

IN-DEPTH ANALYSIS

Requested by the ECON committee



# Sovereign Debt Restructuring and Debt Mutualisation in the Euro Area: An Assessment

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Euro Area Scrutiny

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PE 634.396 - May 2019

EN



# Sovereign Debt Restructuring and Debt Mutualisation in the Euro Area: An Assessment

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## Euro Area Scrutiny

### **Abstract**

Existing proposals for reform in the euro area, including the introduction of an orderly sovereign debt restructuring mechanism and of forms of debt mutualisation, rely on similar implicit or explicit assumptions: The “diabolic loop” between sovereign debt and domestic banks is to be mitigated or avoided; market discipline has to be maintained; and moral hazard has to be avoided. This paper discusses the stated goals of existing proposals, together with their likely anticipated and unanticipated effects and trade-offs. It recognizes that several of these underlying assumptions and frameworks are at odds with the extant empirical evidence. It concludes by setting forth a three-pronged proposal for reform in the Euro Area. First, it is desirable to have a more explicit seniority structure in sovereign debt, which should be achieved by introducing a junior class of risky sovereign bonds linked to nominal GDP growth. Second, governments with high legacy debt and/or high deficits should be required to access new financing by issuing such junior bonds. Third, the extent of fiscal stabilization and banking union in the Euro area should be increased.

This document was requested by the European Parliament's Committee on Economic and Monetary Affairs.

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Manuscript completed in May 2019

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## EXECUTIVE SUMMARY

The sovereign debt and banking crises in Europe of 2010-2012 and the subsequent recession have renewed the debate about European reforms to resolve or mitigate the adverse effects of these crises ex post, and to reduce the likelihood that such crises occur ex ante. Two ideas that have received a lot of attention consist in setting up a European Sovereign Debt Restructuring Mechanism (ESDRM) to facilitate orderly restructuring of sovereign debt (ex post), and the “mutualisation” of sovereign debt and credit risk to reduce the probability of a crisis (ex ante). I outline the underlying premises for an ESDRM and for debt mutualisation, as well as their consequences, including potentially unintended ones, by drawing on the leading extant academic research.

The main weakness of the whole idea of an ESDRM and of debt mutualisation is that they start from the wrong premises and focus on the wrong issues. Sovereign debts in the Eurozone are not too hard to restructure, as the Greek case clearly showed. The main problem is that sovereign debt does not have a clear, explicit seniority structure that facilitates automatic debt relief when adverse economic shocks make high legacy debts unsustainable.

In fact, one premise that most proposals of an SDRM or of debt mutualisation share is the implicit or explicit notion that the world is, or ought to be, as described in the Eaton and Gersovitz (1981) model of sovereign borrowing. In such a world, sovereigns borrow from international investors and commit to repay them because – following default – sovereigns are excluded from international financial markets. To the extent that the world differs from such a stylized framework and domestic banks hold a sizable share of their governments’ debt (“home bias”), the notion goes, this is due to some temporary disequilibrium phenomenon, at best, or to the moral suasion of their governments, at worst. Once the debt of a government becomes unsustainable and credit risk increases, such home bias triggers a feedback effect (“doom loop”) from sovereigns to their banks, which ultimately makes credit for the non-financial sector dry up and the economy plunge in a recession, likely provoking political turmoil as a result. Ex post, international policy makers would have an incentive to bail out domestic governments and their banks, but this would be against the EU treaty (“no bail out clause”). As a result, the proposals conclude, the home bias should be actively discouraged or outright banished, through regulation (e.g., “sovereign concentration charges”, “risk weights”) or otherwise, at any costs.

I show in this paper that such a notion is incorrect. A burgeoning recent body of research shows that the home bias is not due to some disequilibrium phenomenon, but it arises because of the same market disciplining forces that the proponents of extant proposals wish to preserve. Ex ante, government debt provides liquidity to the domestic banking sector. Ex post, when a crisis hits and credit risk suddenly increases, market forces drive international investors to unwind their positions in government bonds and sell to the domestic banks. It is in fact the very possibility of a doom loop ex post that acts as a powerful commitment device ex ante, ultimately allowing governments to commit to repay their debts, thereby making sovereign debt sustainable. Therefore, proposals to remove the home bias would only exacerbate instability and make the affected economies more vulnerable, not less.

Once the equilibrium nature of the home bias is recognized, it becomes much easier to see a way forward. Recognizing that reforms that are more ambitious may not be politically viable, I advocate a three-pronged intervention. First, introducing seniority in sovereign debt, where seniority should not come from opaque financial engineering, but should come instead from the issuance of a (junior) class of sovereign bonds indexed to transparent and easy to verify contingencies, such as for example bonds linked to nominal GDP. Second, governments with high legacy debt and/or high deficit should be required to access further financing by issuing such junior bonds. This way, to be able to issue such junior bonds at viable interest rates governments will have strong incentives to commit to a path of structural reforms and debt reduction. Third, because monetary policy alone has proved ineffective near the zero bound to either stimulate growth or inflation to reduce public debt, the extent of fiscal stabilization and banking union in the Euro area should be increased. I discuss some avenues to do so.

## 1. INTRODUCTION

The sovereign debt crises and banking crises in Europe of 2010-2012 and the subsequent recession have renewed the debate about European reforms to resolve or mitigate the adverse effects of these crises *ex post*, and to reduce the likelihood that such crises occur *ex ante*.

One idea that has received a lot of attention consists of setting up a European Sovereign Debt Restructuring Mechanism (ESDRM) to facilitate orderly restructuring of sovereign debt outstanding. I discuss this idea in Section 2. First, I outline the underlying premises for an ESDRM, its stated goals, and its basic contents. Then I discuss the suggested implementation of an ESDRM, as well as its potential consequences, including potential unintended ones, its challenges and limitations, and some open issues.

As a response to some of these challenges and limitations, a parallel line of thinking proposed forms of “mutualisation” of sovereign debt and credit risk. This idea has taken several forms, and it has been developed in parallel to the idea of an SDRM, at least in part to address shortcomings of an SDRM. In Section 3 I discuss the main forms of debt mutualisation that have been proposed, their stated goals, suggested implementation, and potential consequences, including unintended ones. A key element in these reforms is whether debt mutualisation and the establishment of an ESDRM should be either substitutes or complements. I discuss the desirability, the challenges, and the limitations of either solution. Again, I do so by drawing on the leading extant academic research.

One aspect that most proposals of an SDRM or of debt mutualisation share is the implicit or explicit notion that the world ought to be as described in the Eaton and Gersovitz (1981) model of sovereign borrowing. In such a world, sovereigns borrow from international investors and commit to repay them because sovereigns wish to avoid the penalties that would be imposed on them by international financial markets in case of default. To the extent that the world differs from such a stylized framework and domestic banks hold a sizable share of their governments’ debt (“home bias”), the notion goes, this is due to some temporary disequilibrium phenomenon, at best, or to the moral suasion of their governments, at worst. Once the debt of a government becomes unsustainable and credit risk increases, such home bias engenders a feedback effect (“doom loop”) from sovereigns to their banks, which ultimately makes credit for the non-financial sector dry up and the economy plunge in a recession, likely provoking political turmoil as a result. To mitigate or avoid such a doom loop altogether, international policy makers will then have an incentive to resist default or an orderly restructuring, thereby considering the *ex post* bail out of governments of member states and of their banks, which is undesirable and against the spirit of the EU Treaty (“no bail out clause”). As a result, the proposals conclude, the home bias should be actively discouraged or outright banished, through regulation (e.g., “sovereign concentration charges”, “risk weights”) or otherwise, at any costs.

I show in this paper that such a notion is incorrect. In Section 4, I review a burgeoning body of research showing that the so-called home bias in sovereign debt by the domestic banking sector is not due to some disequilibrium phenomenon, but is the equilibrium response to frictions in financial markets. *Ex ante*, government debt provides liquidity to the domestic banking sector.<sup>1</sup> *Ex post*, when a crisis hits and credit risk suddenly increases, market forces incentivize international investors to unwind their

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<sup>1</sup> The definition of liquidity used here is that of a positive correlation between the *ex post* returns of government bonds and the marginal productivity of investors. That is, *ex post* debt is repaid in good times, precisely when the economy is doing well and investors have plenty of investment opportunities. Therefore, investors can use the proceeds of government bonds to finance these. A special case of this is if government bonds are riskless, but under the current definition, also risky government bonds do provide liquidity. See Gennaioli, Martin, and Rossi (2014) for a formal theoretical model of this mechanism.

positions in government debt and sell their securities. Those same market forces make sure that on the other side of these trades are the domestic banks and financial institutions. As a result of the above, proposals to remove the home bias would only exacerbate instability and make the affected economies more vulnerable, not less. For example, imposing sovereign charges or risk weights to domestic government bonds would also have the unintended effect of decreasing the incentive of *foreign* investors to buy those bonds to begin with, because foreign investors could no longer expect to resell those bonds to domestic banks ex post. Therefore, once the equilibrium nature of the home bias in the holding of sovereign bonds by domestic banks' portfolios is recognized, a way forward for feasible reforms becomes apparent. At the same time, at some point, sovereign debt might just become unsustainable, for example, when countries with high legacy debt face large negative economic shocks. In those cases, having an explicit seniority structure of sovereign debt would prove helpful to provide automatic debt relief. Therefore, I conclude by drawing on the current academic research to suggest a three-pronged approach to European reform in sovereign debt management.

## 2. ORDERLY SOVEREIGN DEBT RESTRUCTURING

One set of proposals argues that Europe needs a framework for orderly sovereign debt restructuring, along the lines of a ESDRM. Proposals in this vein include the ‘non-paper’ that was circulated at the Eurogroup meeting by Schäuble (2017); see also Sapir and Schoenmaker (2017), Scheubel and Stracca (2016), Weder di Mauro and Zettelmeyer (2017). I discuss the content of these proposals in Section 2.1 and their suggested implementation in Section 2.2, discussing challenges and limitations with respect to its various aspects. The takeaway of this section is that challenges and limitations with current proposals for a European SDRM have prompted proposals for debt mutualisation and the creation of safe assets based on financial engineering. I will discuss these more recent proposals in Section 3.

### 2.1 Content and Rationale: Soft vs Hard Restructuring

The starting point of proposals for an ESDRM is typically the observation that sovereign debt restructurings are often ‘too little, too late’ e.g., see the Committee on International Economic Policy and Reform, (CIEPR (2013)) and IMF (2013). The Greek crisis is often used to illustrate this point. Restructuring was too little, because although it amounted to a transfer of about €100 billion from private creditors to the Greek government and came with significant fiscal adjustments and reforms, it was ultimately insufficient to restore solvency. Restructuring was too late, because as estimated in Zettelmeyer, Trebesch, and Gulati (2013) if the Greek restructuring had occurred one year earlier than it did (i.e., in mid-2011 instead of mid-2012), European taxpayers would have saved about €10 billion. Observers typically conclude that debt restructuring should be made easier and faster when debt levels and flows become unsustainable. [I will later argue in Section 4 that the Greek debt restructuring was actually quite extensive and reasonably easy and fast given the circumstances.]

In this spirit, proposals for a sovereign debt restructuring mechanism typically consider maturity extensions (i.e., “soft” restructuring, also defined re-profiling by the EFSF/ESM or standstill), debt reduction (i.e., “hard” restructuring encompassing reductions in coupon and principal payments, or “haircuts”), or a combination of the two.<sup>2</sup> Maturity extensions tend to be preferred at the beginning of a crisis, to reduce the need to access backstop facility to service principal repayments. Andritzky et al (2018) estimate that in the recent crises of Greece, Ireland, and Portugal, maturing long-term debt securities accounted for 62%, 21%, and 64% of the total funding needs, respectively, based on the European Commission’s initial projections. Meyer, Reinhart and Trebesch (2019) show that historically almost all defaults of the past 200 years were resolved by a debt exchange of old into new debt at a discount, with average creditors’ losses of 44% and a standard deviation of 30%. In turn, creditor losses typically involve an extension in maturity and a reduction in coupon payments, with only 39% agreements implying a nominal reduction on the principal face value.

The rationale for maturity extensions is to attempt to avoid the more disruptive debt reductions. Trebesch and Zabel (2017) document that “hard” restructurings are associated with a much steeper drop in GDP of up to 10% relative to “soft” restructurings, without necessarily implying a causal effect. The IMF (2014) views maturity extensions as reducing the risk of contagion. At the same time, maturity extensions reduce the risk of subordination of existing bondholder claims that would arise in the presence of IMF intervention. In general, maturity extensions preserve creditors’ exposure, while maintaining the option of subjecting sovereign debt to subsequent deeper debt restructuring, and

<sup>2</sup> While widely used in common parlance, these definitions are not unanimously held in political and regulatory circles. For example, see the European Financial Stability Facility decision to extend the maturity of loans to Ireland and Portugal in 2013, EFSF (2013).

many believe that in some cases only hard restructurings will do to restore debt sustainability, particularly in emerging countries (e.g., Krugman (1988); Sachs (1989)).

Existing proposals for an ESDRM centre on hard restructurings. The idea is that absent an ESDRM, insolvent sovereign debtors would tend to restructure too little and too late, at which point the deadweight costs to creditors, the spillovers to the banking sectors and the risk of contagion would be so large as to force the European Stability Mechanism to bail out creditors. In turn, bailouts would trigger moral hazard and excessive borrowing, particularly in countries with weak institutions, potentially worsening debtors' insolvency. To avoid such bailouts and the associated moral hazard, the rationale goes, an ESDRM should be established to make restructuring easier as a precondition for ESM assistance in case of non-sustainability of debt. In the process of making restructuring easier, an ESDRM would also reinforce fiscal discipline, particularly for countries with weak institutions and high legacy debt. The next section discusses practical implementation of these ideas.

## 2.2 Implementation: Challenges and Unintended Effects

Based on the above line of reasoning, existing proposals then turn to the actual implementation of the restructuring mechanism and examine the question of how to minimize negative side effects, such as deadweight losses from debt restructuring, spill-overs to the banking sector, and international contagion.<sup>3</sup> A key impediment to restructuring in the presence of dispersed debt is the free-riding problem that occurs because each individual creditor is better off holding out of a restructuring in the hope that enough other creditors agree to the restructuring. This way, if the restructuring succeeds the holdout creditor is repaid in full. However, of course, if enough creditors hold out, then the restructuring effort fails altogether. Holdout problems are well known in informal private debt renegotiations and workouts, particularly those based on unanimity rules such as those under the US Trust Indenture Act of 1939. For this reason, bankruptcy laws for the private sector, such as US Chapter 11, include provisions to depart from unanimity, and if necessary allow a restructuring plan to be crammed down on a dissenting creditors' class. In the context of public debt, existing proposals consider statutory or contractual approaches to deal with holdouts. I consider these in Sections 2.2.1 and 2.2.2, respectively. Section 2.2.3 considers the issue of automatic vs discretionary thresholds to trigger renegotiation and voting on a restructuring proposal. Section 2.2.4 considers the issuance of state-contingent bonds. Section 2.2.5 considers the extent of debt relief to implement, and Section 2.2.6 consider the issue of whether sovereign debt is issued under domestic or international law. Finally, Section 2.2.7 considers briefly the experience of public debt in the US and how crises are resolved there.

### 2.2.1 Statutory Proposals and Holdouts

A key concern is how to avoid holdouts and free riding by some creditors on the debt relief granted by creditors, which would ultimately undermine the restructuring effort. Early proposals of a Sovereign Debt Restructuring Mechanism (SDRM) (Krueger (2002), IMF (2002 and 2003)) failed to gather support, but remain at the basis of more recent ideas, such as a European Crisis Resolution Mechanism (ECRM, see Gianviti et al. (2010)). These proposals rely on the imposition by statute of a stay on all litigation by individual creditors seeking repayments, which would require a change of the ESM or the signing of a new Treaty and therefore remain controversial. Other proposals aim at establishing a court, such as an

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<sup>3</sup> On modelling and forecasting government bond spreads in the Euro area in the presence of spill-overs and contagion see Favero (2013) and references therein.

International Debt Restructuring Court (IDRC, see United Nations (2009)), to prevent holdout litigation from undermining the restructuring process.<sup>4</sup>

### 2.2.2 Contractual Clauses and Holdouts

A different approach aims at introducing contractual clauses in sovereign debt contracts to facilitate a workout. These clauses allow for renegotiation of the terms of the contract without requiring a unanimity of creditors to agree on the restructuring with the debtor. Typically, such collective action clauses (CACs) allow the debtor and some qualified majority of creditors to impose (“cram down”) the renegotiated terms even on dissenting creditors.

After bailing out their own domestic banks during the Greek crisis, the governments of Germany and France wanted to show their voters that such bailouts would not happen again, and demanded that all Eurozone countries incorporate CACs in their sovereign debt. The goal was to facilitate debt restructuring by making future debt issues more risky and more vulnerable to sovereign default. In other words, the stated goal was that a bond with a CAC would be easier to restructure, and hence would carry higher credit risk.

**Table 1:** Bond Yields in CAC vs Non-CAC Bonds

Country	Yields of CAC Bonds minus Yields of Matched No-CAC Bonds
<b>Austria</b>	−0.164***
<b>Belgium</b>	−0.054
<b>Finland</b>	−0.137***
<b>Germany</b>	−0.060
<b>France</b>	−0.054
<b>Ireland</b>	−0.146**
<b>Italy</b>	−0.086***
<b>Luxembourg</b>	−0.131***
<b>Netherlands</b>	−0.081
<b>Portugal</b>	−0.254**
<b>Slovakia</b>	−0.017
<b>Slovenia</b>	−0.127***
<b>Spain</b>	−0.010
<b>Full Sample</b>	−0.084***

Source: Carletti, Colla, Gulati, and Ongena (2019)

Thus, the common expectation was that CACs would favour debtor governments by making debt restructurings easier, and thus by making sovereign bonds riskier from the perspective of investors. However, following the introduction of CACs under English law and New York law since 2003, empirical

<sup>4</sup> To be sure, establishing an EDRC would require such court to assume exclusive jurisdiction on debt-related issues under principles that prevent holdout problems. I argue in Section 4 that the real issue is the lack of an explicit seniority structure in sovereign debt, and introducing such a seniority structure does not require the creation of a third party with discretionary powers such as an IDRC.

research has found the opposite: lower spreads for high-rated debtors and mixed evidence for riskier debtors (Eichengreen et al. (2003); Bardozzetti and Dottori (2014); Bradley and Gulati (2014), Gelpert and Gulati (2013)).

Using data from Carletti, Colla, Gulati, and Ongena (2019), Table 1 above shows that CAC bonds yield on average a lower return than bonds without a CAC, after controlling for other factors affecting spreads such as, among others, maturity and liquidity. Credit risk was reduced, not increased, likely because CACs helped clarify contingencies in which sovereign default is excusable.<sup>5</sup> Importantly, this finding is stronger in countries with weaker institutions as measured by the extent of rule of law,<sup>6</sup> again running directly counter to the stated goal of making restructuring easier in countries with higher legacy debts and weaker institutions than other countries.<sup>7</sup> Collectively, these results show that CACs reduce credit risk (rather than increasing it), indicating that financial markets view CACs as pro-creditor provisions, presumably due to the removal of some ambiguity in the renegotiation process. Put differently, market participants view any risk of moral hazard of strategic default by debtor countries as more than offset by the efficiency gains of an orderly restructuring process in future scenarios (“states of the world”) in which sovereign default is excusable, for example following the realization of a bad economic shock.

### 2.2.3 Renegotiation and Voting: Automatic vs Discretionary Thresholds

Both statutory and contractual approaches to orderly debt restructuring need implementation mechanisms that specify when to initiate renegotiations and how to elicit votes from dispersed investors to decide on renegotiation options. Almost all proposals consider a country’s request for ESM support as a trigger point for restructuring debt, if the Debt Sustainability Analysis establishes that the debt is not sustainable. Other proposals indicate automatic thresholds of the debt/GDP ratio at which to require debt restructuring. Of course, clear-cut threshold rules come with their own concerns. On the one hand, automatic thresholds may trigger unnecessary restructurings, or trigger them too early;

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<sup>5</sup> A common dichotomy in the literature is excusable vs inexcusable defaults (e.g., Grossman and Van Huyck (1988)). Excusable defaults are also known as liquidity defaults or solvency defaults, i.e., defaults due to adverse economic shocks that make outstanding debt unsustainable. Put simply, the sovereign would want to repay but negative economic growth and a large legacy debt prevent it from doing so. By contrast, inexcusable defaults, also known as strategic defaults, opportunistic defaults, “defaults due to political-economic reasons”, or defaults due to moral hazard, are unilateral decisions by potentially solvent governments to repudiate their debt. The model of Eaton and Gersovitz (1981) considers only the latter type of defaults, i.e., inexcusable or opportunistic defaults. The sovereign crisis of 2010-2012 highlighted the importance of the former type of defaults, excusable or liquidity defaults.

<sup>6</sup> Carletti et al (2019) use two common indexes of rule of law, one from La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1998, LLSV henceforth) and the other from the World Bank Worldwide Governance Indicators. Ranking countries by these two indicators of rule of law yields the documented result. From Panel B in Table A1 in the Appendix of Carletti et al: Rule of Law Index LLSV: “Law and order tradition”, 10 point scale, bad to good (source: LLSV); Rule of Law Index World Bank: “Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence”, 5 point scale from -2.5 to 2.5, bad to good (source: World Bank, Worldwide Governance Indicators <http://databank.worldbank.org/>, 2014 update).

<sup>7</sup> To be sure, the introduction of CACs followed the creation of the ESM, so at least in part the estimated effects could reflect the presence of the ESM. At the same time, to the extent that introduction of the ESM affects both CAC and non-CAC bonds equally, the puzzling result remains that CAC bonds yield on average a lower return than comparable non-CAC bonds.

on the other hand, automatic thresholds may trigger restructurings too late.<sup>8</sup> Some proposals indicate several thresholds, at which different types of support or restructuring occurs (e.g., Buchheit et al (2013), Corsetti et al (2015)). Other proposals instead allow for a large element of discretionary assessment by a third party. For example, Gianviti et al (2010) envision a Debt Sustainability Assessment by the European Court of Justice, while others envisage an assessment of the country's prospects to regain durable market access (e.g., Corsetti et al (2011), Fuest et al (2014)), with or without an implicit soft restructuring with maturity extension. As I discuss below and in Section 4, in the presence of an explicit seniority structure of government debt with a class of junior GDP-linked bonds, many of the issues of renegotiation and voting would become no longer relevant, because the junior bonds would be automatically restructured contingent on easy-to-verify states of the world.

#### 2.2.4 State Contingent Bonds

Based on the theoretical framework in Holmström and Tirole (1998), a number of proposals favour the issuance of state-contingent sovereign bonds, to facilitate liquidity creation in states of the world in which liquidity is more valuable. Building on this idea, Gennaioli, Martin and Rossi (2014) present a model where government bonds, even if risky, do provide liquidity because ex post they are repaid in the states of the world in which the economy is strong and there are plenty of investment opportunities. These are precisely the states of the world in which investors wish to have liquid resources available for investment, so the ex post return of (risky) government bonds correlates positively with the strength of the economy and thus with GDP growth. One way to introduce state-contingent sovereign bonds can be to introduce clear-cut restructuring rules into newly issued bond contracts. Such clear-cut restructuring rules include automatic maturity extensions and a stay on coupon repayment, contingent on structural deficits or debt/GDP ratios exceeding some thresholds (0.5% and 120%, respectively, in the accountability bonds proposed by Fuest and Heinemann (2017)). Because of the introduction of these provisions, debt restructuring becomes less discretionary and more automatic. Other proposals recommend a combination of sovereign contingent convertible bonds and GDP linked bonds (Brooke et al. (2013)).

Proposals relying on the introduction of state-contingent bonds also address the risk that a sudden introduction of an ESDRM could trigger a financial crisis. In fact, in the presence of high levels of legacy debt, these risks stemming from regime shifts could in principle be sizeable, and to mitigate them some proposals explicitly consider transition periods such as a debt redemption fund or a debt buyback (e.g., Buchheit et al. (2013) and Corsetti et al. (2015)).<sup>9</sup>

To address regime shifts risks directly, these proposals envision either the direct issuance of accountability bonds or the tranching of the outstanding stock of public debt in a senior and junior tranche.<sup>10</sup> In the latter case, a restructuring mechanism would only apply to the junior tranche (e.g., see Weber et al. (2011), Fuest and Heinemann (2017), Gianviti et al. (2010)). In fact, these state-contingent bonds would ease the transition toward establishing an ESDRM because the tranching process itself would take time and allow market participants to reassess the sustainability of public debt. The main

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<sup>8</sup> An automatic threshold could also act as a strong deterrent for countries not to get even close to it, to avoid precipitating the crossing of the threshold in the presence of adverse economic shocks. The extent of the deterrence would depend of course also on the size of the legacy debt.

<sup>9</sup> Empirical evidence for regime shifting concerns, however, is scarce; see e.g. Trebesch (2015).

<sup>10</sup> Pooling and tranching of outstanding bonds may be difficult to implement from a strictly legal perspective and may depend on whether the applicable law is international or domestic. See also Section 2.2.6 below.

thrust of these proposals, however, is often not junior state-contingent bonds per se but an ESDRM. That is, typically these proposals consider the introduction of junior state-contingent bonds as means toward the establishment of an ESDRM, and in so doing combine the introduction of junior state-contingent bonds with the creation of a special court to hold these cases (e.g., a European Court of Justice in Gianviti et al (2010)) and the creation of an ESDRM. Introducing an ESDRM, with or without special courts to deal with renegotiation, is the wrong issue, as I show in Section 4. In fact, introducing an explicit seniority structure with the issuance of junior bonds is desirable per se, not as means toward a (different) end.

### 2.2.5 Extent of Debt Relief to Implement

Another issue in orderly debt restructuring mechanism is the extent of the debt relief to implement, contingent on restructuring being triggered. Only a few proposals set specific debt relief targets. In the case of accountability bonds, Fuest and Heinemann (2017) envisage a full write down. At the same time, accountability bonds might constitute only a small fraction of total public debt. Corsetti et al. (2011) propose to use market prices to estimate the debt level believed to be sustainable by market participants. Gros and Mayer (2010, 2017) propose a Brady-type exchange of bonds into instruments with a partial guarantee at a haircut equivalent to bring the debt ratio down to 60 % of GDP.<sup>11</sup>

### 2.2.6 Issuing Government Debt under Domestic vs International Law

Conditional on determining the necessity of some debt relief, it becomes crucial to determine the extent of domestic and external debt outstanding, whether debt is issued under domestic or international law, and the ultimate identity of who is holding the sovereign debt affected by the restructuring. In the Euro area, domestic financial institutions hold a large proportion of sovereign debt issued under domestic law, so that a public debt restructuring translates into balance sheet losses for domestic banks, forcing them to deleverage and triggering banking crises. As an illustration, in the Greek crisis, a public debt crisis and a banking crisis did feed into each other in a doom loop (Gennaioli et al (2014); Archarya et al (2014), Brunnermeier et al (2017)).

This is different from the typical public debt crises of the 1980s and 1990s, which involved emerging countries issuing dollar-denominated bonds abroad to foreign creditors. There are two implications of this difference. First, any debt restructuring process needs to take into account its ramifications and spillovers to the domestic economy, particularly the banking sector. Second, the fact that sovereign debt by and large is issued under domestic law already facilitates orderly debt restructuring through legislative change. As a case in point, in the Greek case restructuring was achieved by the retroactive insertion of CACs in the Greek bonds, which would not have been possible had the bonds been issued under international law (Buchheit and Gulati, 2010).

### 2.2.7 Public Debt in the US

In the US the situation with respect to public debt is markedly different to that in the Euro area, and arguably cannot offer guidance or a meaningful basis for comparison for a variety of reasons. To begin, US states are sovereign entities, which means that if they tried to seek bankruptcy protection they would violate their sovereign status under the US constitution and their creditors would likely

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<sup>11</sup> Brady bonds are dollar denominated bonds issued mostly by Latin American and other emerging countries that became popular in the late 1980s and early 1990s. They were named after then US Treasury Secretary Nicholas Brady and were based on the idea that illiquidity was the main obstacle to debt restructuring of emerging country debt. Similarly, Brady-type exchanges consist of exchanging illiquid bonds into liquid instruments.

immediately file constitutional objections under the contracts clause and the 10<sup>th</sup> Amendment. As a result, US states have typically quite low state debt as a percent of their states' GDP.

The situation for US local governmental entities such as for example municipalities is quite different from that of US states, but also cannot offer guidance for the EU. In fact, while US local governmental entities can seek the protection from their creditors in U.S. federal bankruptcy court under Chapter 9 of the US federal bankruptcy code (e.g., see Kirkegaard (2015) page 37), their debt structure is different from that of countries in the Euro area. The reason is that municipalities issue two types of bonds, General Obligation (GO) bonds and "project bonds", aka Revenue bonds. GO bonds are backed by the municipality's promise to repay and thus are senior in normal times. In Chapter 9, however, they are subject to an automatic stay and thus their repayment stops during bankruptcy proceedings, to be resumed afterward after any restructuring undertaken in Chapter 9. By contrast, municipal "project" bonds (revenue bonds) are collateralized by the cash flows generated by the projects they finance (e.g., hospitals, toll roads) and are not subject to the automatic stay in Chapter 9 (see Rossi and Yun (2019) for more details). This debt structure has the advantage to provide at the same time debtor protection and debt relief under bankruptcy proceedings and creditor protection, at least for the creditors of the project bonds. At the same time, introducing a class of public debt similar to the US-type of project bonds in the Euro area is uncharted territory, to the best of my knowledge. In Section 4 I will provide what I believe is a more viable path toward reform in the Euro area.

### 2.3 Taking Stock

Steps toward the introduction of a European SDRM have somewhat slowed down, for two reasons. First, several issues about implementation reviewed above have proved controversial in the context of the EMU. Second, and most important, the recent crisis of 2010-2012 has revealed a strong interconnection between sovereign debt markets and banks' balance sheets. The home bias in the holdings of sovereign bonds' by domestic banks has engendered a feedback effect ("doom loop") between sovereign bond markets and private debt markets. This realization has led a number of authors to propose some forms of mutualisation of sovereign bonds, to create a safe asset in the Euro area and break the doom loop between sovereigns and their banks.<sup>12</sup> I review and assess these proposals below.

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<sup>12</sup> In fact, the most recent proposals for an ESDRM now include explicit provisions to break the doom loop between sovereign and their banks, for example through introducing risk weights for sovereign bonds, as in Destais, Eidam, and Heinemann (2019).

### 3. DEBT MUTUALISATION

Proposals for debt mutualisation start from the recognition that the euro crisis was fuelled by the diabolic loop, or doom loop, between sovereign risk and domestic banks. The doom loop is a key feature of modern debt crises and was not considered or addressed by most proposals for a European SDRM. A doom loop ex post between banks and their sovereigns arises because ex ante domestic banks own large amounts of their sovereigns' bonds, which constitute a sizable proportion of their balance sheet. This was particularly the case in Greece, Ireland, Italy, Portugal, and Spain. In these countries, therefore, the deterioration of sovereign creditworthiness reduced the market value of banks' holdings of domestic sovereign debt. In turn, this mechanism reduced the perceived solvency of domestic banks, forcing them to deleverage and curtail their lending activity, resulting in a credit crunch.

In turn, the credit crunch can have a recessionary impact, both directly through a reduction in tax revenue stemming from the reduced economic activity (e.g., consumption) by firms and individuals, and more indirectly through a contraction in the capital investment programs of firms. One key effect of this credit-crunch induced recession is thus to further weaken government solvency in these countries, triggering a "real-economy loop" and further transmitting the doom loop to the banking sector.

Gennaioli, Martin, and Rossi (2018) provide systematic evidence of this phenomenon, drawing on comprehensive data on sovereign bondholdings by 20,000 banks in 191 countries and 20 sovereign default episodes over 1998-2012. They document a very strong negative correlation between a bank's holdings of government bonds and its subsequent lending following sovereign default episodes.

These results are confirmed in more forensic examination of individual countries and the Euro area crisis, e.g., see Battistini, Pagano, and Simonelli (2014) Bofondi, Carpinelli, and Sette (2018), Altavilla, Pagano, and Simonelli (2017), Popov and Van Horen (2015), De Marco (2019) and others. Acharya, Eisert, Eufinger, and Hirsch (2018) document that the impairment of banks' exposures to sovereign debt was transmitted to industrial corporations through a reduction of syndicated lending, which triggered a large contraction in capital expenditures at the firm level.

Based on the above empirical evidence, a number of academics, policymakers, and commentators have proposed forms of debt mutualisation and the creation of safe assets, with the stated goal to break the doom loop between sovereign risk and bank risk. By reducing the sensitivity of banks' sovereign debt portfolios to the risk of the domestic sovereign, these proposals seek to drastically reduce or even eliminate the doom loop between sovereigns and banks. Earlier suggestions to increase the risk-weights of sovereign bonds by banking regulation were motivated by this same set of considerations.

To reduce the home bias in sovereign debt holdings by domestic financial sectors and thus break the doom loop, Bénassy-Quéré et al. (2018), drawing on prior work by Brunnermeier et al (2016 and 2017), Zettelmeyer (2018) and others, propose the introduction of sovereign concentration charges for domestic banks (see also Véron (2017)). In particular, drawing on Brunnermeier et al. (2016, 2017) Bénassy-Quéré et al. (2018) envision that sovereign bonds should undergo a securitization process. In this process, financial intermediaries would use a well-diversified portfolio of imperfectly correlated euro-area sovereign bonds to back the issuance of a senior tranche, labelled "European Safe Bonds" (or ESBies), and a junior tranche, named "European Junior Bonds" (or EJBies). Given the joint workings of diversification and seniority, the ESBies would be essentially safe bonds. As a result, the impact of a sovereign default would be absorbed primarily, if not exclusively, by the junior tranche, the EJBies. To complete the proposal, domestic banks would be directed toward holding exclusively ESBies, while EJBies would be directed toward foreign investors and speculators. The proponents note that unlike

other proposals (e.g., Delpla and von Weizsäcker (2010)) the creation of ESBies and EJBies would not require any form of “fiscal solidarity” among euro-area governments, as each government would remain entirely responsible for its own solvency, and the market price of its debt would remain a signal of its perceived solvency.

The underlying idea is that, once the home bias and the doom loop are removed, market discipline would be restored and sovereign debt restructuring would become faster and easier, with fewer adverse consequences and spillovers. In other words, the above proposals of debt mutualisation share the implicit or explicit belief that the home bias in banks’ holdings of sovereign debt and the resulting doom loop are undesirable disequilibria phenomena that should be eradicated. This formalization is most apparent in the work of Hatchondo, Martinez, and Onder (2017) (see also Arellano (2008) and Brunnermeier et al (2017)). In this work, the framework of Eaton and Gersovitz (1981) is taken as the baseline model of sovereign borrowing. In such a world, sovereigns borrow from international investors and commit to repay them because sovereigns wish to avoid the penalties that would be imposed on them by international financial markets in case of default. In this setting, Hatchondo et al (2017) consider the issuance of non-defaultable bonds and from calibrations of their theoretical model conclude that the introduction of non-defaultable bonds up to 10% of GDP would determine a significant decline of sovereign spreads, although such a decrease would be short lived. Similarly, Brunnermeier et al (2017) provide numerical simulations that ESBies with a subordination level of 30% would be as safe as German bunds and thus constitute safe assets. In these frameworks, the holdings of sovereign bonds by domestic banks either are ignored or are implicitly assumed to be exogenously given. In other words, in these models domestic banks are neither allowed to select their portfolio holdings of sovereign debt ex ante, nor to rebalance their portfolio in response to a crisis.

To the extent that the world differs from such a stylized framework and domestic banks willingly hold a sizable fraction of their governments’ debt, the notion goes, this is due to some temporary disequilibrium phenomenon, at best, or to the moral suasion of their governments’, at worst. To mitigate or avoid such a doom loop altogether, international policy makers will then have an incentive to resist default or an early orderly restructuring, thereby considering to bail out ex post domestic governments and their banks, which is undesirable and against the spirit of the EU Treaty (“no bail out clause”). As a result, these proposals conclude, the home bias should be actively discouraged or outright banished, through regulation (e.g., “sovereign concentration charges”, “risk weights”) or otherwise, at all costs.

However, the above notion is at odds with a recent burgeoning literature, both empirical and theoretical, which shows how the home bias in sovereign debt holdings by domestic banks arises in equilibrium because of the same market forces that the authors of such proposals wish to preserve. In the next Section, I show that proposals for an ESDRM, for debt mutualisation, and for safe assets creation are based on the wrong premises, because holdings of sovereign bonds by domestic banks arise as an equilibrium phenomenon due to trading in secondary markets between profit-maximizing agents. Having established the equilibrium nature of banks’ holdings of domestic sovereign bonds, I put forward a proposal for reform.

## 4. ASSESSMENT AND A PROPOSAL

I argue in this paper that current proposals for a European SDRM and for debt mutualisation focus primarily on issues that are unlikely to be relevant in practice, while presenting significant concerns for raising instability in the Euro area. In Section 4.1 I discuss proposals for a European SDRM and argue that they focus on incorrect issues, while leaving untouched the real issues. In Section 4.2 I discuss proposals for debt mutualisation and I argue that their basic goal of discouraging the home bias in sovereign debt holdings by the private financial sector, with a view of breaking the doom loop between banks and sovereigns, is misguided. There are neither sound conceptual arguments nor compelling empirical evidence that support the idea that the home bias should be curtailed or the doom loop should be eliminated. On the contrary, the very same reasons that explain why a doom loop should not be eliminated point out the weaknesses in the proposal to break the doom loop by creating a safe asset through financial engineering. I discuss the specific problems with the “safe assets” proposals in Section 4.3. Finally, in Section 4.4 I discuss a viable way forward toward the creation of an explicit seniority structure in sovereign debt. Introducing an explicit seniority structure in sovereign debt is desirable, and while proposals to create safe assets with financial engineering do also generate a seniority structure as a by-product, I argue that there are simpler, more transparent, and thus more desirable ways to do so that do not come with the severe risks of financial engineering.

### 4.1 Assessment: Why a European SDRM is not needed

It is important to distinguish between the conceptual goals of ESDRM and the implementation concerns that the various proposals grapple with. I will address first the conceptual arguments in favour of a European SDRM. Simply put, extant empirical evidence supports no compelling argument in favour of an ESDRM. I will then address the proposals to implement an ESDRM, and I will find that aspects of such implementation do address weaknesses of the current sovereign debt structure and deserve merit; in particular several proposals imply the establishment of an explicit seniority structure of government bonds through the creation of a junior class of sovereign bonds. However, an explicit seniority structure of government bonds can and should be introduced without at the same time establishing an ESDRM.

In fact, proposals to introduce an ESDRM address the wrong issues. The conceptual arguments in favour of a European SDRM reflect those of an older debate on the role of the IMF in emerging countries and do not apply to the Euro area. These arguments can be summarized as follows. To begin, left to their own volition, insolvent sovereign debtors would restructure their debt too little and too late. Upon deciding for a debt restructuring, the negative spillovers to the neighbouring economies force the ESM to bail out the creditors, which tend to be overwhelmingly domestic banks. In turn, ex post bailouts fuel moral hazard and excessive borrowing going forward, particularly by countries with large legacy debts and weaker institutions. To break this deadlock, it would be desirable to make debt restructuring easier, so that it would come sooner and be subject to market discipline. Furthermore, to prevent bailouts and in general abide by the “no bailout clause”, some form of debt restructuring should be a precondition for ESM assistance, along with the already existing forms of strict conditionality.

These arguments are conceptually incorrect. To begin, these arguments imply that sovereign debt restructuring should become more frequent, which would make countries with high legacy debt significantly more vulnerable, as noted by Tabellini (2017, 2018). In fact, given that the Euro area as a whole is hardly stronger than its weakest member is, the systematic consequences of frequent defaults could be severely destabilizing, to the point of making a sovereign default of a large country potentially threaten the very existence of the whole Euro Area. In this respect, Kremens (2019) provides a measure

of currency redenomination risk and empirical evidence on the extent to which a sovereign default and exit from the Euro of one of its large countries would have on overall Euro stability.

More broadly, the intellectual underpinning of a European SDRM is largely predicated upon the notion of moral hazard. However, the notion of moral hazard is at odds with the data, even in empirical analyses of emerging countries in the 1980s and 1990s where arguably the incentives for moral hazard are larger compared to those of countries in a monetary union. First, while there is no one disputing the fact that some countries do engage in excessive borrowing, there is just no evidence that the reason for excessive borrowing is moral hazard. Furthermore, there is no evidence that moral hazard results in increased borrowing, subsequent to international crisis lending by IMF or others.

To be sure, empirical evidence on the presence of moral hazard in international crisis lending is at best mixed. Dell’Ariccia, Schnabel, and Zettelmeyer (2002) write “No subject in the debate on globalization and international institutions suffers from a greater disconnect between policy debate and empirical literature than the “moral hazard” supposedly caused by international official rescues. Ever since the Mexican (1995) bailout, the possibility that large-scale crisis lending might encourage excessive risk taking by investors and imprudent policies in debtor countries has been a constant charge of some IMF critics, and a source of concern to the official community. ... However, no systematic empirical evidence has so far been presented suggesting that moral hazard associated with international crisis lending is, in fact, a problem or has been a problem in the past.” (p. 2).

In fact, a necessary (but not sufficient) condition for moral hazard to affect economic fundamentals is that expectations of IMF intervention reduce investors’ risk, as reflected in emerging market bond spreads. Studying this channel directly in a large panel of emerging countries where arguably moral hazard effects should be particularly sizable, Zhang (1999), Lane and Phillips (2002), and Kamin (2004) all reach negative conclusions, either rejecting the presence of moral hazard outright or finding economically negligible and inconsistent effect. Consistent with these studies, Dell’Ariccia et al (2002) conclude that “neither the response of spreads to the Mexican crisis nor their response to the Asian crises provide any evidence for a moral hazard effect” (p.26). Focusing exclusively on the 1998 Russian crisis, Dell’Ariccia et al (2002) find some evidence that following the unexpected non-bailout of Russia some emerging countries had larger spreads, reflecting a lower expected probability of future bailouts and consistent with the presence of moral hazard in some of those emerging countries, albeit with significant cross-country heterogeneity.<sup>13</sup> At the same time, Dell’Ariccia et al (2002) cannot reject the alternative interpretation that “the events in the aftermath of the Russian crisis, in particular the LTCM crisis, revealed the high degree of interdependencies of financial markets in the world” (p. 17).<sup>14</sup>

Using instrumental variables estimation Barro and Lee (2005) find that participation in IMF loan programs has a statistically significantly negative causal effect on economic growth over the contemporaneous 5-year period, although the economic magnitude is arguably small. Barro and Lee (2005) argue that their estimate reflects the negative effect of program participation on growth, rather than the negative effect of growth on the participation rate. While they discuss moral hazard among the possible explanations, however, they conclude, “our results do not explain what the direct negative effects of IMF loan participation on economic growth represent” (p. 1267). More recently, Saravia (2013)

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<sup>13</sup> In the words of Dell’Ariccia et al (2002), “the group of countries that does not provide clear-cut support for the hypothesis that the Russian default led to a permanent increase in investor risk includes a number of Asian countries, as well as Eastern European reformers such as Poland and Croatia.”

<sup>14</sup> Interestingly, Dell’Ariccia et al (2002) do not find an effect of the Russian crisis on the External Debt to GDP ratio, which runs directly counter the main channel of moral hazard triggering excessive borrowing.

finds some evidence that IMF intervention is associated on average with subsequent shorter debt maturities in a sample of emerging countries, suggesting IMF intervention may spur risky borrowing in program countries. However, Saravia (2013) also documents significant heterogeneity in such effect and finds that countries with weak fundamentals actually *lengthen* their debt maturities following an IMF lending programme.

Therefore, despite much searching, a large body of empirical literature has produced very little or no direct evidence of moral hazard. While more data and better tests in the future might provide a different picture, the possibility that moral hazard has empirically negligible effects should at least begin to be entertained. Indeed, the Greek crisis should remind everyone that a sovereign default does produce devastating effects to the domestic economy, whether or not bailouts are involved.

In addition, as outlined above, Euro area debt is often issued under domestic law, which already makes sure that debt restructuring is easy to achieve, because domestic courts already tend to internalize the interests of their government. As a case in point, Zettelmeyer, Trebesch and Gulati (2013) document that Greece was able to achieve debt relief of about 54% for an amount of over 50% of its GDP in 2012, with the participation of 97% of creditors (private sector involvement, or PSI), who suffered haircuts of about 60-to-65 cents on the dollar. Issuing debt under a super-national jurisdiction such as a European Court of Justice would make renegotiation more costly and offer creditors more protection, not less.<sup>15</sup> The recent empirical evidence on the introduction of collective action clauses (CACs) in the public debt issues in the Eurozone discussed above further reinforces this point.

Another stated goal of European SDRM is to restore and strengthen market discipline on sovereign debtors. However, markets are an imperfect mechanism to discipline sovereign debtors. Markets react too late, and then when they finally do, their reaction is too abrupt. Figure 1 below illustrates this point. The figure plots the average bond prices over 7 default episodes in 6 countries (Argentina 2001-2004, Russia 1998-2000, Cote d'Ivoire 2000-2004, Ecuador 1998-2000, Ecuador 2009, Nigeria 2002, Greece 2012), from day -1,000 to +1,000, whereby day 0 is the day in which default is announced. Figure 1 shows that bond prices remain essentially constant and actually trending up, until 3-4 months prior to default. Only in the last 3 months prior to default, do bond prices start declining, eventually plummeting in the final weeks before default. These patterns mimic those in countries that experienced sovereign debt turmoil without going through default, including the case of Italy from July 2011 when turmoil started in October 2011 when the change in government averted worse developments. Therefore, given the size of legacy debts in several countries, requiring automatic restructuring or maturity re-profiling as a precondition for ESM assistance would only raise global instability. Illiquidity risk would become insolvency risk, and self-fulfilling debt runs would become more likely, not less.

In fact, even with sound fundamentals, the larger the outstanding debt, the higher the risk that market discipline degenerates into a debt run. This risk looms on high public debt countries even in the absence of debt runs, raising the cost of capital for the whole economy, reducing growth, and making self-fulfilling debt runs more likely. Therefore, it appears that a primary goal for stability in the Eurozone should be that of reducing levels of sovereign debt, particularly in countries plagued by high legacy debt levels.

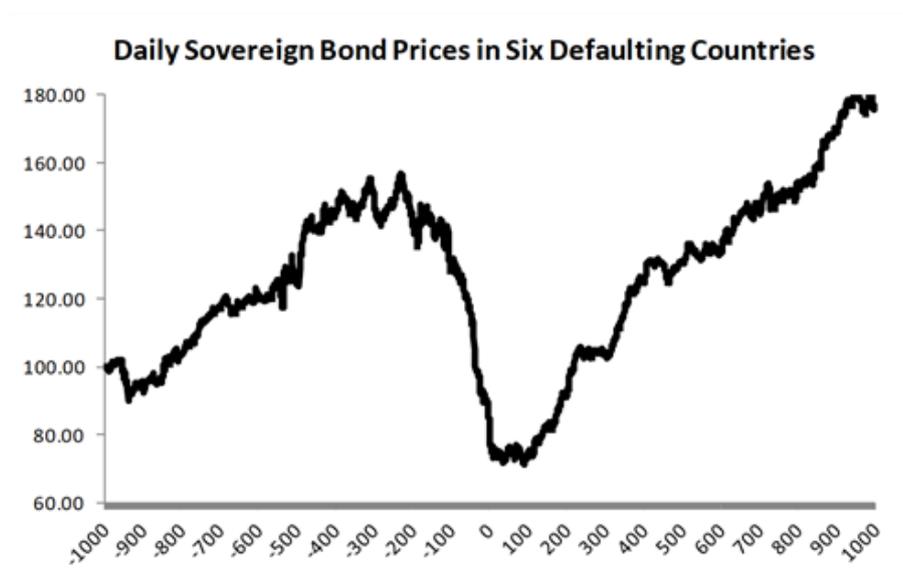
In sum, the main weakness of the whole idea of European SDRM is that it focuses on the wrong issue. From a purely technical point of view, sovereign debts in the Eurozone are not too hard to restructure, as the Greek case clearly showed. The main problem is that sovereign debt does not have a clear,

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<sup>15</sup> In fact, the about 6 billion foreign-law Greek bonds did hold out and continue to be repaid in full.

explicit seniority structure. In the private sector, if a bank or a financial institution becomes insolvent, holders of its liabilities are repaid in a pre-established order of seniority. First losses are born by shareholders, then by holders of convertible debt, then by junior unsecured creditors, and senior secured creditors are hit last. This seniority structure makes the banks' liabilities resilient to adverse shocks and reduces the risk of a run on the bank by holders of the more liquid liabilities such as the depositors and the holders of current accounts. In this framework, resolving financial distress of banks requires solely the enforcement of such a seniority structure, without needing to take an active stance on reorganization or debt restructuring. Such an explicit seniority structure is missing altogether in the case of sovereign debt, exposing countries with high public debts to significant instability.<sup>16</sup> The proposals for a European SDRM do nothing to address this problem.

**Figure 1:** Sovereign Bond Prices in Defaulting Countries.



Prices are normalized at 100 starting 1,000 trading days prior to default.

Source: Gennaioli, Martin, and Rossi (2018)

Therefore, it appears that a precondition to provide effective debt relief is thus the establishment of some form of seniority in sovereign debt. Blanchard, Mauro and Acalin (2016), Shiller (2003) and Tabellini (2017), among others, advocate the issuance of bonds indexed to nominal GDP. GDP-linked bonds would be *de facto* junior, and would provide automatic debt and cash relief in the event of adverse shocks or during a crisis. The rest of the borrowing would be unaffected. I discuss some practical ways to implement GDP-linked bonds in Section 4.4 below. In the next Section, I address proposals to eliminate the home bias in banks' holdings of sovereign debt.

<sup>16</sup> To be sure, some bonds are issued with *pari passu* or other rank clauses, and there is often a *de facto* or implicit seniority structure, implying that the ECB, central banks, and certain classes of creditors are often repaid before others, although repayment remains to a large extent discretionary, see Schlegl, Trebesch, and Wright (2019).

## 4.2 Assessment: Why Home Bias should not be Eradicated

Why shouldn't home bias and the resulting doom loop be eliminated? In short, the reason is that it is the very possibility of a doom loop ex post that contributes to make sure that governments repay their debts in the first place. The conventional wisdom that governments repay their debts to avoid foreign sanctions or exclusion from international financial (or goods) markets (as in Eaton and Gersovitz (1981); see Eaton and Fernandez (1995) for a survey) has long been shown to be at odds with the empirical evidence. In fact, sanctions are rarely observed, and any market exclusion is short-lived. Given the paucity of these sanctions and the scarcity of market mechanisms to discipline governments, one might expect frequent sovereign defaults. Instead, sovereign defaults are rare events, which must imply that sovereign defaults come with large output costs to the domestic economy, and that sovereigns repay to avoid such output costs, a point made by Arellano (2008).

What are, then, such output costs? Gennaioli, Martin, and Rossi (2014) argue that such output costs originate in the banking sector, and then present both a formal model and systematic empirical evidence consistent with this argument. To begin, a cursory look at historical evidence shows that sovereign defaults in Russia, Ecuador, Pakistan, Ukraine and Argentina in the 1990s caused large losses to their domestic banks, because of these banks' exposure to their sovereign bonds'. It is precisely to avoid these losses to their own domestic financial sector that sovereigns choose to repay their debt. Gennaioli, Martin, and Rossi (2014) build a theoretical model around this insight. In the model, domestic banks optimally choose to hold public bonds as a way to store liquidity for financing future investments. Even if risky, public bonds are useful for this purpose, because the government's incentive to repay them is highest when investment opportunities are most profitable. As a result, ex post returns on government bonds line up with investment opportunities and economic growth. Given this arrangement, the government's decision to default involves a trade-off. On the one hand, default beneficially increases total domestic resources for consumption, as some public bonds are held abroad. On the other hand, default dries up the liquidity of domestic banks that also hold a share of public bonds, thereby reducing credit, investment, and output. When financial institutions are sufficiently developed, this second effect becomes so strong that the government finds it optimal to repay its debt in order to avoid inflicting losses on the domestic banking system.

In other words, it is precisely because a sovereign crisis is severely disruptive ex post that sovereigns want to prevent it ex ante, particularly when financial markets are developed and the banking system is highly leveraged. The more the country has to lose, the higher the incentives to repay their debt, which keeps government borrowing sustainable. This model thus delivers the key empirical prediction that countries in which the banking sector is more exposed to sovereign bonds (high bank bondholdings) should have a lower probability of a sovereign crisis.

Table 2 below reproduces evidence from Gennaioli, Martin, and Rossi (2014) consistent with this prediction. In their theoretical model, governments face a trade-off when deciding whether to repay or default. On the one hand, sovereign default implies more resources available for domestic consumption at the expense of foreign creditors, to the extent that sovereign debt is held abroad. On the other hand, to the extent that sovereign bonds are held domestically, sovereign default implies that domestic banks' exposed to sovereign bonds go under, because in the model default is not discriminatory. Making banks fail is costly to the domestic economy because banks intermediate credit to the real economy and thus banks' failures likely result in a recession. As a result, as long as domestic banks' bondholdings exceed an endogenous threshold, the costs of a sovereign default exceed the benefits, and the government decides to repay.

The empirical implications of the above model is that the probability of sovereign default should decrease with the extent to which banks are exposed to government debt and with the extent of financial development, as measured by creditor rights. In an extension that studies access to international capital flows, Gennaioli et al further show that government is more sustainable when market openness and international capital flows are larger. Accordingly, to test these predictions Gennaioli et al. (2014) estimate the following empirical model:

$$Pr(\text{Public Default})_{i,t} = F(v_t + \beta_1(\text{Creditor Rights})_{i,t-1} + \beta_2(\text{Bank Bondholdings})_{i,t-1} + X'_{i,t-1}\gamma)$$

in a sample of 20 countries over 1980-2005 that includes 61 sovereign default episodes, where  $i$  indexes the country and  $t$  the year.<sup>17</sup> Table 2 presents the results.

**Table 2:** Determinants of Sovereign Defaults

	(1)	(2)	(3)	(4)	(5)
<b>Bank Bondholdings</b>	-0.157**			-0.259***	-0.010***
	(0.024)			(0.003)	(0.000)
<b>Creditor Rights</b>		-0.037*		-0.056**	-0.002***
		(0.053)		(0.017)	(0.004)
<b>Capital Flows</b>			-0.318*		-0.031***
			(0.080)		(0.000)
<b>Banking Crisis</b>	0.373***	0.090*	0.089**	0.402***	0.435***
	(0.001)	(0.055)	(0.025)	(0.001)	(0.000)
<b>GDP p.c. Growth</b>	-0.125	-0.141	-0.345**	-0.147	-0.030***
	(0.324)	(0.305)	(0.015)	(0.311)	(0.000)
<b>Default Risk</b>	0.736***	0.465***	0.463***	0.768***	0.032***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
<b>Short-Term Debt</b>	0.000**	0.000	0.000	0.000**	0.000***
	(0.010)	(0.457)	(0.239)	(0.013)	(0.001)
<b>Foreign Reserves</b>	0.008***	-0.006	-0.006	0.010***	0.001***
	(0.006)	(0.136)	(0.105)	(0.003)	(0.000)
<b>No Observations</b>	122	288	305	122	122
<b>No Countries</b>	15	20	20	15	15
<b>No Defaults</b>	29	61	61	29	29
<b>Pseudo-R<sup>2</sup></b>	0.480	0.347	0.364	0.514	0.628

Source: Gennaioli, Martin, and Rossi (2014)

Countries in which domestic banks have larger sovereign bondholdings have a significantly lower probability of a sovereign crisis. Other factors reducing the probability of a crisis are the strength of institutions, as measured by creditor rights, and the extent of international capital flows. By making a

<sup>17</sup> Please see Gennaioli et al (2014) for further details.

country more vulnerable to the ex post adverse effects of a default, these mechanisms provide a powerful ex ante commitment for countries to repay their debts and maintain debt sustainability.

The key reason of this is that in the model of Gennaioli, Martin, and Rossi (2014) government default is non-discriminatory. When deciding whether to repay, the government cannot tell apart domestic vs foreign creditors, because government bonds are traded in secondary financial markets.

This last point warrants more discussion. Indeed, financial markets do discipline governments, but their effects are not as straightforward as some proponents of debt mutualisation make them appear. The reason is that markets may essentially ignore symptoms of debt crises and then all of a sudden might trigger sudden stops, with little change in fundamentals. The likelihood of this depends on the stock of outstanding debt. Even when fundamentals are relatively sound, the larger the outstanding debt, the higher the likelihood that market discipline behaviour degenerates into a debt run. This point is consistent with Figure 1 above.

Interestingly, the argument above is developed in a model without moral hazard and incentive to borrow excessively, it is possible to show that the exact same logic goes through even in a setting in which governments have an incentive to borrow too much. The reason is quite obvious. Any domestic bank is unlikely to survive unscathed following the default of its sovereign, almost irrespectively of its exposure to sovereign bonds, a point well known in the banking industry and known as the sovereign ceiling, namely, the highest rating that any bank's bond issue can have cannot exceed the country rating where the issuer is situated. This argument is even amplified in the Euro area, due to risks of exiting the Euro. Banks would not survive this event, quite simply because in the event of their country exiting the Euro, the banks' non-deposit liabilities cannot be redenominated in a new currency because they are not subject to national law. Even if Euro exit does not occur, the fear that it could happen (or similarly the fear of capital levies on private wealth) will lead to capital flights and banking panics. Diversification under the ESBies/EJBies or similar types of bonds would be powerless against such an event.

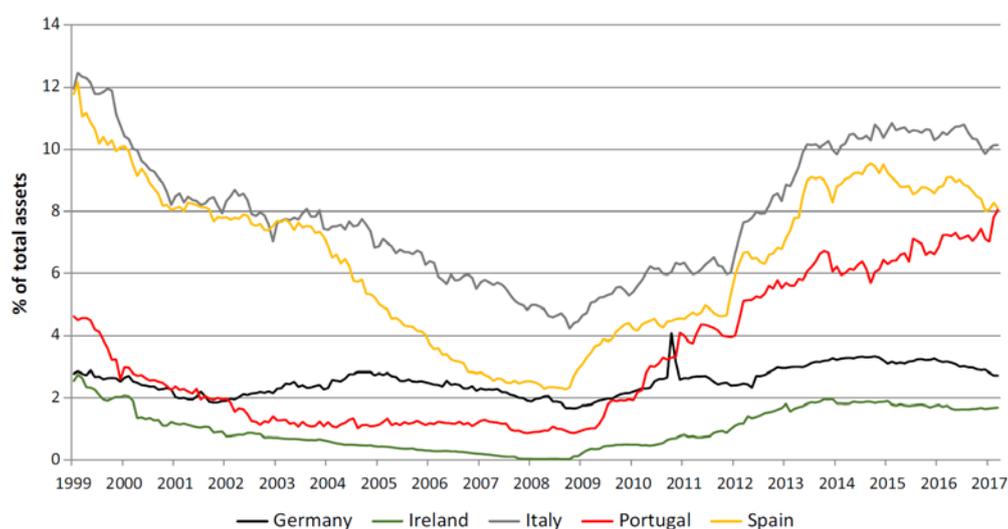
This argument echoes the seminal paper of Broner, Martin, and Ventura (2010) that, once credit risk increases and a sovereign default becomes more likely, foreign creditors will not passively hold their debts until default takes place, because they do fully internalize both losses and gains from their securities trading. Instead, they will try to sell the now risky sovereign bonds in secondary markets, hoping to recover any value they can. But who will buy these bonds? Certainly not other foreign creditors, who will make a similar assessment of the risk-return trade-offs. However, the domestic private sector will, as long as it expects the government to enforce its domestic debts with some probability. The reason is that, while unlikely to avoid bankruptcy in case of a default of their sovereign, domestic banks will however have a lower bound on the losses they will incur in the event of a default, due to limited liability. For domestic banks, in other words, purchasing domestic sovereign bonds during a sovereign crisis amounts to purchasing a call option on the value of their underlying assets. However out of the money might such an option be at the time of purchase, its value does increase with the volatility of the underlying asset, again incentivizing domestic banks to buy the sovereign bonds. On the other hand, for foreign investors both upside and downside risks are entirely internalised. Therefore, during a financial crisis foreign investors rush to the doors, while domestic banks are residual buyers of sovereign debt, not because they want to chase excessive risks but because domestic investors see more upside from domestic sovereign bonds than foreign investors.

The above line of argument is perfectly consistent with the empirical evidence during the Greek crisis and during a large number of sovereign crises in both developed and emerging markets. In the Euro area, as shown by Brutti and Sauré (2017) and Lanotte and Tommasino (2018), periphery banks increased their purchases of domestic government bonds during the Greek crisis, when no one else

was willing to buy them and when foreign investors were large sellers. Figure 2 below illustrates these patterns. Furthermore, this evidence is in line with the experience in a large panel of countries in both emerging and developing economies, as documented by Gennaioli, Martin, and Rossi (2018). In sum, during a default diversification does nothing to prevent a banking crisis; even before default, during periods of market turmoil even the would-be safe tranches (ESBies) are likely to suffer.

Gennaioli, Martin, and Rossi (2014 and 2018) present evidence, across countries and across banks, strongly supporting this phenomenon. They show that sovereign bondholdings by domestic banks are quite large during normal times, and particularly large for banks that make fewer loans and for banks that are located in financially less developed countries. During crises, banks in periphery countries increase their exposure to their domestic sovereign bonds, particularly the large banks.

**Figure 2:** Domestic Holdings of Sovereign Debt Securities by Domestic Banks.



Source: Percentage of Banks' Assets, based on Eurosystem Data from the European Central Bank (ECB)

Once more, these patterns reflect more broadly the workings of financial markets. During sovereign crises, domestic investors such as banks are unlikely to internalize sovereign default risk as much as foreign international investors. The reason is limited liability: in a sovereign default, the bank loses at most its equity value. By contrast, foreign investors fully internalize all bonds and losses. Therefore, when sovereign risk materializes and sovereign bond prices and CDS start deteriorating, foreign investors have a strong incentive to sell, while domestic banks have a strong incentive to buy. This mechanism has been formalized by Broner, Martin, and Ventura (2010) and Gennaioli, Martin, and Rossi (2014), and has been shown to be consistent with empirical evidence by Gennaioli, Martin, and Rossi (2018).

Furthermore, this mechanism shows that under the ESBies-EJBies proposal, even the EJBies bonds, initially directed to foreign investors, would be pushed by market forces to end up in the hands of domestic banks ex post, completely undoing their original goal. The only way to stop such an outcome during a crisis would be some form of financial repression or an outright ban to hold EJBies. In turn, however, the expectation of such financial repression or ban would greatly diminish the incentive of

foreign investors to buy up such bonds in the first place if they could not expect to resell them in a crisis.

In sum, competitive forces in secondary financial markets have the potential to completely undo the very goals that ESBies and similar safe bonds are meant to achieve.

### 4.3 Assessment: Safe Assets

As argued above, the home bias and the doom loop should not be eradicated. But is the creation of a safe asset through financial engineering a desirable goal for a reform to target? Financial markets face large demands for safe assets, particularly during periods of market turmoil in which investors display flight-to-quality preferences. In general, therefore, given investors' appetite for safe assets, it is always possible to argue that increasing the supply of safe assets is desirable.

In light of recent proposals the real question, however, is whether creation of safe assets through financial engineering would render the Euro area more stable. The answer, alas, is that it is unlikely to be the case. Even before the risk of exit from the Euro area, the Greek crisis of 2010-2012 has shown that the credit risk that spread to various government bonds made the correlation of government bonds in the periphery of the Euro area go up. Bonds of Ireland, Portugal, Spain, and Italy started to move together with those of Greece to a much larger extent than before, a fact documented by Cifarelli and Paladino (2018) among others.

In other words, the proposal of ESBies and EJBies would be vulnerable to the same weakness of financial securitizations that were at the heart of the financial crisis of 2007-2008 (e.g., Coval, Jurek, and Stafford (2009)). Indeed, the two general features of structured finance products, as described by Coval et al (2009)—the extreme fragility of their ratings to even modest imprecision in evaluating underlying risks, and their exposure to systematic risks—are likely to make ESBies more risky than proponents of debt mutualisation would hope for. In general, vulnerability to systematic risks would likely make the senior tranche not risk-free.

Furthermore, the same arguments made in Section 4.2 above would apply. In fact, trading in secondary markets would imply that even the junior tranche ex post would likely end up in the hands of the domestic financial sector. Once more, ex post foreign investors would rush for the door, and the domestic banks would be residual buyers of the junior bonds.

### 4.4 Proposal

In this section, I take the preceding discussion one step further and advocate a path for feasible reform. To be sure, some goals of a European SDRM are obviously desirable and should be pursued, like for example the goals of promoting fiscal discipline. However, there are other ways to achieve these goals that do not require the setup of a European SDRM. For example, debt limits can be strengthened and external institutional constraints made more effective. The Fiscal Compact is a case in point, because in a country with weak institutions the threat of falling into an excessive deficit procedure does strengthen the position of the Treasury and effectively discipline otherwise squabbling coalition governments.<sup>18</sup>

Similarly, there are aspects of the idea of introducing safe assets that are desirable. The main problem with the safe asset proposals is not whether the creation of a safe asset per se is desirable, but it is with

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<sup>18</sup> In fact, the threat of sanctions may be sufficient to discipline governments and, in equilibrium, actual sanctions may not need to be observed.

financial engineering itself. The source of the financial crisis of 2007-2008 was the securitization process itself, whereby senior tranches ended up not being risk free but vulnerable to systematic risks. As a result, there are reasons to fear that financial engineering of such kind might not make the Euro area more stable, but possibly less so.

At the same time, sovereign debt may become (close to) unsustainable in countries with high legacy debt that face large negative economic shocks. In such cases, it is desirable to have a path for debt reduction. To this purpose, it should be possible to introduce a more explicit seniority structure of sovereign debt, so that senior securities become safer and any credit risk is carried by the junior securities. The key is to create such a seniority structure in such a way as to be fully transparent, i.e., not hidden behind opaque financial engineering. Such a seniority structure would facilitate debt restructuring ex post in a rather automatic manner, bypassing issues of creditors' holdout or court intervention, because ex post negative economic shocks would wipe out the risky junior bonds and leave untouched the senior ones. At the same time, countries should have incentives to commit to structural reform and debt reduction. Finally, a European financial architecture should be completed, with the goal of increasing the insurance against massive shocks such as sudden stops, because monetary policy has proved quite ineffective near the zero bound.

For these reasons, I advocate a three-pronged intervention. First, there should be an explicit seniority of sovereign bonds. One way to do so would be to introduce a new class of junior sovereign bonds indexed to nominal GDP growth. Why would this help? Ex post, a country that had issued a sizable proportion—10-to-15% of its outstanding sovereign debt, say—of such a new class of junior sovereign bonds (the GDP-linked bonds) would find automatic debt relief following a crisis such as the one of 2010-2012. As an illustration, consider a 5-year GDP-linked bond that made repayment contingent on the GDP-growth rate, whereby the bonds are repaid in full as long as annual GDP growth in each of the 5 years is greater than zero, and only partially repaid if GDP growth is negative at least in one year. The details may vary, but in general, these bonds would provide lower repayment the lower the GDP growth rate.<sup>19</sup> Given such a GDP-linked bond, a recession such as that following the financial crisis of 2008-2009 would trigger a near-complete default on these junior GDP-linked bonds, thereby providing automatic debt relief. This automatic debt relief would open up budgetary room for expansionary fiscal policies to prop up domestic demand. Crucially, this would occur through explicit verifiable contingencies (i.e., large negative nominal GDP growth rates) rather than non-transparent adjustment of credit ratings or other assessments of less verifiable contingencies as during the financial crisis of 2007-2008. Ex ante, GDP-linked bonds would be junior and potentially risky securities. They would be risky also from a prudential and regulatory perspective. They would be of interest to risk-seeking investors, who would break even in expectation.

At the same time, to make financial markets willing to buy these junior bonds at viable interest rates, sovereigns would have a strong incentive to commit to a plan to reduce their legacy debt. This brings us to the second aspect of the intervention I advocate, namely, introducing explicit bylaws and regulations to mandate the issuance of GDP-linked bonds to countries with high legacy debts and large deficits, to create incentives for commitment to a path of structural reforms and reduction of outstanding legacy debts.

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<sup>19</sup> One possibility would be to stipulate a 25% loss rate for each 1% negative GDP growth rate, so that in the event of an annual GDP growth of -1% the loss-given-default is 25c on the Euro, in the event of an annual GDP growth of -2% the loss-given-default is 50c on the Euro, and so on.

In fact, one potential concern is that countries with high legacy debt might not have the incentive to refinance their debt with junior debt, and left to their own volition they might still prefer to issue senior bonds that remain risk-free from a prudential and regulatory perspective. To address this possibility, a simple way to go is to mandate that, above a certain threshold of outstanding debt and/or structural budget deficit, countries must issue junior GDP-linked bonds. To make such junior GDP-linked bonds appealing to investors at viable interest rates, countries would need to commit to a path of structural reforms and debt reduction. Therefore, the proposal could stipulate that if a country's debt to GDP ratio including GDP-linked bonds exceeds, say, 120 percent of GDP, or its structural budget deficit exceeds the level of 0.5 percent of GDP, then a large and fixed proportion of its new debt be issued in the form of GDP-linked bonds.<sup>20</sup>

How would a transition look like? To make an example, if a country like Italy that refinances about 15-16% of its outstanding debt each year were to issue one fifth of such refinancing in the form of junior GDP-linked bonds then in about 5 years it would have outstanding junior GDP-linked bonds representing about 15% of its total outstanding debt. The transition could easily be made faster or slower, depending for example on market appetite for these new securities.

Therefore, GDP-linked bonds would be a simple and transparent instrument that will go some length toward facilitating debt relief in such a way as not to entail the negative effects of hurting the liquidity provision of government bonds and undermining the domestic banking sector.

Finally, the third aspect follows the realization that monetary policy alone has been insufficient to stabilize the Euro area because interest rates were already so low and close to zero, so there was no room to further reduce them. Furthermore, monetary policy alone has proved ineffective near the zero bound to either stimulate growth or increase inflation, which would have helped reducing the incidence of high legacy government debts. As a result, a number of proposals set out to introduce elements of a common fiscal policy, e.g., see Obstfeld (2013) and the Five Presidents' Report, European Commission (2015). The goal of these proposals is to provide an arrangement that allows fiscal stabilisation at the level of the Eurozone as a whole. These elements of fiscal stabilization include the introduction of a European unemployment insurance. While it is beyond the scope of this paper to delve in detail about which elements of fiscal stabilization to introduce and how—for example, a non-trivial challenge should be the harmonization of labour markets across the Euro area—I wish to make a point here that the goal should be to avert systemic financial crises.

The reason is that for the Euro area a sovereign debt crisis like the one of 2010-2012 had massively negative consequences. Another crisis of a similar or larger size might well threaten the very existence of the Euro, e.g., see Kremens (2019). This state of affairs stands in sharp contrast to the US, where fiscal

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<sup>20</sup> These thresholds are mindful of a recent proposal by Fuest and Heinemann (2017), who advocate the issuance of accountability bonds, which are also a new class of junior bonds. There are two key differences between accountability bonds and GDP-linked bonds. First, unlike GDP-linked bonds, accountability bonds are not linked to explicit and easy to verify contingencies, but instead they are seen as losing value if the country starts an ESM program, or in the event of the country defaulting on any other outstanding bond. As discussed above, linking default of such junior bonds to easily verifiable contingencies such as nominal GDP growth has the advantage of generating debt relief precisely in the states of the world in which debt relief is most valuable. Instead, if a country had to start an ESM program for junior bonds to lose their value, there would be a strong incentive *ex post* not to start an ESM program even if debt was (close to) being unsustainable. Second, unlike GDP-bonds, in Fuest and Heinemann (2017) redemption and interest payments on accountability bonds are suspended until the debt ratio falls below 120 percent of GDP, even if the issuer does not default on other government bonds. If implemented, this provision would defy the very purpose of junior bonds, which is to gradually replace senior bonds with junior bonds, because countries with high legacy debt would find little or no market for issuing such junior bonds.

union already exists and default by a state of the size of Illinois or California would have a negligible impact at the federal level. Therefore, precisely because the US is a federal state and the EU is not, it is necessary for the EU to set aside resources to withstand systemic financial crises, including banking crises and sovereign debt crises. This argument has been controversial, not least because the Five Presidents' Report (European Commission (2015)) explicitly rules it out with the argument that the ESM already performs this function.

At the same time, the European Stability Mechanism was born with different goals in mind (see Erce (2018) for a historical account of official lending in the Euro area), and it is unclear that it could single-handedly prevent the risk of future systemic crises, for two reasons. First, it is capped at about 5% of the GDP of the Eurozone, which seems far too low given the size of EU banking sectors and thus the potential size of systemic crises. Second, the decision to provide stability support through the ESM is taken by unanimity, or by a qualified majority of 85% in special circumstances. The likely reason for this is again moral hazard (and on this, see the preceding discussion on the empirical relevance of moral hazard). The point here is that such a facility is unlikely to be sufficient to stem a systemic debt crisis that, once under way, is quite abrupt and devastating.

As a result, it appears necessary to increase the safety net to withstand systemic crises. In this respect, there have been some steps in the right direction such as the European Investment Stabilisation Function, and there is no reason not to complete the banking union and introduce deposit (re-)insurance, with the ESM acting as a fiscal backstop for the Single Resolution Fund. Other forms of fiscal union may also be desirable, and I leave it to others to discuss their specific content.

## 5. CONCLUSIONS

The challenges of agreeing on a proposed reform are twofold, as involved parties need to agree first on the economic model representing most accurately the issue at hand, and then agree on how to balance divergent interests, given such a model. Starting from an economic model that incorrectly represents reality may imply that implemented reforms produce a worse outcome than the status quo, irrespective of whether divergent interests are balanced or not. As Pisany-Ferry (2018) put it, “As with any zero-sum game, divergent interests may be hard to reconcile, but they are analytically simple to deal with, because the settling of a dispute is regarded by both sides as a purely transactional matter. Divergent representations may be less divisive, because the protagonists may ultimately all gain from cooperating, but agreement may be harder to reach. *Worse, because they reason with different models, participants may agree on a solution that leaves them actually worse off.*” (Pisany-Ferry (2018), p.2, italics mine).

This paper shows that home bias in banks’ holdings of sovereign debt and the resulting doom loop between domestic banks and their sovereigns during financial crisis are not disequilibrium phenomena that prevent the world from behaving as in the theoretical model of Eaton and Gersovitz (1981). While moral suasion might also play a role, a growing recent academic literature points to strong market forces that in equilibrium imply that domestic banks and financial institutions have strong incentives to hold a disproportionate share of their sovereigns’ bonds, both *ex ante* and *ex post*. While *ex post* such banks’ holdings of sovereign debt may fuel a doom loop between these same banks and their sovereigns, it is the very possibility of a doom loop with negative effects to the real economy *ex post* that provides incentives to governments to repay their debt, thereby making the system more stable and more secure *ex ante*. As a result, proposals to discourage the home bias and break the doom loop would make the system less stable, not more.

Similarly, proposals to introduce explicit sovereign debt restructuring mechanisms along the line of a ESDRM would have the immediate effect of making countries with high legacy debt more vulnerable and unstable, a point already made by Tabellini (2018). And proposals relying on financial engineering and hard-to-verify contingencies bear similar risks to the securitization process deemed at the heart of the financial crisis of 2008-2009 (Coval, Jurek, and Stafford (2009)). At the same time, it is possible that, following negative shocks, countries with high legacy debt will find their debts to be unsustainable and will need to restructure.

What to do then? Recognizing that reforms that are more ambitious may not be politically viable, I have advocated a three-pronged intervention, based on:

- 1) allowing the issuance of securities of a class of junior sovereign bonds indexed to transparent and easy to verify contingencies, such as for example bonds linked to nominal GDP,
- 2) mandating countries with high legacy debt and/or high nominal deficits that want to refinance their debt to issue a proportion of the new debt in the form of such junior bonds. This way, sovereigns will have the right incentives to commit to a path of structural reforms and debt reduction, because they will want to convince investors and financial markets to offer viable interest rates on the junior bonds, and
- 3) increasing the extent of fiscal stabilization and banking union in the Euro area, because monetary policy alone has proved ineffective near the zero bound. In this respect, the key aspect to recognize is that existing backstops such as the ESM may be insufficient to deal with systemic crises that could threaten the very existence of the Euro. I have then mentioned some forms of fiscal and banking union, including unemployment insurance, and deposit (re-)insurance.

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Existing proposals for reform in the euro area, including the introduction of an orderly sovereign debt restructuring mechanism and of forms of debt mutualisation, rely on similar implicit or explicit assumptions: The “diabolic loop” between sovereign debt and domestic banks is to be mitigated or avoided; market discipline has to be maintained; and moral hazard has to be avoided. This paper discusses the stated goals of existing proposals, together with their likely anticipated and unanticipated effects and trade-offs. It recognizes that several of these underlying assumptions and frameworks are at odds with the extant empirical evidence. It concludes by setting forth a three-pronged proposal for reform in the Euro Area. First, it is desirable to have a more explicit seniority structure in sovereign debt, which should be achieved by introducing a junior class of risky sovereign bonds linked to nominal GDP growth. Second, governments with high legacy debt and/or high deficits should be required to access new financing by issuing such junior bonds. Third, the extent of fiscal stabilization and banking union in the Euro area should be increased. This document was provided by the Economic Governance Support Unit at the request of the ECON Committee.

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PE 634.396

Print ISBN 978-92-846-4823-8 | doi:10.2861/342162 | QA-04-19-423-EN-C

PDF ISBN 978-92-846-4822-1 | doi:10.2861/916598 | QA-04-19-423-EN-N