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A Safe Asset for the Eurozone

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ABSTRACT

This essay delves into the discussion of the advantages, disadvantages, and policy implications of introducing a European Safe Asset. It thoroughly examines the vulnerabilities and fragilities of the Eurozone as an incomplete monetary union, especially in light of recent crises, and then delves into the details of creating this financial instrument. The essay explores various Eurobond models, considering the advantages and disadvantages associated with different designs.

In conclusion, the essay investigates the necessary size of a federal budget required for issuing a common bond. It calculates the surpluses needed to manage European public debt based on different debt-to-GDP thresholds, utilizing a model and the principles governing public debt dynamics. Two different scenarios are explored for Eurobond interest rates: one based on historical data from the past 30 years and the other on future estimates. According to this analysis, achieving a stable debt-to-GDP ratio, especially in a context where interest rates exceed the growth rate, would necessitate moderate surpluses of less than 3 percent per year.

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1. INTRODUCTION

This essay aims to punctually analyze the advantages, disadvantages and problems regarding the adoption of common debt in the Eurozone.

The discussion surrounding Eurobonds and their potential introduction has been a focal point in recent years, particularly in debates concerning European public finance and the sustainability of national public debts. Central to these debates is the fundamental question of whether greater integration of European taxation is necessary to ensure the long-term stability and prosperity of the European Union and the European Monetary Union.

The Sovereign Debt Crisis has brought to light the shortcomings of the EMU and the challenges associated with an incomplete monetary union. One of the significant issues is the absence of a true leader of last resort[1], which means there is no central authority capable of stepping in to support member states facing financial distress. Additionally, the lack of the exchange rate instrument limits the ability to respond to exogenous shocks, leaving member states without a crucial monetary tool to mitigate economic challenges.

Addressing these challenges has sparked discussions about potential solutions, and Eurobonds have emerged as a proposal to enhance fiscal integration and risk-sharing among member states. However, the debate on Eurobonds remains contentious, with concerns about moral hazard, fiscal discipline, and sovereignty considerations complicating the path toward greater integration.

In this regard, the thesis is divided between the first chapters, which aim to introduce this debate and enable understanding of the context and references, and the middle chapters aimed at a more detailed discussion of common debt instruments, their

[1] The role in the Eurozone is often attributed to the European Stability Mechanism or, through the Outright Monetary Transactions, to the ECB. Refer to chapter 3.2.3. for further discussion.

characteristics and assumptions. In conclusion, an analysis has been conducted to estimate the necessary size of a hypothetical European budget to support the issuance of common debt instruments.

In the first chapter, the case of federal debt assumption in the United States is proposed. This case is crucial to continue with the discussion as it has consistent similarities with the political situation in Europe today and allows for the introduction of the main issue of moral hazard. This, as will be seen, is one of the staples in the debates, supported mainly by the Eurobaltic countries. It also allows us to highlight the relevance of the no bailout clause as a resolution tool in these terms.

The subsequent chapter will focus on the European context of recent years, particularly concerning the shocks that influenced sovereign debt dynamics and the analysis of the European Monetary Union's strengths and weaknesses. Special attention will be given to the sovereign debt crisis as the event that exposed the system's shortcomings. It will also examine the roles of the European Central Bank and the European Stability Mechanism, as well as the Treaties and Pacts that impose fiscal rules within the Union. Furthermore, the chapter will touch on the pandemic crisis and the enacted programs that signify a step toward stronger integration.

The middle chapter will focus on the more precise and technical aspects of the instruments. It will begin by analyzing the concept of risk and the varying perspectives on this matter from different regions of Europe. Two subchapters will then be introduced, detailing the advantages and disadvantages of Eurobonds. The different designs will be examined, with a key distinction between the need for debt mutualization, supported by the southern European countries, and the alternative of not engaging in debt mutualization. Subsequently, the chapter will conduct an analysis regarding the rules and prerogatives needed to complete the projects, with specific reference to the establishment of a European federal budget. This analysis aims to provide a comprehensive understanding of the requirements and implications associated

with the proposed common debt instruments and the potential integration of European taxation.

The last chapter will then present an empirical analysis, based on the principles governing debt dynamics and the corresponding surpluses and deficits, which aims to investigate the amount of surpluses required to support the issuance of common debt. The approach involves the introduction of a model and the establishment of achieving a steady state as a target, all built upon various assumptions aimed at estimating the magnitudes of the relevant variables.

2. THE U.S. FEDERAL DEBT AS A BENCHMARK

2.1. THE PROCESS OF DEBT ASSUMPTION IN THE U.S.

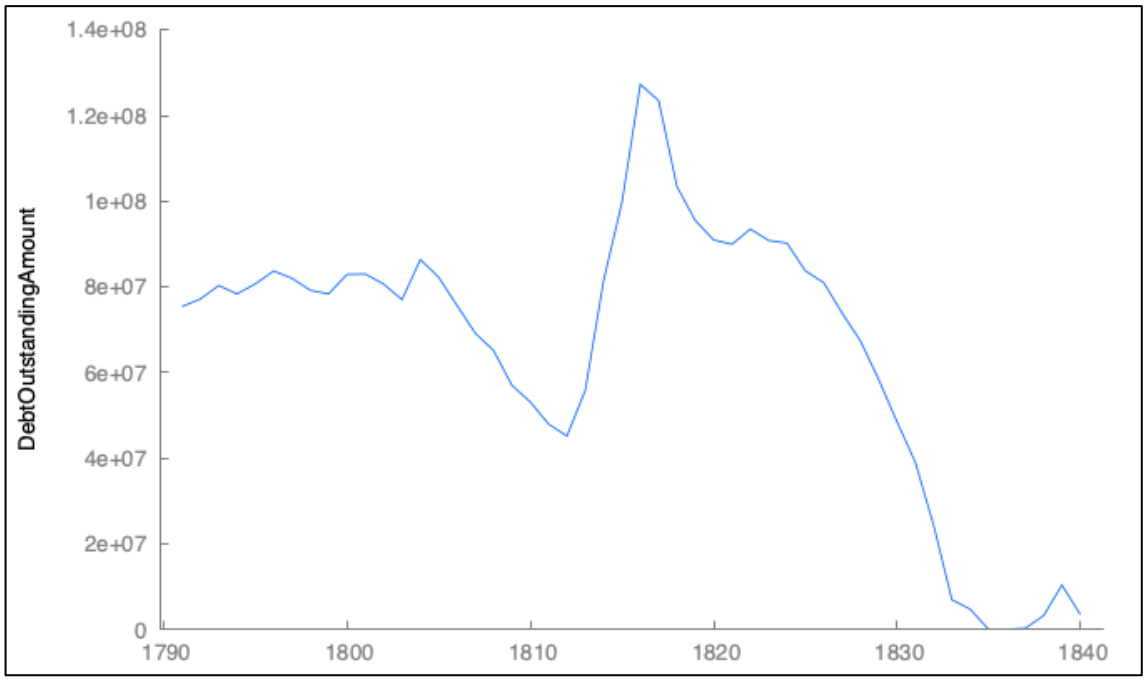
Numerous comparisons can be made between today's Europe and specific situations of the past. However, when it comes to common debt, the most substantial parallel can be found with the United States of the late 1700s. From a political economy perspective, Steinbach (2015) examines the commonalities and patterns of behaviors between Europe now and the post-independence US, to make a strict comparison and possibly introduce the debate about a European Federal System.

In 1783, The United States concluded the Independence War with high debts and a poor-performing constitution, which limited the power of the government to raise taxes or reduce public spending[2].

The following years saw a succession of crises and increased indebtedness since the payment of instruments issued to finance the war could not rely on tax policy operations. This fiscal crisis quickly led to further revolution and in 1788 the U.S. introduced a second, new constitution, which departed from the previous one by focusing particularly on aspects of fiscal reform. The latter was thus based on the protection of creditors, the reconstruction of fiscal institutions and gave the Central Council the supreme authority to tax and regulate the market (Sargent, 2012).

[2] To make these decisions, the central government needed the universal consensus between the 13 states, which implied that any proposal in this regard was unlikely to see implementation.

Figure 1 U.S. Debt Outstanding Amount 1790-1840



Source: data from Fiscaldata.treasury.gov

The Secretary of the Treasury then proposed a plan[3] to increase fiscal union through the assumption of the individual states' debt by issuing new Treasury securities, facing various opposition but succeeding thanks to the argument that this was necessary to achieve complete independence. These securities would pay some sequences of payoff in Spanish dollar. Fiscal union would be paramount and would only later see a program aimed at monetary union (Ando, et al., 2023).

The first big bailout of the individual states took place in 1790 to realign creditors' interests towards the central government. Following this, the United States saw 30 years of expansion, under the Madison and Jackson governments. Under the latter government, debts were discharged by accumulating successive annual budget assets. In the space of a few years, the states took advantage of these huge transfers, adding them

[3] The *Report on Public Credit* on January 14, 1790.

to autonomous borrowing, especially from foreign creditors, to establish banks, build railways, roads and canals that did not have the expected return in terms of permanent income to repay the debts incurred (Sawicki, 2016). In the first three decades of the 1800s, most states had accumulated a lot of public debt, believing that the Treasury securities could be used to finance these new public constructions. They were purchased on a large scale in Europe, probably dictated by the belief that these assets enjoyed guarantees comparable to federal bonds (Sargent, 2012). As soon as a recession loomed, eight American states plunged into default, with at least a temporary inability to meet their obligations, and four came to partial or total repudiation of their debt (Sawicki, 2016).

Faced with this, in 1840 Under the Van Buren presidency there was the shilling of the Secretary of the Treasury Hamilton announcing that he would not grant a bailout to any state. The debts of 1790 were justified by reasons of war, while those accumulated in the following years were attributable only to the internal policies and projects of the states. This will be the first step in combating moral hazard[4], a crucial aspect regarding the adoption of a common debt. As a result, many states defaulted, without receiving help from Congress. In the following years, almost all states worked on laws and plans to enhance fiscal discipline, including year-by-year balanced budgets. Despite the recession caused by the failures, the decision to prevent the bailout of states proved itself far more beneficial than harmful (Sargent, 2012).

Sargent also highlights the lessons from the United States which bring food for thought for the European context. First, current debt potential depends on future revenue expectations. If perspective debt holders do not expect enough revenues produced by the government, the latter won't be able to issue enough debt. Second, the free-riding problem exists between the individual countries. Third, the importance of good reputation and its cost. As for the bailout case of 1840, the credibility of the

[4] Refer to Chapter 3.2 for further discussion.

Government was crucial to achieve the intended benefits. Forth, to sustain this reputation it might be needed to involve different parties and lastly, and maybe the most important if the EU context is kept in mind, uncertainties can result from a confused monetary-fiscal coordination. This is because to achieve a well-performing economic policy, in most of the cases a coordination of both fiscal and monetary actions will be needed, since both by themselves have a smaller impact.

2.2. THE FUNCTIONING OF THE US FEDERAL DEBT

As a result[5] of the turnaround brought by the adoption of federal debt sharing, the United States has entered the new millennium with far greater domestic stability than in the previous century. In the 1900s, debt dynamics were particularly unstable again due to the two World Wars, but they were followed by a period of limited deficits due to the economic recovery of the 1960s, with government debt falling from 78.6% of GDP in 1950 to just 24.6% in 1975. This process of debt reduction was then reversed by the major crises of the early 2000s and, more recently, the COVID-19 crisis. The debt then resumed its upward trend, reaching more than 100% by the end of 2020, requiring the implementation of new policies to contain it as well as recent discussions about the debt ceiling. The US debt can be distinguished into two tranches: that held by the public, understood as that borrowed by the public to finance the federal government, and that held by government accounts, based on internal transactions of much smaller value.

[5] Refer to "FEDERAL BORROWING AND DEBT", The White House (2022), https://www.whitehouse.gov/wp-content/uploads/2022/03/ap_4_borrowing_fy2023.pdf

Figure 2 Trends in Federal debt held by the public and interest on the debt held by the public.

Fiscal Year	Debt held by the public		Debt held by the public as a percent of		Interest on the debt held by the public[3]		Interest on the debt held by the public as a percent of[3]	
	Current dollars	FY 2020 dollars[1]	GDP	Credit market debt[2]	Current dollars	FY 2020 dollars[1]	Total outlays	GDP
1946	241.9	2,635.0	106.1	N/A	4.2	45.5	7.6	1.8
1950	219.0	1,927.7	78.6	53.3	4.8	42.6	11.4	1.7
1955	226.6	1,753.1	55.8	42.1	5.2	40.1	7.6	1.3
1960	236.8	1,623.7	44.3	33.1	7.8	53.6	8.5	1.5
1965	260.8	1,675.6	36.8	26.4	9.6	61.5	8.1	1.4
1970	283.2	1,516.4	27.1	20.3	15.4	82.3	7.9	1.5
1975	394.7	1,556.8	24.6	17.9	25.0	98.6	7.5	1.6
1980	711.9	1,952.4	25.5	18.4	62.8	172.1	10.6	2.2
1985	1,507.3	3,150.5	35.3	22.2	152.9	319.6	16.2	3.6
1990	2,411.6	4,330.7	40.9	22.5	202.4	363.4	16.2	3.4
1995	3,604.4	5,709.1	47.7	26.3	239.2	378.9	15.8	3.2
2000	3,409.8	4,976.9	33.7	18.8	232.8	339.8	13.0	2.3
2005	4,592.2	5,998.4	35.8	17.1	191.4	250.0	7.7	1.5
2010	9,018.9	10,671.0	60.8	25.0	228.2	270.0	6.6	1.5
2015	13,116.7	14,227.3	72.5	30.4	260.6	282.7	7.1	1.4
2016	14,167.6	15,233.3	76.4	31.4	283.8	305.2	7.4	1.5
2017	14,665.4	15,492.8	76.0	31.3	309.9	327.3	7.8	1.6
2018	15,749.6	16,262.9	77.4	31.8	371.4	383.5	9.0	1.8
2019	16,800.7	17,012.0	79.2	32.4	423.3	428.6	9.5	2.0
2020	21,016.7	21,016.7	100.1	36.2	387.4	387.4	5.9	1.8

Source: whitehouse.gov

Almost all federal debt is issued by the Department of the Treasury. The latter meets most of the federal government's financing needs by issuing marketable securities to the public. Treasury marketable debt is sold at public auctions on a regular schedule, and due to its high liquidity, it can be easily bought and sold on the secondary market with narrow bid-offer spreads. Additionally, the Treasury also offers a relatively small amount of nonmarketable securities, such as savings bonds and State and Local Government Series securities (SLGS), to the public. Among the instruments[6] issued by the Treasury, there are those of shorter duration, the Treasury bills, and the Treasury bonds of longer duration, i.e. 30 years.

[6] In U.S: there are also the TIPS, Treasury inflation-protected securities which consist in coupon issues for which the par value of the security rises with inflation, Treasury Notes and Floating Rate Securities.

In addition to the issuance of debt at the federal level, Member states may take the opportunity of issuing Municipal Bonds, which are debt securities issued by state and local governments or their agencies. They are typically issued to finance public projects and infrastructure development such as the construction of schools, hospitals, highways, bridges, water treatment plants, and more. The advantage of their use is that they enjoy tax exemption, particularly from federal income tax.

Municipal bonds can also be used as collateral in certain situations. In the case of bank loans, states can use their bonds to obtain financing by using them as collateral for the loan. They can also be used in the same way in the Federal Reserve's lending programs. The latter can accept municipal bonds as collateral for loans to commercial banks under its lending programs, although it must comply with strict rules imposed by the central bank itself.

2.3. EUROPEAN PERSPECTIVES COMPARED TO US HISTORY

In the previous section, we reviewed the methods and context by which the U.S. approached the decision to issue debt at the community level. Keeping in mind the circumstances in the U.S. during the late 18th century, we can then address the comparison with the situation in the European Union in recent years.

In terms of implementing fiscal policies and institutions, the E.U. is currently in a situation similar to that of the U.S. of the first Constitution. All powers relating to taxation are in the hands of the member states, and the lack of an E.U. tax institution prevents joint decision-making, requiring unanimous votes for major issues. Unlike what was observed for the United States, in the Union we first witnessed a monetary type of union focused on the management and control of the single currency (Steinbach, 2015).

Moreover, similarities can also be found regarding the opposition to the common debt proposal by individual states. American southern states, which were less indebted than others such as New York, New Jersey, Massachusetts and South Carolina, feared the repercussions of taking on the large debts of other states. Similarly, following the Sovereign Debt crisis, EU member states found themselves debating the potential benefits and drawbacks to the proposed debt mutualization in support of the downturn escalated between 2011 and 2013, seeing stiff opposition from northern-European countries.

Obviously, historical circumstances were completely different from those of the past 30 years: families, culture, and education are just a few factors among those that have been turned upside down in 200 years. Needless to say, the ways in which reform was implemented in the 1800s should not mirror the ways that the EU should follow today.

As previously emphasized, monetary policy, unless combined with appropriate fiscal policy, has limited power to respond to economic shocks. This factor, along with the next ones that will be addressed in the paper, should give pause for thought to the possibility of creating a supranational fiscal institution with the power to tax and coordinate with ECB policies.

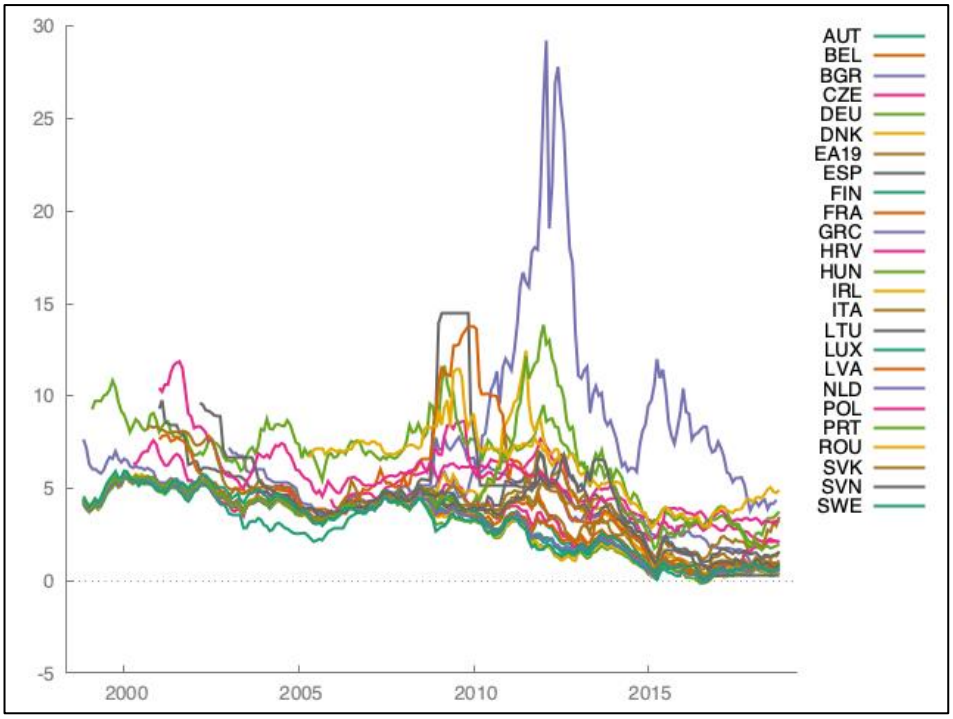
3. EUROPEAN DYNAMICS OF PUBLIC DEBT

3.1. INTEREST RATES AND SPREAD ON GERMAN BUNDS

Key features of interest rates' dynamics

To understand the benefits and drawbacks of debt mutualization, it is important to understand the dynamics of interest rates and the spread. The spread is a factor of the divergence between a member country's government bond yields compared to German bonds, chosen as a benchmark because they are the lowest in the Union. The difference reported between the two assets arises from the different certainty of payments. German bonds are almost totally risk-free, implying that coupon payments and reimbursement at maturity are, practically, certain. Taking Italy as a benchmark, investors will demand a higher yield on bonds, named a risk premium, justified by the greater uncertainty regarding payments.

Figure 3 E.U. Interest Rates 1998-2018



Source: data form OECD

There are mainly two components weighing on Italy's public debt safety. The default risk is related to the sustainability of the debt and the possibility of insolvency, and the redenomination risk is related to the possibility of the state redenominating the debt in the domestic currency and thus with devalued currency.

These factors do indeed have a significant impact on most member countries, particularly those in Mediterranean Europe, which are often more sensitive to the first risk[7]. As a result, these countries tend to experience higher spreads. This condition gives rise to a number of challenges.

Firstly, a high spread leads to increased borrowing costs for the affected countries. Higher interest rates on debt mean that the state will have to allocate more financial resources towards servicing its debt obligations. This, in turn, can limit the funds available for other critical areas, such as public services and investments.

To meet the increased payment streams, the state may resort to one of two options: increasing taxation or reducing public spending. Both approaches have repercussions for taxpayers and the overall economy.

Moreover, high interest rates reflect a higher risk of the securities, and investors may be reluctant to engage in investments. The bonds would then not be purchased, and the state would lose access to the market, losing the most important financing mechanism.[8]

Lastly, rising spread impacts banks and the banking system. The increase in banks' cost of funding, dieted by rising interest rates, then automatically spills over to consumers. In addition, it decreases the value of securities, of which banks are major investors potentially causing a credit crunch, increasing the financing costs of businesses and individuals.

[7] The risk of a devaluated currency would be connected with exiting the Union.
[8] This is what happened during the Sovereign Debt Crisis.

Another issue concerns the debt ratings assigned by Rating Agencies, which are necessary to secure financing from the European Central Bank. Taking Italy as an ongoing example, it finds its debt ratings only a few notches above the "junk" classification used to assess securities of states nearing default.

Debt Sustainability

The issue of debt sustainability has been a widely discussed topic in recent years, as it is crucial to a country's economy. In this section, we will offer an overview of what are the main issues due to unsustainable debt so as to introduce the rationale aimed at the introduction of Eurobonds.

Public debt plays a crucial role as it enables states to borrow funds when their expenditures exceed revenues. Additionally, it serves a stabilizing function by redistributing the burdens of government spending across multiple generations and addressing certain market failures. However, challenges emerge when the level of debt becomes excessive, raising concerns about its sustainability. There are three main channels through which the economy is damaged:

- Crowding Out: i.e. the reduction in the economy's long-term growth rate caused by a shifting of savings in favor of government financing, causing higher interest rates and a lower flow of resources for private investment, which in a market economy is the engine of growth.

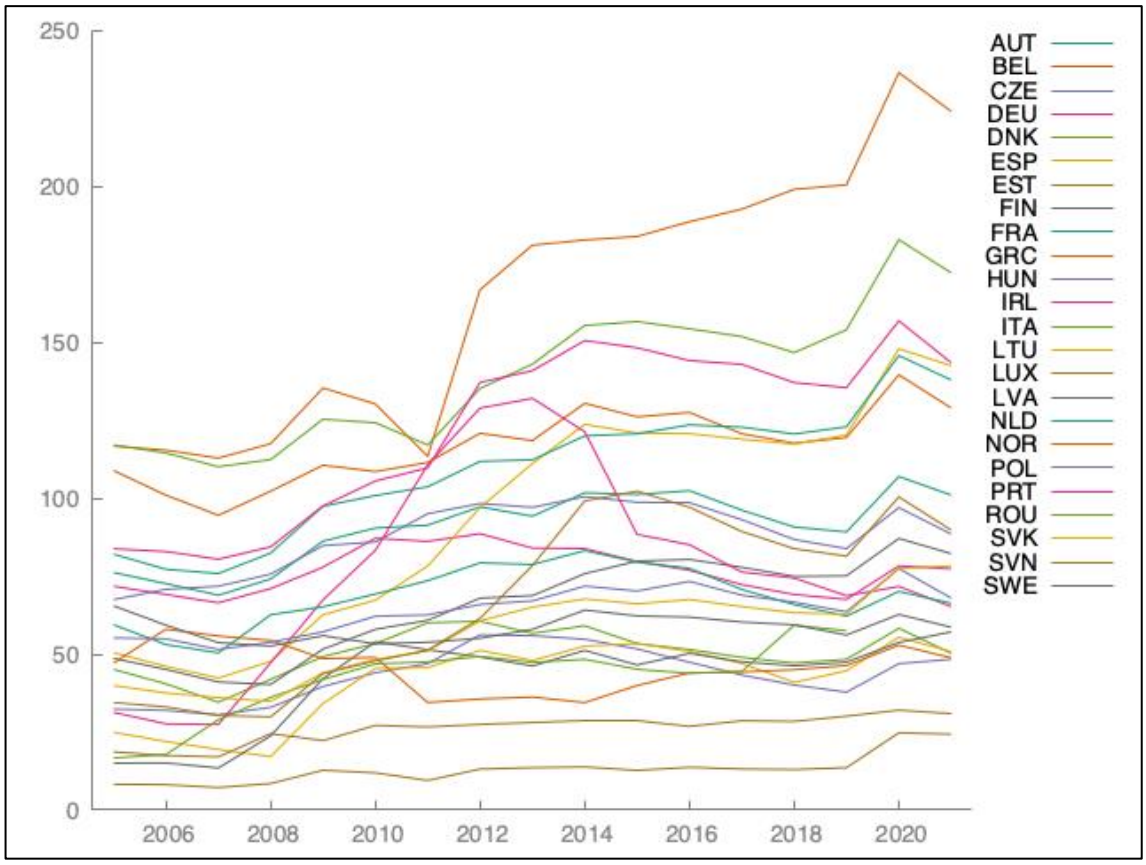
- The destabilizing effects that occur when financial markets fear that the state will no longer be able to repay its debt, as seen in the 2011 debt crisis. Excessive debt levels can erode investor confidence and result in credit rating downgrades. This can increase borrowing costs and further exacerbate the debt burden, creating a vicious cycle that hampers economic stability and growth.

- Too much public debt hurts the economy. Indeed, if the debt is too high, it becomes difficult or impossible to use the leverage of public accounts to support the economy in times of crisis, since this would cause the debt to grow further. Excessive debt levels can result in high interest payments and debt servicing costs, consuming a significant portion of a country's budget. This constrains the government's ability to pursue expansionary fiscal policies during economic downturns. This limits the capacity to stimulate the economy, provide necessary public investments, and support social welfare programs (Cottarelli & Galli, Osservatorio sui Conti Pubblici Italiani, 2019).

In light of these challenges, the concept of Eurobonds has been proposed as a potential solution. It is argued that Eurobonds could help alleviate the debt-related challenges faced by individual countries and promote fiscal stability and economic convergence within the European Monetary Union, by spreading the burden of debt across the union.

However, the introduction of Eurobonds involves complex considerations and requires consensus among member states, as it touches upon issues of sovereignty, moral hazard, and economic disparities. The discussion surrounding Eurobonds continues to evolve, reflecting the ongoing efforts to address the challenges posed by unsustainable debt and foster a more integrated and resilient European economic framework.

Figure 4 U.E. Debt Outstanding Amount 2005-2021



Source: data from OECD

3.2. THE SCENARIO AND THE NEED FOR A SAFE ASSET

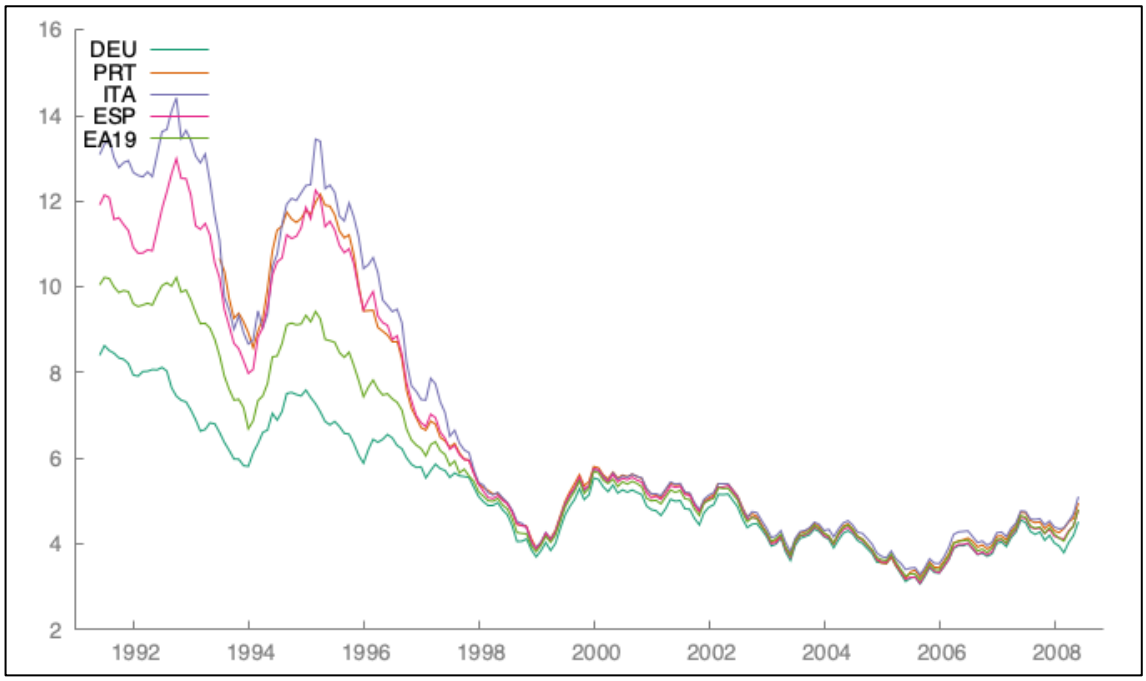
3.2.1. FISCAL RULES AND THE STABILITY AND GROWTH PACT

The history of the European Monetary Union and monetary integration began in 1992 when the Maastricht Treaty was signed. However, even prior to that, extensive discussions took place regarding the regulations necessary for prospective member states to adhere to, for their admission. In particular, Germany and the northern European countries expressed concerns over the potential consequences posed by the moral hazard of certain nations. They were apprehensive that these countries might pursue lenient fiscal policies, thus compelling others to provide financial assistance as a

result (Bilbiie, Monacelli, & Perotti, 2021). To remedy this problem, two fiscal rules[9] were introduced within the Treaty:

- A nation's yearly budget deficit must not surpass 3% of its gross domestic product (GDP) where any deviations are expected only in exceptional circumstances.
- The overall public debt should not exceed 60% of GDP or, if it is greater, a substantial reduction must be planned.

Figure 5 Yields convergence after monetary union



Source: data from OECD

Although according to the Optimal Currency Area theory there is no need of convergence criteria for the success of a monetary union (De Grauwe, Economics of a

[9] Also other rules were settled, as come criteria for the inflation rate and the interest rates.

Monetary Union, 2018), these have been imposed as a central point for entry into the EMU[10].

The reason behind this decision should be sought by analyzing the fears that the introduction of a Monetary Union brought with it at the dawn of the new millennium. One of the concerns in this regard was that dictated by the divergence of budgets. De Grauwe (2018) expounds on this argument by taking two countries joining a monetary union with two different debt stocks. The country with a larger debt stock, in this case, would have an incentive to raise inflation expectations to cause erosion of the real value of the state's long-term debt securities[11], preying on the short-term economic situation but causing large costs in the long run. Thus, if a country has a higher debt-to-GDP ratio it will have an incentive to create expected inflation. The less indebted country will then demand a reduction in the ratio from the "more frugal" country. In fact, once this is achieved, no country will have the need to produce expected inflation[12].

Another argument for the introduction of these criteria was dictated by the default risks for countries with high debt-to-GDP ratios. For this reason, the Stability and Growth Pact (SGP), which serves as a cornerstone of the Union's fiscal policies, was subsequently established. This agreement rests upon two fundamental principles[13]:

[10] In fact, the OCA theory, predicts the need for a fiscal union to complete and strengthen a monetary union.
[11] Since these securities are not indexed to inflation.
[12] Another criterion expressed in the Treaty was precisely that inherent in the inflation rate, which could not exceed the average of the three lowest rates in the EU by more than 1.5 percent. In this case, the different inclinations of member countries to deal with inflation, would indeed require the presence of a common Central Bank to make decisions regarding joint monetary policies. In fact, as pointed out by De Grauwe (2018), if two countries with different levels of inflation join the same monetary union, the one with lower inflation sees a reduction in its welfare, due to the rise in its inflation rate, which, by likely Central Bank decision, will reflect the average between the two. For this reason, Germany, a low-inflation country, has not only demonstrated the need for the Central Bank to reflect its national directions and interests, but has also demanded a reduction in inflation as a prerequisite for joining the union.
[13] Bordignon M. and Scutifero N. (2022) "Il Patto di Stabilità e Crescita tra ieri e oggi"

- The introduction of the "no-bail out clause", prohibiting other member states from taking on the debts of others and directly purchasing the debts of other governments.[14]
- The ultimate goal of the public policies of member countries must be a balanced or budget surplus.

Moreover, two mechanisms[15] for fiscal surveillance were later introduced by the Commission. The first mechanism requires countries to ensure the long-term sustainability and stability of their national debt. The second mechanism establishes a procedure for addressing excessive deficits, which refers to deficits that surpass the 3 percent threshold defined by the Maastricht Treaty.

As economic growth slowed in the early 2000s, some of the weaknesses of the SGP became clear, including the lack of flexibility and proportionality of the tax rules imposed. The requirements were expressed in nominal value, without taking into account the relative speed of growth of the nominal deficit relative to GDP.[16]

In the following sections, we will delve into the historical and economic factors that contributed to the suspension of the Stability and Growth Pact and the factors that led to specific public debt dynamics that, to this day, still burden some countries.

[14] This clause was drafted in very general terms and allowed for significant interventions during the crises of the following decades.
[15] These are the Six Pack, the Two Pack and the Fiscal Compact, see next chapter for further discussion.
[16] Bordignon M. and Scutifero N. (2022) “Il Patto di Stabilità e Crescita tra ieri e oggi”

3.2.2. SOVEREIGN DEBT CRISIS AND THE FRAGILITIES OF A MONETARY UNION

The Sovereign Debt Crisis

The question of sovereign debt sustainability has gained significant importance in recent decades, primarily due to the numerous crises that have characterized this period. The onset of the Great Recession in 2008, triggered by bank failures, served as a significant wake-up call, particularly for heavily indebted countries such as Italy. During the period from 2008 to 2010, Italy experienced a substantial 15.4 percent increase in the proportion of public debt to GDP, resulting in a total debt-to-GDP ratio of 119 percent.

The Sovereign Debt Crisis of 2011 was a direct consequence of the global financial crisis that unfolded in 2008. The credit tightening measures, coupled with the deceleration in GDP growth, marked the onset of the second downturn for the European Union's economy.

The escalation of the crisis was promoted by several factors. EU countries were characterized by excessive borrowing and spending by national governments in an attempt to mitigate the effect of the downturns of the 2008 crisis, with a consequent accumulation of debt that triggered the stability and enlighten the risk of default. Also, the huge number of investments by financial institutions on sovereign bonds of countries with deteriorating financial conditions, questioned the bank's solvency capabilities.

Moreover, structural issues within the Eurozone played a role in exacerbating the crisis. The monetary union's design lacked sufficient mechanisms for dealing with fiscal imbalances among member countries. Weaker economies within the Eurozone, such as Greece, Portugal, and Ireland, faced difficulties in implementing necessary economic reforms and achieving fiscal discipline. These structural weaknesses, combined with the absence of a comprehensive framework for handling sovereign debt crises, led to increased market uncertainty and further amplified the crisis.

Structural fragility of a monetary union

Indeed, being part of a monetary union exposes member countries to the risk of asymmetric shocks, as we have witnessed in the 2011 crisis. In fact, joining such a union entail relinquishing the ability to have monetary independence. Member states issue debt securities in a currency they cannot control, which hinders governments from ensuring the necessary and reliable liquidity to meet their debt obligations. As a result, financial markets gain the ability to push the most vulnerable and exposed countries towards involuntary insolvency[17], as there is no central bank willing to support these countries' internal debt dynamics.

If investors lack confidence in the sustainability of a member state's debt, they may choose to sell its bonds. This action leads to an increase in the interest rate and creates a liquidity challenge that cannot be resolved by a central bank, which operates independently from the government's preferences. Consequently, this situation raises concerns about the country's solvency. Merely being a part of this "incomplete" Union exposes member states to the possibility of facing market distrust crises, leaving them without the necessary monetary instruments to effectively respond. This was the case for the GIIPS[18] countries during the Sovereign Debt crisis (De Grauwe, Economics of a Monetary Union, 2018).

The Greece situation, central to the study of this crisis, shared light on the two main costs of European Monetary Union. First, the costs from exogenous shocks to member countries are extremely high because of the inability to devalue the currency, which

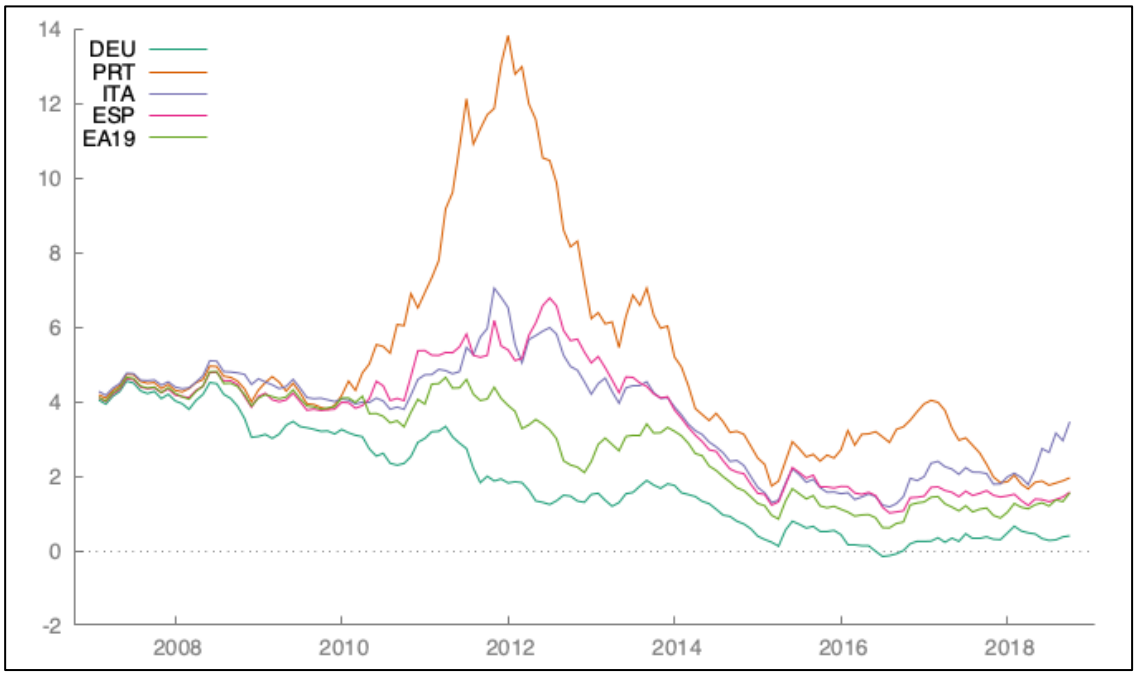
[17] In the case of Spain, if investors were concerned about a potential government default, they would sell Spanish government bonds, causing an increase in interest rates. Consequently, investors may redirect their investments towards safer assets, such as German Bunds, resulting in a capital outflow from Spain to Germany. The absence of exchange rates within a single currency framework eliminates the possibility of halting this capital flight.
Under these circumstances, the Spanish government would face challenges in addressing the situation. It would be unable to issue more debt due to the high interest rates, and seeking liquidity from its Central Bank would not be an available option. As a result, the Spanish government could potentially face insolvency, highlighting the significance of market expectations and the absence of a Central Bank directly controlled by the government.

[18] Greece, Ireland, Italy, Portugal and Spain

forces the country to submit to the relentless rise in interest rates. Second, the fact that the government cannot issue its debt in its own currency causes the risk of facing liquidity problems and insolvency (De Grauwe, Economics of a Monetary Union, 2018).

While in the previous section we saw how Monetary Union and adherence to the Maastricht Treaty led to a convergence between the interest rates of states, we see here why the following decade again saw disparate interest rate dynamics. Asymmetric shocks in the Eurozone led to divergence in long-term government bond interest rates. While the southern Eurozone faced massive sales of their bonds resulting in higher rates, the northern Eurozone saw the opposite process, with capital flowing in due to the numerous purchases and lowering rates.

Figure 6 Yield divergence after 2008

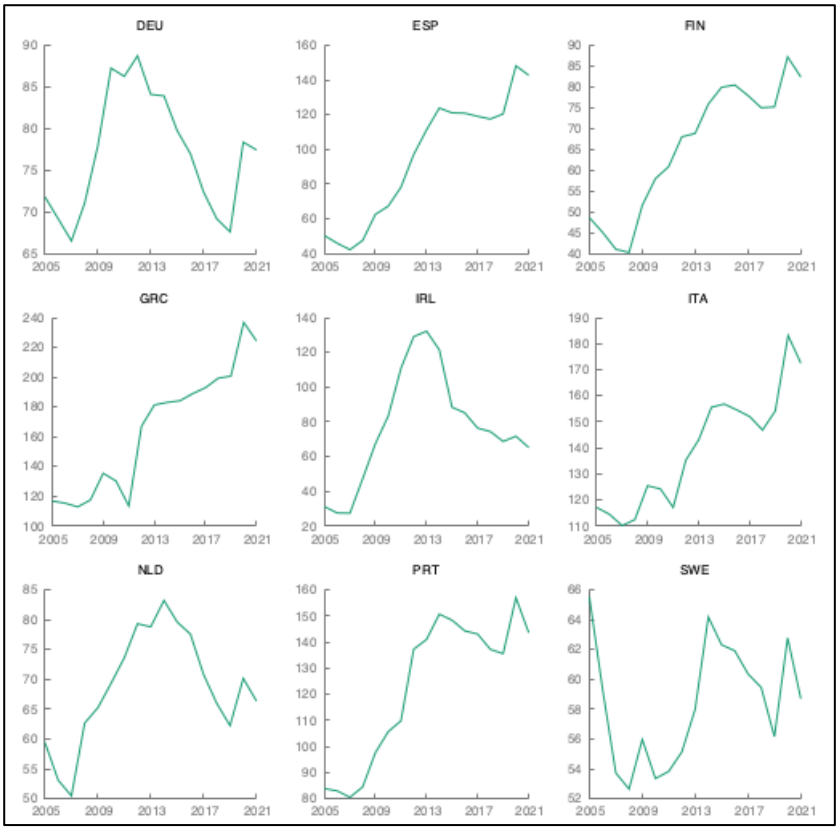


Source: data from OECD

Therefore, the problem that seems to underlie these situations would appear to be the structure and organization of the EMU itself. While the Maastricht Treaty is intended to reduce spreads and promote a convergence of debt, and thus of member countries' interest rates, it indirectly encourages dynamics that act oppositely.

This scenario underscores the importance of market confidence and the role played by the absence of certain tools, such as exchange rate adjustments or direct control over a Central Bank, in shaping the financial dynamics of a country within a monetary union. It highlights the need for effective fiscal management, structural reforms, and policies that enhance market confidence to mitigate the risk of insolvency and promote financial stability.

Figure 7 Debt accumulation of some key member states



Source: data from OECD

Reforms and containment measures

Crisis containment measures involved implementing restrictive government budget policies, primarily aimed at curbing the spread of the crisis. However, these measures exacerbated the already weakened state of the real economy.

After the Crisis, the Stability and Growth Pact underwent changes with the establishment of the Fiscal Compact and the introduction of two reform packages. The Six Pack focuses on setting medium-term targets for the structural deficit, aiming to contain and reduce it[19] through the implementation of automatic stabilizers. Also, the Six Pack introduced some escape clauses from the objectives in case of an exogenous, unusual shock[20]. The obligations imposed on states in this regard are to converge toward the goal of a balanced budget with an annual improvement in balances of at least 0.5 percent. For those in a debt situation exceeding 60 percent of GDP, a reduction of at least 1/20 of the excess over the threshold is required, to be calculated over the last three years. In addition, there will be semi-automation regarding the sanctioning process for those who fail to comply with the imposed limits and dynamics. This would amount to a sterile deposit of 0.2 percent of GDP.

On the other hand, the Two Pack introduced the European Semester, which entails each country presenting its public budget plan for the following year to the Commission. This is to enable the goal of strengthening economic and fiscal surveillance through macroeconomic estimates and forecasts to be presented to the Eurogroup. Also included in this agreement is a proposal for a report on the advantages, disadvantages and risks

[19] A country with more than a 60% debt-to-GDP ratio would have to reduce it at an average speed of one-twentieth of the excess per year.

[20] In 2015, Italy was allowed to deviate from its Medium-Term Objective on the basis of three different clauses: the "unusual events" clause for 0.12 percentage points of GDP (half to cover the costs of the refugee crisis and half for the security crisis after terrorist attacks in Europe); the "investment" clause for 0.25 percentage points; and the "structural reform" clause for 0.50 percentage points. This was based on a submission to the European Commission envisioning that these reforms would raise the level of Italy's GDP by 1.8 percent in 2020 and 7.2 percent in the long run (Bilbiie, Monacelli and Perotti, 2021).

associated with the partial replacement of national debt issues with a common issue, to be promoted through the creation of ad hoc instrument or a redemption fund[21].

The Fiscal Compact, in turn, incorporated the objective of achieving a balanced budget, with stricter limits over the objectives and the establishment of a national Fiscal Council (Bilbiie, Monacelli, & Perotti, 2021). The above two packages above participate in this, with some changes regarding the terms and percentages expressed in debt reduction.

All in all, there were numerous proposals from experts and economists on how to solve and prevent events such as the Sovereign Debt Crisis. Certainly, the latter highlighted the problems of EMU like no event before, opening a reflection on the actors, risks and responsibilities within the Union itself.

3.2.3. European Central Bank and Fiscal dominance

ECB targets and the role of lender of last resort

The strategic position with which Germany found itself at the beginning of the EMU formation process meant that the European Central Bank was established according to the so-called German model. This model assumes as its primary objective precisely that the control of prices, to which all remaining policies and objectives of the bank itself are subordinated, as also stated in Article 105 of the Maastricht Treaty:

> *"The primary objective of the ESCB (European System of Central Banks) shall be to maintain price stability. Without prejudice to the objective of price stability, the ESCB shall support the general economic policies in the Community with a view to contributing to the achievement of the objectives of the Community as laid down in*

[21] This proposal was brought forward by the Council of Economic Experts of the German Chancellery. This fund would converge the amount of the public debts of the member states for all the share exceeding the Maastricht Treaty limits. The bonds issued would have a term of 25 years and would be secured by tax revenues from states and public assets.

Article 2[22]. The ESCB shall act in accordance with the principle of an open market economy with free competition, favoring an efficient allocation of resources, and in compliance with the principles set out in Article 4[23]."

Along with this, the basic principle of political independence was also defined, which was necessary to fulfill price stability. The ECB is thus completely untied from government control of any country and acts only to pursue the interests of the Union as a whole.

Defining these conditions, however, disregards the need, in the context of an incomplete monetary union, for a lender of last resort to prevent the future occurrence of frequent liquidity crises. The presence of such a central bank, then, would be able to reduce the fragilities of an incomplete monetary union.

This need became evident in September 2012 when the ECB planned to intervene in the markets to purchase substantial amounts of government bonds for countries experiencing crises. These operations, known as Outright Monetary Transactions (OMTs), are genuine lender-of-last-resort measures aimed at preventing crises and bolstering Union stability. It should be noted that while this decision successfully mitigated system fragilities to a significant extent, it was primarily due to the shift in market expectations following the announcement. Consequently, the ECB did not have to make any actual securities purchases for this purpose.

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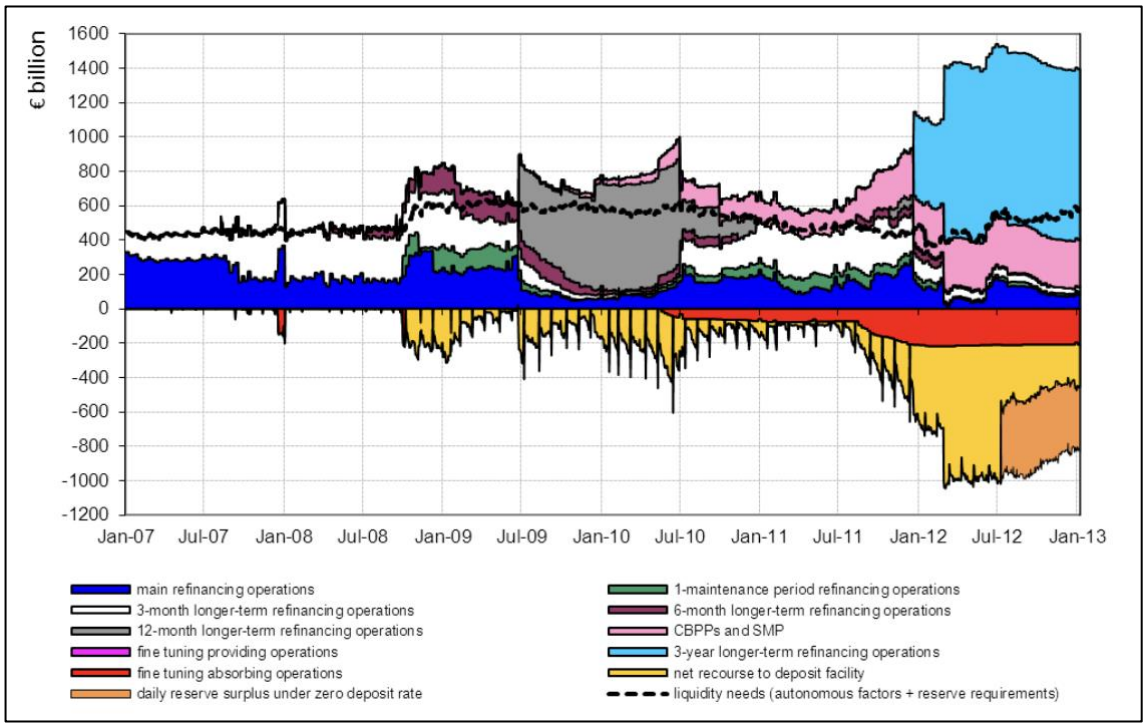
[22] *"The Community shall have as its task, by establishing a common market and an economic and monetary union and by implementing the common policies or activities referred to in Articles 3 and 3a, to promote throughout the Community a harmonious and balanced development of economic activities, sustainable and non-inflationary growth respecting the environment, a high degree of convergence of economic performance, a high level of employment and of social protection, the raising of the standard of living and quality of life, and economic and social cohesion and solidarity among Member States."*

[23] *"A European System of Central Banks and a European Central Bank shall be established in accordance with the procedures laid down in this Treaty; they shall act within the limits of the powers conferred upon them by this Treaty and by the Statute of the ESCB and of the ECB annexed thereto."*

This program was subsequently subjected to stricter conditions for its implementation. The ECB would only be allowed to buy bonds with a maximum maturity of three years, and the countries receiving support would be required to implement an austerity program under the supervision of the European Stability Mechanism.

Despite the potential benefits of this operation, the OMT program faced several criticisms. States like Germany contended that its implementation exceeded the bounds of the ECB's mandate and was therefore illegal. Indeed, even today, debates about the "fiscal dominance" of the ECB are not uncommon. This term refers to the notion that the central bank becomes subject to fiscal obligations towards governments, potentially jeopardizing its primary objective of maintaining price stability.

Figure 8 Euro-system monetary policy operations



Source: P. Cour-Thimann and B. Winkler elaboration from ECB data

Surrogate function of a federal budget

In principle, a central bank should exercise its powers as a lender of last resort solely during liquidity crises and should refrain from intervening in matters involving insolvent governments or states. However, distinguishing between liquidity problems and solvency problems can be challenging due to their interconnected nature. The doctrine, as formulated by Walter Bagehot in 1873, assumes that these two types of crises can be differentiated (De Grauwe, Economics of a Monetary Union, 2018). The proposed solution is to provide unlimited liquidity, albeit at unfavorable rates, in order to address the moral hazard issue. Nevertheless, the ECB's decision to offer support in the securities market has yielded positive outcomes, contributing to market stabilization.

In the context of state bailouts, the ECB has been regarded as the most cautious and conservative central bank. It experienced a significant increase in its balance sheet, doubling in size over a span of three years, after it made the decision to participate in the Quantitative Easing (QE) program. The QE program aimed to inject liquidity into the system and stimulate the economy. While the Federal Reserve swiftly implemented this measure, the ECB took some time, until January 2015, to adopt it.

These open market operations were justified by the necessity to manage the escalating crisis. In the aftermath of the bankruptcies triggered by the 2008 crisis, there was a significant surge in private sector savings, which was offset by substantial deficits in government accounts. Rebalancing this situation had significant implications for Eurozone monetary decisions. These new economic policies served the purpose of liquidity intermediation by utilizing the Euro system balance sheet, enabling the distribution of liquidity from the Central Bank to the banking systems of countries in crisis.

European Stability Mechanism

Having previously mentioned the European Stability Mechanism (ESM), let's now take a brief detour to analyze its operation. The ESM is a European intergovernmental organization established with the aim of promoting financial stability within the eurozone and providing assistance to states facing difficulties. The fund has the capacity to disburse up to €500 billion.

The primary role of the mechanism is to provide loans to countries in the eurozone that are experiencing instability, which could potentially trigger a crisis in the entire region. The ESM is funded through contributions from member countries based on their economic significance. In order to receive disbursements from the ESM, countries are typically required to implement specific internal reforms aimed at addressing weaknesses in their national economies, such as structural reforms or fiscal consolidations. The disbursements are made through two credit lines: the Precautionary Conditioned Credit Line (PCCL), which is contingent upon meeting certain economic criteria, and the Enhanced Conditions Credit Line (ECCL).

Since its establishment, the ESM has undergone reform processes, including the 2019 reform that introduced changes such as the possibility of utilizing the mechanism for bank resolutions and restructuring public debt.

One of the key advantages of utilizing the European Stability Mechanism (ESM), in addition to the potential activation of Outright Monetary Transactions (OMTs)[24], is the ability to access financing at lower interest rates. This results in significant cost savings in terms of repayment fees. For instance, in June 2020, the interest rate on Italian government bonds (BTPs), after accounting for taxation, was 1.6 percent. In contrast, funds obtained from the ESM would have been disbursed at an interest rate of 0.08 percent. According to estimates, this would have led to savings of around €500 million

[24] These would be potentially unlimited purchases of government bonds, but with "strict and explicit" conditions attached to an ESM program and possibly also IMF guidance and support.

per year for Italy over a 10-year period, amounting to approximately €5 billion (Cottarelli, All'inferno e ritorno: per la nostra rinascita economicaa e sociale, 2022).

3.2.4. PANDEMIC CRISIS AND SGP SUSPENSION

As a result of the pandemic and its impact on government spending and increased public debt, the Stability and Growth Pact (SGP) was suspended starting from March 2020. This suspension led to a cessation of debates surrounding the SGP and altered the discussion about European fiscal policy. However, at the expense of this, support packages were created for member countries such as the SURE (Support to Mitigate Unemployment Risks in an Emergency), a 100-billion-euro plan to support labor expenditures.

In general, the crisis containment efforts have primarily focused on the fiscal aspects of the economy. After extensive debates, an agreement was reached with the establishment of the Next Generation EU[25] (NGEU) program, an unprecedented €750 billion plan that includes the largest aid package known as the Recovery and Resilience Facility, with the aim of promoting economic recovery and strengthening the resilience of the entire Union. Out of this amount, €338 billion was allocated as grants, meaning that repayment is not required by Member States as long as certain conditions are met[26] and will be repaid with new own resources of the European Union. The remaining €385.8 billion is provided as long-term loans, with member states expected to repay them by 2058, such that they take the form of debt securities issued by the EU.

The significance of this plan lies in the fact that it marks the first time the European Union has directly provided loans to member countries. Numerous economists argue

[25] Ofter referred to as an "Hamiltonian moment" for Eurozone.
[26] Actually, not all the grants are a net gift to the recipient, as the latter will have to contribute to the repayment of the whole pool of grants, roughly in proportion to its own GDP.

that the current situation in the EU bears resemblance to that witnessed by the United States in the late 1700s, during the federalization of national debt. In the American context, state debts incurred to finance a common national cause were assumed by the central government. Similarly, in Europe, there was a proposal for a similar assumption of the increased debt resulting from COVID-related expenditures, such that this would involve a collective responsibility for the debt incurred by member states, aiming to address the financial challenges posed by the pandemic in a unified manner (Ando, et al., 2023). The responsibility of collecting taxes necessary to cover the issued bonds will be entrusted to a newly established autonomous Union taxing authority, which represents a significant step towards achieving European fiscal integration (Bilbiie, Monacelli, & Perotti, 2021; De Grauwea & Ji, 2013; Romana & Bilan, 2012; Blundell-Wignall, 2022; Collignon, 2012; Monetary and Economic Department, 2011).

Indeed, assuming the debt incurred by member states to address the COVID-related expenditures came with its own set of challenges and implications. For instance, assuming the debts of member states could create moral hazard, as it may reduce the incentives for responsible fiscal behavior and reforms in the future. Also, the assumption of debt by a central authority raises questions about national sovereignty, as it involves a transfer of fiscal decision-making powers to a supranational entity. The burden of debt assumption may not be evenly distributed among member states, leading to concerns about fairness and exacerbating economic disparities within the European Monetary Union. Moreover, the assumption of debt by a central authority may impact financial markets and investor sentiment, potentially affecting borrowing costs and market confidence. For all these reasons, the proposal for assuming debt can be politically contentious, as it requires unanimous agreement among member states and may face opposition from countries that are reluctant to take on the debt burdens of others.

Despite the potential to address these problems, the ongoing pandemic crisis has reignited the discussion on common debt, with the creation of new instruments that

increasingly move towards the issuance of common debt securities. The Eurozone finds itself in an uncertain and fragile situation, necessitating the exploration of new paths to move forward.

3.3. BUDGETARY POLICIES IN MONETARY UNIONS

A central issue to support the rationale proposed in this essay is the current situation of Eurozone taxation and its impact on the fiscal discipline of member country governments. This topic has been and continues to be a subject of extensive debate, with differing views on whether a monetary union leads to reduced or increased fiscal discipline.

Regarding the relaxation of the discipline, it is closely related to the points mentioned earlier regarding EMU fragilities. The interest rates on national debt issued by any country reflect a risk premium influenced by the risk of default, where the state is unable to repay its debts, and the risk of currency devaluation. Historically, currency devaluation has occurred more frequently than default, however in a monetary union, currency devaluation is not possible as the currency is shared among all members. Consequently, insolvency becomes a more relevant concern. Nevertheless, previous crises have shown that states may rely on the belief that there is a bailout guarantee from other member states, leading to moral hazard and the issuance of significant amounts of debt.

As mentioned earlier, a possible solution to this dilemma could be the imposition of a no-bailout clause, akin to the Hamiltonian moment witnessed in the United States during the nineteenth century. However, the credibility of such a clause has been undermined by the example of the Greek bailout.

On the other hand, there appears to be a factor that tends to enhance the discipline of countries. The issuance of national debt by Eurozone countries in a currency that they

do not have control over imposes firm budget constraints. The independence of the ECB as a governing body should, in principle, ensure that states cannot readily rely on its assistance to address internal stability issues (De Grauwe, Economics of a Monetary Union, 2018).

According to an empirical analysis conducted by De Grauwe (2018), it appears that the latter condition prevails, as there has been a slight increase in debt following the membership of Eurozone countries compared to the United States and the United Kingdom.

However, despite this apparent benefit, the EMU brings forth numerous problems regarding the dynamics and management of public debt. As mentioned earlier in the analysis of the Sovereign Debt Crisis, we know that a country can default either through payment suspension or indirectly through the creation of expected inflation or unexpected devaluations. Joining a monetary union makes defaulting more challenging due to reduced control over the currency, which amplifies the possibility of payment suspension. In this case, it seems that a monetary union increases the risk of direct default by national governments.

In addition, we have seen that there is a close correlation between the liquidity crisis and a solvency crisis precisely because of the lack of a national central bank guarantee.

Based on the analyses presented in this chapter, it is evident that the European Monetary Union is characterized by several significant vulnerabilities. While its initial objective was to enhance stability within the system, it often produces the opposite outcome. The most logical solution, it seems, would be to address these shortcomings by completing the incomplete union through the establishment of a fiscal union and the issuance of a common bond. This approach has a proven historical track record in mitigating internal instabilities, as seen in the case of the United States after the War of Independence. Furthermore, extensive research has been conducted on this topic, and empirical evidence seems to favor this path.

In the next chapter, we will delve deeper into the concept of common European debt, examining its application, benefits, and challenges. The aim is to provide a critical and comprehensive perspective on this issue.

4. EUROPEAN SAFE ASSET

In the third chapter, we explored how one of the primary threats to the economic stability of the Eurozone lies in its internal fragilities. In this context, we examined the issues concerning the ECB and fiscal dominance, which have resulted in the ECB assuming the role of a federal budget and highlighted the challenges of operating a monetary union without a fiscal union.

Thus, the solution would be to move towards a comprehensive and political union to overcome these challenges. Ideally, the Eurozone would be incorporated into a federation known as the United States of Europe. However, this ambitious project currently faces significant obstacles, including ongoing conflicts among member states. Furthermore, Baldwin and Wyplosz (2006) argue that a "deep variable" is lacking, meaning that a strong and deeply rooted sense of collectivity is currently absent.

Nevertheless, it is possible to embark on a path of union and integration by taking a few initial steps, which may eventually lead to achieving the goal of a confederation in the future. In addition to establishing the ECB as a lender of last resort, a complete union also necessitates the consolidation of budgets and public debt. The adoption of common debt has been the subject of intense debate in recent years, as it presents numerous benefits but also significant challenges, which will be examined in this chapter.

One of the key hurdles to overcome is the conflict of interests between member states. To gain a comprehensive understanding of this central point, it is crucial to delve into the different visions that characterize the opposing poles of Europe and the underlying motivations that drive them.

4.1. *DIFFERENT VIEWS ON RISK*

Indeed, managing risks, external shocks, and exogenous changes is crucial for maintaining the integrity of the Eurozone. Given the interconnectedness of member states and the shared currency, it is vital to have effective mechanisms in place to address and mitigate these risks. There are three main visions to encourage integrity and promote the cohesion of the European Monetary Union:

- The risk reduction vision;
- The risk sharing vision;
- The synthesis between both.

The risk reduction vision

The first approach to safeguard the monetary union against external shocks involves the decision to mitigate risks and mutual contagion. This perspective, known as the Eurobaltic view, is primarily supported by Northern European countries that are opposed to the idea of debt-sharing at the Eurozone level. The proposed solution revolves around implementing a mechanism that restricts the likelihood of less responsible countries engaging in moral hazard. This would be achieved through reinforcing the fiscal rules established by the Stability Pact and providing stronger incentives to implement structural reforms.

Enhanced market control[27] and monitoring would serve as a mechanism to encourage fiscal authorities to undertake reforms aimed at reducing the vulnerabilities of highly indebted states. This could involve market-based measures, such as differential access and financing based on spreads, which would incentivize greater fiscal discipline. Additionally, imposing strict conditions for debt reduction as a prerequisite for utilizing

[27] Supporters of this approach argue that prior to the crisis, financial markets failed to adequately differentiate between government bonds of different countries based on the additional risks associated with each country's deficit and debt levels.

the European Stability Mechanism could further restrict their ability to access it. These measures would exert pressure on the most indebted states to prioritize fiscal discipline and take necessary steps to address their fiscal fragility factors.

Regarding the banking system, there is a growing demand to reduce the correlation between sovereign risk and banking risk by placing restrictions on domestic banks' investments in government bonds as well as the ECB purchases, to obtain a better and more correct estimate of the risk premium. Simultaneously, there is a push to facilitate a more streamlined process for troubled banks to undergo failure, as it would reinforce discipline and incentivize risk reduction from within the banking sector.

Critics of this perspective often highlight that these proposals run counter to the trend of integration that the European Monetary Union has sought to foster over the years. Programs such as the European Stability Mechanism (ESM), the Next Generation EU (NGEU), and the Support to mitigate Unemployment Risks in an Emergency (SURE) have all been aimed at promoting integration and fostering a sense of solidarity in addressing crises. Indeed, the past decades have demonstrated how external shocks, such as the recent pandemic crisis, can rapidly escalate into full-fledged crises. During such periods, a system with fewer interconnected networks may potentially exacerbate recessions and economic hardships before any potential benefits are realized. It is essential to carefully consider the potential consequences and trade-offs associated with reducing networks and integration in the face of exogenous shocks.

Furthermore, the assumption that markets can consistently and accurately price assets when provided with the necessary conditions is arguably idealistic. Recent events, such as the sovereign debt crisis, have demonstrated that investors do not always possess a perfectly clear view of the market. Believing that macro-level interventions alone would be sufficient to foster a correct perception of market dynamics can be challenging. It is important to recognize the limitations and complexities of market behavior and the potential need for additional measures beyond macro-level interventions.

The risk sharing vision

The level of risk sharing is often seen as a key measure of success for federations or monetary unions. It refers to the ability to absorb shocks to GDP that are specific to certain member countries. When risk sharing is high, a country experiencing a GDP decline will have its national consumption only minimally affected. This can be achieved through various means, such as integrated capital markets at the federal level that generate capital income for citizens, public transfers from the federal budget, household savings that help offset consumption declines, or national budget surpluses and deficits. Ultimately, the extent of risk sharing determines how effectively a federation or monetary union can navigate and mitigate the impact of economic shocks on its member states.

This second approach, favored by the Euro Mediterranean countries, involves promoting integration through near-total risk sharing. This integration would occur not only from an economic perspective but also from a political standpoint, with the ambition of creating a European budget capable of facilitating income redistribution and providing support to struggling states.

This central goal of stabilization, currently at the heart of discussions, would be more swiftly and easily achievable if the European Monetary Union were integrated at a federal level. In such a scenario, a European institution would be responsible for issuing debt (Eurobonds) backed by contributions from member states and would have the ability to provide subsidies or implement tax cuts in favor of crisis-hit states.

While the adoption of a common currency has increased risk sharing in Europe, it remains lower compared to other federations such as the United States. The higher level of integration in the US can largely be attributed to its efficient capital market and financial system. In the Eurozone, risk sharing primarily occurs at the level of national budgets and their surpluses and deficits.

The primary reason for the United States' greater integration and risk sharing lies in the higher level of coordination of their financial markets, as opposed to their balanced budget policies which do not actively encourage risk sharing. However, the 2008 financial crisis had different effects on risk sharing for the US and Europe. While it led to a reduction in risk sharing in the US due to repercussions in financial markets, it acted as a catalyst for greater integration and risk sharing in Europe. This was facilitated through the creation of funds aimed at restoring economic balance and providing support to member states.

According to this view, to promote fiscal union by issuing jointly backed debt it will be crucial to achieve a complete, efficient, and effective integration of the Eurozone. Additionally, efforts should be made to cultivate a more homogeneous financial system within the Eurozone. These developments would help alleviate the issues arising from relying solely on monetary policy[28] as the primary tool.

The adoption of a federal budget can indeed have several positive effects on the Eurozone's financial landscape and integration. Firstly, it would contribute to greater financial stability by reducing the systemic risks that arise from the interconnectedness of banks and sovereigns. Furthermore, the issuance of common debt can promote the integration of capital markets within the Eurozone. It can create a more harmonized and efficient market for European securities, attracting a larger investor base and facilitating cross-border investment. The establishment of a common budget, which can be supported by Eurobond issuance, can also foster the integration of financial markets. A common budget would enable the financing of common projects, investments, and initiatives that benefit the entire Eurozone. It would provide a platform for fiscal transfers and solidarity among member states, promoting economic convergence and reducing regional disparities. Moreover, the adoption of Eurobonds can bring the level

[28] It could reduce reliance unconventional policies such as Quantitative Easing, leveraging the ability to combine monetary and fiscal policies to achieve more cohesive outcomes.

of risk-sharing in the Eurozone closer to that of the United States. The United States has a well-established system of fiscal federalism, with risk-sharing mechanisms that help buffer shocks across different states. Eurobonds can contribute to a similar framework within the Eurozone, reducing the divergence of economic outcomes and enhancing the resilience of the overall monetary union. Lastly, the introduction of Eurobonds can facilitate the establishment of a deposit guarantee system, which would enhance depositor confidence, ensure a level playing field for banks across member states, and promote cross-border banking activities.

The numerous benefits derived from the adoption of a federal budget raise two important considerations. Political integration and union would be essential in order to establish a common decision-making system regarding the budget and public finances. Additionally, it would be necessary to address the varying levels of debt currently held by member countries. The different designs that will be examined later aim to tackle this issue and find the best solution for managing the transition towards common debt.

Synthesis between risk reduction and risk sharing

In a context of continuous discussions and conflicting opinions, the Eurozone needs to find a common ground on which to build a new, increasingly united European Union. The success of this synthesis would determine the feasibility of a program to introduce Eurobonds. Rules, programs, and procedures would be needed, but also mutual trust and compromise. The attempt to reduce national risks before accepting their sharing ends up increasing them and fueling the sense of precariousness surrounding the euro.

In order to establish a suitable synthesis between the two perspectives, it is crucial to establish a shared vision of the future, clearly defined goals to be accomplished, and a set of procedures to be followed. Additionally, it is imperative to implement national measures aimed at attaining the objectives of risk reduction.

4.2. ADVANTAGES

More Liquidity and lower Costs

The main argument in favor of a common European debt security is that it would promote greater economic integration and facilitate the management of debt and potential crises.

First of all, there would be a substantial efficiency gain in market liquidity due to higher transaction volumes; this would then lead to a reduction in the risk premium and thus in the cost of financing[29], with a significant benefit to small issuing states (Favero & Missale, 2010). Countries would be able to diversify their investor base and reduce their reliance on domestic investors, which would help mitigating the risk of market fluctuations and economic uncertainties. Additionally, a EU debt bond would facilitate access to capital markets for countries with lower credit ratings, allowing them to secure financing at more favorable terms compared to individual issuance.

A safe asset alternative to U.S. Treasuries

The demand for risk-free assets is typically met by the supply of U.S. Treasuries from the United States. However, the creation of a suitable common European government bond could introduce competition on the supply side, offering a stable alternative to U.S. government bonds. This would diversify investment options and potentially reduce reliance on a single dominant market for risk-free assets. Currently, the only viable alternative to U.S. Treasuries are the German Bunds but since they are issued by a single state, they face liquidity issues. Germany alone is unable to meet the potential demand that the United States fulfills, despite possessing the characteristics that make it a safe asset.

[29] The higher interest-rate volatility, associated with a perceived higher risk, could increase the cost of illiquidity.

Indeed, the benefits of introducing a common European government bond would extend beyond countries with limited and well-managed debt. While the advantages for such countries may appear relatively small, they would have positive implications for all economies in several ways.

For a security to earn the name of being a safe asset it's also required a high rating attributed by Rating Agencies, which, in turn, is influenced by spreads, credit risk, and the associated risk premium. By issuing bonds at the Union level, these factors could potentially experience significant reductions. A common European government bond would benefit from the collective strength and creditworthiness of the participating member states, leading to a higher credit rating and lower spreads. If, on the other hand, participation in a Eurobond only entails liability for each issuer's own share, it would need to be limited to Member States with credit standings as strong as those of Germany and France. This approach would essentially create a diversified portfolio of national bonds, providing a level of safety and stability comparable to that of individual countries with robust credit ratings. The question of whether participation in a Eurobond backed by joint guarantees should be equally restricted remains open. However, examining the credit quality of bonds issued by the European Investment Bank (EIB), which are implicitly backed by the joint guarantees of all EU Member States, can provide some insights into this matter. Analyzing the performance and creditworthiness of EIB bonds can help assess the feasibility and potential credit standing of a Eurobond supported by joint guarantees (Favero and Missale, 2010). This evidence can contribute to the ongoing discussion regarding the eligibility and risk associated with expanding participation in such a bond beyond countries with the highest credit ratings. This suggests that if a Eurobond were to be issued by an EU institution, possibly with the participation of all euro-area member states, it could be perceived as having the highest credit quality and potentially attain the status of a safe asset.

Still, for it to truly rival the market size and reputation of US Treasuries, the Eurobond would need to reach a significant level of market liquidity and investor confidence. As

the size and acceptance of the Eurobond market grows, it has the potential to become a credible alternative and establish itself as a trusted and sought-after asset in global financial markets.

Risk insurance, market access and crisis prevention

Risk insurance, enhanced market access, and improved crisis management are key considerations when discussing the introduction of Eurobonds and their potential benefits.

As highlighted in the previous section, one of the main advantages of Eurobonds is the provision of risk insurance. The concept of risk insurance applies to common debt when member countries are required to respond to aggregate shocks that affect all countries simultaneously. Common debt, in this context, would enable the absorption of these common shocks without the necessity of implementing fiscal tightening measures. In these terms, common debt would serve as an intertemporal insurance mechanism, allowing the European Union to respond to aggregate shocks without resorting to restrictive fiscal policies but by utilizing debt.

Moreover, Eurobonds can improve market access for countries that may face difficulties in raising funds on their own. Weaker economies or countries with higher borrowing costs can benefit from the collective strength and credibility of the Eurobond market. This can lower borrowing costs and improve access to capital, allowing governments to finance their operations and investments at more favorable terms.

In terms of crisis prevention, Eurobonds can act as a buffer during times of economic distress or financial instability. By having a common debt instrument, member states can tap into the collective resources and support of the Eurobond market to mitigate the impact of crises. This can help stabilize financial markets, prevent contagion effects, and provide a coordinated response to economic challenges.

Even so, the economic rationale for a common Eurobond relies on both risk sharing and the assumption of risk by larger and safer issuers, such as for countries with higher credit ratings, that can contribute to the better credit quality (with reference to the weaker economies) of Eurobonds. Their participation in issuing Eurobonds adds credibility and market confidence, attracting a broader range of investors. This, in turn, can lead to lower borrowing costs for all participating countries.

4.3. *DISADVANTAGES*

Market fragmentation and issuance program

Introducing a new market, that of Eurobonds, among existing national markets could cause some disruption in the economy. Transitioning to a common debt issuance requires a significant shift in the financing strategies of member states, with a substantial portion of national debt being replaced by Eurobonds. For the benefits discussed earlier to materialize, it is indeed necessary for the issuance of Eurobonds to be significant and for member states to rely on this new instrument for their financing needs. This transition could occur at a faster pace for smaller states to facilitate their integration into the new market.

Building a large and regular base of Eurobond issuance is a critical aspect of establishing a robust market. However, achieving this goal in the short term can be challenging due to the uncertainties associated with the transition and the perceived benefits. Member states may be cautious about fully committing to Eurobonds without a clear understanding of the advantages and potential risks involved.

Different needs and less flexibility

All the issuers have different amounts of debt, with different characteristics and addressing different needs, albeit characterized by greater uniformity when compared

with the pre-Union situation. The introduction of common forms of debt, would greatly restrict the flexibility of states in making up for their domestic needs and in coping with their own debt management problems. The use of national debt instruments provides states with the ability to tailor their borrowing strategies to meet domestic needs. It allows them to respond effectively to their own specific circumstances, such as financing infrastructure projects, social welfare programs, or addressing economic downturns. National debt instruments provide the necessary flexibility for states to manage their debt according to their individual requirements. In contrast, the introduction of Eurobonds would result in a more centralized approach to debt management.

This problem would then have repercussions on the integration goals preponed by the introduction of common debt. However, as we will see further on this rigidity is subject to the choice of the different type of Eurobond.

The problem of Moral Hazard and discipline

Among the arguments against the introduction of a common European bond, one of the most significant concerns is the issue of moral hazard[30]. This refers to a situation where one party takes greater risks or behaves irresponsibly because it knows that it will not bear the full consequences of its actions.

In the context of a common European bond, the concern is that some Member States may become less disciplined in their fiscal policies or undertake excessive risk-taking, relying on the assumption that other countries will bear the costs or provide financial support if needed. This can create a moral hazard problem where countries may not take sufficient measures to address their economic imbalances or pursue sustainable fiscal

[30] Moral hazard is a term for a situation in which, due to information asymmetry and as a result of entering into a contract (ex-post), opportunistic behavior on the part of one of the signatories occurs.

policies, knowing that they can potentially count on the collective backing of Eurobonds. This kind of behavior, called free riding, could be engaged by the countries that even today show problems into managing their debt, at the expenses of those states whose fiscal discipline has always been pursued.

Moreover, the belief that the introduction of any form of Eurobonds will reduce the risk premium and lower interest rates is not entirely certain. Relying solely on market signals, such as interest rate spreads, to enforce fiscal discipline may not be effective. Market sentiment can be influenced by various factors, including investor perceptions, market volatility, and speculative behavior. As a result, interest rate spreads may not always accurately reflect the underlying fiscal conditions of a country or serve as timely indicators for fiscal adjustment (Favero and Missale, 2010).

The debate regarding moral hazard was also present in the case of the United States, with several debates taking part between 1790 and 1791, as some states (such as Massachusetts and South Carolina) would have been relieved of greater burdens than others (such as Virginia and North Carolina) (Steinbach, 2015). Similarly, in Europe, with particular reference to Germany, the same discussion is being faced, centering on the no bailout clause[31]. The German government has emphasized the importance of imposing strict conditions and reforms on countries in need of financial assistance to ensure that they undertake necessary measures to address their economic challenges and restore fiscal sustainability. Germany has indeed shown strong opposition to bailouts and has been a key player in negotiations within the eurozone since, as the largest economy of the Union, it would bear a significant share of the costs in any mutualization scheme or bailout efforts.

Public opinion not only in Germany, but also in other eurozone countries, such as France, has reflected skepticism towards bailouts. Polls have indicated that a significant

[31] The no bailout clause[31] is a provision that prohibits the European Union or other member states from assuming the debts of another member state.

portion of voters in these countries are opposed to the idea of using taxpayers' money to rescue other member states[32]. Comparison to US history shows that Virginia's position in relation to the beneficiaries of debt assumption has strong parallels to Germany's position in relation to the European periphery (Steinbach, 2015).

Also, critiques argue that relying exclusively on the no bailout clause to mitigate moral hazard may not be sufficient due to the close interdependence of eurozone economies.

However, in a highly interconnected and interdependent economic system like the eurozone, the risk of contagion is significant. Economic shocks in one country can quickly spread to others, leading to a potential systemic crisis. In such a scenario, member states may find it difficult to strictly adhere to the no bailout clause and may be compelled to intervene to prevent a broader financial and economic meltdown. The case of Greece during the Sovereign Debt Crisis was the event that reinforced these doubts, as its rescue caused the loss of credibility of this clause. Even so, some argue that the extension of credit to Greece is not solely for the benefit of the country itself but rather to safeguard the stability of the entire euro area. The argument is that by providing support to Greece, other member states are protecting their own economic interests and preventing the potential contagion effects of a Greek default.

Indeed, this issue could resurface in various aspects with the introduction of Eurobonds. Their potential benefits of lower-cost financing and reduced default risk, could incentivize some member states to carry out relaxed fiscal policies, counting on the perceived safety net provided by the Union. If member states feel that the risks associated with their debt are reduced, there is a possibility that they might be tempted to engage in irresponsible fiscal behavior. This could include increased borrowing, higher government spending, or failure to implement necessary structural reforms. Such

[32] "French People Oppose Second Greek Bailout, Ifop Poll Shows", Bloomberg News, 09/17/2011.

actions could undermine the credibility of the Union and jeopardize the overall stability of the European financial system (Favero and Missale, 2010).

Maintaining the credibility of the Union is of utmost importance to ensure the confidence of investors, financial markets, and other member states. If there are concerns about the fiscal discipline of certain countries, it could lead to a loss of trust in the common European debt framework and result in higher borrowing costs for all member states.

The pivotal point at hand is to determine which design of Eurobonds, among various options, is most effective in limiting the potential for moral hazard. Simultaneously, it is crucial to assess whether the benefits of risk mutualization outweigh the risks of free riding.

The evaluation of advantages and disadvantages is indeed crucial in assessing the desirability of Eurobonds, and an analysis of the Sovereign Debt Crisis can shed light on this matter. If the prevailing view is that the financial difficulties faced by the most troubled states were primarily a result of their fiscal indiscipline, the introduction of Eurobonds might be seen as rewarding irresponsible behavior. Conversely, if the substantial accumulation of debt is viewed as stemming from external shocks that were unforeseen and beyond the control of individual states, Eurobonds could be regarded as a valuable instrument for ensuring fiscal stability across the entire Union (Gilbert, Hessel, & Verkaart, 2013).

The challenges discussed thus far can find potential solutions through the formulation of different types of Safe Assets, which we will explore in detail later. These solutions may involve imposing limits on the amount of debt that can be issued or differentiating between existing debt and new issuances. Each proposal carries its own advantages and disadvantages, and we will examine them closely to analyze their key features.

4.4. *DIFFERENT DESIGNS*

The idea of joint issuance was first discussed by member states in the late 1990s, when the Giovannini Group published a report presenting several possible options for coordinating euro area sovereign debt issuance.

Subsequently, the intensification of the sovereign debt crisis in the euro area opened a wider debate on the feasibility of a form of common debt. For this reason, in November 2011 the European Commission published the Green Paper, which examines the feasibility of what it calls stability bonds. Three proposals are put forward, depending on the degree of debt mutualization: the first, also known as the Eurobond proposal in the narrower sense, envisages full debt mutualization; the second envisages the division of the debt into two tranches, blue and red, with the guarantee only in favor of the blue issue; the third, whereby Member States would retain responsibility for their respective share of the stability bond issue, in addition to their own national issue.

As from 2011, numerous other proposals[33] have been made to design an instrument that would be able to reduce the disadvantages and opposition to Eurobonds. At the same time, proposals of a different nature have been put forward which, while not envisaging the creation of a bond, seek to realize all the advantages discussed above.

In this next chapter, we will try to provide an overview of the most popular proposals and comment on their respective advantages and disadvantages, subdividing them according to whether debt mutualization is necessary or not.

4.4.1. *LIABILITY FOR ISSUE AND WARRANTY OBLIGATIONS*

Before proceeding with the analysis of the different Eurobond designs proposed in recent years, it is essential to make a distinction based on the types of guarantees and

[33] Boonstra (2005, 2010), De Grauwe and Moesen (2009), Delpla and von Weizsäcker (2010), Juncker and Tremonti (2010).

the institutions responsible for issuing these instruments. There are primarily three possible paths to consider for the issuance of common securities (Favero & Missale, 2010):

- Common issue backed by several guarantees.
- Common issue supported by mutual guarantees.
- Issuance of common bonds by an EU institution.

In the first case, we observe the issuance of a single instrument backed by individual guarantees from each state. The issuance would be managed by an independent institution, which would collect funds and distribute them among the issuing states in the appropriate proportions. The resulting debt instrument would be a single and common bond, but the guarantees and responsibility for interest payments would remain with each individual state. This option would provide the increased liquidity benefits promised by the issuance of Eurobonds while mitigating the potential moral hazard effects.

The second case proposed involves the concept of debt mutualization, which entails the sharing of the debt burden among multiple parties who also serve as guarantors. In this scenario, an independent agency, such as the EMU Fund proposed by Boonstra (2010)[34], would be responsible for the issuance. However, unlike the first proposal, each issuing state would serve as the guarantor for all obligations. These obligations would still be proportional to the amount of funds raised but would have a cross-default feature in case some issuers are unable to meet their debt payments. This approach aligns with the vision of risk-sharing advocated earlier and is supported by southern European countries while facing opposition from northern European countries. Although it presents challenges in addressing the moral hazard problem, such a reform would not

[34] Consists in central financing through EMU fund, replacing sovereign bonds; the spread is based on deficit and debt deviations from target or average and it involves clear sanctions when rules are breached, i.e. in case of non-payment. Based on voluntary participation, but with strong signalling effects from the participation of each member state.

only reduce the credit risk premium associated with bonds but also support European integration and bring the instrument closer to the characteristics of an internationally recognized safe asset, akin to US Treasury bonds.

The last proposed case involves the issuance of the Eurobond instrument by a European Union (EU) institution[35]. Similar to the previous case, this scenario would involve a certain level of debt mutualization and common guarantees derived from the EU legal framework. For instance, if the Eurobonds were issued by the European Commission, the liabilities and obligations would be governed by the EU Treaty. Alternatively, if they were issued by the European Investment Bank, they would be backed by the capital contributed by EU Member States. In this case, the securities issued would possess the highest level of credit quality, and the associated risk premium would be close to zero (Favero & Missale, 2010).

Bringing the focus back to the creation of a new institution, we refer to numerous articles and research papers that examine the characteristics and potential impacts of a new European Debt Agency (EDA)[36] in the context of common European debt issuance. The EDA would be an independent European institution, operating alongside the European Central Bank (ECB), and would be tasked with managing EU debt. However, there are conflicting proposals regarding the establishment of this agency, particularly concerning whether it should be linked to the mutualization of the debt issued or not.

In particular, the view of Amato, et al. (2022) presents itself as an alternative to the process of debt mutualization. According to the authors, the European Debt Agency raises funds from the market by issuing bonds with a finite maturity, and providing perpetual loans to finance the repayment of the securities. These loans would be priced

[35] This is the case proposed by De Grauwe and Moesen (2009). An EU institution issues Eurobonds with average yield of participating countries and the governments pay the same rate as before on their national debt. Everything is based on equity share in European Investment Bank with more benefits realized for weak countries.

[36] First proposed by Juncker and Tremonti (2010). The European Debt Agency, successor to stability funds, issues Eurobonds; it implies a transition from national to Eurobonds at a discount; it creates a liquid global market for Eurobonds.

at a unit price, which is then differentiated based on the debt quality of the states. The EDA bonds are traded on the markets, while the perpetual loans are not. The perpetual loans would be calculated based on the fundamental risk and an amortization factor. This operation would, on one hand, increase the liquidity of the member states and pursue the objectives of risk sharing by transforming European debt into safe debt. On the other hand, it would leave the responsibilities associated with national fiscal decisions to the states themselves. The differentiated pricing of the loans would indeed reflect the level of risk and reliability of each country, also serving as an incentive to implement fiscal policies aimed at discipline.

The other side of the coin is represented by the proposal put forth by Ando, et al. (2023) under the name of the European Debt Management Agency (EDMA). This proposal indeed sees the mutualization of debt as a key step for the functioning of the new institution. The EDMA would implement an initial mutualization of debt by issuing new debt to purchase a fraction of the national debt. In this proposal, such purchases should be limited to debt exceeding 60% of GDP, as indicated by the Stability and Growth Pact. Here, the prevention of moral hazard would be pursued through the possibility of borrowing only the debt resulting from common exogenous shocks (such as the COVID-19 shock). Additionally, together with the establishment of the new agency, policies aimed at consolidation and fiscal discipline[37] would also be promoted to accomplish this goal.

[37] In this circumstance, we should remember the importance of the no-bailout clause, with the intention of preventing fiscal indiscipline. In this case, the authors support the presence of this clause but invite a rethinking of it with the aim of avoiding exit from the Union.

Figure 9 Total debt of EMU countries and debt caused by exogenous shocks

Country	Total Debt (2021)	Covid Debt	2008-09 Debt
Austria	82.8	12.3	14.8
Belgium	113.9	15.8	12.9
Cyprus	107.7	13.7	0.3
Estonia	17.7	9.3	3.4
Finland	71.2	11.7	7.6
France	115.3	17.8	18.5
Germany	72.2	12.6	9.0
Greece	197.9	17.4	23.6
Ireland	55.2	-2.2	37.7
Italy	153.5	19.2	12.7
Latvia	48.8	11.8	28.4
Lithuania	46.0	10.1	12.1
Luxembourg	25.8	3.8	7.9
Malta	61.3	19.3	4.4
Netherlands	57.8	9.1	13.8
Portugal	126.9	10.1	15.1
Slovakia	61.5	13.3	6.0
Slovenia	78.5	12.9	11.7
Spain	119.6	24.1	17.5

Source: Giavazzi, et al. (2021)

Note: for some countries, the assumption of the COVID-19 debt and/or the 2008-2009 debt would be enough to reduce the total amount to a value below the 60% as required by the Stability and Growth Pact

Other proposals, on the other hand, follow the line of creating a European Monetary Fund or assigning the powers directly to the European Stability Mechanism.

In general, it can be said that the introduction of Eurobonds is complex not only due to the design of the issuance instrument, as we will see later, but also and above all due to the creation of a dedicated institution responsible for issuing, managing, and monitoring the fiscal situation of the Union.

4.4.2. DEBT MUTUALIZATION

Debt mutualization consists in transferring a portion of existing sovereign debt to a joint euro area agency. This route represents the most difficult to take because of the reasons seen above[38]. The reluctance of northern European countries to engage processes of debt mutualization stems from their desire to protect their own fiscal stability and maintain control over their national finances. They often argue that debt mutualization could undermine the incentives for responsible fiscal policies and create moral hazard, where countries may take on excessive debt with the expectation of being bailed out by others.

The debate surrounding debt mutualization is complex and involves balancing the interests and concerns of various member states[39].

There are mainly three hypotheses of debt mutualization:

- Eurobonds (strictly speaking)
- Blue-Red bonds
- Eurobills (with mutualization)

Eurobond

The Eurobond scenario involves a high degree of mutualization and would require a significant level of integration in terms of debt management and fiscal policy. Under this scenario, national debts would be replaced by a common European debt instrument, and member states would relinquish their autonomy in managing debt fiscal policies.

The adoption of Eurobonds would mean that member states would no longer issue their own individual bonds, but instead issue bonds collectively as part of the Eurobond framework, under the exclusive aegis of a supranational authority capable of imposing

[38] Referring to moral hazard and the problems connected to full risk sharing.
[39] Debt mutualization would require a revision of the TFUE, in particular of the no bail out clause.

severe restrictions on governments' fiscal decision-making choices. This would entail a pooling of resources and risks among participating countries. Individual member states would still maintain their independent taxing capacity and separate budgets from that of the issuing entity. This means that each member state would continue to have the authority to levy taxes and manage its own budget. The proceeds from these bonds would still be managed by the relevant government of each member state, such that the funds raised through these bonds would be used by each government according to its own budgetary priorities and needs.

This arrangement allows member states to maintain some (low) level of flexibility in managing their fiscal affairs while also benefiting from the lower borrowing costs and increased market stability that can come with the issuance of Eurobonds. Thus, the scenario envisages high economic and financial integration and a significant transfer of benefits from virtuous states to those most in need.

Under the Eurobond scenario, countries that have faced significant challenges during the debt crisis, such as Italy, Greece, and other heavily affected nations, could potentially benefit from the pooling of debt and shared liability because of lower borrowing costs and increased market stability. However, it is true that countries that have maintained relatively stronger fiscal positions and exercised more fiscal discipline, often referred to as "more virtuous" countries, may incur some costs (or in non-gains) under this arrangement.

The advantages and disadvantages of this system are quite clear[40]. The first benefit relates to the fact that through risk-sharing, it would eradicate part of the mechanism that caused the debt crisis, preventing the scope for speculation on the yields of individual states. It would go on to eradicate the collateral discrimination process and

[40] Minenna, *La moneta incompiuta. Il futuro dell'euro e le soluzioni per l'Eurozona*, Ediesse, Roma, 2016

structural differences in Eurozone securities. This can enhance market stability and reduce the potential for financial contagion within the Eurozone.

The existence of these European bonds could attract international liquidity and make euros a reserve currency like the U.S. dollar. Through the elimination of the perceived risks associated with specific countries, Eurobonds can also enhance investor confidence and attract a broader investor base. This can lead to improved market liquidity, lower borrowing costs, and increased access to capital for participating countries.

On the other hand, is important to consider potential disadvantages as well. Some concerns include the potential moral hazard and the risk of encouraging lax fiscal policies in countries that may rely on the support of other member states. Additionally, there may be challenges in terms of decision-making and coordination among member states regarding debt issuance, maturity, and other related factors. The diversity of economic and fiscal conditions across member states could present challenges in achieving consensus and maintaining an optimal balance between risk sharing and national autonomy.

Also, this mechanism involves a form of aid for the most indebted countries from the least indebted countries, which indeed oppose strong resistance in this regard.

From a legal perspective, it would also require a substantial amendment of the TFEU, particularly Article 25 and the no bail out clause, resulting in a very long lead time.

Red-Blue bonds

The red-blue bond proposal[41] was put forward in 2011 by Jacques Delpla and Jakob von Weizsäcker. The two economists came up with a design based on the division of public debt into two tranches: the first, up to 60% of GDP, is the blue bond, with senior status and the feature of being jointly and severally guaranteed by the participating countries. All remaining debt issued (over 60% of GDP) would be identified with red bonds, with junior status.

Blue bonds would thus be the part of the debt with the characteristics of a safe asset, such as US Treasury bonds, including high stability and liquidity. This would allow the euro to establish itself as a reserve currency, as previously advocated, and would allow Member States to obtain financing at limited prices. Simultaneously, the allocation of red bonds would serve as an incentive for governments to uphold fiscal discipline. It is worth noting that a significant proportion of red bonds would result in elevated financing costs and a tightening of market credit. Delpla and von Weizsäcker (2011) emphasize these aspects and highlight the importance of excluding this portion of the debt from banking systems. This separation helps ensure that the consequences of potential fiscal laxity are contained and that the overall stability of the financial system is safeguarded.

Therefore, this proposal would align with what was advocated earlier, i.e., the synthesis of the risk reduction vision and the risk sharing vision.

Blue debt would be covered by common guarantees from each country and would be characterized by a probability of default close to zero. Each member state would guarantee the Blue debt of every other country issued the following year, giving it the status of a safe asset. This advantage is, of course, subject to the fulfillment of several stringent conditions. As already mentioned, one of these would be the 60 percent limit

[41] This proposal is also known as “approach 2” of the EC’s (2011) Green Paper on Stability Bonds.

on issuance relative to GDP, a condition that could see an even more stringent limit as needed. An independent stability council would issue this amount of debt, and the allocation would be decided jointly by the member states have the necessary conditions to place these instruments, as specified by the authors in their article for Bruegel Policy Contribution: *"Any country voting against the proposed allocation would thereby decide neither to issue any Blue Bonds in the coming year nor to guarantee any Blue Bonds of that particular vintage"*. The issuance of these instruments would also have to be treated like the issuance of existing national debts, thus requiring the creation of a joint debt agency to which such revenues would be directly transferred.

On the other hand, red debt would consist of the amount of debt issued more than 60% of GDP and could and would be honored only after the entire blue debt has been fully serviced. It would not be guaranteed by the other member states and would not be bailed out by the other European mechanisms (i.e. ESM). However, it's important not to overlook the disadvantages of this design, especially when considering countries like Italy, where the debt-to-GDP ratio exceeds 130 percent. In such cases, the red bond portion would be disproportionately large. Given their junior status and the inability to use this portion of the bonds as collateral, the interest rates on this debt could potentially be very high, risking unsustainability. While blue bonds might receive a higher credit rating and lower interest rates, red bonds could face rising interest rates due to reduced liquidity in their market, increasing the risk of default.

As mentioned above and given the no-bailout clause concerning this portion of the debt, it should not contribute to banking in any way. Doing so would make it more credible to let states that overextend this portion of debt go bankrupt, thereby favoring policies of national fiscal discipline.

It is indeed essential to consider the benefits that could result from this proposal. Smaller states would enjoy increased liquidity, stronger states would not have to bear

the full weight of the more indebted states' risk of default, and the latter would be incentivized to implement domestic policies aimed at achieving tighter fiscal discipline.

Eurobills

The Eurobills proposal was formulated by professors Cristian Hellwig and Thomas Philippon in 2011[42]. It entails the issuance of debt with a maturity of less than one year, amounting to a maximum of 10 percent of the GDP of the entire Eurozone, by a joint debt management office (DMO). The DMO would gather the needs and requests from member states for the issuance of bonds with maturities of less than one year before each quarter. Subsequently, at the beginning of the quarter, Eurobills would be issued to fulfill these requirements. Notably, under this proposal, countries would be prohibited from independently issuing any further short-term debt, while they would still have the ability to issue their own debt with maturities of two years and beyond.

Hellwig and Philippon argue that the utilization of short maturities in Eurobills enhances their seniority and credibility when compared to longer-term Eurobonds. This is due to the inherent characteristics of short maturities, such as the requirement for regular rollovers of the common debt. The regular rollovers provide an ongoing mechanism for enforcing fiscal discipline, as member states must consistently meet their financial obligations. The use of Eurobills as a tool to enforce fiscal discipline becomes more feasible and effective due to the shorter-term nature of these instruments.

To highlight the advantages of this maneuver, some numerical examples are presented (Altomonte, 2013). The issuance of Eurobills by countries such as Spain, Italy, and Belgium for their entire allotted quota for 2011 would have been sufficient to cover half of the refinancing needs for the following year. For Italy, this would have translated into a saving of approximately 5 billion euros through the reduction of short-term interest

[42] Article published on VoxEU - https://cepr.org/voxeu/columns/eurobills-not-eurobonds.

rates. However, according to other sources (Gilbert, Hessel, & Verkaart, 2013) the purpose of the program would have rather limited effects due to its restricted nature.

4.4.3. NO DEBT MUTUALIZATION

In principle, to sustain eurozone fiscal integration and debt stability, it is not strongly necessary to resort to debt mutualization. Indeed, several of the proposed designs make use of other methods to achieve the objectives of risk sharing and risk reduction.

Eurobonds, without debt mutualization, refer to a concept where member states of the Eurozone issue joint bonds to finance common projects or initiatives, without assuming collective responsibility for each other's debts. Common among these proposals is the need for the creation of a European Debt Agency (EDA) or any public entity of a European nature to manage the issuance of the instruments. In this framework, the issuance of Eurobonds would involve the pooling of resources from participating countries, allowing them to access the financial markets at more favorable interest rates. However, unlike the traditional idea of debt mutualization, each member state would remain responsible for servicing its own share of the bond, bearing the full weight of its own debt burden. This approach aims to foster cooperation and solidarity among Eurozone nations while maintaining the principle of fiscal responsibility at an individual country level.

We can analyze two main proposals that follow this approach:

- E-bonds
- SBBS

E-bonds

More recent research conducted by Zettelmeyer and Leandro (2018), delves into the analysis of E-Bonds. Their findings indicate that E-Bonds possess appealing characteristics in terms of safety, liquidity, and incentives.

Given these compelling attributes, the authors propose that further examination and evaluation are essential to fully comprehend the potential impact of E-Bonds. This includes assessing their potential size, attractiveness to investors, and how their introduction might affect national bond markets.

E-bonds are instruments issued by a public entity of a European nature (i.e. EDA) with the purpose of raising funds and financing from Member States and issuing unconditional senior loans in return, aiming at the subordination of all national debt to the loans received from the common issuer of the European safe asset. The use of seniority, combined with a size cap, would render the E-bonds safe, resorting neither to securitization, nor to mutualization of debt (current or future), nor to joint guarantees (Giudice, de Manuel, & Kontolemi, 2019). These conditions would make this instrument particularly attractive in the eyes of northern European states, i.e. those most opposed to debt mutualization for political and moral hazard reasons.

The seniority of EDA-guaranteed loans could be secured through various channels, such as an inter-governmental agreement, a specific clause in the loan agreement or a subordinate clause in new national debt contracts. In addition, this proposal would not require any changes to the EU treaties, since in practice states would remain liable to their creditors.

SBBS

The final class of instruments we will examine is Sovereign bond-backed securities (SBBS), first proposed by Brunnermeier, et al. (2011)[43] and then studyed by ESRB High-Level Task Force on Safe Assets (2018). This category involves pooling government bonds issued by countries within the euro area and then dividing them into senior (ESBies) and junior securities (EJBies) (Giudice, de Manuel, & Kontolemi, 2019). The senior securities represent a higher level of security and are given priority in terms of repayment. On the other hand, the junior securities carry a higher risk profile and are subordinate to the senior securities in terms of repayment priority.

The objective of SBBS is to enhance risk-sharing and diversification across the euro area. By pooling the government bonds, the risk associated with individual countries' debts can be spread among a broader investor base. This pooling mechanism aims to reduce the vulnerability of individual countries to market shocks or fiscal distress by creating a more robust and diversified investment product.

The creation of senior and junior securities within the SBBS structure allows for the differentiation of risk and return profiles. Senior securities typically offer lower yields but higher security, appealing to risk-averse investors. Junior securities, on the other hand, may provide higher yields to compensate for the additional risk undertaken. This instrument requires, like others, the figure of a European institution to purchase this diversified portfolio of national securities through the funds received by issuing the securities in the two tranches.

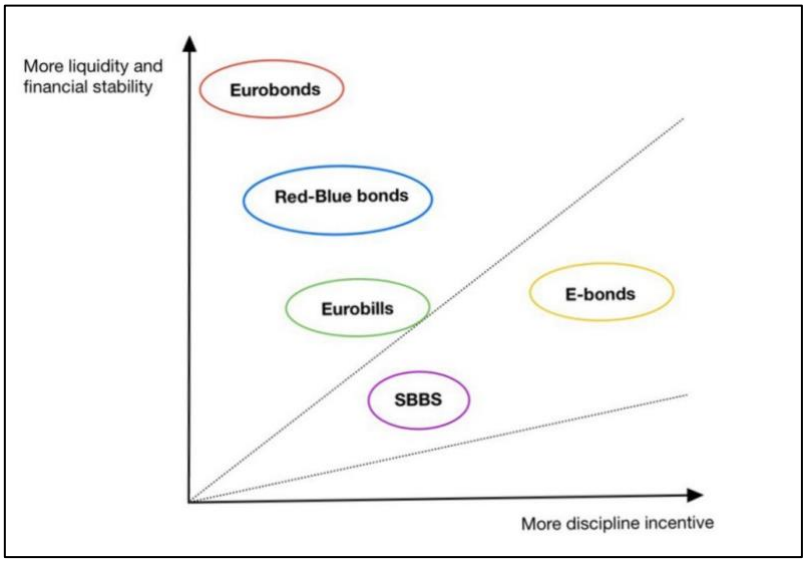
A default by a member state would indeed have an impact on the payments to the holders of the junior tranches, but the payments of the senior tranches would remain unaffected. Recent studies, such as the one conducted by Brunnermeier et al. (2017), have explored the minimum amount of junior tranche issuance required to keep the

[43] Actually Brunnermeier et al. in 2011 proposed a paper focusing on ESBies, the senior bond tranche of SBBSs. Later, the study was expanded by introducing the junior tranche (EJBies) as well.

expected loss rate at 5 years below 0.5 percent, and the findings indicate that a minimum of 30 percent junior tranche issuance is necessary to achieve this threshold.

The intensive review by the High-Level Task Force of the ESRB finally defined certain factors necessary to wish for the feasibility of this proposal, focusing in particular on the need to implement stricter regulation.

Figure 10 Map of different designs



4.5. *FILLING THE GAPS BETWEEN PROPOSALS*

4.5.1. RULES AND REFORMS

Indeed, the introduction of Eurobonds hold the potential to foster fiscal integration within the eurozone and promote fiscal discipline. These instruments can contribute to addressing moral hazard concerns through different designs and mechanisms. However, it is crucial to acknowledge that the implementation of a common debt instrument alone would not be the sole solution to achieve these objectives.

Comprehensive reforms of fiscal rules within the eurozone are necessary to complement the introduction of Eurobonds. Strengthening provisions related to countries' budgets and macroeconomic dynamics is vital to ensure the effectiveness and sustainability of fiscal integration. This comprehensive approach entails implementing robust monitoring mechanisms, enforcing fiscal discipline, and fostering accountability among member states.

By combining the introduction of Eurobonds with comprehensive fiscal reforms, the eurozone can establish a framework that promotes responsible fiscal behavior, strengthens economic governance, and encourages long-term stability. This holistic approach recognizes the need for a multi-faceted strategy to address the complexities and challenges of fiscal integration within the eurozone.

First of all, a reform should provide for strict rules for the agency in charge of issuing and managing the common debt. One approach to managing the surplus could involve a reduction in contributions by member states in the future. This would allow for the redistribution of the surplus funds back to the contributing countries, reducing their financial burden. Alternatively, the surplus could be retained in the Union's coffers, creating a safety buffer to mitigate the impact of exogenous shocks that affect the entire union.

Another consideration is the possibility of keeping the surplus funds within the agency responsible for issuing Eurobonds. This could be justified by the intermediation margin resulting from the services provided by the agency. By retaining the surplus, the agency could cover operational costs, ensure financial stability, and potentially generate additional income to support its operations (Giavazzi, Guerrieri, Lorenzoni, & Weymuller, 2021).

Referring to the Union's tax system more broadly, there are some key objectives that should be pursued to promote integration. Firstly, there is a need for simplification of the existing rules to create a streamlined and transparent system that can efficiently

address the internal needs of the Union. Secondly, a comprehensive reassessment of laws is necessary to incentivize member states to reduce their debt burdens while still allowing national governments the flexibility to utilize their fiscal authorities independently to achieve stability objectives.

In this regard, following the three-year suspension of the Stability and Growth Pact in response to the pandemic, the European Commission published a document in 2022[44] proposing a revision. While the parameters regarding debt and deficit (60% and 3% of GDP, respectively) would remain unchanged, there would be modifications in the calculation of expenditures and the methods for countries to return within the target range. Simultaneously, efforts would be made to strengthen the credibility of the system, which has been weakened in recent years due to the lack of sanctions for less fiscally prudent states. Indeed, credibility is a crucial concept for the success of both the system reform and the introduction of Eurobonds. As discussed extensively before, trust in the institutions' provisions plays a pivotal role, as exemplified in the case of the United States. The firmness of the no-bailout clause in the early 19th century in America facilitated a solid and enduring transition to common debt. In the European context, it would help overcome political challenges and opposition, fostering internal initiatives by member states aimed at converging towards the targets established by the Stability and Growth Pact.

[44] See European Commission, *Communication on orientations for a reform of the EU economic governance framework* (2022)

4.5.2. A EUROPEAN FEDERAL BUDGET

As highlighted earlier in this chapter, the completion of the monetary union involves not only the adoption of common debt but also the consolidation of national budgets into a supranational budget.

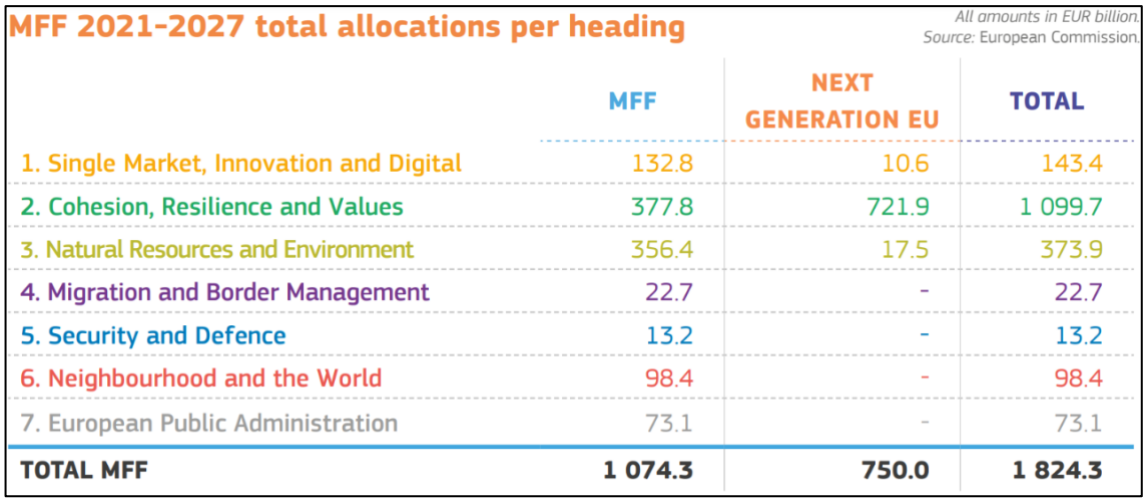
This centralization would enable the implementation of fiscal policies at the aggregate level and could involve the establishment of automatic transfer mechanisms. These mechanisms would serve as an insurance mechanism, automatically transferring resources to countries facing crises. However, it is foreseeable that this proposal would encounter the same opposition witnessed in the case of common debt adoption. As mentioned before, it would lack the "deep variable" of a sense of community unity and trust among member states.

Drawing from the example of the late 1700s American Revolution, the slogan "no taxation without representation" can be applied to analyze the situation in the Eurozone. A fiscal union would necessitate member states being willing to relinquish their autonomy over taxation to a supranational body, which would require a certain degree of political union.

As of today, the European budget is structured under a Multi-Year Financial Framework, which is a long-term budgetary plan outlining resource allocations for the next seven years. The current budget, in effect for the years 2021 to 2027, per year amounts to approximately 1 percent of European GDP.

Regarding expenditures, the EU budget designates 85% of its funds to areas such as infrastructure, structural funds, and agriculture. On the revenue side, the main sources of funding include national contributions, which are proportionate to each member state's GDP and account for 70% of the total budget. Customs duties and a portion of member countries' VAT revenues also contribute to the funding of the European budget.

Figure 11 Allocations for EU budget per heading



MFF 2021-2027 total allocations per heading

All amounts in EUR billion.
Source: European Commission.

	MFF	NEXT GENERATION EU	TOTAL
1. Single Market, Innovation and Digital	132.8	10.6	143.4
2. Cohesion, Resilience and Values	377.8	721.9	1 099.7
3. Natural Resources and Environment	356.4	17.5	373.9
4. Migration and Border Management	22.7	-	22.7
5. Security and Defence	13.2	-	13.2
6. Neighbourhood and the World	98.4	-	98.4
7. European Public Administration	73.1	-	73.1
TOTAL MFF	**1 074.3**	**750.0**	**1 824.3**

The European budget is administered through three distinct modes. Approximately 20% of the budget is under direct management by EU agencies, wherein these agencies are responsible for overseeing the allocation and utilization of these funds. The majority of the budget, around 70%, follows a shared management approach. This means that member states play an active role in the implementation and administration of these funds. The European allocations are managed and distributed by the respective member states to support various projects and initiatives within their territories. Finally, the remaining portion of the budget, which constitutes a smaller fraction, is managed indirectly. This involves entrusting funds to third countries or international organizations for specific projects or programs. This mode of management allows the European Union to engage in collaborative efforts and provide financial support beyond its borders.

As previously mentioned, European Union revenues are derived from various sources. Approximately 10% of the EU's revenues come from customs and agricultural duties. Another 10% is generated from VAT revenue shares collected by member countries. The largest share, constituting 70% of the EU's revenues, is derived from government

contributions, which are proportionate to the GDP of each member state. These contributions serve as a critical source of funding for the EU budget.

In recent times, a new source of revenue has been introduced, accounting for approximately 3-4% of the total. This source involves a national contribution based on the amount of waste from non-recycled plastic packaging, an initiative aimed at promoting environmental sustainability.

Moreover, in response to the challenges posed by the pandemic crisis, the Next Generation EU initiative has exceptionally allowed the use of loans as an additional funding mechanism.

As elaborated throughout the thesis, the need for more integration within the European Union has become increasingly apparent. The discussion surrounding the 2021-2027 budget has reignited the debate, initiated in 2014, regarding the reform of the EU's own resources. This reform has been prompted by the necessity to repay loans used for crisis support packages.

The primary objective of this reform would be to diminish reliance on national contributions and strive for greater financial autonomy. By reducing dependence on member states' contributions, the European Union seeks to enhance its fiscal capacity and strengthen its ability to address economic challenges, undertake critical projects, and support its policy objectives.

Indeed, pursuing the goal of reducing dependence on national contributions and achieving greater financial autonomy in the European Union would not only reinforce the idea of introducing a common debt but also necessitate the consideration of common taxation. While this approach is often met with reluctance from member states, it holds significant potential benefits.

By implementing a system of common taxation, the EU could attain greater spending autonomy in supporting member countries and common policies. This would allow for

more efficient and effective allocation of resources, promoting economic growth and cohesion within the Union.

Furthermore, common taxation would facilitate streamlined debt management at the community level. It would enable the EU to manage surpluses and deficits collectively, ensuring a more coherent and strategic approach to debt management. This would contribute to enhancing the Union's financial stability and resilience to economic challenges.

5. EMPIRICAL STUDY ON BALANCE SHEET SIZES TO SUPPORT THE ISSUANCE OF EUROBONDS

Let us now introduce a brief analysis of the budget size required for the adoption of Eurobonds. As introduced in previous chapters, the issue of common debt issuance cannot leave out the need for it to be backed by a certain amount of surpluses. We are aware that a European budget, albeit a relatively modest one, already exists. However, in the case of common debt issuance, it would need to be substantially expanded to generate surpluses that can support the issuance of debt, its eventual repayment, and the return of the debt-to-GDP ratio within the set limits.

The question we ask concerns the amount of surpluses required to finance the common European debt.

To this end, it will be necessary to work through several assumptions.

The model will be initially introduced, providing a brief overview of its structure. Subsequently, the dynamic functions governing the movements of the variables of interest will be derived, allowing for a deeper understanding of the model's mechanics. The analysis will then focus on the roles of interest rates and GDP growth, investigating their implications and assumptions.

Furthermore, the study will delve into debt dynamics, examining the deficits required to align the Eurozone's debt-to-GDP ratio with several strict parameters. This analysis will be instrumental in ensuring the long-term solvency of the Eurozone and its ability to meet the fiscal criteria that could be imposed in this regard. By exploring these aspects, we aim to provide valuable insights into the implications of various fiscal policies and their potential impact on the Eurozone's economic stability.

The Model

We begin by defining the concept of a state's financing requirements (surplus if positive, deficit if negative):

$$F_t = (G_t - T_t) + rB_{t-1}$$

Where G_t = government spending, T_t = taxes, B_{t-1} = government debt at time $t - 1$, r = interest rate paid on public debt, rB_{t-1} = interest expenditure on pre-existing public debt and $(G_t - T_t)$ = primary deficit (primary deficit if > 0 or primary surplus if < 0). Then, the coverage of this requirement is:

$$F_t = (B_t - B_{t-1}) + (M_t - M_{t-1})$$

Where (Mt - Mt-1) consider the printing of money (not considered[45]) or by resorting to debt issuance (Bt - Bt-1).

By matching the two equations we obtain the state budget constraint:

$$(B_t - B_{t-1}) = (G_t - T_t) + rB_{t-1}$$

This equation tells us how public debt evolves over time. However, more than the value of absolute public debt, we are interested in the ratio of public debt to GDP, which is more relevant for understanding its dynamics and assessing its sustainability. For this purpose, we divide the previous equation by Y_t (GDP) and multiply by the terms referring to t-1for $\frac{Y_{t-1}}{Y_{t-1}}$.

$$\frac{B_t}{Y_t} - \frac{B_{t-1}}{Y_t}\frac{Y_{t-1}}{Y_{t-1}} = \frac{G_t - T_t}{Y_t} + \frac{rB_{t-1}}{Y_t}\frac{Y_{t-1}}{Y_{t-1}}$$

[45] The analysis will exclude the variable of debt monetization, and the primary focus will be on defining the parameters of solvency and the path towards stability solely through the study of primary surpluses.

The ratios of the variables to GDP are denoted by lowercase letters and n indicates the growth rate of the GDP.

$$b_t - b_{t-1}\left(\frac{1}{1+n}\right) = (g_t - \tau_t) + rb_{t-1}\left(\frac{1}{1+n}\right)$$

And by subtracting b_{t-1} from both sides:

$$b_t - b_{t-1} = (g_t - \tau_t) + \left(\frac{r-n}{1+n}\right)b_{t-1} \qquad \text{or} \qquad b_t = (g_t - \tau_t) + \left(\frac{1+r}{1+n}\right)b_{t-1}$$

The latter describes the evolution over time of the ratio of debt public and GDP. The evolution of the ratio depends, in addition to b_{t-1}, on primary requirements, the interest rate (r), the growth rate of the GDP (n).

Of course, talking about the dynamics of these variables implies having to evaluate their evolution. We therefore indicate the changes in the unit of time with a dot on the indication of the variable itself, so that $\frac{db}{dt} = \dot{b}$. Thus, by simplifying and approximating the previous formulas we obtain:

$$\dot{b} = (g - \tau) + (r - n)b$$

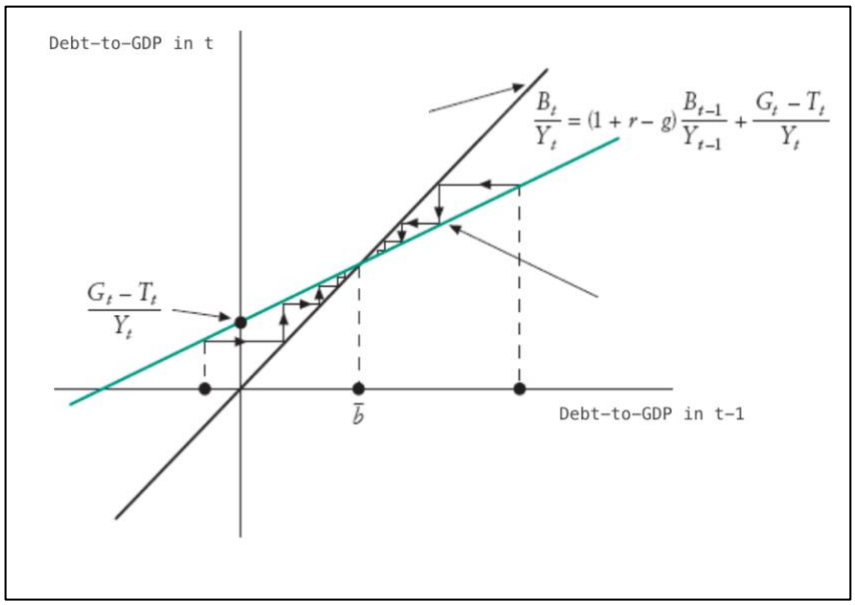
Having expressed the dynamics of debt in this way, we can write the fundamental condition for its solvency, namely

$$\dot{b} = 0 \qquad \text{s.t.} \qquad g - \tau = (n - r)b$$

The scenarios of the debt ratio in the long run that can then occur in this case are mainly four.

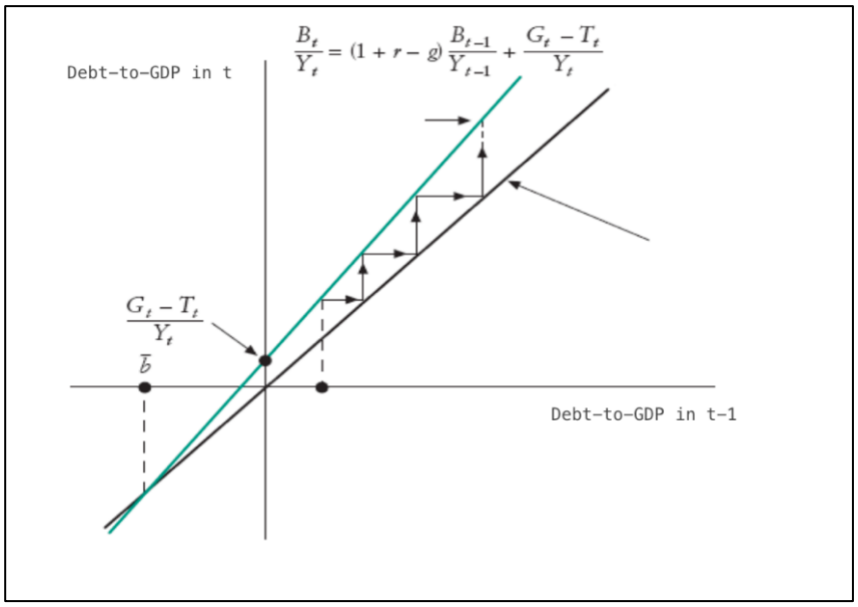
If there is $G - T > 0$ and $n > r$ in the economy, then the debt-to-GDP ratio will converge to its steady-state value over time, and the government will be in debt. The ratio then converges to the equilibrium value of primary deficits.

Figure 12 Debt-to-GDP ratio if G>T and n>r



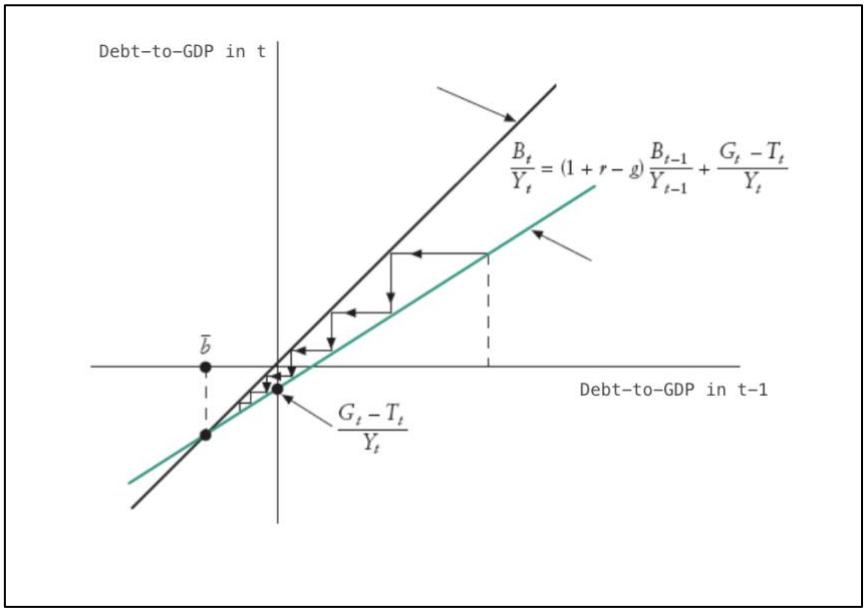
If, on the other hand, $n < r$ occurs in the same situation, the debt ratio does not converge to the steady state and the government is a creditor. The ratio then gradually diverges from equilibrium.

Figure 13 Debt-to-GDP ratio if G>T and n<r



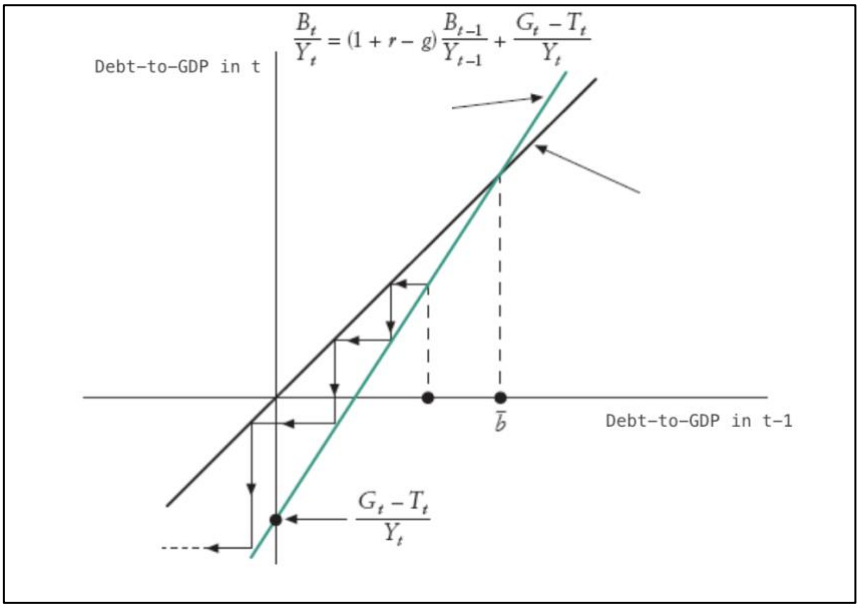
In the third case, where the primary surplus is positive, $T > G$, and $n > r$, the debt-to-GDP ratio converges to equilibrium and the government is a creditor.

Figure 14 Debt-to-GDP ratio if T>G and n>r



Finally, in this case of positive primary deficits and a GDP growth rate less than the real interest rate, the debt-to-GDP ratio tends to decline over time with the government remaining in debt.

Figure 15 Debt-to-GDP ratio if G<T and n<r



This last situation represents a unique case. The coexistence of a primary surplus and a real interest rate surpassing the economy's growth rate implies that, formally, there exists an equilibrium level for the debt ratio (denoted as $\bar{b}$). This level is determined by the point where the line describing the dynamics of the debt ratio intersects with the bisector. However, this equilibrium level is not stable in the sense that the economic system will not naturally converge to it. If the system starts with an initial point where $b < \bar{b}$, it would result in a continuous reduction in debt. Conversely, if $b > \bar{b}$, debt would tend to grow uncontrollably, becoming unsustainable. To address this issue of debt sustainability, the only solution would be to generate larger primary surpluses. This would shift the straight (*green*) line to the right, in the case of an explosive debt situation, and consequently lead to a decrease in the steady-state debt level.

The role of interest rates

As mentioned earlier, the analysis to be carried out thus presupposes that assumptions are made about the dynamics and values of the variables involved. Therefore, let us try to study what the values of interest rates might be in the case of adopting common debt.

As for the value of the interest rate on debt, we can use several strategies to derive it. This could be assumed from a weighted average among Eurozone rates, the rate imposed for the NGEU, or those expressed on the ESM.

European interest rate dynamics have been significantly influenced by the diverse responses employed by the European Central Bank in addressing the crises of the new millennium. In recent years, exceptionally low interest rates were a prominent feature due to the implementation of the Quantitative Easing policy by the central bank to stimulate the economy. Until 2020, the Eurozone experienced below-target inflation and interest rates hovering close to or near zero.

However, the situation has undergone a dramatic transformation driven by the imperative need to swiftly and effectively respond to rising inflation. As a result, the ECB has adjusted its approach to monetary policy and interest rates in order to tackle this new economic challenge. The interest rate increase kicked off in July 2022 and continues steadily at present, with periodic increases of 0.25 to 0.75 percent.

In May 2023, the Directorate General for Internal Policies published a study that concentrated on predicting future interest rate dynamics. The study took into account the implementations of new pandemic crisis support packages, in particular the NGEU. The focus of this study was on estimating the 10-year swap rates, which are regarded as a reliable proxy[46] for EU yields, allowing for insights into the potential changes in interest rates in the European Union.

[46] The choice of using 10-year swap rates as a proxy for EU yields in the study is driven by several factors. EU bonds, which underpin European packages like SURE and NGEU, share similarities with swaps. These similarities include a large market size and widespread use in hedging and positioning activities. Moreover, both instruments offer the flexibility to manage various interest rate risks arising from different maturities, liabilities, and assets. Considering these characteristics, 10-year swap rates serve as an appropriate and reliable indicator for estimating future interest rate dynamics in the European Union.

From their analysis, conducted through the use of two confidence intervals, 50% and 90%, it shows that with a 50% probability, investors expect it to be in the 1.9% to 3.7% range in 2026, while the 90% probability interval ranges from 0.1% to 6.2%, as shown in the picture below.

Figure 16 10-year swap rate, expected rate and option-implied confidence intervals (in %)

Source: Claeys, McCaffrey, & Welslau, 2023

In the analysis conducted in this essay, however, two distinct methods for estimating interest rates were selected. The choice was made because no other rate appeared to align with the potential value associated with common debt securities. It's worth noting that the ESM rate, although not included in the analysis due to being lower than the growth rate, was another option.

The estimates employed were computed as weighted averages, taking into account each country's GDP. In the first scenario, the estimate was derived from historical data on long-term interest rates, whereas in the second scenario, forecasts for the upcoming year from the OECD were utilized.

By employing these interest rates as reference, we aim to draw relevant insights and make informed assessments regarding potential Eurobond rates. These rates offer valuable information about the values that securities might assume when placed on the market and can serve as a helpful benchmark for our analysis.

Analysis

We proceed with the analysis of the size of the European budget required to support the issuance of Eurobonds. To ensure a comprehensive outlook, we make multiple assumptions concerning the amount of debt to be raised in the Eurozone. Our calculations consider figures in line with the 60 percent debt-to-GDP ratio limit specified in the Maastricht Treaty[47], as well as more stringent limits.

To carry out the analysis, it was therefore decided to assume different scenarios of growth rates and interest rates to allow for a more complete view. In this regard, two scenarios were studied.

1. In the first scenario, a decision was made to utilize the average interest rates of Euro area[48] spanning the period from 2001 to 2022 as a proxy for estimating interest rates for a European safe asset. This choice was motivated by the necessity to obtain credible interest rate estimates. Relying solely on projections for future years (as for the second scenario concerning 2024) would expose the analysis to potential fluctuations. By utilizing historical data, it becomes possible to gain a more realistic, albeit somewhat abstract, perspective on the Eurozone's situation. Interest rate data were collected from the OECD, disaggregated by states, for the period between 2001 and 2022. Subsequently, these rates were averaged across the entire period, and then a GDP-weighted average was computed. Regarding GDP growth data, these figures were retrieved from the World Bank, already categorized as Eurozone rates, covering

[47] It's important to emphasize that the Maastricht Treaty's limits were formulated to be applicable to each individual state, not at the community level. Therefore, in this context, the treaty's limit is utilized as a reference without the presumption that it should be binding upon the introduction of common debt.
[48] The average was calculated excluding Bulgaria, Slovenia, and Croatia for data homogeneity issues.

the period from 2001 to 2022. Subsequently, these rates were averaged across the entire period.

Calculations on these data then led to estimates of the following proxies:

Long-term interest rate	
GDP- weighted average	2,96 %
Growth rate	
Eurozone average	1,22%

Table 1 Data used from estimation - Source: own estimation from World Bank and OECD data.

The first analysis conducted then concerns the size of deficits or surpluses needed to reach a steady state, given a debt target to be met.
As such, we report the formula used for estimation and previously derived:

$$\dot{b} = 0 \qquad \text{s.t.} \qquad g - \tau = (n - r)b$$

Applying the formula, we then find that the deficits needed to achieve a debt level of 20%, 30% and 60%, respectively, are:

b	$(g - \tau)$	Absolute terms (EU GDP 14 500 b. €)
20%	-0,349%	-50,64 billion €
30%	-0,524%	-75,96 billion €
60%	-1,048%	-151,91 billion €

Table 2 Steady state results 1

As indicated by the data, achieving a steady-state debt level of 20, 30, and 60 percent would require moderate surpluses.

This suggests that, despite the slower GDP growth rate relative to the interest rate, the debt reduction goal can still be attained in a sustainable manner without imposing excessive fiscal constraints.

This scenario closely resembles the fourth case discussed earlier. In this context, marked by $G < T$ and $n < r$, reaching the steady-state level would be unattainable unless stringent policies are enforced to generate surpluses substantial enough to drive down the steady-state debt level. The presented data would then represent the magnitude of surpluses required to achieve this objective, which, however, are determined to be sustainable and not overly burdensome[49].

All in all, it is noteworthy that this method of estimating interest rates does not take into account the benefits of the introduction of Eurobonds and the resulting reduction in interest rates. Here the rates are merely a weighted average of the states' long-term rates, and no impact on the risk premium that a common issue might have, is assessed.

2. In the second possible scenario, we conducted the same calculations and steps of the previous analysis, but with modifications to the assumptions about the values of the variables.

   For the estimation of GDP growth, we utilized data from GDP estimates spanning from 2023 to 2036 from OECD. As for the calculation inherent to the values required to reach the steady state the growth rate of 2024 was considered and held constant.

   The estimation of interest rates, on the other hand, was conducted through an average of interest rate forecasts (given by the OECD[50]) weighted by the GDP of

[49] A moderate deficit is generally understood to be a deficit of less than 3 percent of GDP. in fact, this value is taken as a benchmark in several advanced economies.

[50] OECD: Long-term interest rates forecast refers to projected values of government bonds maturing in ten years. It is measured as a percentage. Forecast data are calculated by making an overall assessment of

each country. The reference value, held constant in the analyses for the reasons already specified above, takes into account projections for 2024 by OECD.

Long-term interest rate	*as of 2024*
GDP- weighted average	3,7%

GDP growth	
2023	2,12%
2024	1,43%
2025	1,23%
2026	1,17%
2027	1,15%
2028	1,13%
2029	1,11%
2030	1,09%
2031	1,07%
2032	1,05%
2033	1,03%
2034	1,01%
2035	0,99%
2036	0,98%

Table 3 Data used for calculations – source: own estimation from OECD data

The steady-state study, performed using the same model as in the previous analysis, reveals similar outcomes in this scenario. Like before, here we have a situation where $n < r$, indicating that the economy grows at a rate lower than the interest rate. In such circumstances, the economy cannot stabilize at a

the economic climate in individual countries and the world economy as a whole, using a combination of model-based analyses and statistical indicator models.

specific value (known as the steady state value), but it can still achieve the debt reduction target through the creation of primary surpluses.

b	$(g - \tau)$	Absolute terms (EU GDP 14 500 billion €)
20%	-0,454%	-65,88 billion €
30%	-0,682%	-98,83 billion €
60%	-1,363%	-197,65 billion €

Table 4 Steady state results 2

As observed in the table, even in this case, the deficits required would be moderate, without necessitating highly restrictive policies.

This case is considered as a complement to the preceding one. Whereas in the former, proxies were employed to reflect the past situation of the Eurozone, in this instance, the analysis pertains to its future condition. In both cases, the findings seem to indicate similar outcomes with a comparable degree of consistency.

The situation described above highlights how, even when facing interest rates higher than the GDP growth rate, which is consistent with the current European situation and Central Bank policies aimed at combating inflation, the objective of debt reduction can still be achieved. This requires very prudent fiscal management that is simultaneously sustainable over the long term.

To accomplish this, it is essential to maintain a high enough primary surplus to cover the interest on public debt and enable a reduction in the debt-to-GDP ratio. If the primary surplus were too low, it would not be sufficient to bring down this ratio effectively. Additionally, it is crucial to achieve these fiscal goals in a sustainable manner that does not severely impact social growth and preserves long-term economic well-being.

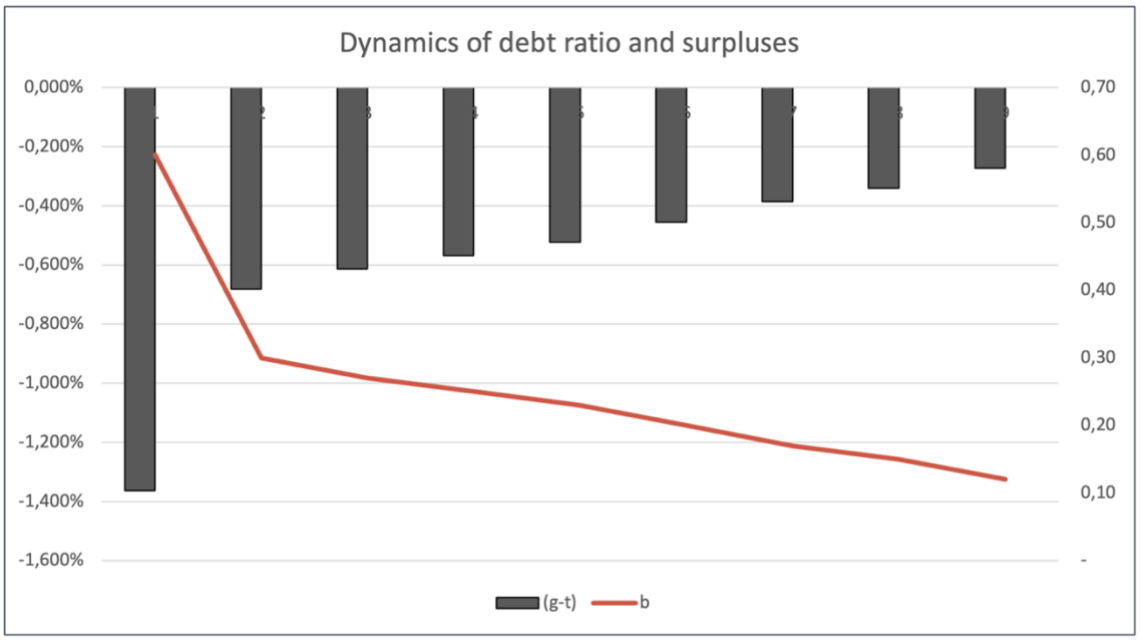
This reaffirms the importance of implementing prudent fiscal policies and employing common debt instruments like Eurobonds to achieve a more stable and sustainable financial position within the Eurozone. Furthermore, it emphasizes how the introduction of common debt can also be sustainable when assessing the reduction of the debt load.

Findings

Indeed, it is essential to acknowledge that the analyses conducted in this study rely on certain assumptions and constant variables, which may not fully capture the dynamic nature of the economy. As the economy is continually evolving, especially in times of uncertainty, the situations observed today might undergo rapid changes even in the near future.

Factors such as GDP growth rate, interest rates, and fiscal policies can all fluctuate over time, significantly influencing the outcomes and estimates presented in this analysis. Changes in global economic conditions, geopolitical developments, and unexpected events like the emergence of new crises can all have profound effects on the economic landscape and fiscal prospects of the Eurozone.

Figure 17 Debt-to-GDP dynamics given the surpluses



In summary, the study has provided insights, based on strict adherence to its assumptions, into the size of a European budget required in the scenario of joint debt issuance. Additionally, the accompanying graph (designed with the 2024 data) illustrates how higher debt ratio targets are associated with higher deficits. This relationship emerges because reducing the debt ratio demands greater efforts as the debt amount increases. With higher government debt, there is a larger interest payment burden, necessitating a more substantial primary surplus to achieve debt reduction.

As government debt rises, it becomes progressively more challenging to effectively manage and lower the debt-to-GDP ratio. The findings underscore the importance of prudent fiscal management and the need for a balanced approach to debt reduction. A carefully structured budget and sustainable fiscal policies are essential to ensure and maintain long-term financial stability.

The final aspect to be addressed concerning the European budget is taxation. The issuance of common debt and the subsequent need to generate surpluses or deficits to ensure debt sustainability requires a substantial increase in European budget revenues. As known, the authority and decision-making regarding taxation still lie with national governments. Although the specifics of establishing an optimal European taxation system are beyond the scope of this analysis and left for future studies, it is essential to highlight the advantages and challenges of common taxation.

First and foremost, implementing an EU direct taxation system would lead to greater tax harmonization among member states, reducing distortions and enhancing efficiency by streamlining tax procedures. Additionally, the most significant benefit would be the integration of tax policy into European economic policies. On the other hand, member states might be hesitant to relinquish this power for political reasons. Moreover, such a system may struggle to adequately address differences in national and regional specificities.

In any case, the analysis demonstrated that the surpluses required to support the issuance of Eurobonds are sustainable. In fact, to reach a debt-to-GDP ratio of 60

percent and facilitate the issuance, it would suffice to double the current European budget's size, which would be equivalent to 2 percent of EU GDP.

6. CONCLUSION

In conclusion, this thesis has delved into the intricate landscape of the Eurobonds and common debt issuance, shedding light on its inherent vulnerabilities and challenges.

The analysis began by delving into a prior, though somewhat akin, scenario of shared debt assumption, that of United States. Within the paper, this was frequently alluded to as a point of reference, evoking the prospect of Europe undergoing its own unique "Hamiltonian moment". In the post-Independence War context, the states had consented to consolidate their debt and its subsequent issuance using common instruments. Initially, there was a prevalent moral hazard perception among the states, with many believing they could freely accumulate debt, relying on other states to bail them out in case of default. However, this perception changed when the Treasury Secretary made a public announcement that the federal government would not guarantee any bailouts to states. This decision encouraged the adoption of more cautious, responsible, and pragmatic fiscal policies.

Subsequently, considerable attention was devoted to an in-depth analysis of the current context that Europe finds itself in. The Sovereign Debt Crisis, which prominently exposed the vulnerabilities of a non-centralized system, as seen in the case of Greece and the speculation surrounding the country's potential default, marked a critical turning point. It drew attention to the concept of Fiscal Dominance, a theory suggesting that the ECB occasionally makes decisions influenced by fiscal considerations, going beyond the confines of its Treaty mandates. These events have played a more pivotal role than ever before in illustrating the shortcomings of the European system. Within this framework, a thorough examination was conducted regarding the challenges stemming from the incomplete Monetary Union, the crises that marked the new millennium, and the striking absence of a last-resort leader. All of these elements were scrutinized with the overarching aim of introducing a critical discourse on the pressing need for the implementation of a common fiscal policy, accompanied by a shared sovereign debt issuance.

The ongoing dynamics surrounding public debt have shed light on the pressing need for Europe to establish its own Safe Asset. Within this context, we explored the various ways, advantages, and disadvantages that the adoption of common debt would entail

within the European Monetary Union. This analysis delved into the motivations, concerns, and potential benefits, examining viewpoints ranging from staunch opposition to ardent support. Subsequently, we delved into an exposition of the diverse Eurobond designs proposed over the years, categorizing them based on whether they necessitated the implementation of debt mutualization. A comprehensive examination of factors ranging from the concept of moral hazard to potential liquidity benefits, from increased fragmentation to reduced risk, was conducted. This analysis encompassed both a general context and specific considerations for various designs. It demonstrated that a solution, while not flawless, indeed exists. This preliminary narrative only briefly touched upon the prospect of a more narrowly defined European Budget and the potential for a federal budget.

Afterward, we shifted our focus to the discussion of safe assets, including their advantages, disadvantages, and associated policy considerations. We then conducted an analysis to determine the prospective size of a federal budget required to support the issuance of European bonds. In this context, assuming the use of instruments like Eurobonds in the narrower sense, we demonstrated how a reduction in states' debt-to-GDP ratios could be achieved without the necessity of resorting to drastic measures in public spending or taxation. The analysis illustrated that even moderate surpluses, amounting to less than 3 percent of GDP, can facilitate the achievement of both stationarity and debt sustainability for countries. According to the analysis, it would be enough to double the amount of the European budget to support the issuance of Eurobonds, equivalent to 2 percent of EU-GDP.

The paper's primary aim, as reiterated throughout the chapters, was to illustrate that for every potential problem arising from the adoption of common debt, there appears to be a solution, at least in the author's perspective. This process is undoubtedly going to be protracted and complex, demanding substantial effort and dedication from member states and European institutions alike. It will entail the formulation of new regulations, likely the establishment of new authorities, and, above all, fostering trust.

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I. APPENDIX

Table 5 Public Debt and Deficits of Euro Area Member States

	Debt						Deficit	
	Debt in 2011 (€ billion)	**Country Share (%)**	**Debt per Head (€ thousands)**	**Debt-to-GDP Level in 2007**	**Absolute Change 2007–2012**	**Relative Change 2007–2012 (%)**	**Deficit in 2011 € billion**	**Country Share (%)**
Euro area 12	**8107.1**	**100.0**	**24.5**	**66.6**	**21.9**	**32.9**	**–427.7**	**100.0**
Germany	1955.9	24.1	23.9	64.9	10.3	15.9	–69.6	16.3
Italy	1912.3	23.6	31.5	103.6	16.3	15.7	–68.4	16.0
France	1746.7	21.5	26.8	63.8	26.0	40.8	–126.8	29.6
Spain	745.4	9.2	15.9	36.1	36.9	102.2	–68.4	16.0
Netherlands	402.1	5.0	24.2	45.3	22.0	48.6	–23.5	5.5
Belgium	367.1	4.5	33.9	84.2	17.9	21.3	–16.8	3.9
Greece	340.2	4.2	29.9	105.0	51.0	48.6	–16.8	3.9
Austria	209.4	2.6	24.9	59.3	14.0	23.6	–10.5	2.4
Ireland	169.7	2.1	37.9	25.0	89.3	357.2	–16.3	3.8
Portugal	152.6	1.9	14.3	62.7	29.7	47.4	–8.4	2.0
Finland	96.2	1.2	17.9	35.2	17.8	50.6	–3.0	0.7
Slovakia	31.5	0.4	5.7	29.6	17.8	60.1	–3.7	0.9
Slovenia	16.6	0.2	8.2	23.4	24.2	103.4	–2.0	0.5
Cyprus	11.9	0.1	14.7	58.3	10.1	17.3	–1.0	0.2
Malta	4.5	0.1	0.0	61.7	9.2	14.9	–0.2	0.0
Estonia	1.4	0.0	1.1	3.7	8.0	216.2	–0.3	0.1
	Relative to EA	Relative to EA	**debt per head**	Relative to EA	Relative to EA	Relative to EA	Relative to EA	Relative to EA
United Kingdom	1474.3	18.2	23.5	44.5	42.1	94.6	–152.5	35.6
Poland	200.8	2.5	5.3	45.0	14.6	32.4	–22.8	5.3
Sweden	151.2	1.9	16.3	40.0	-2.5	–6.3	–0.4	0.1
Denmark	115.4	1.4	20.9	27.3	21.9	80.2	–10.4	2.4
Hungary	75.0	0.9	7.5	66.1	15.5	23.4	–4.4	1.0
Czech Republic	66.0	0.8	6.2	29.0	16.2	55.9	–7.0	1.6
Romania	42.2	0.5	2.0	12.6	21.5	170.6	–6.1	1.4
Lithuania	12.0	0.1	3.7	16.9	31.4	185.8	–2.0	0.5
Latvia	9.7	0.1	4.4	9.0	47.6	528.9	–1.5	0.3
Bulgaria	7.6	0.1	1.0	17.2	3.6	20.9	–1.1	0.3
United States	10764.9	132.8	34.5	62.4	39.7	63.6	–970.7	227.0
Japan	10132.3	125.0	78.7	187.7	37.5	20.0	–291.7	68.2

Source: Stefan Collignon, Europe's Debt Crisis, Coordination Failure, and International Effects - AMECO. http://ec.europa.eu/economy_finance/db_indicators/ameco/index_en.htm; and European Central Bank.

Table 6 Main characteristics of EU bonds and comparable issuers

	EU	Germany	France	Spain	EIB	ESM/EFSF
Median credit rating	AAA	AAA	AA	A-	AAA	AAA/AA
Issuance volume 2022, EUR bn	176.6	448.75	595.17	232.57	44.22	58.06
Share of 2022 issuance by auction (A) and syndication (S)	A: 50% S: 50%	A: 96% S: 4%	A: 98% S: 2%	A: 87% S: 13%	A: 0% S: 100%	N/A
Total outstanding debt (EUR billion)	398.61	1,758.95	2,328.96	1,325.34	443.75	299.38
Average cover ratio in 2022 auctions (A) / syndications (S)	A: 1.85 S: 9.63	A: 1.9 S: N/A	A: 3.07 S: N/A	A: 2.15 S: 7.05	N/A	4.2
Average volume per 2022 issuance, EUR billion	A: 1.493 S: 4.773	A: 2.859 S: 4.250	A: 2.160 S: 4.000	A: 1.689 S: 7.500	S: 0.970	1.529
Haircut category at ECB	I (from 29 June 2023, before II)	I	I	I	II	II
Haircut on 10-year bonds in CCPs (LCH Ltd and LCH SA)	6.50% 8.00%	2.75% 3.50%	2.88% 3.75%	11.38% 12.25%	6.50% 8.00%	6.50% 4.5/8.0%
Share of collateral posted in European repo market	<0.2%*	12.5%	15.8%	4.8%	<0.2%*	<0.2%*
Liquidity indicators, 2022: - Average bid-ask spread - Average daily volume of trades, EUR billion	1.35 1.303	0.65 20.231	0.62 13.365	1.05 5.444	2.37 0.703	3.12/1.96 0.119/0.274
Example of bond indices inclusion (Sovereign or Quasi)	S&P Eurozone Quasi & Foreign Government Bond Index	S&P Eurozone Sovereign Bond Index	S&P Eurozone Sovereign Bond Index	S&P Eurozone Sovereign Bond Index	S&P Eurozone Quasi & Foreign Government Bond Index	S&P Eurozone Quasi & Foreign Government Bond Index
Existence of (i) futures market and (ii) repo facility	No In process	Yes Yes	Yes Yes	Yes Yes	No No	No Not active but possible
Obligations/incentives for primary dealers: - Participation in issuances - Quotation on electronic platforms/trading facilities - Active participation in secondary market	Yes In process Yes	Yes No No	Yes Yes Yes	Yes Yes Yes	N/A	Yes No No

Source: Claeys, McCaffrey and Welslau, The rising cost of European Union borrowing and what to do about it - Bruegel based on European Commission, Deutsche Finanzagentur, Agence France Trésor, Tesoro Público of Spain, ESM, EIB, Moody's, Fitch, S&P, DBRS, ECB, International Capital Markets Association (ICMA), Bloomberg, S&P Dow Jones, LCH Ltd, LCH SA.

SUMMARY

The issue of sovereign debt sustainability has taken center stage in Europe over the past two decades. Successive crises during this time have demonstrated the fragility of the current Monetary Union, primarily due to its lack of comprehensiveness. To address this deficiency, there is often a call to establish a fiscal union, and consequently, the issuance of common debt.

The current situation in the European Monetary Union is not unique; historical parallels can be drawn, with one of the most significant comparisons being that of the post-Independence War United States. At the conclusion of the War of Independence in 1783, the United States faced a substantial national debt and limited means to manage it. In response to this challenge, Treasury Secretary Hamilton proposed consolidating the debts of individual states into new common debt instruments. This proposal encountered strong opposition, especially from states with lower accumulated debts. However, once the decision was approved, the U.S. began issuing common debt following the assumption and bailout of the national debts resulting from the war. In the subsequent years, many states in the United States did not prioritize the sustainability of their public finances. They relied on the expectation of being bailed out by other states and the central government. However, this hope was dashed by Treasury Secretary Hamilton, who introduced what is still referred to as the central "no-bailout clause," a concept that resonates even in discussions about European debt.

Hamilton's rejection of bailouts had a profound impact. It led to defaults by many states, but in the years that followed, it also encouraged them to adopt responsible fiscal policies characterized by restrained spending and increased revenue collection.

While this situation occurred two centuries ago, it bears some resemblance to the current situation in the Eurozone. Many states, each with varying levels of debt, must decide whether to embrace common debt issuance. This has sparked debates between proponents and opponents, centering on issues like moral hazard and the no-bailout clause, among others.

Over the past two decades, the Eurozone has weathered a series of crises, laying bare the inherent weaknesses of the system. Since the signing of the Maastricht Treaty in

1992, the question of debt and its sustainability has been at the forefront of efforts to establish a stable and enduring Union. The Treaty set limits on the maximum debt-to-GDP ratio (60 percent) and the annual deficit-to-GDP ratio (3 percent) that member states must adhere to. Additionally, the Stability and Growth Pact was introduced in 1997, although it is temporarily suspended, with the aim of further bolstering fiscal discipline among member states. Despite these limits and rules, the Sovereign Debt Crisis played a pivotal role in exposing significant flaws in the system. During this period, some of the most heavily indebted states faced the risk of default, a situation exacerbated by mounting speculation and a Union that increasingly revealed its fragmented nature. This fragmentation is also evident in the trajectory of interest rates from the Union's inception to the present day. The introduction of the Euro initially led to a convergence of interest rates, with rates across member states hovering at similar levels in the early 2000s. However, over the years, a series of asymmetric shocks triggered a growing divergence in interest rates. This divergence can be attributed to inherent shortcomings within the European Monetary Union (EMU).

Several factors contribute to this phenomenon. Firstly, the inability to resort to exchange rate adjustments, coupled with the absence of direct control by individual central banks, plays a significant role. Furthermore, the absence of a genuine lender of last resort within the EMU framework exacerbates the issue. The actions undertaken by the ECB since September 2012, particularly through Outright Monetary Transactions (OMTs), effectively resembled the operations of such a figure, however, these are beyond the Central Bank's mandate and have not escaped severe criticism in subsequent years. In this context, the Quantitative Easing (QE) conducted in recent years has also raised concerns that the ECB might be susceptible to fiscal dominance. All of this is due to the challenges of making clear distinctions, especially in an incomplete monetary union without a fiscal union.

The crises in 2011 and the subsequent pandemic crisis led to the introduction of new support mechanisms and packages. These were designed with the ultimate goal of promoting stability and restoring states in need to a healthy fiscal state. The European packages introduced during the pandemic crisis also included European bonds, although their terms were too limited to be compared with potential Eurobonds.

The solution to all these challenges within the EMU might well lie in the promotion of a fiscal and political union. This debate places proponents of European federalism on one side, while skeptics on the other argue that the absence of a "deep variable," signifying a collective sentiment, renders the idea of a closer union unfeasible.

One of the pivotal issues in this ongoing debate revolves around how risk would be managed within a more robust union. The risk reduction perspective, primarily advocated by Northern European nations, aims to temper risks and their potential ripple effects. According to this viewpoint, risk management doesn't necessarily require centralization; instead, the union should focus on implementing mechanisms that reduce risk and curb moral hazard. Critics argue that this approach doesn't necessarily foster greater integration. In contrast, the risk-sharing vision, more common among Mediterranean European countries, posits that greater unity and sharing allow countries to collectively absorb shocks more effectively. This perspective supports deeper integration, not only economically but also politically.

The lesson from the United States also demonstrates that behind the promotion of the risk-sharing vision and the achievement of greater integration lies the realization of fiscal union, including a common budget at the federal level and a common debt issuance. A federal budget offers numerous advantages. It can create a more harmonized and efficient market for European securities, attracting a larger investor base and facilitating cross-border investment. Additionally, it can foster the integration of financial markets, enable the financing of common projects, investments, and initiatives that benefit the entire Eurozone, and provide a platform for fiscal transfers and solidarity among member states, promoting economic convergence and reducing regional disparities. The adoption of Eurobonds, in some cases, could promote a level of risk-sharing akin to that of the United States. The central challenge then becomes finding a balance between the two visions that reduces risk while also allowing for sustainable risk-sharing.

To strike an adequate synthesis between these visions, it's imperative to establish a common vision of the future and the direction in which the union should progress. The introduction of common debt issuance is a complex decision that entails weighing numerous advantages against several disadvantages. Notably, common debt issuance

offers benefits such as enhanced liquidity and reduced debt costs. This approach would yield substantial efficiency gains through increased transaction volumes and improved liquidity, which could lead to lower financing costs for member countries. Moreover, countries would have the opportunity to diversify their investor base and reduce their dependence on domestic investors, mitigating the risk associated with market fluctuations and economic uncertainties. Consequently, European bonds could potentially evolve into a safe asset, competing favorably with U.S. Treasuries. A common European government bond would benefit from the collective strength and creditworthiness of participating member states, resulting in a higher credit rating and reduced spreads. Another noteworthy advantage of this approach lies in reducing the vulnerability of securities to economic shocks. This increased stability could serve as a buffer against crises and their potential spread, thanks to the coordinated response facilitated by a single instrument.

However, it's essential to consider the potential disadvantages associated with the introduction of common debt. Firstly, Eurobonds could lead to fragmentation in national markets due to the shift in financing terms that states would experience when transitioning from their national debt to European bonds, causing uncertainties that may not immediately reflect the benefits described above. Furthermore, member states have diverse financing needs, and the introduction of these instruments could limit their flexibility in addressing domestic issues.

Another significant drawback is the risk of moral hazard, particularly concerning heavily indebted countries. The adoption of common debt might create a situation where countries do not take adequate measures to address economic imbalances or pursue sustainable fiscal policies, relying on the collective support of Eurobonds. This moral hazard concern has historical precedence, even in the case of the United States, where debates between 1790 and 1791 centered around some states being relieved of greater burdens than others. Today, the opposition to free riding in Europe is primarily voiced by Germany, but it is also a concern for France and the Netherlands. Interestingly, Germany shares some similarities with late 1700s Virginia in the United States. The Hamiltonian solution, which could also be applicable in Europe, centers on the implementation of a no-bailout clause. This clause would prevent member countries

from bailing out another country if its lax policies led to default. Implementing such a clause requires establishing a credible Union in which investors can place their trust.

To strike a balance that maximizes the advantages and minimizes the disadvantages, it's essential to consider the various Eurobond designs proposed over the years. These designs aim to mitigate the risks associated with common issuance through different methods. The diversity in these designs mainly stems from the guarantees placed on common issuance.

The first option involves common issuance backed by individual guarantees. In this scenario, a single instrument is issued, supported by separate guarantees from each member state. An independent institution would oversee the fundraising and distribution of funds among the participating states in appropriate proportions. While the resulting debt instrument is a unified, common bond, the guarantees and responsibility for interest payments remain with each individual state.

In contrast, the other scenario envisions common issuance supported by mutual guarantees, aligning more closely with the risk-sharing perspective. This approach entails sharing the debt burden among multiple parties who also serve as guarantors. The obligations are still proportional to the funds raised by each member, but they come with a cross-default feature, triggering in case some issuers are unable to meet their debt obligations.

The last proposed scenario involves the issuance of Eurobonds by a European Union (EU) institution. The primary options put forth entail the establishment of a European Debt Agency (EDA), an independent European institution that would operate in conjunction with the European Central Bank (ECB) and would be responsible for managing EU debt. Depending on differing viewpoints, this agency may or may not involve debt mutualization.

The condition of debt mutualization, or lack thereof, also applies to various bond designs. Those designs requiring debt mutualization, involving the transfer of a portion of existing sovereign debt to a joint euro area agency, include Eurobonds in the narrow sense, Blue-red bonds, and Eurobills (without mutualization).

In the case of Eurobonds in the narrow sense, which is the simplest from a technical standpoint, it assumes a high degree of mutualization and would necessitate a significant level of integration concerning debt management and fiscal policy. Under this scenario, national debts would be replaced by a common European debt instrument, and member states would cede their autonomy in managing debt and fiscal policies. This means that each member state would retain the authority to levy taxes and manage its own budget but would no longer issue its own bonds. The advantages of this approach align with those outlined previously, such as a high level of risk sharing, promotion of market stability, and increased liquidity. However, the disadvantages include the potential for moral hazard among less fiscally prudent economies and reduced flexibility regarding issuance decisions.

The Red-Blue bond proposal, introduced in 2011 by Jacques Delpla and Jakob von Weizsäcker, involves splitting the debt into two segments: the first, covering up to 60 percent of GDP, is referred to as the blue bond, enjoying senior status and being jointly and severally guaranteed by the participating countries. Any debt issued beyond this threshold (exceeding 60 percent of GDP) would be categorized as red bonds, with junior status. This design aims to mitigate the problem of moral hazard because debt issued beyond the limit remains the responsibility of individual states. However, it also facilitates the advantages of increased liquidity and stability, representing a synthesis of the risk-sharing and risk-reduction visions.

The last proposal analyzed for debt mutualization is Eurobills, which was formulated by Cristian Hellwig and Thomas Philippon in 2011. This plan envisions the issuance of debt with a maturity of less than one year, amounting to a maximum of 10 percent of the Eurozone's GDP. It would be managed by a joint Debt Management Office (DMO) responsible for aggregating the needs and requests of member states for issuing bonds with maturities of less than one year each quarter. This proposal also aims to limit the potential for lenient fiscal policies. The cap on issuing short-term debt enhances their seniority and credibility in comparison to longer-dated Eurobonds.

Among the case histories that do not require debt mutualization, two prominent options are often discussed. Firstly, there are E-bonds, which were introduced by Zettelmeyer and Leandro in 2018. These instruments are issued by a European-level public entity,

such as the EDA, with the purpose of raising funds and financing from member states. In return, unconditional senior loans are issued, aiming to subordinate all national debts to the loans obtained from the common issuer of the European safe asset. E-bonds do not necessitate mutualization of current or future debt due to their seniority, which is guaranteed through intra-governmental agreements or specific clauses.

Another option in this category is SBBSs (Sovereign Bond-Backed Securities), which were introduced in 2011. SBBSs involve pooling government bonds issued by countries within the euro area and then dividing them into senior (ESBies) and junior securities (EJBies). ESBies have a higher level of security and repayment priority, while EJBies carry a higher risk profile and are subordinate to the senior securities in terms of repayment priority. This approach is somewhat reminiscent of the Red-Blue bond case but does not require debt mutualization. Potential state defaults would only impact the EJBies, leaving the payments of the ESBies unaffected. This design allows, however, to limit the risks associated with individual country securities by broadening the investor base so as to reduce volatility to individual country market shocks.

Limiting the discussion to different Eurobond designs would be overly restrictive. Each of these proposals implies a comprehensive package of reforms and rules, not only for issuance but also for stabilizing the macroeconomic and fiscal dynamics of individual states. This would require an efficient monitoring mechanism to encourage fiscal discipline. Moreover, many of these proposals assume the creation of a new European institution dedicated to securities management. Current laws would need to be reformed and strengthened to enable the system to function effectively and promote integration.

In this context, it's important to emphasize the potential role of a European federal budget in the proposed changes. Currently, the European budget lacks the capacity to support a fiscal union. The primary reform would involve increasing the budget's capacity by allowing the EU to operate through its own resources. By reducing dependence on member states' contributions, the European Union aims to enhance its fiscal capacity and strengthen its ability to address economic challenges, undertake critical projects, and support its policy objectives. This in turn would entail the need for common taxation, which would allow for more efficient and effective allocation of

resources, promoting economic growth and cohesion within the Union but which finds, even today, fervent opponents.

When discussing the size of the federal budget, it becomes important to study its magnitude to understand how it can support the issuance of Eurobonds. This can be achieved by modeling the dynamics of public debt, considering various assumptions about the interest rates that Eurobonds might have. Several methods of estimation can be applied. One approach is to assume that interest rates mirror those of current European bonds, such as those linked to packages like the NextGenerationEU (NGEU), however, these rates might differ due to issues related to liquidity. Therefore, the analysis was conducted under two distinct assumptions.

The first assumption considers that Eurobond interest rates reflect the average rates of past years, weighted by each state's GDP. The second assumption involves using interest rate and growth rate forecasts for the year 2024. In the first case, the reported interest rate is 2,96 percent, while the GDP growth rate is 1,22 percent. The results from the steady-state study (using the formula that sets the dynamics of the debt-to-GDP ratio $\dot{b} = 0$ such that $g - \tau = (n - r)b$) were calculated for three different debt-to-GDP ratio targets: 20 percent, 30 percent, and 60 percent. The findings indicate that moderate primary surplus levels would be needed to meet these targets. Specifically:

- For a 20 percent debt-to-GDP ratio target, a surplus of 0,349 percent would be needed.
- For a 30 percent debt-to-GDP ratio target, a surplus of 0,524 percent would be required.
- For a 60 percent debt-to-GDP ratio target, a surplus of 1,048 percent would be necessary.

In the second case, using data based on the OECD's estimates for 2024, the interest rate is projected to be 3,7 percent, with a growth rate of 1,43 percent. Under these assumptions, the required surpluses to achieve a steady-state level of the debt-to-GDP ratio are as follows:

- For a 20 percent debt-to-GDP ratio target, a surplus of 0,454 percent would be needed.

- For a 30 percent debt-to-GDP ratio target, a surplus of 0,682 percent would be required.
- For a 60 percent debt-to-GDP ratio target, a surplus of 1,363 percent would be necessary.

Once again, these values indicate that achieving these debt targets would only necessitate moderate primary surpluses. Indeed, maintaining moderate and consistent primary surpluses is crucial to ensure that the debt-to-GDP ratio converges to a steady state rather than spiraling out of control, in particular when the GDP growth rate is lower than the interest rate, as in these two cases.

Although contingent on numerous assumptions, the analysis sheds light on the required size of the European budget to facilitate the issuance of Eurobonds. It is imperative to conclude by discussing how this budget can be funded and the conditions under which a common taxation system can be developed.

The pursuit of greater European integration inherently involves the issuance of common bonds. Despite the complexities of this process, it appears increasingly feasible. It is crucial that a project with such substantial advantages over disadvantages be advanced through the implementation of new regulations, the probable establishment of new authorities, and, most importantly, the cultivation of trust.