

Aalto University School of Business

Department of Economics

Spring 2017

Eurobonds: Repackaging sovereign risk

Bachelor's Thesis in Economics

3.5.2017

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ABSTRACT

This thesis describes the eurobonds discussion based on the existing literature. The topic is relevant, since the eurobonds discussion revived strongly during the euro crisis. Moreover, the European Systemic Risk Board launched a new proposal on the new eurobonds, European Safe Bonds (ESBies) in the fall 2016 which makes this topic even timelier. The current eurobonds proposal is based on the approach introduced by Markus Brunnermeier *et al.* (2011) and its aim to break the diabolic loop between banks and states by creating a safe asset. The problem of this, and in other eurobonds proposals, is however limiting moral hazard. The main objectives of this thesis were to describe the reasons and origins for the current discussion and to understand the basic elements of the eurobonds in the light of moral hazard. The aim is to give a more technical approach to the theme and start the discussion about the problematic issues. As the research and proposals on Eurobonds don't cover all the critical elements, e.g. the future of the EMU or the political consequences of the Eurobonds, a need for further studies and research still exists.

1 Introduction

The seeds of the euro crisis were sown already at the foundation of the European Monetary Union. The common currency removed the currency risk between the euro-member states and enabled borrowing with lower interest rates than some of the member states' fiscal stance would have enabled (Lane, 2012). Thus, the euro lowered especially the periphery¹ countries' incentives to conduct sustainable fiscal policy, while the rules for the fiscal stance were too loose and they weren't monitored carefully enough. This created the base for the moral hazard problems inside the euro area. In late 2008, the financial crisis landed also in Europe, the cross-border financial flows dried up and the problems of euro area surfaced.

In this situation, the discussion on eurobonds revived and two main arguments were proposed in the crisis context: "Firstly, Eurobonds could reduce interest expenses and secondly they could lead to a deepening of the markets and therewith reduce vulnerability to speculation." (Hild *et al.*, 2011). Another point of view was stated by Markus Brunnermeier *et al.* (2011). They found that even if other deficiencies were addressed there was still one crucial feature remaining: the lack of a European safety asset. The problem is that the market operators have treated all the assets of the sovereign euro area states safe (e.g. both the Netherlands and Greece), which has led to a diabolic loop between banks and states. According to Brunnermeier *et al.* the problem would be solved through the eurobonds.

However, the question is still how an instrument that carries such a huge risk to moral hazard would solve the euro area problems that are caused by moral hazard? The possible benefits of the eurobonds are remarkable but even more remarkable is the question about moral hazard. Almost all the eurobonds proposals emphasize that the eurobonds should be accompanied by better budget policy especially in heavily indebted countries to avoid moral hazard. Therefore, it might be relevant to ask if the eurobonds are the right response to the challenges of the euro area, especially in the crisis context. Would the eurobonds only enable the ongoing show without really fixing the underlying problem, moral hazard?

The main objectives of this thesis were to describe the reasons and origins for the current discussion and to understand the basic elements of the eurobonds in light of the moral hazard. The aim isn't to find the exact recommendation whether the eurobonds are the right solution to the euro area problems, but to give a more technical approach to the theme and start the discussion about the problematic issues.

¹ According to Higgins & Klitgaard (2014): Greece, Portugal, Spain and Italy.

The structure of the thesis is the following: Firstly, to introduce the theoretical foundation about moral hazard. After that, briefly cover the most frequently used terms, since they vary broadly. In the third part, the phases of the euro crisis are introduced to explain the problematic nature of eurobonds. In the fourth part, the commonly known eurobonds approaches are covered, classified by their substitution of national bonds and liability. After that, we take a deeper look at the current discussion and proposals. In the last part, sum up the moral hazard problems and to give some recommendations for further studies. The conclusions part puts the pieces together and takes a look at the future. In this last part, some tentative recommendations are given.

2 Moral hazard

Limiting moral hazard has frequently been mentioned as the main challenge with introducing eurobonds (e.g. Hild *et al.* 2011 & European Commission, 2011). This can be seen as a very logically following problem, since one of the key underlying reasons for euro crisis was moral hazard.

The moral hazard is often described with the Principal-Agent-Theory. The theory is concerned with solving two problems that appear in agency relationships. The first problem occurs when “(a) the desires or goals of the principal and agent conflict and (b) it is difficult or expensive for the principal to verify what the agent is actually doing”. The second issue is the “problem of risk sharing”, which arises if the parties have different attitudes toward risk. (Eisenhardt, 1989)

Jensen and Meckling (1976) describe the Principal-Agent-Problem following: “An agency relationship as a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent. If both parties to the relationship are utility maximizers, there is good reason to believe that the agent will not always act in the best interests of the principal.”

The principal can limit the problem by monitoring the agent. However, it's generally impossible for the principal at zero cost to ensure that the agent acts optimally from the principal's point of view. So, the monitoring incurs monitoring costs. Another way to avoid the problem is to create appropriate incentives for the agent. This can incur positive monitoring and bonding costs. Due to the costs the overall welfare decreases, since the monitoring costs could be used to alternative purposes to enhance the overall welfare. (Jensen & Meckling, 1976)

The Monetary Union enabled borrowing with lower interest rate (Lane, 2012). Especially the euro area periphery benefited from an economic boom caused by a significant declining interest level due to the desertion of their own currency (Higgins & Klitgaard, 2014). The real problem was the high degree of convergence in euro-area bond yields during the first decade of the euro that was not, in retrospect, justified by the budgetary performance of the Member States, and thus, the periphery countries enabled their living standards with “cheap” debt (European Commission, 2011) This situation created the base for the moral hazard problems inside the euro area. The problem at the same time was that the market operators treated all the assets of the sovereign euro area states as safe (i.e. Dutch and Greece), which has led to a diabolic loop between banks and states (Brunnermeier et al., 2011). The no-bail-out clause wasn't credible enough, since nobody could even think that one of the euro member states could default. (Brunnermeier *et al.*, 2016b). So, the member states didn't have strong incentives to create enough stable structures to tackle the fiscal imbalances (i.e. implementation of rules and sanction tools) and to show true political commitment to the rules agreed. Due to the euro crisis, the euro area has been forced to create new structures and procedures to tackle the crisis, but still the process isn't ready yet.

Thus, if we assume one of the key problems of euro area is moral hazard, it's somewhat hard to see why the eurobonds would ease the situation in euro area. As mentioned earlier, limiting moral hazard has frequently been mentioned as the main challenge with introducing eurobonds and for obvious reason. The European Commission (2011) states the problems as follows: *“Moral hazard inherent in common issuance arises since the credit risk stemming from individual lack of fiscal discipline would be shared by all participants.”* Hence, the eurobonds will even decrease the incentives of the euro area member states to conduct appropriate fiscal policy and to make reforms needed in the crisis context.

3 Defining eurobonds: A beloved child has many names

The term “eurobonds” will be used as an umbrella term for common issuance among the member states in the euro area, since term eurobonds is most commonly used in the public discussion and literature (European Commission, 2011). However, the term used still varies broadly and therefore I will briefly cover other commonly used terms.

The European Commission considers (2011) that the main feature of such instrument is the stability and therefore, in line with President Barroso's State of the Union address on 28 September 2011, uses term "Stability Bonds". Other actively used term, introduced by Markus Brunnermeier *et al.* (2011), is European Safe Bonds (ESBies). "They are “European” in a way that they are backed by the sovereign bonds of all euro area

members; they are “safe” as expected loss rates are minimal; and they are “bonds” in a way that they are fixed-income instruments that investors may trade and hold.” (European Systemic Risk Board, 2016). The third relevant term for this thesis is “Structured Eurobonds” introduced by Alexandra Hilde *et al.* The latter proposals are somewhat similar. However, they still had some differences in the specific design of the structure. (Hild *et al.*, 2013)

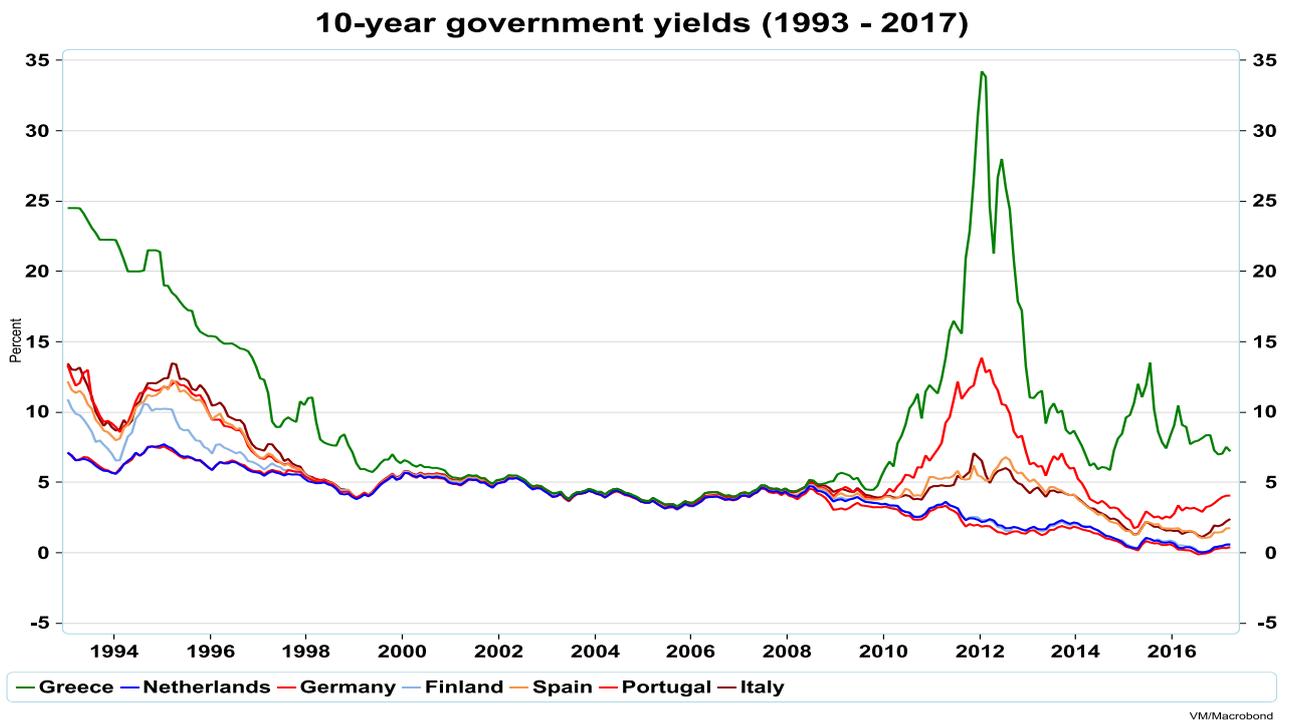
The term “eurobond” has also completely other meaning. Eurobond can also mean an international bond that is denominated in a currency other than the home currency of the country in which it is issued (Melnik & Nissim, 2005). However, this meaning isn’t relevant regarding this thesis.

4 Background: The euro crisis

The euro crisis (often also referred to as the European debt crisis or the European sovereign debt crisis) originate to the foundation of the European Monetary Union (EMU) back in 1999. The Monetary Union removed the currency risk between the euro-member states and enabled borrowing with lower interest rate (Lane, 2012). Especially the euro area periphery benefited from an economic boom caused by a significant declining interest level due to the desertion of own currency. The problem was not only that the government spending exceeded tax revenues, but the simultaneous growing indebtedness in the private sector. (Higgins & Klitgaard, 2014)

The debt to GDP ratios in the periphery countries rose to risky level and quickly exceeded the 60%-limit agreed in Maastricht Treaty (1992). The general government debt-to-GDP ratio of Greece was already in 1997 95,5% and in 2006 115,2% (OECD). The corresponding numbers to Spain are the following: in 1997 73% and in 2006 45%. The interest rates remained still rather moderate and the countries were able to pay the interest expenses.

Graph 1: 10-year government yields (1993-2017)



Source: Data from Macrobond

The first signs of the crisis occurred already in August 2007, when a group of European banks got caught up in trouble. The second sign was the subprime crisis and bank run of the British mortgage bank Northern Rock in September 2007. The run was halted when the government announced that it would guarantee all the Rock's deposits, but eventually it wasn't enough, and the bank was taken into state ownership in February 2008. (Hodson & Mabbet, 2009) Even if the bank wasn't systemically important bank, it was a clear warning sign about the problems of European banks concerning liquidity. The global crisis entered a more acute phase in September 2008 when investment bank Lehman Brothers collapsed (Lane, 2012).

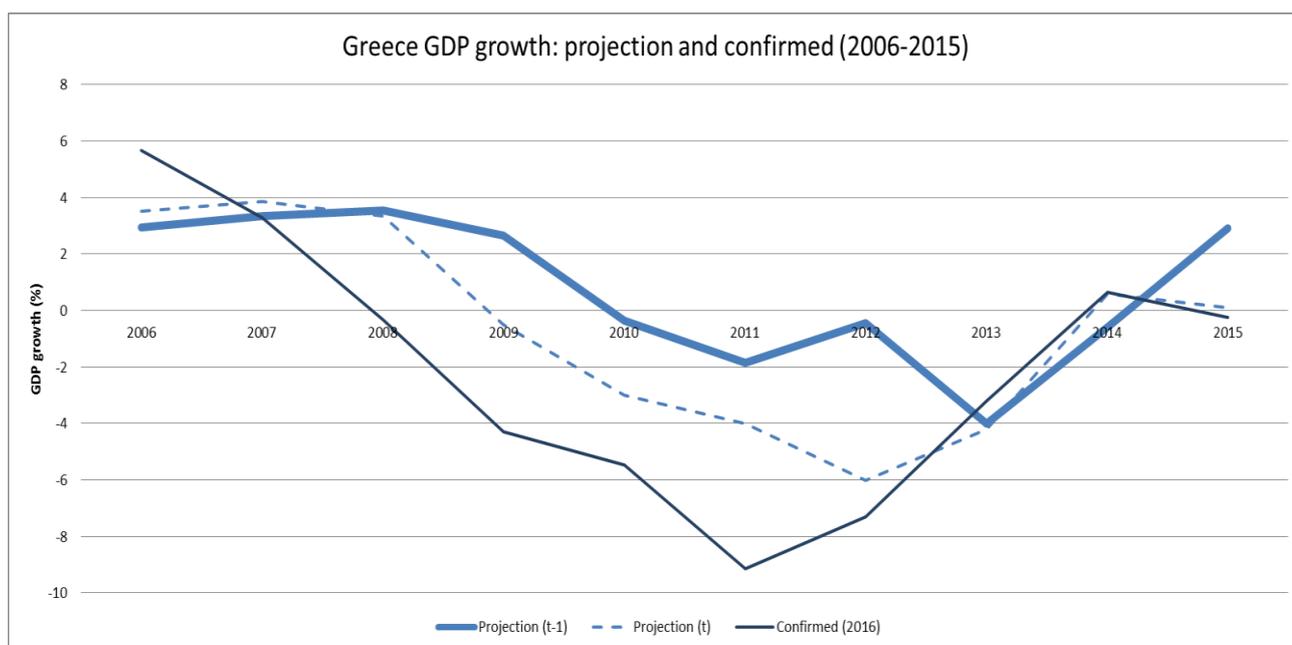
In late 2008, the financial crisis landed also in Europe, and the cross-border financial flows dried up. This affected most to the countries with the greatest reliance on external funding, and inside the euro area the first victim was Ireland and especially its banking system. The problems in the banking sector eventually prompted its government to provide an extensive two-year liability guarantee to its banks at the end of September 2008 (Honohan, 2010 & Honohan *et al.* 2003).

The situation was exceptional, since there were no structures or models in euro area how to address to the crisis, and at the same time, the contagion effects were wide. In this pre-crisis context, the contagion effects affect especially through speculation. There were many countries that have rather moderate debt burden and budget deficit, but still through the speculation of their fiscal stance drove them to troubles. Many European

countries were forced to use state aid for banks (for recapitalisations, guarantees and impaired asset measures) (European Commission Competition data). Thus, the direct costs for the member states were remarkable but still most of the costs originated indirectly from the tax losses and increased social expenditure. The fast-growing public deficit pushed the debts even higher which started to limit the market access of the periphery countries with sensible costs. This increased the interest payments which was the real problem. For instance Greece's interest payments of expenses grew with almost 4 percentage point between 2009-2011 reaching 13,3%. The same number for Spain was 3,5% reaching 10,9%. (The World Bank)

Still the euro area debt market remained relatively calm until 2009. Though late 2009, several countries reported larger-than-expected increases in deficit/GDP ratios, and the downhill began. The problem was not only the falling GDPs, but also quickly falling fiscal revenues. However, nobody couldn't even imagine how deep the crisis actually was or how problematic the situation was.

Graph 2: Greece GDP growth: projection and confirmed

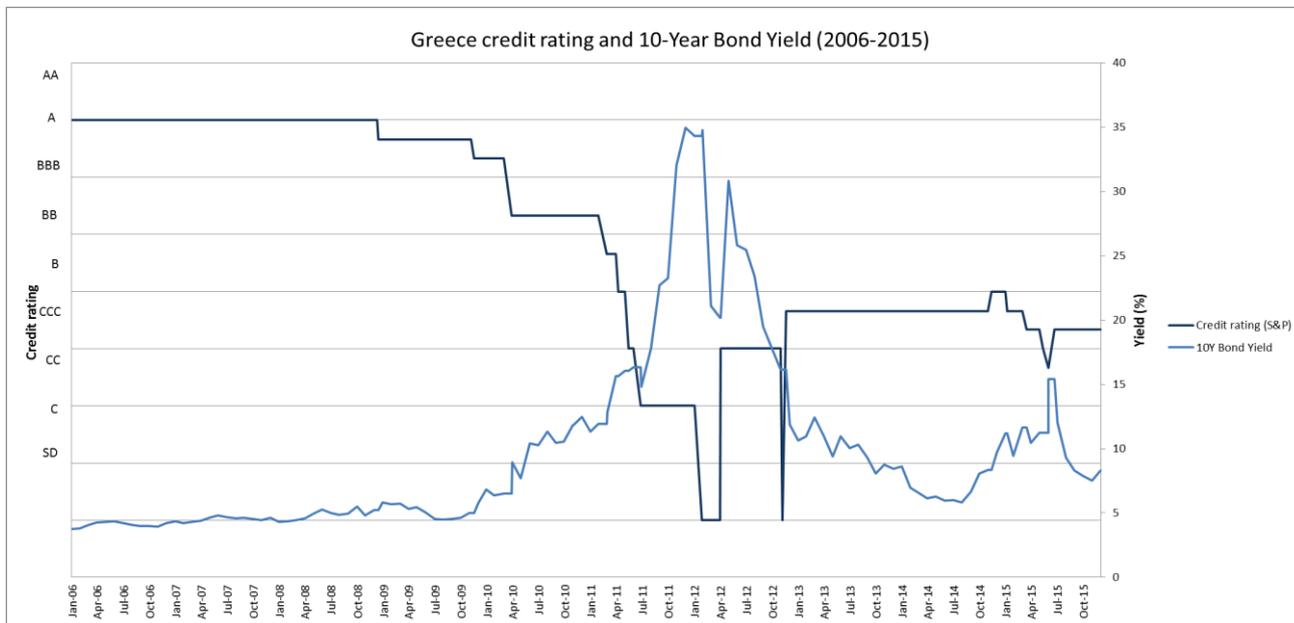


Source: Data from IMF World Economic Outlooks 2005-2016

The most shocking news came from Greece. In October 2009, the new government announced a revised 2009 budget deficit forecast of 12.7 percent of GDP which was more than double the previous estimate of 6.0 percent (Lane, 2012). However, the outlook for Greece was still quite optimistic as the forecasts of the credit agencies and IMF show. Eventually the yields started to rise, when the investors began to lose their trust in Greece's solvency in spring 2010. The crisis culminated in 2010 when Greece was the first country to be excluded from the bond market in May, with Ireland following in November 2010. Portugal followed in April

2011. In June 2012, also Spain and Cyprus were forced to seek official funding (Lane, 2012). The investors lost their trust in the periphery countries, and the risk premiums climbed sharply and started to reflect the right risk.

Graph 3: Greece credit rating and 10-Year Bond Yield (2006-2015)



Source: Data from S&P and Bloomberg

In this situation, the discussion on eurobonds revived and two main arguments were proposed in this crisis context: “Firstly, Eurobonds could reduce interest expenses and secondly they could lead to a deepening of the markets and therewith reduce vulnerability to speculation.” (Hild *et al.*, 2011) In other words, the main purposes of this kind of asset were to enable market access to all euro area member states, to lower the interests in the whole euro area (also for the well-performing countries by creating safety asset) and to stabilize the economical atmosphere by sharing risk.

Another point of view was stated by Markus Brunnermeier *et al.* (2011). They find that even deficiencies were addressed there was still one crucial feature remaining: the lack of European safety asset. The lack of euro area’s own safe asset has been mentioned as one of the reasons leading to the euro crisis. The problem is that the market operators have treated all the assets of the sovereign euro area states safe (i.e. Dutch and Greece), which has led to a diabolic loop between banks and states (Brunnermeier *et al.*, 2011). The purpose of the safe assets is to secure financial transactions, since at the foundation of even the most complex financial securities; there is usually a requirement to post collateral (Giovannini, 2013). It will decrease risks, like liquidity or market risk, when the collateral is deemed safe by the parties involved. Moreover, for instance the

Basel regulation requires the substantial of bank's balance sheet must be on safe assets (Basel Committee on Banking Supervision, 2013). Safe assets have also a crucial role in central banks' operations. To conduct conventional monetary policy, the central bank exchange money to safe assets (Brunnermeier & Sannikov, 2016). Nowadays the most used safe asset is the US Treasury bills and bonds (Krishnamurthy & Vissig-Jorgensen, 2012).

So far, politicians and researchers have launched several proposals about eurobonds and commented especially their necessity. The beginning of the eurobonds discussion dates to 1990's. Already in 1993 Jaques Delors, former president of the European Commission introduced the idea of EU joint bonds in his plan for growth, competitiveness and employment (European Commission, 1993). Later, the Giovannini Group (2000) proposed a technical approach of further financial integration, but at the time none of the proposals was considered further, mainly due to strong opposition from Germany (Hild et al., 2011).

However, now the situation was different due to the crisis. The common issuance was usually suggested as a longer-term possibility, but now the recent debate focused more on potential near-term benefits to ease the pressure in the sovereign debt market (European Commission, 2011). The eurobonds weren't introduced to end the process of the economic and fiscal convergence but to become parallel for such further convergence. Thus, the discussion on eurobonds is characterised by two extreme positions. The supporters emphasize the need for solidarity and liquidity boost generated by eurobonds. They find that the euro crisis is a chance for further integration, and thus, the euro area become more resilient to react on crisis. The opponents emphasize moral risk. They warn that euro area could become a transfer union, where the well-performing countries pay for bad performing countries. The opponents also warn that introducing the eurobonds would only worsen the euro crisis resulting in disintegration or even a break-up of EMU (Hild *et al.* 2011 & 2013).

5 European Commission: Green Paper on the feasibility of introducing stability bonds

As a response to the public discussion, the European Commission published a Green Paper² regarding eurobonds in November 2011. The aim of the Green Paper was to "launch a broad public consultation on the concept of Stability Bonds" but also to calm the ambience in the euro area, since the speculation about the stability of the euro area was the hot potato. There was even some speculation if the euro area will fall apart.

² Green Papers, when released by the European Commission, are documents intended to stimulate public discussion and to invite relevant parties to participate on consultation process. (EUR-Lex)

In the Green Paper, the Commission recognized that the common issuance of stability bonds has significant potential effects. However, it should be accompanied with sufficient fiscal surveillance and policy coordination to avoid moral hazard and to support competitiveness. According to the European Commission (2011) possible benefits of such eurobonds can be identified as following: managing the current crisis and preventing future sovereign debt crisis, the deepening of the internal market, increasing shock resilience of the financial sector and government financing and improving euro's role in the global financial system.

However, it also reminds that the launching of stability bonds will also be associated with significant challenges. The greatest challenge to tackle would be to limit moral hazard. It is also regarded as a precondition for eurobonds in many proposals. Other major issue is how to ensure the high credit quality and how to make stability bonds beneficial for all the euro area member states. The Commission calls that the structure of the eurobonds should be sufficiently transparent so that the investors will deem them safe. If the investors are sceptical about the safety of the eurobonds, they will demand higher yield than present yields for the sovereign member states' national bonds. Because of this, it's important to ensure the high credit quality.

The consistency with EU Treaty should also be ensured. The bonds shouldn't violate the "bailing out" prohibition i.e. the article 125 in Treaty of Lisbon (2007). "The Union shall not be liable for or assume the commitments of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of any Member State, without prejudice to mutual financial guarantees for the joint execution of a specific project. A Member State shall not be liable for or assume the commitments of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of another Member State, without prejudice to mutual financial guarantees for the joint execution of a specific project." The compatibility with the article would depend on the chosen model. According to the Commission, the issuance of stability bonds under several but not joint guarantee would be possible without changes to the Treaty. The other possibility (joint and several guarantees) would need an amendment to the EU Treaty.

The Green Paper presents three different options of stability bonds that differ "on the degree of substitution of national issuance (full or partial) and the nature of underlying guarantee (joint and several or several) implied".³

³ Joint and several liability: Under joint and several liability each party is responsible for to part of the damages or up to as all the damages. Several liability: Under several liability the parties are only responsible for their own obligation. (Kornhauser & Revesz, 1993)

The three different options have been divided as follows:

- 1) “the full substitution of Stability Bond issuance for national issuance, with joint and several guarantees;
- 2) the partial substitution of Stability Bond issuance for national issuance, with joint and several guarantees; and
- 3) the partial substitution of Stability Bond issuance for national issuance, with several but not joint guarantees”

After analysing the pros and cons of the eurobonds and pondering the different options, the Commission ended up being positive about eurobonds and summarized that the positive arguments outweigh the negative ones. Since the European Commission is one of the key European institutions, this must be taken into account when reading the publications written by the Commission.

5.1 The full substitution, with joint and several guarantees

The first option is both the broadest and most ambitious option, which targets to complete a fiscal union (Hild et al., 2013). Under this option, the euro area member states’ national bonds would be fully replaced with joint issuance. This would imply “the creation of a single euro-area debt agency” (European Commission, 2011). Thus, the stability bonds would be issued under joint and several guarantees by the common debt agency. In other words, the risk would be pooled and all the member states would be equally responsible for each other’s debt.

According to the European Commission (2011) this approach would be the most effective solution in delivering the benefits of stability bonds. It would ensure all the member states full refinancing despite the condition of their national public finances and enhance the resilience of the euro area financial system. Though it also involves the greatest risk of moral hazard. Thus, this approach should be accompanied by very strict budget discipline, which would also almost certainly lead to changes in the Treaty.

Moral hazard could be solved through more strict budget discipline but it would demand not only changes in the Treaty but also changes to the political atmosphere (more in annex). At the moment, the Stability and Growth Pact (SGP) (1997) gives the framework for the coordination of national fiscal policies in the European Union. The corrective arm of the SGP includes the Excessive Deficit Procedure and the thresholds of 3% of GDP for the general government deficit and 60% of GDP for the general government, as defined in the Treaty. However, the monitoring has been loose and many of the countries have frequently violated the rules since

the sanctions have never been used.⁴ It doesn't only concern the periphery countries, but for instance France has repeatedly exceeded deficit and debt rules. Moreover, the political situation has been rather sensitive after the UK referendum in June, and in other euro area member states the discussion about euroexit has revived. Due to the political reasons, this direction makes even harder to set sanctions for the big, core countries.

This kind of approach is introduced by Boonstra (2005, 2010). He proposes that the bonds would be issued through new fund. The participating countries could borrow money from the fund and as exchange pay premium (interest) based on the spread of their deficit and debt from the average levels of Germany and France. The benefits would be in outline the same as the Commission stated.

This approach is surely the hardest to implement and therefore many of the eurobond proposals fall to the following two categories. This approach would have a direct aim to integrate the EMU cooperation and to complete the fiscal union. This path has strong opposition among many member countries due to moral hazard, and it would be politically extremely hard, or even impossible, to implement at least in the near future. It would demand developing new fiscal structures and sanctions so that the member states have the real resources to step in the free rider problem and moral hazard. Moreover, it would demand the change of the Treaty and many of the national laws. For these reasons, it's very hard to see that the eurobonds would be joint and several guaranteed and would fully replace national bonds.

5.2 The partial substitution, with joint and several guarantees

In the second option, the stability bonds would be joint and several guaranteed, but would only partly replace the national bonds. This approach is also known as "blue-red approach" and was first introduced by Delpla and Von Weizsäcker (2010). They state that it would be possible to achieve higher and lower yields at the same time. It would be achieved by forming "red" and "blue bonds".

The "blue bonds" or stability bonds would be formed by pooling up to 60% of GDP of government debt in the form of euro area common bond. The remaining part of the debt would be issued at the national level under national guarantees, which make them junior to stability bonds. This remaining junior tranche would be composed of more risky assets and thus, would be exchanged with higher yield. The exact yield would depend on

⁴ On 12 July 2016, the Council found that Portugal and Spain hadn't taken effective action to reduce its deficit below 3% of GDP. The Council's decisions triggered sanctions under the excessive deficit procedure, on the basis of article 126(8) of the Treaty on the Functioning of the European Union (TFEU). However, after request of Spain and Portugal and the proposal of the Commission, on 8 August the Council agreed not to impose fines on Portugal and Spain. (Council of the EU, statement 8.8.2016)

the countries' credit quality. This kind of structure would give the more indebted countries an incentive to fiscal adjustment, since the yield of the national bonds would be determined by the national credit rating. Although, this doesn't remove the fact that some of the countries have unbearable debt burden which could still lead to financing problems in these countries.

The Commission (2011) propose, according to Delpla and Von Weizsäcker that the proportion of stability bonds could be limited to a specified percentage but also propose "a more flexible system linked to policy compliance". The maximum percentage of the stability bonds would be fixed, but the ceiling could be flexible. In other words, if a member country follows the rules and recommendations under euro area governance framework, the maximum is equal to the ceiling. Otherwise the non-compliance countries could be sanctioned by lowering the stability bond ceiling. The Commission points out that this would also "serve as a quasi-automatic stabilizer of the credit quality of the Stability bonds". To ensure this, the ceiling should be maintained and not adjusted on an arbitrary basis (i.e. political pressure).

This second approach is less ambitious than the first one and can be characterised "as a tool of financial repair" (Hild *et al.*, 2013). The Commission (2011) describes that the benefits would still be remarkable but smaller than in the first approach; the credit quality would be high, the euro area more stable and the role of the euro more central in the global financial markets. Moral hazard would also be limited through residual national issuance. However, the relationship between moral hazard, market discipline and contagion risk in defining the stability bond ceiling is not simple. A low ceiling (and thus high amount of national bonds) would limit moral hazard, but would leave a default chance for highly indebted member countries. Vice versa a high ceiling of stability bonds (and thus low amount of national bonds) would create a greater risk of moral hazard but would lower the risk of defaulting. The choice of ceiling would also determine the credit quality of stability bonds.

As this approach suggests, joint and several guarantees for stability bonds would lead changes in the EU Treaty.

The German Council of Economic Experts (2011, 2012) introduced an idea about debt redemption fund which aim is to bring the government indebtedness back to the 60% of GDP, as agreed in the Maastricht Treaty. The proposal turns the "blue-red bond proposal upside down" as Hild *et al.* describes it (2013). The redemption fund would pool the government debt exceeding 60%. The countries involved must agree to a strict redemption scheme to participate. But if they are following it, they would benefit from relatively low yields since the bonds are joint and several guaranteed. This approach doesn't constitute the proposal introduced by the

Commission since the fund would be only temporary and would only be used member countries with debt to GDP ratio over 60%. The German Council of Economic Experts propose that this financial tool would be a crisis solving mechanism, which only gives the indebted countries breathing space to bring their debt back to the sustainable level. Once the goal is reached, the eurobonds would be phased out. The key question is still how this kind of approach would be more beneficial than the current crisis management mechanisms inside the euro area.

5.3 The partial substitution, with several but not joint guarantees

In the third and last option, the stability bonds would again only partially replace national issuance and they would be only several guaranteed. This approach differs from the previous approach, since the member states would retain liability for their respective share of stability bonds issuance and for their national issuance. According to the European Commission (2011), “issues relating to the split between Stability Bond and national issuance, including the choice of ceiling for Stability Bond issuance, would be largely the same. Hild *et al.* (2013) notices that these kinds of eurobonds would also see as a crisis management tool, since this approach could be implemented much faster than the other two approaches.

This approach has the lowest danger of moral hazard; since the bonds would only be several but not joint guaranteed, and the option could be implemented relative quickly, since this approach doesn't require changes to the EU Treaty. However, the Commission sees that this approach would deliver fewer benefits. The key issue in this option would be to ensure the credit quality. The Commission (2011) states that the credit quality of such bond would “at best be the (weighted) average of the credit qualities of the euro-area Member States. It could even be determined by the credit quality of the lowest-rated Member State, unless they enjoy credible seniority over national issuance in the case of all Member States.” This could mitigate the acceptance of the stability bonds in high credit rating countries. To solve this problem, the Commission proposes that the member states could post collateral, e.g. cash or cold.

The two most commonly recognised approaches that include several but not joint guarantees are introduced by Brunnermeier *et al.* (2011) and Hild *et al.* (2011). Both proposals are based on modern financial instruments despite the similarities developed contemporaneously and independently. Hild *et al.* (2011) would recommend using ASB structure and partial replacing of the national bonds. Brunnermeier *et al.* (2011) also suggest a product composed of different tranches (safe European Safe Bonds and a junior tranche) and backed by with sovereign bonds of euro area national bonds and guaranteed through a credit enhancement. The proposals are somewhat similar but Brunnermeier's approach would only allow two tranches, whereas

Hild's allow "for several tranches with different rating to ensure reasonable liquidity and market depth and to address investors' preferences" (Hild *et al.*, 2013).

Hild *et al.* (2013) reminds that these approaches should be seen as a part of the solution for the crisis but only when they are accompanied by additional measures such as structural reforms or bank recapitalisations.

6 Current discussion: ESBies: Safety in the tranches

The current discussion focuses mainly on the proposal that Markus Brunnermeier *et al.* introduced in 2011. The group suggests that the euro area member states should launch European Safe Bonds that would end the diabolic loop and thus, stabilize the euro area. On 29 September 2016, the European Systemic Risk Board (ESRB) created a High-Level Task Force on Safe Assets. According to the ESRB the mandate of the task force is "to investigate the potential creation of sovereign bond-backed securities (SBSs), which could comprise senior and junior claims on a diversified portfolio of sovereign bonds." At the same month, the Task Force published a working paper "ESBies: Safety in the tranches"⁵.

According Brunnermeier *et al.* the ESBies aren't same as eurobonds since nothing is shared among governments and through pooling and tranching ESBies are just repackaging of existing sovereign risk. However, the public opinion is that the ESBies are somewhat same as the eurobonds. For instance the Handelsblatt stated that the ESBies are leading to mutualisation through the backdoor (Handelsblatt, 26.1.2017).

6.1 Diabolic loop and safe assets

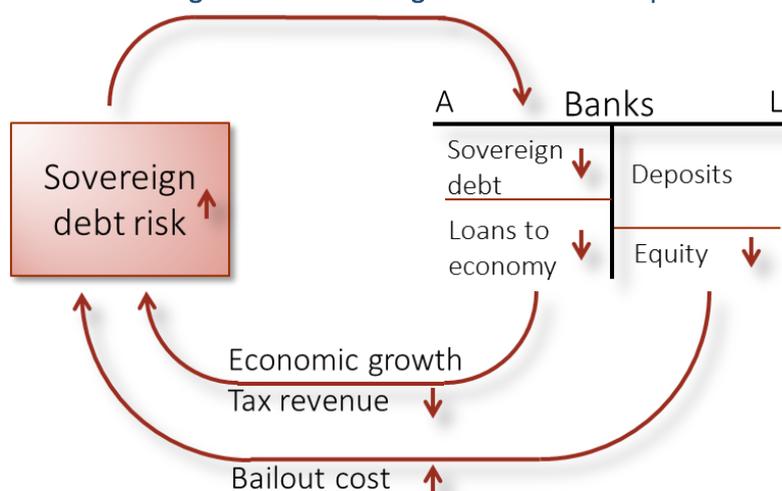
The diabolic loop or nexus between sovereign and bank credit risk was one of the key element that caused the sovereign crisis in the periphery area. (Brunnermeier *et al.* 2016a) The reasons for the loop are yet slightly different inside the euro area. In Ireland and Spain, the main cause was the banking sector and its insolvency whereas in Greece, Italy and Portugal the problems originated more from the long run public debt accumulation and slow growth which then threatened banks. (European Systemic Risk Board, 2016)

There are three key elements that that enables the loop. First, the home bias of banks' sovereign debt portfolios. Even if, the zero risk-weight applies to banks' claims on any EU member state the banks are more likely to hold domestic claims (Altavilla *et al.* 2015). Second, "the inability of governments to commit ex ante not to bailout domestic banks, since bailout is optimal once banks are distressed." And third free capital mobility,

⁵ By Markus K. Brunnermeier, Sam Langfield, Marco Pagano, Ricardo Reis, Stijn Van Nieuwerburg and Dimitri Vayanos.

which causes that international investors' outlooks of future government solvency are involved in the value of national bonds. (Brunnermeier *et al.* 2016a) Moreover, the loop was encouraged by "the absence of any regulatory discrimination among bonds" (Brunnermeier, 2011).

Figure 1: The sovereign-bank-diabolic-loop



Source: Brunnermeier *et al.* (2011)

The loop works as follow. First the country faces a shock, such as productivity shock or asset pricing collapse, which reduces the marked-to-market value of the national debts, which leads to a fall in bank's book and market equity. (European Systemic Risk Board, 2016)

Two spillover channels follow. The first channel operates via bail-out channel: the reduction in bank's solvency and thus increase in leverage raises the probability of a bail-out if the bank is valued too important to fail (Acharya *et al.*, 2014). This increases the sovereign risk and lowers the bond prices. The second loop operates via the real economy: As a solution to the increasing leverage and lowering solvency, the banks try to return to their target leverage ratio (Adrian & Shin, 2014). This involves cutting in loans to firms and households which lead to lowering real activity and tax revenues (Brunnermeier *et al.*, 2011).

The lack of European safe asset has created distortions, since the market operators have treated all the assets of the sovereign euro area states safe. Still this wasn't problem during the boom in 2003-2007 and the capital flowed from non-vulnerable countries to vulnerable countries after attractive investment opportunities. However, in 2009 the financial crisis landed in Europe and the investors started to question the solvency of the periphery countries (European Systemic Risk Board, 2013). The diabolic loop in the euro area was ready.

6.2 Structure

To break the loop Brunnermeier, Garicano, Lane, Pagano, Reis, Santos, Thesmar, Van Nieuwerburgh & Vayanos (2011) propose “European Safe Bonds” that are formed from the senior tranche of a diversified portfolio of euro area sovereign bonds.

ESBies would work as follows. A public or private entity buys sovereign bonds of euro area member states according to some fixed weights. The weights would be set by a strict and well-defined rule, such as euro area countries’ relative GDPs or contributions to ECB capital. To finance the purchase the issuer would issue two types of securities: European Safe Bonds (ESBies) and European Junior Bonds (EJBies). ESBies would be senior to EJBies and the point where the junior tranche is subordinated to the senior tranche is also set by strict and pre-defined standard. As a consequence, “ESBies and EJBies would be fully collateralized by the underlying portfolio, such that the combined face value of ESBies and EJBies equals the sum of the face values of the national sovereign bonds against which ESBies and EJBies are issued.” (European Systemic Risk Board, 2016).

Figure 2: Balance sheet of an ESB securitization vehicle

Assets	Liabilities
Diversified portfolio of sovereign bonds	Senior Bonds (ESBies)
	Junior Bonds (EJBies)

Source: ESRB (2016)

Tranching is the first key element that makes the ESBies safe. Losses that came from the national bonds’ defaults are first to be borne by holders of the junior bond and only if the subordination rate is exceeded, the ESBies began to take losses. According to Brunnermeier *et al.* (2011), if the tranching cut-off is 20% and we are using historical data, the ESBies would bear losses only once in every 1000 years. Under the pessimistic scenario, with 30% tranching cut-off, the ESBies would pay sure every 600 years.

Pooling is the second key element that makes ESBies safe. If the portfolio is well diversified, it becomes less likely that all bonds default at the same time. Brunnermeier *et al.* (2011) shows some simulations in their analysis “European Safe Bonds (ESBies)” to support their claim about ESBies’ safety.

One might still think that what kind of investor really would want to buy these very risky EJBies that enables safe ESBies. According to European Systemic Risk Board (2016), “This worry is fundamentally misplaced: if investors hold sovereign bonds, then they will also hold synthetic securities backed by these bonds.” They state that junior bonds enable investor to leverage their exposure to sovereign risk with lower cost than using on-balance sheet leverage because the “first-loss piece” comes with embedded leverage. The following example might clarify the situation. “Take the case of a hedge fund seeking exposure to a diversified portfolio of sovereign bonds. Imagine that the hedge fund wishes to enhance its return using leverage. It has two options. It could buy a pool of sovereign bonds on margin; the prime broker would set the cost of this margin funding at the interest rate of the hedge fund’s external funding. Alternatively, the hedge fund could buy EJBies, in which leverage is already embedded. In this case, the leverage is implicitly financed at the safe interest rate of ESBies, rather than at the hedge fund’s marginal rate of external funding, which is likely to be much higher.”

6.3 Portfolio weights

The European Systemic Risk Board (2016) suggests that the portfolio weights should be set according to nation-states’ relative contributions to euro area GDP or to portion of national central banks’ shares in the ECB’s capital. The GDPs might change rapidly (e.g. due to recession) and therefore it would be more reasonable to calculate moving average moving average of countries’ relative GDPs with a window of for instance five years. This would avoid sudden changes in the weights. The portion of national central banks’ shares in the ECB’s capital is in design quite slow-moving.

The first issue with the GDP-weighting or ECB capital rule is that several member states in the euro area have little public debt outstanding relative to their GDP. The solutions for this could be modifying the portfolio weights after “the weights on the remaining elements of the portfolio being scaled up proportionally” since ESBies include all of a member states’ outstanding bonds.

The second issue regarding to the simple re-weighting scheme is the price distortion. The ESB-issuer would buy all or most of the outstanding national bonds (depending on the country) and thus cause price distortions. To solve the problem the European Systemic Risk Board (2016) suggests that the issuer would follow the ECB’s example in the implementation of its public-sector purchase program. This would mean the following: “The

underlying pool would include only up to $k\%$ of a nation-state's outstanding bonds, with the ESB-issuer purchasing these bonds at the market price of the $1-k\%$ that would still be traded on secondary markets. When the $k\%$ constraint binds, the weights on the remaining elements of the portfolio would be scaled up proportionally so that the weights sum to 100%."

The third important issue is that the weights would be set strict and they wouldn't be changed as a respond to any crises. As a result, the ESB-issuer can't bail out a nation having difficulties by placing its sovereign debt (Brunnermeier *et al.* 2011).

6.4 Issuance

According to the European Systemic Risk Board (2016), ESBies can be issued by any entity. The two most suitable options are the securitization vehicles of private financial institutions (e.g. large banks or asset managers) or a public institution (e.g. the European Stability Mechanism, European Investment Bank or European Central Bank, or a new "European Debt Agency"). One option is also a combination of private and public entities.

A public issuer doesn't have an incentive to deviate from the rule set for the ESBies and thus instruments would possess homogeneous characteristics. Moreover, a public institution might also be more stable solution especially in the crisis, since during banking crisis some private financial institutions might have their functions weakened. However, a public issuer should be independent from political influence, which creates a governance challenge. This would demand substantial investment of political capital and changes to EU legislation. (European Systemic Risk Board, 2016)

The use of a private issuer wouldn't require legal changes and many of these institutions have pre-existing expertise in securitizations. The latter point could even make the ESBies more attractive, since securitization is more complex than operating in sovereign bond markets by primary dealers and private issuer could also form differently sub-tranched junior securities. However, a private institution should fulfil the following requirements: "The institution must have the necessary financial expertise and experience, and demonstrate capacity to continue to issue ESBies during crises. Beyond these basic requirements, it is important to ensure that the holders of ESBies do not face counterparty credit risk." (European Systemic Risk Board, 2016).

6.5 The difference from the EFSF and the ESM

The question is still: don't we already have such bonds issues by for instance European Stability Mechanism (ESM) and European Financial Stability Facility (EFSF)? In a sense bonds can be considered as eurobonds of all euro-member states (Brunnermeier *et al.* 2016b), but despite the obvious similarities the current proposals don't find these as "pure" eurobonds. However, the ongoing Eurobond discussion can be read also as approach to optimize ESM financing (Hild *et al.*, 2013).

There are two key differences that separate eurobonds and bonds issued by ESM and EFSF. The first key difference is the structure of these institutions. The EFSF is a special purpose vehicle that was created as a temporary crisis resolution mechanism by the euro area Member States in June 2010. (EFSF Framework Agreement, 2011) The EFSF has provided financial assistance to Ireland, Portugal and Greece but it doesn't provide any further assistance anymore. The funding structure of the EFSF is rather exceptional since it operates with guarantees. The institution generates funds for loans by issuing bonds or other debt instruments on the market with the support of the German Finance Agency. Emissions of bonds are backed by guarantees given by the euro area member states in proportion to their share in the paid-up capital of the European Central Bank (ECB). To ensure the highest credit worthiness and the trust of the investors, the fund-raising of the EFSF has up to 165% over-guarantee meaning that the euro area member states with the highest rating (including Finland) have committed to give guarantees with 165% of the EFSF's funding. (EFSF Framework Agreement, 2011) According to Brunnermeier *et al.* (2011) this causes four main differences. First, the bonds are not each tightly linked to a portfolio of sovereign bonds and the facility can change the composition of bonds it holds at any time without acceptance of its creditors. Second, the EFSF doesn't have a loss buffer and the taxpayers of the member countries will directly pay the losses. Third, there is almost no diversification achieved in this portfolio due to the contagion risks inside the euro area. Fourth, the assistance provided by the EFSF is strictly conditional to the progress of the assistance programme.

The European Stability Mechanism is a financial institution founded by the euro area member states that operates with its own capital. The ESM was founded as a permanent crisis resolution mechanism in 2012. The capital of the ESM consists of the paid-in and callable capital. The capital is not used for providing assistance but the ESM uses it as collateral. It absorbs any losses if countries receiving help fail to repay it. The main difference between EFSF and ESM is the loss buffer, since ESM has the buffer to absorb losses mainly through its paid capital and reserve fund. The assistance provided by the ESM is also strictly conditional to the progress of the assistance programme. The two institutions have a different governance structure but share the same staff and offices located in Luxembourg. (Treaty Establishing the European Stability Mechanism, 2012)

The second key difference is the so called “Pringle case”. Thomas Pringle, a member of the Irish Parliament, challenged ratification of the ESM Treaty and its compatibility with EU Treaty. The main question regarding to the eurobonds was the compatibility with the TFEU 125 (“no-bailout clause”). The resolution was that “the ESM as a financing mechanism rather than an instrument of economic coordination” and thus the loans provided can’t be interpreted to violate the TFEU 125 since they are *loans* and meant to be paid back. Thus the EFSF and ESM are compatible with the EU Treaty otherwise than the eurobonds. (Adam & Parras, 2013)

One of the key benefits mentioned regarding the eurobonds are the lower interest expenses (e.g. Hild *et al.*, 2011). In theory the interests should decrease even below the German interest rates but there have been some doubts, since the interest rates for instance Germany and Finland are extremely low. April 19th 2017 the 10-government bond yield in secondary market for Germany was 0,03% (Bloomberg) and for Finland 0,31% (Bloomberg). At the same time the 10-year yield for the ESM was 0,40% and for the EFSF 0,54% (Bloomberg). Despite the differences explained earlier, the eurobonds and these European crisis management mechanisms have both some kind of joint liability. So even if the eurobonds wouldn’t be issued by countries with financing difficulties, their option to do so would increase the expected liabilities of other member States. Thus, the joint guarantees may raise the borrowing costs on all type of bonds. (Favero & Missale, 2016)

6.6 The difference from private CDOs

The ESBies are collateralized debt obligations (CDOs). Bearing in mind that one of the key elements leading to the financial crisis was the CDO, it might be challenging to prove that these new kinds of debt securizations could solve the problems in the euro area. According to Brunnermeier (2011) there are three elements that separate ESBies with private CDOs.

First, the issuer would be a public institution or a private institution that obtain authorization from a public licensing body. The public issuer wouldn’t have an incentive to deviate from the rules agreed and the private issuer should also agree with the rules beforehand. In the US one of the main causes was that the private banks had incentives to manipulate the content of the contract to favour some clients which then led to imbalances.

Second, the ESBies are transparent and the rules are easy to monitor while the private CDOs leading to crisis were diffuse. The portfolio weights are fixed and there is no room for the issuer to manipulate them according

to their incentives. Moreover, the ESBies are structured with two tranches (ESBies and EJBies). Many problems of the CDOs were caused due to multiple intermediate tranches and further rounds of repackaging.

Third, each of the ESBies' security components will be traded in a separate market and thus the prices and right incentives can be observed. This was not the case with the CDOs since usually the CDO was the only vehicle through which investor could access some specific assets (e.g. mortgages).

7 Eurobonds and moral hazard

7.1 Joint versus joint and several guarantees

The main difference between different proposals is the legal nature of the guarantee for the bonds. In the case of joint liability participant countries are individually liable for the full amount, whereas with several guarantee each party is expected to take the responsibility for only a share of the loan in case of default (Kornhauser & Revesz, 1993).

According to the European Commission (2011) the joint and several liabilities would be the most effective solution in delivering the benefits of stability bonds. "The full guarantees" would ensure that all the member states receive refinancing despite the condition of their national public finances and enhance the resilience of the euro area financial system. This would create credibility to the eurobonds and ensure the trust of the investors in a most effective way. However, this kind of arrangement would demand changes in the EU Treaty since it violates TFEU 125 (so called no-bailout clause). At the same time when the benefits are at the highest, moral hazard is also at its highest point.

This causes the first moral hazard issue that the policy-makers and further research should take into account and compare carefully the trade-off between the benefits and the level of moral hazard.

7.2 Full versus partial replacement of the national bonds

One of the key benefits mentioned regarding the eurobonds is the lower interest expenses (e.g. Hild *et al.*, 2011). In theory the interests should decrease below even the German interests but as showed in the chapter 6.5. there are no guarantees of that. However, several authors, e.g. Sinn (2015) and Issing (2009), state that eurobonds will result in artificially low and subsidized interest rates for the periphery countries. The subsidized rates would no longer reflect the fiscal stance and the risk of the country and thus lead to additional moral hazard problems as seen during the euro crisis. However, the decreasing interest rates can be gained

only if all bonds are mutualized or if a separation is made between senior and junior bonds and the senior bonds are mutualized (Eger & Schäfer, 2016). Moral hazard would also be limited through residual national issuance. However, the relationship between moral hazard, market discipline and contagion risk in defining the stability bond ceiling is not simple. A low ceiling (and thus high amount of national bonds) would limit moral hazard, but would leave a default chance for highly indebted member countries. Vice versa a high ceiling of stability bonds (and thus low amount of national bonds) would create a greater risk of moral hazard but would lower the risk of defaulting. (The Commission, 2011)

This causes the second moral hazard issue. The policy-makers and further research should take into account the benefits and the level of moral hazard when comparing the level of the replacement of the national bonds. In the case of the partial replacement they should consider carefully the relationship between moral hazard, market discipline and contagion to avoid moral hazard and to limit the default chance for highly indebted member countries.

7.3 Fiscal centralism versus structural mechanisms

The lower interest rates might lead that part of economically weaker member states conduct reckless lending and externalize part of the credit risk to other member states, i. e. typically to the economically stronger member states of the euro area (Eger & Schäfer, 2016). There are generally two ways to avoid the situation. The first is centralized and bureaucratic control against excessive borrowing to reduce the default risk. This approach is well known from past experience. Now, the Stability and Growth Pact (1997) gives the framework for the coordination of national fiscal policies in the European Union. The corrective arm of the SGP includes the Excessive Deficit Procedure and the thresholds of 3% of GDP for the general government deficit and 60% of GDP for the general government, as defined in the Treaty. The monitoring has been loose and many of the countries have frequently violated the rules since the sanctions have never used (only the so called zero fines). However, it's possible to strengthen the monitoring and sanctions. This will almost surely lead towards more integrated monetary union.

The second approach is to limit moral hazard through structural mechanisms, i.e. with only partial replacement of the national bonds and using only several guarantees.

This causes the third issue regarding moral hazard. The policy-makers and further research should take into account the structural mechanisms how to avoid moral hazard and evaluate their efficiency. They should also consider the fiscal federalism side if needed and thus consider its consequences, e.g. the future of the EMU.

7.4 Eurobonds as a crisis management mechanism

According to Brunnermeier *et al.* (2011) the eurobonds would stabilize the euro area and prevent crises through the safe asset character. The lack of the euro area safe asset was one of the key elements leading to the euro area wide crisis since there was such a strong link between the banks and states. Thus, the most important feature of such a safe asset is that it would break the nexus between sovereign and bank credit risk and so mitigate the speculation of the investors. Moreover, it would decrease risks, i.e. liquidity or market risk (Basel Committee on Banking Supervision, 2013) and to safeguard that the central bank can conduct conventional monetary policy (Brunnermeier & Sannikov, 2016). All in all, through the safe asset feature, Brunnermeier *et al.* state that the eurobonds would create a more stable euro area.

The other key benefit of the eurobonds is that they would ensure market access for all the euro area member states by providing debt with sensible costs and therefore mitigate speculation (Hild *et al.*, 2013). When the euro crisis started, the debt levels in the euro area member states were rather moderate and the states could react to the crisis by financing their economy with debt and by conducting loose fiscal policy to activate the economy. Let's make a mind game. The euro area faces a new crisis in the near future. The debt burdens of the member states are already in the risky levels and there is only a limited amount of debt they can get from the markets without creating speculation about their solvency. Thus, eventually all the member states can't use the loose fiscal policy as they did in the case of the euro crisis. If we had eurobonds, all the countries could receive loans from the markets with sensible interest expenses and there would be no speculation about some countries' solvency and market access. This would reduce the speculation and the vulnerability of the euro area and so mitigate the effects of the crisis. Still, one might ask if the eurobonds really solve the problem or do they just enable moral hazard to continue in the future.

Moral hazard and the Principal-Agent-Theory have been realized inside the euro area extremely clearly in the crisis context. As Jensen and Meckling (1976) describe "if both parties to the relationship are utility maximizers there is good reason to believe that the agent will not always act in the best interests of the principal." This has been the case in the euro area. As proved earlier, the financial crisis was not the reason for the problems in the euro area; instead, only the mechanism that revealed the structural problems. The low interest rate environment only enabled the loose fiscal policy since nobody ever thought that a sovereign state could default (Brunnermeier *et al.*, 2016b). So, in this light, it could be reasonable to state that in the end, eurobonds would not solve the fundamental problems of the euro area. On the opposite, for instance Portugal and Greece have shown that the aid programmes provided by EFSF, ESM and the International Monetary Fund (IMF) are rather effective ways to execute structural reforms. The loan disbursements of the programmes have been condi-

tional to the progress of the reforms. The policy-making usually needs a crisis and threat scenario to make huge structural reforms and to justify to the voters the difficult decisions. In other words, would member states have any incentive to conduct appropriate fiscal policy and to make difficult structural reforms if they were to get low-interest loan through the eurobonds without any imperative to reform to gain investors' trust? Moreover, we already have the permanent crisis management mechanism ESM that involves lower moral hazard.

This causes the fourth issue regarding the moral hazard. The policy-makers and further research should consider carefully the already existing crisis management mechanisms and the added value that the eurobonds would actually bring to the crisis management framework. Moreover, the policy-makers and further research should consider the effects of introducing the eurobonds on member states' incentives to conduct responsible fiscal policy.

7.5 Eurobonds and the European banking system

According to Brunnermeier *et al.* (2011) the diabolic loop or nexus between sovereign and bank credit risk was one of the key elements that caused the sovereign crisis in the periphery area (Brunnermeier *et al.* 2016a). The problem is that the market operators treated all the assets of the sovereign euro area states safe (i.e. Dutch and Greece), which led to a diabolic loop between banks and states (Brunnermeier *et al.*, 2011). They state that the problem could be solved by creating euro area's own safe asset, ESBies. The euro crisis might have been avoided or its consequences mitigated through euro area wide safe asset.

In an ideal world the euro-area banks would hold only the senior tranches and especially the periphery countries would benefit by swapping risky domestic government bonds with the new risk-free asset of the euro area. On the other hand the junior bonds would help investors to leverage their positions cheaper. However, in reality the practise could be dramatically different. For instance Marcello Minnenna (2017) stated that the ESBies would create moral hazard issues to the European banking sector. In reality the banks of the periphery countries could now seek some extra return by buying the riskier tranches of the ESBies or other risky assets when the higher yield government bonds are swapped for lower-yielding ESBies. At the same time, the ECB is referred to as a lender of last resort meaning that banks can raise money during a panic to repay nervous creditors without having to worry about selling their risky assets at a loss. Moreover, the euro area member states have been rather reluctant to leave banks in trouble as the European Commission's Competition data shows. So, it might be relevant to state that the ESBies, together with ECB's loose monetary policy and banks'

recapitalisations, can create even worse moral hazard problems in the banking sector since the banks might not have strong enough incentives to conduct sensible banking business and they begin to take too much risk.

This causes the fifth issue regarding the moral hazard. The policy-makers and further research should take into account the consequences of the ESB and especially its safe asset feature and to mirror it to the current situation. Moreover, the policy-makers and further researches should consider the effects of introducing the ESB on the European banks' incentives to conduct responsible banking business.

8 Conclusion

The discussion about eurobonds is characterized by two extreme positions. According to Hild *et al.* (2011 & 2013) the supporters emphasize the need for solidarity and liquidity boost generated by eurobonds. They find that the euro crisis is a chance for further integration and thus the euro area would become more resilient to react to crises. Another point of view is stated by Markus Brunnermeier *et al.* (2011) and they emphasize the need for a safe asset. The opponents emphasize moral risk. They warn that euro area could become a transfer union where the well-performing countries pay for bad performing countries. (Hild *et al.*, 2011 & 2013) And as we can see throughout this literature review, the both positions are well stated. The possible benefits (breaking the diabolic loop and ensuring the market access) are considerable but at the same time moral hazard is hard to avoid. The key issues include the nature of the guarantees, the level of the national bonds' replacement, the need for fiscal federalism, the crisis management aspect and the European banking system. These aspects will need further studies.

This thesis proves that the present euro area structure isn't functional in the long run and due to moral hazard problem, the eurobonds aren't now the right solution. The writer's belief is that the euro area has two main paths in the future: the first one is full integration, when all member states move together towards the fiscal union; the second path is partial or multi-speed integration, when only some of the countries deepen their integration which creates the core and the periphery. The core would probably be formed of countries with similar economies and levels of competitiveness. Of course, there is still the possibility that the whole currency union will fall apart, but at this political situation, it's not a relevant option. If the euro area moves towards a fiscal union and integrated fiscal policy, the eurobonds might not be a bad decision. As we can see from the approaches, the eurobonds have also good elements, especially in breaking the diabolic loop between banks and states. The main conditions for such developments would still include remarkable structural reforms in the member states, regarding for instance fiscal policy and competitiveness, and also structural reforms in the European banking sector.

However, the results show that the eurobonds are not the solution to the euro area problems, as in the worst case the eurobonds would even deepen moral hazard among the member states resulting in a break-up of EMU. Especially now when the British referendum on their EU membership made it clear that there is a way to leave the EU. If and only if the moral hazard problems are solved and the fiscal policy is more integrated and the European banking sector is restructured, the eurobonds can be seen as a solution to the diabolic loop and to the lack of European safe asset. But in this situation and based on the current information, the eurobonds wouldn't solve the euro area problems, e.g. lagging structural reforms, lack of competitiveness and inefficient banking sector, to prevent or manage crisis.

"No Euro Bonds as Long as I Live" - German Chancellor Angela Merkel, 2012

Annex: Political atmosphere

As we covered earlier the discussion on eurobonds is characterised by two extreme positions. The supporters emphasize the need for solidarity, liquidity boost generated by eurobonds and further integration. The opponents emphasize moral risk. They warn that euro area could become a transfer union where the well-performing countries pay for bad performing countries. (Hild *et al.* 2011 & 2013). The whole eurobonds discussion has been since the beginning very difficult and even emotional, since the consequences might be determining in the future of the EMU.

As a rough dichotomy, we can say that the Germany and northern Europe are against the eurobonds when the southern Europe together with France and the European Commission are in favour. The German economic tradition puts a strong emphasis on individualism rather than ex post transfers and joint liability. The German philosophy derives from a history of decentralized power and federal nation structure which gives the regions freedom but at the same time force them to avoid moral hazard. (Brunnermeier *et al.*, 2016b) The German politicians are known to their strict approach to bail-out programmes and joint liability, but however they don't fully oppose fiscal integration and eurobonds if moral hazard is limited. Usually the German policy makers see two ways forward: "(1) a decentralized fiscal order in which each country is liable for its own debt or (2) a fully integrated fiscal union in which spending powers are transferred to a European authority" (Brunnermeier *et al.*, 2016b) The second option limit the moral hazard since individual countries don't have much decision power and hence the decisions are made for the favour of the whole union.

The French policy makers never emphasized the need for the no-bail-out clause as much as Germany. The French philosophy derives from a history of centralized power (Paris) and willing to facilitate ex post transfers. They stress the insure even at the cost of moral hazard. But the complicate issue is that the French policy makers are more favourable on the fiscal transfers to the periphery countries but at the same time unwilling to move their own fiscal power to Brussels. (Brunnermeier *et al.*, 2016b) Thus this approach doesn't really solve the initial reason moral hazard.

This dichotomy has characterised strongly the euro crisis discussion and thus also Eurobond discussion and made the situation complex when it comes to policy-making.

Finland has been rather reluctant towards eurobonds and deepening the euro area. The current government programme (2015) by Juha Sipilä's government strictly excludes the chance for joint liability and thus also creates quite negative basis for eurobonds or safe bonds discussion. The government programme states that

“EMU should not be developed through such deepening of economic coordination which would lead to an expansion of joint responsibility. The Government supports a strong banking union based on investor liability, and its development. To strengthen compliance with rules, economic policy coordination should be simplified, and Member States’ ownership of economic policy must be ensured. The Government is opposed to increasing Finland’s liabilities in handling the euro crisis. The primary means to handle the financial problems of a euro country are the country’s national measures to consolidate the economy and stabilise public finances.”

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