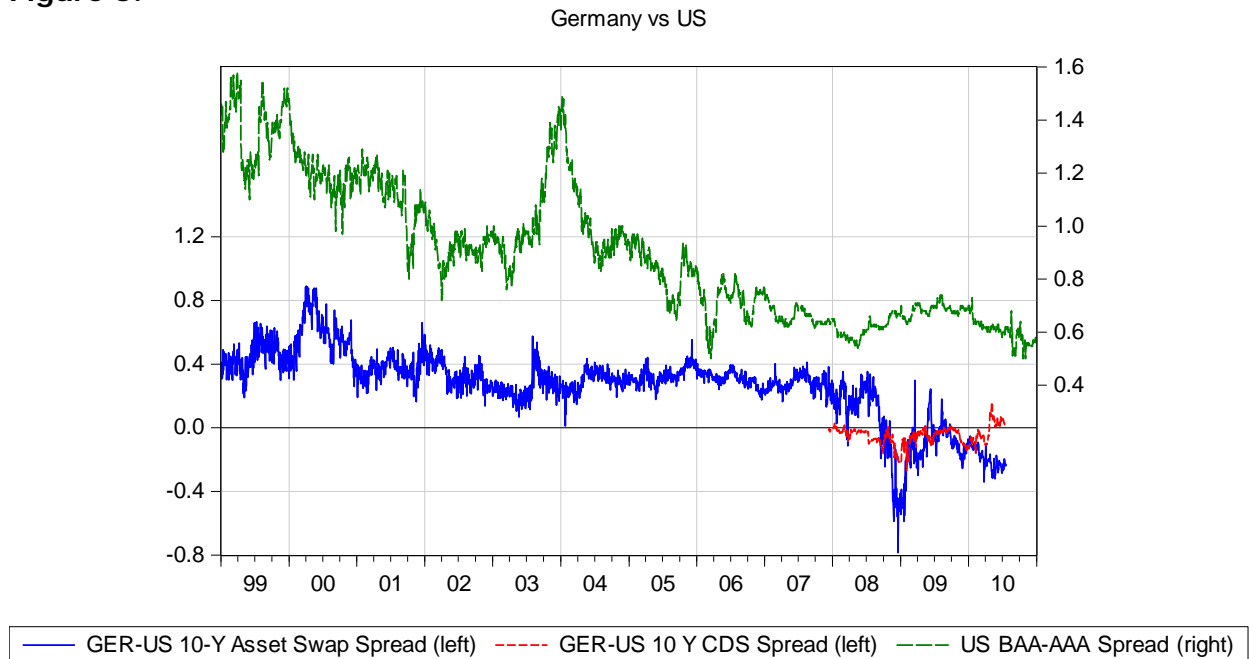
Figure 5:



Answering this question is made easier by the fact the CDS swap differential between US and Germany is negligible, and so is their relative credit risk premium, but is made more difficult by the existence of a fluctuating euro-dollar exchange rate. To filter out exchange-rate expectations from the interest rate differential between German and US bonds, we use the difference between the 10-year Fixed Interest Rate Swaps in euro and in US dollars that is immune from sovereign liquidity and credit risks. We report in Figure 6 three series: the 10-year German US Asset Swap Spread (defined as the difference between the interest rate spread and the difference between the 10-year Fixed Interest Rate Swaps), the difference between the CDS on German Bunds and US Treasuries and the US BAA-AAA spread.

We note first that before the financial crisis a common Eurobond would have enabled the euro-area market to better compete with the US market as the most liquid market globally. In the pre-crisis period the CDS differential is negligible and the asset swap spread can be taken as an indicator of the liquidity premium on German Bunds. It points to a sizeable liquidity premium, around a mean of 40 basis points.

Figure 6:



However, when the crisis hits the markets and the BAA-AAA spread starts fluctuating away from its low-risk period mean, the liquidity premium paid by German Bunds on US Treasuries disappears, and in fact is reversed as a consequence of the “flight to quality” towards German Bunds and a perceived higher relative credit risk of the US, as witnessed by the CDS differential. The increase in the relative supply of US Treasuries, shown in Figure 5, is also consistent with this interpretation. This pattern persists during the Greek debt crisis, probably due to a portfolio shifts towards German Bunds away from bonds issued by Member States with lower credit standings. Hence, in the pre-crisis period US Treasuries did enjoy the status of the most liquid benchmark globally, but they appear to lose this role thereafter.¹⁰⁹

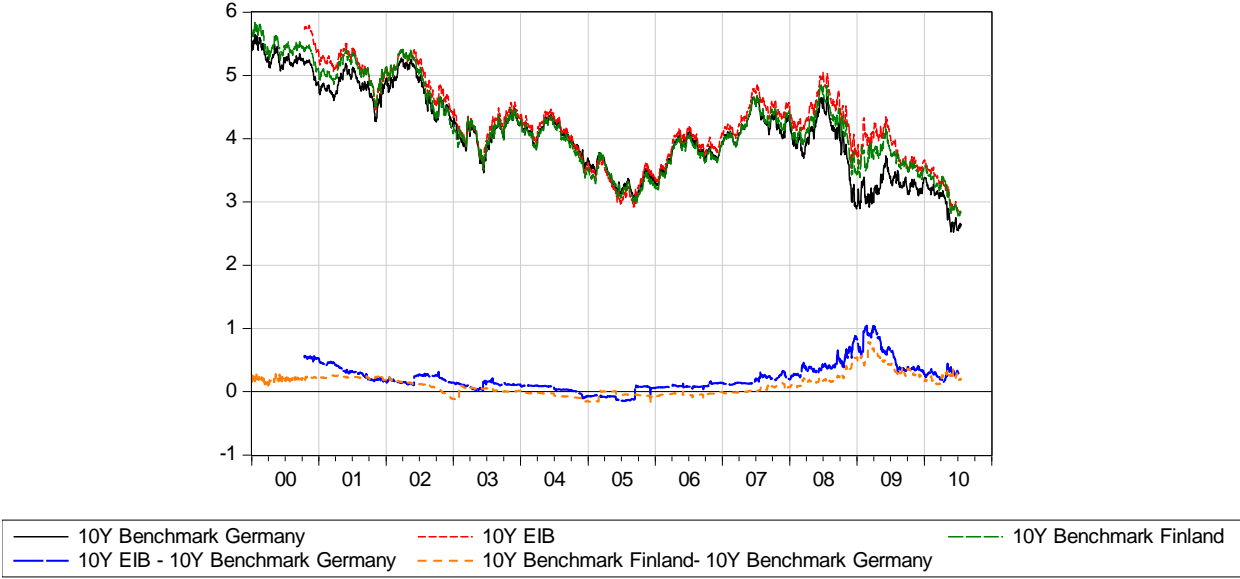
2.4 The interest rate on Eurobonds issued by the EIB

To assess the performance of a bond issued by an EU Institution we construct, from various EIB bond issues, the interest rate on a synthetic EIB bond with residual term to maturity as close as possible to 10 years. Figure 7 reports the yields on 10-year EIB bonds along with the yields on 10-year German Bunds and the yields on 10-year Finnish bonds. We note first that the yield differential between the EIB bonds and German Bunds climbed from near zero to 100 basis points over the course of the financial crisis, to return to a level of around 30 basis points thereafter.

Although the pre-crisis level has not been restored yet, the impact of the euro-area debt crisis on this differential is clearly much smaller than that of the financial crisis. Interestingly, Figure 7 also shows that the interest rate on EIB bonds follows closely that on 10-year Finnish bonds, paying only a small premium over it. As Finnish bonds have no credit risk but very low liquidity, this evidence suggests that the illiquidity of EIB bond is the most likely explanation for their interest rate differential with German Bunds. This evidence is consistent with the idea that a common Eurobond issued by a EU Institution would have the same credit quality of German Bunds.

¹⁰⁹ While it would worth looking at traded volumes to better understand the apparent reversal in international benchmark status, data are difficult to find because US Treasuries and German Bunds are mostly traded over the counter (Bunds as well as other euro-area bonds are also traded on regulated markets).

Figure 7:



BOX: Credit Risk, Liquidity Risk and Interest Rate Differentials

The interest rates on government bonds with the same currency denomination and maturity can differ because of different credit and liquidity risks. The credit risk depends on the creditworthiness of the issuer; if there is a positive, even small, probability that a government may not honor its obligations and default on its debt, investors will ask for a credit risk premium (or a default risk premium) to hold its bonds. As the probability of default that investors perceive increases, so does the credit risk premium and the interest rate. The credit premium depends on the government’s domestic fiscal fundamentals (deficit and debt) and economic growth, but also on international factors, such as the investors’ attitude to (or perception of) global risk, flight to quality effects and the level of interest rates. The liquidity of a bond depends on how easily it can be traded without incurring into losses and transaction costs. In a thick market with large volumes traded, the risk that selling (or buying) a bond may move the price adversely is reduced because the probability of a matching order increases. A thick and efficient market also reduces transaction costs. It follows that the liquidity premium (and the interest rate) that investors ask to hold a bond should decrease with the volume traded and thus with the stock of bonds outstanding; governments with smaller economies and lower amounts of bonds should pay a higher liquidity premium. Liquidity is also enhanced by the availability of a futures contract to hedge investors’ positions; German Bunds may pay a lower liquidity premium because they are the bonds on which the Eurex futures contract is based.

This discussion suggests the following simple representation for the interest rate differential:

$$R^M - R^B = \Delta C(d, g) + \Delta L(v, g)$$

where the difference between the interest rate on a Member State bond, R^M , and the interest rate on a benchmark bond, R^B , i.e. the German Bund, is equal to the sum of the credit risk premium differential, ΔC , and the liquidity premium differential, ΔL . As discussed above, the credit risk premium depends on the domestic fundamentals, d , and global factors, g . The liquidity premium depends on the volumes of bonds outstanding, v , and on global factors. One reason for including global factors as determinants of the liquidity premium differential is that a perceived higher global risk is often associated with higher interest-rate

volatility and thus an increased cost of illiquidity; i.e. of having to trade in a thin market at an uncertain price. Moreover, portfolio shifts by international investors towards safety and liquidity, i.e. flights to quality, may affect both the credit risk premium and the liquidity premium. We take the difference in credit default swaps (CDS) as a proxy of the credit risk premium differential, ΔC , and report in Figures 2 and 3 the spreads on Bunds, $R^M - R^B$ (blue line), and the CDS spread (red line); their difference is a measure of the liquidity premium differential, ΔL .

3. What Type of Eurobond?

Several arguments have been put forth in favor of a common European government bond. All proposals stress that Eurobonds would promote further market integration, greater liquidity and lower borrowing costs due to a reduction in liquidity premia. Recent proposals also contend that Eurobonds could reach the status of a “safe-haven” benchmarks competing with US Treasuries for global financial flows and strengthen the use of the euro as an international reserve currency. The politically sensitive argument that Eurobonds could provide insurance and continued market access to weaker Member States is instead rarely made, but Eurobonds could reduce exposure to crisis transmission from contagion and interdependence. Whether some or all of these potential benefits would arise from common issuance depends on the type of debt instrument. It is then worth considering three hypotheses:

3.1 - A commonly issued Eurobond with country-specific shares backed by several guarantees

The first hypothesis is a single debt instrument issued by a group of euro-area Member States, through an independent agency, with funds raised and obligations divided between participating issuers in specific fixed proportions (how to determine these shares is discussed below). Each participating Member State would guarantee only its share of the joint instrument. While the Eurobond would trade as a single debt instrument, each participant would be liable only for the interest payments and principal redemption corresponding to its share of the bond, and not for the debt of the other issuers. The credit standing of this bond would likely emerge and be perceived by investors as the average of the credit standings of the participating Member States (weighted by their relative shares), while its liquidity could be greater than that of the national bonds of the participating issuers depending on the size that its market would reach.¹¹⁰

3.2 - A commonly issued Eurobond backed by joint guarantees

The second hypothesis is a single debt instrument issued by a group of euro-area Member States backed by several and joint guarantees: each participating issuer would guarantee the totality of the obligations of the common instrument, thereby making it an indivisible legal object. The issuing entity could be an independent agency or, as suggested by Boonstra (2010), a newly created EMU Fund for on-lending to a group of participating euro-area Member States. The debt-service obligations of each participating issuer would be specified in relation to the amount of funding obtained, but the cross-default nature of the joint guarantees would give an investor legal recourse to all the participating issuers, in case that not all the obligations of any issuer were fully met. Thus, the credit standing of this instrument would tend to reflect the creditworthiness of the participating Member States with larger economies. Participation by Germany and France would ensure a lower credit risk premium than the weighted average of the participating Member States even if some of them were of lower credit standings.¹¹¹

¹¹⁰ This type of instrument has been studied by EPDA (2008) and is consistent with the proposal by De Grauwe and Moesen (2009).

¹¹¹ This type of instrument is the third hypothesis considered in the Giovannini Group Report (2000) and is consistent with the proposals by Boonstra (2010), Delpla (2010) and Jones (2010).

3.2 - An EU Eurobond issued by an EU Institution

The third hypothesis is a debt instrument issued by an EU Institution for on-lending to Member States. This institution would lend the funds raised with EU bonds to Member States at an interest rate reflecting funding costs plus, eventually, a margin possibly different across States. EU bonds would be backed by the several and joint guarantees of the 27 EU Member States; these guarantees would not be explicit but derive from the EU legal order. If the common bond were issued by the European Commission (EC) the guarantees would derive from the legal obligations of the Member States under the EU Treaty.¹¹² If the bonds were issued by the EIB, it would be backed by the capital subscribed by EU Member States.¹¹³ In both cases, EU bonds would be of the highest credit quality and their risk premium should be close to zero.¹¹⁴

Table 1: Summary of Main Characteristics of the three Types of Eurobond

Characteristic	Type 1	Type 2	Type 3
Issuing Entity	Independent Agency	Independent Agency or EMU Fund	EU Institution EC or EIB
Participation	Open	Open	27 EU Member States
Fixed Shares of each Country	Yes	No but limits on debt of each participant	No but limits on debt of each EU Member
Guarantees	Several	Several and Joint explicit	Several and Joint from EU Treaty
Mutualisation of Default Risk	No	Yes	Yes
Credit Rating	Weighted Average of participants	Reflect Rating of larger participants. Highest (AAA) if all euro-area Members join	Highest (AAA)
Liquidity	Conditional on Market Size and Participation	Conditional on Market Size and Participation	Conditional on Market Size
Management	Inflexible	Flexible	Flexible
Legal Obstacles	None	Change in TFEU Art.125 No-Bailout	Change in TFEU

¹¹² The European Commission already borrows on capital markets to fund its Balance of Payments Facility and its bonds have a AAA rating.

¹¹³ The EIB already borrows on capital markets to finance investment projects and its bonds have a AAA rating.

¹¹⁴ This type of instrument is the fourth proposal in the Giovannini Group Report (2000). Issuance of a common bond by the EIB has been considered by Majocchi (2005) for funding projects envisaged in the Lisbon Strategy and by Gros and Micossi (2009) for the purpose of financing a European Financial Stability Fund.

4. The Arguments for a Eurobond

4.1 The efficiency gains from further integration; greater liquidity and lower borrowing costs

The main argument for a common European government bond is that it would promote further market integration, especially on the supply side, and greater debt management coordination. The efficiency gains from a unified bond market could be substantial: liquidity could be enhanced by larger outstanding volumes and the more so if the common Eurobond would become eligible for delivery into a futures contract. Greater liquidity would, in turn, reduce liquidity premia and, thus, the costs of borrowing for Member States, with greatest advantage for smaller and medium sized issuers. Finally, to the extent that issuance of national bonds would come to an end, some Member States with smaller funding needs would save the costs of maintaining their national primary markets and dealer systems.

These benefits could be obtained, in various degrees, with all the three types of debt instruments considered, to the extent that: issues were sufficiently large and regular; the outstanding volumes of the Eurobond reached sufficiently high levels and; its market replaced the national markets of, at least, the Member States with smaller funding needs.

The evidence in section 2 suggests that the argument has some merit and mostly appeals to small issuers with high credit standings, such as Finland and The Netherlands, but also to a benchmark issuer like France, which all appear to have borne a high cost from illiquidity since the start of EMU.¹¹⁵ Interestingly, this cost increased over the course of the US financial crisis by up to 30 basis points, either because of greater interest-rate volatility or a portfolio shift toward German Bunds. In fact, liquidity premia for these countries seem to respond to the surge in measures of risk, thereby displaying a positive correlation with credit risk premia. Indeed, the higher interest-rate volatility, associated with a perceived higher risk, could increase the cost of illiquidity; i.e. of having to trade in a thin market at an uncertain price. Moreover, a portfolio shift by international investors towards safety and liquidity, i.e. a flight to quality, may affect both the credit risk premium and the liquidity premium.

4.2 A “safe-haven” alternative to US Treasuries and the use of the euro as a reserve currency

Recent proposals contend that a common European government bond would satisfy the global demand for a risk-free asset and better compete with US Treasuries for the global financial flows in search of a safe investment. The “safe haven” argument is based on the idea that, since safe German Bunds are in scarce supply, a common Eurobond with similar credit risk characteristics, but greater liquidity, would attract the demand by international investors and thus would reduce the borrowing costs for the euro-area sovereign issuers. A single debt instrument would also strengthen the use of the euro as international reserve currency.

Indeed, even German Bunds appear to suffer from a lack of liquidity or international benchmark status compared to US Treasuries: before the financial crisis, they have been paying a premium as high as 40 basis points, though their credit risk is practically zero. This suggests that, even benchmark issuers, such as Germany and France, for which the gains from further integration have always been thought to be small, could benefit from greater liquidity if the common issuance market approached the size of the US market. Liquidity is, however, not enough; for a common Eurobond to achieve the status of a “safe haven” international benchmark, its credit standing should be as high as that of German Bunds. Indeed, evidence from the global financial crisis is consistent with a flight to credit quality more than liquidity. As shown in Section 2, the widening of interest-rate spreads on the bonds with lower credit standings is completely explained by their higher credit risk as

¹¹⁵ For France this argument applies only to 10-year bonds.

measured by CDS spreads. Higher liquidity premia, or portfolio shifts towards German Bunds, can account for an increase in bond spreads only in a few Member States: Finland, France and The Netherlands. However, even the French spread during the euro-area debt crisis is mainly explained by an increase in credit risk as measured by the CDS spread.

Whether the demand for a "safe haven" asset of high credit quality and liquidity can be satisfied by a common Eurobond depends on the type of the guarantees and/or the credit standings of the participating Member States. Participation to a Eurobond that makes each issuer liable only for its own share (as under hypothesis 1) would have to be restricted to Member States with a credit standing as high as that of Germany and France, since it would be equivalent to a diversified portfolio of national bonds. The latter countries should also join for such a bond to reach a sufficient liquidity. Whether participation to a Eurobond backed by joint guarantees (hypothesis 2) had to be equally restricted is an open question. Evidence on the credit quality of EIB bonds (which are implicitly backed by the joint guarantees of all EU Member States) can however shed light on this issue. As shown in section 2, EIB bonds are priced by international investors in the same way as safe but illiquid Finnish bonds; indeed the interest rate differential between the two bonds is practically zero. This suggests that a Eurobond issued by an EU Institution (and probably by all euro-area Member States) would be perceived as of the highest credit quality and could reach the "safe haven" status if its market size approached that of US Treasuries.

4.3 Risk insurance, market access and crisis prevention

In principle, common European government bonds could provide insurance against credit risk and ensure continued market access during crises to sovereign issuers under distress. However, for this to be the case, the common Eurobond should have to be backed by the joint and cross guarantees of the issuing Member States (hypothesis 2) or it should be issued by an EU Institution (hypothesis 3). The risk insurance argument is rarely made in the policy debate and in the economic literature. This probably reflects political considerations but also economic reasons. Indeed, evidence that movements in interest-rate spreads (a proxy for credit spreads) have a strong common component mainly driven by changes in international risk factors suggests a limited scope for insurance.

Notwithstanding the lack of risk-diversification opportunities, a debt instrument guaranteed by France and Germany, that together account for 46% of the euro-area debt, would be of similar credit quality to their national bonds and thus greater than the weighted average of the credit standings of the participating Member States. Evidence on the EIB bond interest rate closely tracking that of Finnish bonds is consistent with this hypothesis. However, there would be no economic rationale for a common Eurobond if its better credit quality and lower risk premium emerged from the assumption of risk by larger and safer issuers rather than from risk sharing opportunities. What needs to be argued is that country-specific shocks have negative spillovers to other Member States' creditworthiness. In this case, a common debt backed by joint guarantees (or issued by an EU Institution) would reduce exposure to crisis transmission from contagion and interdependence. If the occurrence of a debt crisis in a Member State increases the probability of a crisis in other States and, thus, their credit risk premia, then providing insurance to the State with the weakest fundamentals would work as an insurance for all; it would benefit all participating Member States except, perhaps, the most virtuous one. This would be the case if a debt crisis originating in a Member State were likely to propagate to other Member States through their financial links. One main channel of crisis transmission is through cross-border holdings of national bonds and increased vulnerability of the European banking system. Another channel works from a worsening of market sentiment and increased risk aversion. The euro-area debt crisis triggered by the fiscal problems of Greece is a case in point. As shown in section 2, the surge in the credit risk premium of Greece clearly affected the Italian interest-rate spread that even rose above the US BAA-AAA corporate spread to reach nearly 200 basis points. Even the credit risk component of the French spread that was muted until then reached almost 40 basis points in the euro-area debt crisis.

5. The Arguments Against a Eurobond

5.1 Creating a thick market is costly and requires a permanent and credible issuance program

A main argument against a commonly issued bond is that the launch of a Eurobond would add a new market to the existing national markets and thus increase rather than reduce fragmentation. In fact, to promote market integration, enhance liquidity and provide a safe-haven international benchmark, the outstanding amount of Eurobonds should be substantial and, more importantly, Eurobonds should replace national bonds on a large scale. This implies that the success of the program will critically hinge on the decision of participating Member States to rely on the new instrument for their funding needs. Smaller size issuers, in particular, should quickly move to Eurobonds and close their national markets. Commitment to a permanent issuance program will then be crucial. To create a thick market, Eurobond issues would have to be sufficiently large, regular and predictable, i.e. based on an issuing calendar specifying minimum offered amounts. More importantly, issuance should not be discontinued.¹¹⁶ This may prove to be difficult to the extent that the transition process will involve high initial set-up costs and uncertain benefits in the future.

5.2 Centralized funding makes debt management inflexible

The Eurobond issuing program would have to accommodate the different needs of participating issuers, from rolling-over maturing debt to achieving the desired maturity structure, to early redemptions. The problem is now less compelling than at the start of EMU because of the substantial convergence in the type of (medium- and long-term) instruments and in the maturity structure of public debt across Member States. Interest-rate swaps can also be used to fine tuning the duration of the debt. It is however a fact that centralized funding would raise coordination issues and would reduce flexibility in the pursuit of country-specific debt management objectives that would have to be accommodated on national bond markets. This could add complexity to the management of each Member State's total debt and run against full market integration.

The "inflexibility" problem is different depending on the type of Eurobond. A debt instrument with country-specific shares backed by several but not joint guarantees (hypothesis 1) would prove to be the most inflexible. In order to enhance liquidity and facilitate the pricing of risk, subsequent bond issues would have to be comparable over time and this could only be ensured by keeping both the set of participating Member States and their shares in the common bond constant over time. A trade off would then emerge in the choice of these shares; they could either reflect the debt levels (or securities outstanding) of the participating issuers or the sizes of their economies in terms of GDP. The latter solution would restrict the use of the common instrument by the Member States with highest debt levels and might be instrumental to impose fiscal discipline, but the former would be preferable to promote market integration and liquidity and could be defended on the basis that each Member States would remain liable for its own share.

A Eurobond underpinned by joint guarantees (hypotheses 2 and 3) allows for a greater flexibility in accommodating debt management needs because the risk characteristics of each single bond issue would not depend on the amount of funds that each Member State would obtain from that issue. However, limits on the maximum amount of debt that each participating Member State could possibly incur over time (and across maturities) would have to be agreed upon and communicated before the start of the program.

¹¹⁶ The use of Eurobonds for temporary programs, such as the funding of the European Financial Stability Fund as proposed by Gros and Micossi (2009), would thus fail to reduce market fragmentation and enhance liquidity.

Because of the assumption of risk by all participating issuers, these limits would have to be set in relation to their taxing power and thus GDPs. Moreover, in order to preserve the comparability of different issues over time, the Member States participating in the program should not change.

Issuance of Eurobonds by an EU Institution can also ensure flexibility in that the Institution could deal with specific needs in lending to Member States. Even in this case a limit should be set to the maximum amount of debt that each State could possibly incur over time (and across maturities). Constant participation would also be a problem (on top of participation *tout court*) to the extent that new states joined the EU.

In all cases, joint issuance would require a high degree of coordination: amounts, maturity and timing of bond issues would have to be decided by the issuing entity in close co-operation with the Member States.

5.3 Lower incentives for fiscal discipline and moral hazard

The most forceful argument against a common European bond is that it undermines fiscal discipline by removing incentives for sound budgetary policies. At worst, it could create a moral hazard problem in that a Member State may be tempted to free ride on other Members' legal obligations to assume its debt in case of default. In particular, a common Eurobond prevents financial markets from exerting their disciplinary effects through higher interest rates and undermines the no bailout clause that prohibits a Member State to be liable for or assume the debt obligations of another government. Then, with lower costs of default and deficit financing, Member States would be encouraged to run lax fiscal policies and take up more debt. This would weaken the credibility of the euro-zone as an area of stability and fiscal soundness.¹¹⁷

A first argument that applies to all types of Eurobonds is that they will reduce the credit risk premium and thus the interest rate that weaker Member States have to pay on their debts. However, the case for relying on the disciplinary effects of widening interest rate spreads is weak. Experience shows that market signals, i.e. interest rate spreads, not only are dominated by swings in market sentiment but, more importantly, can remain weak for a long time and change violently when it is too late to prompt fiscal adjustment.

A stronger case can instead be made against Eurobonds with mutual guarantees based on the fact that the cross-default nature of the guarantees would undermine the no bailout clause (Article 125 TFEU), and heighten the risk of moral hazard. However, to assess the impact of Eurobonds on fiscal discipline one has to ask how effective the no bailout clause is in preventing irresponsible or even opportunistic behavior. In fact, there has always been skepticism as to whether governments would adhere to the no bailout clause given the close financial and economic ties within the euro-area and the threat of contagion. After the rescue of Greece, these doubts have been reinforced and the deterrent role of the no bailout clause has lost much of its credibility.¹¹⁸ Summing up, bailout expectations and moral hazard will always be a problem. It has to be seen whether it would be wise to further weaken the no bailout principle. For instance, with a jointly guaranteed debt the possibility of imposing strict conditionality on financial support to a country with fiscal distress would partly be lost.

In the end the problem of moral hazard created by the mutualisation of risks would always emerge, as it is inherent in any insurance contract. The important question to ask is whether a common Eurobond can reduce exposure to crisis transmission and whether this benefit can compensate for the risk of moral hazard.

¹¹⁷ See Issing (2009) for a stand against Eurobonds, Becker (2010) and Berrigan (2010) for a discussion.

¹¹⁸ The debate on strengthening the Stability and Growth Pact offers further evidence that fiscal discipline cannot rely on the no bailout clause.

Moreover, bailout and moral hazard problems can be limited, for instance by fixing the maximum amount of debt obligations that each Member State could have in the form of Eurobonds (see Depla 2010 and Jones 2010).¹¹⁹ Any borrowing need beyond this ceiling would have to be funded with national bonds. This would set a limit to the obligations that the other Member States would have to guarantee and be liable for in the event that a Member State would default. Moreover, Eurobonds could be made senior with respect to the national bonds issued after the start of the program (see Depla 2010). While Eurobonds would be risk free, any debt exceeding the ceiling would have to be issued at higher interest rates on the national market. This solution is simple and set incentives for fiscal discipline that are closely related to the amount of outstanding debt, a feature that is still missing in the Stability and Growth Pact.

6. Feasibility

Is the issuance of a Eurobond feasible? Debt underpinned by joint guarantees is not only against the spirit but most likely violates the no bailout clause of the EU Treaty. A common Eurobond also faces strong political opposition. These issues are addressed in what follows.

6.1 Legal obstacles

Legal obstacles depend on the nature of the guarantees underpinning the common Eurobond. A debt instrument that makes each participating Member State liable only for its own share (hypothesis 1) would not face legal impediments. Common issuance could be agreed outside the EU legal framework; participating issuers would only be required to abide by common rules on technical issues.

More advanced arrangements implying the cross-guarantees of the participating Member States may require changes in the legal infrastructure, either in the Treaty, or in EU legislation. For instance, a common Eurobond backed by the several and joint guarantees of the participating euro-area Member States (hypothesis 2) violates the no bailout clause, i.e. the letter of Art 125 of the Treaty on the Functioning of the European Union (TFEU).

Legal obstacles related to the possible violation of the no bailout clause would be technically different in the case of a bond issued by an EU Institution because the cross guarantees, would not be explicit but derive from the EU legal order. On the other hand, providing the European Commission with the power to raise funds for deficit financing would likely require a change in the Treaty, unless it could be based upon Article 352 TFEU (conferring the Council the power to adopt actions necessary for the attainment of the Treaties' objectives), as the Balance of Payment Facility under regulation 302/2002. A possible alternative to be explored could be to give the Commission power to raise funds under Article 122.2 TFEU, whose scope is restricted to financial assistance by the Council in case, *inter alia*, of difficulties caused by exceptional circumstances, as for the European financial stabilization mechanism recently adopted on May 9, 2010. A similar problem arises if the mandate of EIB were to be extended to finance the deficit of the Member States, as Article 309 TFEU should be modified.

Finally, and importantly, if an EU Institution, such as the EC or the EIB, were to become the single issuer, the question of non-participating Member States which would *de facto* cross guarantee the debt of the participating States would have to be addressed (see Goldschmidt 2009).

¹¹⁹ EPDA (2008) also concludes that debt limits should be preferred to the creation of a Guarantee Fund given market aversion to structured products.

6.2 Political Feasibility

Political opposition has two motivations. The first is that a common Eurobond relaxes fiscal discipline and creates a moral hazard problem, as already discussed in the previous section. The second, perhaps, more compelling issue is the equitable sharing of the benefits and costs of the program. While all Member States participating in the issuance of a Eurobond (or borrowing from an EU Institution) would benefit from greater liquidity, those with the highest credit standings might lose from the mutualisation of credit risk. If the joint bond did not reach the safe-haven status, Member States with sound budgetary policies and low debts could even face higher credit risk premia and borrowing costs. In any case, they would end up subsidizing Member States with weaker fiscal fundamentals.¹²⁰

In the case each participating Member States were liable only for its own share of the joint instrument (hypothesis 1), the latter would be equivalent to a diversified portfolio of national bonds and the credit risk component of its interest rate would likely emerge as an average of the credit risk premia paid by participating issuers on their national bonds. The risk characteristics of a common Eurobond backed by joint guarantees (hypothesis 2) would depend on the participating Member States. In the best case scenario, the credit quality and the risk premium of a Eurobond jointly guaranteed by all euro-area Member States would be as good as those of French and German national bonds. But the latter States, while sharing the benefits of enhanced safe-haven status and, perhaps, greater euro-zone financial stability, by assuming the credit risk of the other States, would see their risk exposure increased. Issuance by an EU Institution would also be problematic and even more so because EU Member States outside the euro-area would guarantee the Eurobond without sharing its benefits.

As the discussion makes clear, the lack of participation incentives is a serious obstacle to the implementation of any common issuance program. Why should a Member State pay a higher interest rate or agree to guarantee the debt of other States if it did not obtain a proportionate share of the benefits? This explains why Eurobond proposals usually come along with suggestions on how to relax the participation constraint.

A first solution is to restrict participation to the Member States with the highest credit rating or to restrict issuance to a short-maturity low-risk type of instrument: Treasury bills (see EFDA 2008, Münchau 2009). These solutions cannot be applied to a Eurobond issued by an EU Institution, limit the scope of market integration and may not be effective because, as shown in section 2, the credit risk component of interest rate spreads may differ substantially even within the same class of high rated bonds.

A second solution relies on a compensation scheme based on the indexation of the interests paid by each Member State either to measures of its credit risk premium or to fiscal parameters. For instance, each Member State could pay on its share of the Eurobond a margin equal to the credit risk premium, as measured by CDS, on its national bonds, while the remaining interest payments would be proportional to the share of the Eurobond (see Mayordomo et al. 2009).¹²¹ This scheme could be applied to any type of Eurobond. For instance, an EU Institution could charge Member States with different interest rates. The main problem with this solution is that, for the compensation scheme to work, the markets for national bonds (on which CDS are quoted) have to be kept alive contrary to the objective of reducing fragmentation. Making Eurobonds depend on the national markets that they should replace is a self-defeating strategy.¹²²

¹²⁰ See Berrigan (2010) for a further discussion.

¹²¹ Similarly, De Grauwe and Moesen (2009) propose to link payments to the interest rates on national bonds. Interest rates are however worse proxies for credit risk than CDS spreads.

¹²² Furthermore, if a common Eurobond backed by joint guarantees reduced the exposure to crisis transmission then the risk premium measured by CDS on national bonds would tend to overstate the credit-risk contribution of the participating issuers.

If anything, Member States with smaller funding needs would not be able to issue Eurobonds and at the same time maintain a liquid market for their national bonds. A different compensation scheme, that overcomes these difficulties, is to index the interest payments to fiscal parameters such as the deficit and/or the public (and private) debt relative to GDP (see Boonstra 2010 and Gros 2010). This solution offers a shield from the sudden swings in sentiment on financial markets, and may provide incentives for fiscal discipline based on EU most preferred indicators of fiscal sustainability but agreement on technical details on the indexation mechanism could be difficult to reach.

The only viable solution, as already discussed in the previous section, is to define the maximum amount of debt obligations that each Member State could have in the form of Eurobonds. Any additional borrowing would have to be funded with national bonds. This would set a limit to the obligations that the participating Member States would have to guarantee and be liable for in the event that one of them would default. If Eurobonds were also made senior with respect to the national bonds issued after the start of the program, they would be risk free (see Depla 2010). This solution would ensure a safe-haven status for Eurobonds, set incentives for fiscal discipline and appears equitable to Member States with strongest fiscal fundamentals. Whether it could receive political support is however unlikely.

7. Concluding Remarks

In this paper we have provided the relevant stylized facts to assess the potential benefits from a European government bond issued by euro-area Member States or by an EU Institution. We have found that credit risk premia are the main drivers of interest-rate differentials of euro-area Member States relative to Germany, a fact suggesting little scope for a Eurobond with country-specific shares that leaves each participating issuer liable only for its own share. Indeed, only few Member States, Finland, France and, perhaps, the Netherlands appear to have borne a high cost from illiquidity. Moreover, the efficiency gains from a Eurobond backed by several but not joint guarantees in terms of market integration and greater liquidity would be limited and possibly offset by the higher costs of an inflexible debt management.

The potential benefits of combining credit quality with liquidity are suggested by the evidence on the interest-rate differential between German and US bonds. Indeed, we find empirical support to the "safe haven" argument that a common Eurobond with the same credit standing of German Bunds, but greater liquidity, would attract the demand by international investors and strengthen the use of the euro as a reserve currency. In fact, before the US financial crisis, German Bunds appear to suffer from a lack of liquidity or international benchmark status compared to US Treasuries. After the crisis they even appear to be perceived as a safer investment. This findings together with the evidence of a zero credit risk premium on EIB bonds suggests that a Eurobond issued by all euro-area Member States could reap the liquidity benefits of a unified market approaching in size that of US Treasuries. However, to reach a "safe-haven" status the common bond would have to be jointly guaranteed by all euro-area Member States. A Eurobond backed by joint guarantees could also reduce exposure to crisis transmission and contagion that appear relevant factors affecting interest-rate spreads over the course of the euro-area debt crisis.

A Eurobond issued by an EU institution would also provide these benefits but participation of non-euro Member States would be problematic as they would assume the risk of a jointly guaranteed debt without fully sharing its benefits. This suggests the creation of a new EMU issuing entity for centralized funding of euro-area Member States. Full participation by euro-area Member States should also be ensured since the start of the program; a gradual approach with sequential participation is bound to fail because a common issuance program has high initial set-up costs while its success critically hinges on the potential market size for the new instrument and thus on the number of participating issuers and their credible commitment to the program.

Issuance of a jointly guaranteed Eurobond requires, however, a change in the no bailout clause (Article 125 TFEU) and, more importantly, the political will to implement it, which is lacking at present. Indeed, a mutualisation of credit risk faces strong political opposition especially by Member States with sound fiscal fundamentals because of fears of relaxed fiscal discipline and inequitable sharing of the benefits and the costs from the program. Although solutions to these problems can be found, it is difficult to think of a Member State willing to assume another State's risk in the absence of an EU common fiscal policy. Indeed, one may even wonder whether a common debt will ever exist without a stronger fiscal integration.

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