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The design of a sovereign debt restructuring mechanism for the euro area: Choices and trade-offs*

Christophe Destais[§] Frederik Eidam[†] Friedrich Heinemann[‡]

28 March 2019

Abstract

This paper critically assesses several dimensions of a sovereign debt restructuring mechanism (SDRM) for the euro area. The novelty of our analysis is that we abstain from recommending one ideal model for a restructuring mechanism. Instead, we apply a menu-type approach. For five key institutional SDRM dimensions, we discuss the underlying fundamental trade-offs and discuss the pros and cons of different design choices. Specifically, we investigate the following SDRM dimensions: (i) the institutional assignments of responsibilities, (ii) the condition or decision rule that triggers a debt restructuring, (iii) the design and size of debt restructuring, (iv) the role and details of collective action clauses (CACs), and (v) the safeguards for financial stability in support for a SDRM. We conclude that there is no such thing as the single optimal SDRM. Design decisions require judgements on the underlying trade-offs and related assumptions on relative costs. Also, the search for an appropriate euro area SDRM design can benefit from complementarities. Ambition in one dimension can offer more degrees of freedom in another dimension. Our analysis implies that there is no convincing reason to further taboo the search for a euro area SDRM, as there are ways to combine the opportunities of a credible SDRM with financial stability.

Keywords: eurozone crisis; sovereign debt restructuring mechanism; collective action clauses

JEL-Classification: H63, F53, G15

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1. Introduction

From a historical perspective, sovereign defaults are no rare events (Destais, 2019): The first recorded example dates back to ancient Greece, when Greek cities did not repay a loan to the Temple of Delos. Since 1800, at least 250 sovereign default events on foreign loans and around 70 domestic public debt default events have been recorded (Reinhart and Rogoff, 2009). In contrast to this historical experience, the perception of the likelihood of sovereign defaults was very different in the first years of the euro.[1] With the optimistic mood in the early euro era, the scenario of a sovereign insolvency was widely seen as unrealistic for countries in the monetary union. Since the outbreak of the eurozone sovereign debt crisis in 2010, this optimism has been deeply shattered. Financial markets and politicians had to learn that EU and euro member countries are not immune to developments that can finally lead to sovereign insolvency and default.

The euro area sovereign debt crisis has kicked-off comprehensive reforms with a tightening of fiscal governance, measures to cut the sovereign-bank nexus such as the buildup of the European Banking Union and the creation of the European Stability Mechanism (ESM) as a permanent mechanism for liquidity support (Strauch, 2019). Moreover, the European Central Bank (ECB) has set up its Outright Monetary Transactions (OMT) program that has the potential to back up the ESM's liquidity provision to crisis countries through purchases of government bonds in secondary markets. However, the euro area still lacks a statutory sovereign debt restructuring mechanism (SDRM) that precisely defines procedures and responsible institutions in case of a sovereign insolvency. A few elements that affect the handling of sovereign insolvency are in place, such as the obligation to include Collective Action Clauses (CACs) in new euro area sovereign bond issues and the performance of a debt sustainability analysis (DSA) prior to ESM lending. Nevertheless, apart from these few clarifications, the strategy how to cope with insolvent sovereigns remains vague and largely undefined. As a consequence, the euro area still sticks to a case-by-case approach in dealing with sovereign debt restructurings.

There are several arguments that this case-by-case approach might be sub-optimal (Destais, 2019). On the one hand, the case-by-case approach likely leads to procrastination. Politicians and market participants can have interests to delay a debt restructuring. The absence of a clearly defined procedure and delays increase uncertainties and can thus increase the social and economic costs of a sovereign debt overhang. In addition, procrastination might lead to open or hidden bailout solutions that can raise issues of moral hazard, democratic legitimacy and, voter resistance on the side of donor countries. On the other hand, there are arguments that the absence of a clearly defined procedure could be beneficial due to its "constructive ambiguity". Underlying this argument are the risks of destructive multiple equilibria in government bond markets (Baglioni and Bordignon, 2019). In addition, limiting contagion to other member countries financial sectors and sovereigns has been a key argument to postpone or abstain from sovereign debt restructurings. Given these diverse arguments, there is an ongoing academic debate about how a SDRM could be designed to match the conditions of the euro area (for surveys on SDRM proposals see Fuest et al. (2016), and Andritzky et al. (2018)). Increasingly, this academic debate impacts the ongoing political reform process in the euro area. For example, in December 2018 the Eurogroup proposed to strengthen the existing CAC obligations and to assign the ESM the role as moderator for debt negotiations between euro countries and creditors (Eurogroup, 2018).

In this paper, we critically assess several dimensions of a SDRM for the euro area. The novelty of our approach is that we abstain from recommending one ideal model for a restructuring mechanism. Instead,

[1] Prior to the Greek debt restructuring in 2012, there has been no sovereign debt restructuring in Europe since the Second World War (Zettelmeyer et al., 2013).

we apply a menu-type approach.[2] For five key institutional SDRM dimensions, we discuss the underlying fundamental problems and trade-offs and discuss the pros and cons of different design choices in the context of the euro area. The objective is to inform on the available choices in the design of a more specified SDRM. To our knowledge, we are the first to take this comprehensive and neutral view on the topic of introducing a SDRM, instead of providing a specified proposal.

A transition from the current case-by-case approach towards a more predictable SDRM implies some minimum requirements. First, there must be well-defined *institutional assignments*. The responsible institutions for tasks such as the performance of the DSA, the decision to trigger debt restructuring negotiations or the provision of liquidity, have to be determined. Second, a SDRM should specify a condition or decision rule for *triggering the start* of debt restructuring. Here, a wide spectrum of possibilities between unconstrained discretion and a fully formula-based automatism exists. Third, the mechanism should guide the decision on the necessary *design and size of debt restructuring*. There are various design alternatives that could have different repercussions, such as the choice between debt reduction through nominal haircuts and debt rescheduling by lengthening the maturity of outstanding debt. Fourth, the *role and the details of collective action clauses (CACs)* have to be decided. CACs have an essential function for a contractual approach to debt restructuring that assigns the responsibility for the resolution of a debt overhang to debtors and lenders. However, CACs can also smoothen the functioning of a statutory SDRM. In both cases, CACs provide a legal underpinning of burden sharing to mitigate negotiation inefficiencies during debt negotiation, but the effectiveness of CACs depends on different dimensions. Fifth, the establishment of a SDRM must not ignore the *safeguards for financial stability* and needs to be embedded in the evolution of the regulatory and financial environment. Currently, euro area features such as the prevailing sovereign-bank nexus are risk factors for the possibly destabilizing consequences of any debt restructuring.

Our analysis investigates these five SDRM dimensions in detail. In the subsequent sections, we discuss for each dimension the underlying challenges, involved trade-offs, and existing options that policy makers have to be aware of before taking a decision. Key insights along these five dimensions are as follows:

Institutional assignments: The most controversial issue among the necessary institutional decisions appears to be the appropriate responsibility for the DSA. After the foreseeable end of an IMF involvement in the DSA, the remaining decision is one between either leaving the DSA in the full responsibility of the European Commission and the ECB, or assigning a larger role to the ESM and/or another neutral institution such as the European Fiscal Board (EFB). The appropriate choice also depends on the position towards transfers among member countries. Those who are afraid of transfers as an unintended solution to a national debt overhang would tend to assign an important role in the DSA to the ESM or even another more independent institution. It is likely that those who would rather be ready to accept transfers as an element of a solidarity union or as a precaution against multiple equilibria would rather favor a DSA under the full control of the European Commission with substantial political discretion.

Triggering the start: The choice of criteria or decision procedures to trigger a debt restructuring faces a trade-off between the two objectives of minimizing the risks of multiple equilibria and avoiding procrastination of debt restructuring. While a fully formula-based automatism – if it can ever be credible – might solve the procrastination problem, it implies financial stability risks for countries approaching the trigger. In contrast, full discretion could provide ambiguity that can limit the risk of destructive multiple equilibria, but the downside are possibly stronger procrastination incentives. Consequently, the

[2] With "menu-type approach", we refer to different choice options for different institutional SDRM dimensions. This is not to confuse with the "menu approach" (or "Toronto terms") of the Paris Club for debt rescheduling.

decision on how to design the trigger will depend on the perception of relative costs of financial instability versus procrastination. Design options that might alleviate this trade-off combine formula-based models with some discretionary leeway.

Design and size of debt restructuring: Historical evidence shows that not only the pure incidence of a sovereign debt restructuring matters, but that its consequences are heavily affected by the design choices. A first design choice of a debt restructuring concerns the magnitude of the operation. While an ambitious size of restructuring is likely to overcome the debt overhang problem, it could also result in larger costs in terms of increased future borrowing costs and higher risks to financial stability. In addition, variations in the magnitude of debt reductions result in substantial distributional consequences. This is because the size of a debt restructuring determines the magnitude of wealth that is shifted between (foreign) creditors and the domestic population. A second design choice relates to the choice between debt reduction through cuts in the nominal (face) value of debt, or debt rescheduling through lengthening of the maturity of outstanding debt (and potential interest rate reductions). While debt reduction provides instant debt relief that helps to immediately stimulate economic growth, debt rescheduling promotes macroeconomic adjustments and external rebalancing.

Role and details of collective action clauses (CACs): Creditor holdouts and litigation are recognized as a key reason for inefficiencies and delays in sovereign debt restructurings (Das et al., 2012). Mitigating these costly and prolonged battles after sovereign defaults faces a trade-off between financial stability risks and the speed of transition to a new regime. Those who judge the current likelihood of debt restructurings low or fear the financial stability risks of an immediate regime change might prefer a contractual solution through strengthening CACs. However, as CACs are only introduced in the issuance of new debt instruments, this results in a gradual penetration of debt stocks with CACs and implies long transition phases. Those who view debt restructurings in the near term more likely or have fewer concerns about financial stability risks of an immediate regime change might opt for legal solutions, such as changes to the ESM treaty or immunization of ESM funds against holdouts. These legal solutions may also be applied ad-hoc and in combination with CACs to facilitate debt restructurings, such as in the case of Greece in 2012.

Safeguards for financial stability: The most important concern of a sovereign debt restructuring is the financial instability that could originate from the close link between credit risk of the sovereign and credit risk of the (domestic) financial sector (Zettelmeyer, 2018). Beyond the completion of the Banking Union, reducing the sovereign-bank nexus through removing regulatory privileges for sovereign debt is a key reform. However, the choice of banking regulation faces a trade-off between the differentiation of sovereign credit risk across eurozone member states and limiting distributional consequences. Those who prefer differentiation of sovereign credit risk would prefer the introduction of credit risk-dependent sovereign risk weights and accept the large resulting variations in banks' additional capital requirements across countries. Those who prefer to limit distributional consequences would rather introduce uniform concentration limits across sovereigns and accept that this approach only addresses concentrated exposures to individual sovereigns.

2. Institutional assignments

2.1 Underlying general problem

A SDRM for the euro area has to assign the following responsibilities to existing or newly designed institutions:

a. the provision of liquidity prior to a decision to trigger the insolvency procedure,

b. the conduct of the debt sustainability analysis (DSA),
c. the decision to trigger the debt restructuring mechanism,
d. and the provision of liquidity during debt restructuring negotiations.

If a country merely suffers from a temporary liquidity shortage, but its medium- and long-term fiscal perspective is fundamentally sound, there is a clear case for liquidity assistance. Liquidity assistance is particularly crucial in a monetary union, as euro member countries are indebted in a currency beyond their sovereign control. This lack of sovereign control makes the euro area particularly prone to destructive multiple equilibria in sovereign bond markets (Baglioni and Bordignon, 2019). The establishment of a SDRM as such may increase the risk of self-fulfilling crises. Hence, a SDRM must be embedded in an architecture that includes powerful tools to provide financial support to countries that suffer from a mere liquidity crisis (function a). Liquidity support is also needed for an insolvent country in the transitory period of negotiations as well as the time until a debt restructuring restores debt sustainability and achieves market access (function d). The DSA (function b) is a crucial task as it provides the basis to distinguish between the case of a temporary illiquidity and a fundamental insolvency of a sovereign. Finally, the decision has to be taken whether or not the SDRM is triggered (function c).[3] The DSA (function b) and the decision to trigger the SDRM (function c) can, in principle, be split between two institutions, where the responsible institution for the trigger may take into account additional criteria on top of the DSA (e.g. financial stability, political considerations).

In the decision to trigger the SDRM, two types of errors are possible and both can have severe consequences (Zettelmeyer, 2018): With a 'Type I error', a sovereign with unsustainable debt will continue to receive financial assistance. In this case, financial assistance has a transfer character and bails out the sovereign that would not be able to fully repay the loans received. With a 'Type II error', a sovereign is denied liquidity assistance although it could restore solvency without debt restructuring by conducting adjustments and reforms. This error causes political and economic costs of debt restructuring that would be avoidable in the absence of the error.

Hence, a decision on whether a DSA should be generous or strict also involves a judgement on the relative costs of both types of errors as a reduction of the Type I error usually corresponds to an increase of the Type II error. Supporters of a solidary transfer union might be more willing to accept Type I errors (and its resulting transfers), whereas opponents of a transfer union might try to avoid this Type I error under any circumstances. The costs of a Type II error are influenced by the performance of the SDRM. The smoother a SDRM operates and the swifter a SDRM reliably reopens capital market access for the affected sovereign, the lower the involved economic and political costs of a Type II error might become.

In the eurozone, the status quo to fulfill these four functions can be described as follows: The ESM and possibly the ECB provide liquidity (functions a and d) to sovereigns that loose market access and agree with the ESM on a Memorandum of Understanding (MoU). Through its Outright Monetary Transaction (OMT) program, the ECB can offer additional liquidity for sovereigns with ESM support through the purchase of the country's sovereign bonds in the secondary market.

The DSA (function b) is currently assigned to the "Troika" of European Commission, European Central Bank and IMF – with a primary responsibility to the Commission, a supporting role for the ECB and a possible contribution from the IMF.[4] Judging on the basis of the experience with the Greek public sector

[3] Section 3 discusses in detail pros and cons of triggering the start of a SDRM.
[4] Art. 13 ESM Treaty states: "the Chairperson of the Board of Governors [of the ESM] shall entrust the European Commission, in liaison with the ECB, with the following tasks: … (b) to assess whether public debt is sustainable. Wherever appropriate and possible, such an assessment is expected to be conducted together with the IMF."

involvement (PSI), the decision to trigger a debt restructuring (function c) involves the Troika and also the Eurogroup (Zettelmeyer, Trebesch and Gulati, 2013).

This current setup has been criticized on several grounds. First, this set-up has not avoided long delays in restructuring the Greek debt. In the case of Greece, this institutional setup arguably caused a Type I error as Greece has effectively received a bailout through generous ESM financing conditions (Buchheit and Gulati, 2018; and section 3). Second, the strong involvement of the ECB regularly raises concerns that this monetary policy institution oversteps its monetary policy mandate. And third, the IMF involvement is controversial as some see an undue external influence in internal European decisions.

2.2 Institutional options for a SDRM in the euro area

In its December 2017 proposal for a Council Regulation on the establishment of the European Monetary Fund (EMF), the European Commission sketched its preferred institutional solutions also with respect to the above listed functions of a SDRM (European Commission, 2017). According to this blueprint, the intergovernmental ESM, which is based on the international ESM Treaty, would be replaced by the supranational European Monetary Fund (EMF) under EU law. The new EMF would provide financial assistance to crisis countries under similar conditions as the ESM so far (functions (a) and (d)).[5] With the EMF, the role of the IMF in the DSA would come to an end. The DSA would be assigned solely to the "Commission in liaison with the ECB". In their November 2018 joint position on future cooperation the ESM and the European Commission clarify how the ESM shall take part in DSA together with the Commission and the ECB (ESM, 2018).

In its proposal on euro area reform from December 2018, the Eurogroup (2018) clarified its view on EMU deepening, which do not follow all of the Commission's suggestions. The Eurogroup does not recommend to transform the ESM into a supranational EMF at this stage. However, it agrees with the Commission that the involvement of the IMF in the DSA should come to an end and supports the agreement between the Commission and the ESM on future cooperation on the DSA. This joint position gives the Commission the last word in the "overall assessment of the sustainability of public debt", but states that the ESM will independently assess the Member State's capacity to repay ESM loans.

Overall, there seems to be a consensus that the ESM is the right institution for the liquidity support (functions a and d), whereas the right institution to perform the DSA (function b) is a more contested issue. The options for the institutional involvement of the DSA are the following:

(i) leave the responsibility for the DSA unchanged with the Troika of Commission, ECB and IMF

(ii) discard the IMF from the DSA-performing institutions without replacement

(iii) replace the IMF through the ESM in the DSA

(iv) include another more independent institution in the DSA (option iv can be combined with any of the other options)

In the following, we discuss the pros and cons of involving different institutions in the DSA:

IMF involvement: A key argument opposing IMF involvement is that it raises concerns about an undue external influence in European affairs. Important arguments in favor of IMF involvement are its contribution of technical expertise, large experience in dealing with insolvent sovereigns and a more neutral perspective than European players with their political interests (e.g. a bias towards

[5] In addition, the EMF would have the additional role as a financing tool for the banking union as the 'financial backstop' to the Single Resolution Fund.

procrastination of SDR, see section 3).[6] The argument in favor of the IMF with respect to its expertise might become weaker with the buildup of ESM/EMF and the growing DSA experience of European institutions. Further, it can also be questioned whether the IMF is still a credible guarantee for an unbiased DSA as demonstrated by two recent experiences in Europe (Zettelmeyer, 2018). First, in the 2010 decision of lending to Greece, the IMF has also lent money to Greece in spite of a negative DSA. Second, in 2015 the IMF decided not to join new lending to Greece due to its negative DSA and the ESM still went ahead with new lending to Greece without the IMF. This has shifted the burden of the (Type 1 error-related) bailout fully to European creditors. The potential credibility import from an IMF involvement is low, if IMF lenders do no longer have skin in the game. In fact, the IMF will soon loose skin in the game as IMF loans are paid back early with high interest rates, while ESM loans have extended maturities of more than 30 years with preferential interest rates.

ESM involvement: A key argument in favor of involving the ESM in the DSA is one of linking liability to responsibility: The institution which provides liquidity assistance and thus accepts the credit risk of the sovereign should also be fully involved in all analytical steps that prepare the credit decision. A counter-argument is that not only the European Commission with its interest in European solutions has a political bias but also the ESM (Baglioni and Bordignon, 2019). However, an ESM involvement would give the fiscally sound countries (i.e. the high-creditworthiness ESM guarantors with their veto power in the ESM governing bodies) more influence on the DSA, which could be seen as a counterweight against a bias towards lending to insolvent sovereigns (Type I error). Thus, the decision on an ESM involvement in the DSA amounts to a decision on the weight of creditor countries in the DSA procedure.

Involvement of another independent institution**:** The academic literature discusses the involvement of other, less political institutions. For example, a new chamber at the European Court of Justice could take over a role in a SDRM (Gianviti et al., 2010)). Another suggestion is to involve the newly established European Fiscal Board (EFB), in particular for the DSA (Asatryan and Heinemann, 2018). The EFB as a neutral watchdog could counterbalance the political myopia of other players and lead to a more neutral DSA. The role of the EFB in the DSA could be combined with a final decision of the Commission, ECB and ESM to trigger the SDRM (and thus lead to a separation of functions b and c). This would give these three institutions the possibility to decide against a sovereign debt restructuring even if the EFB has diagnosed insolvency, e.g. due to financial stability concerns or political considerations. The advantage of this setting would be its transparency. It could thus reduce the risk of a biased DSA being misused to hide political decisions on an effective bailout. The most important counter-argument against the involvement of an independent institution is its possible lack of democratic legitimacy, as its decisions potentially have far-reaching economic and political consequences. In addition, and in contrast to the Commission, IMF, ECB, and ESM, other independent institutions initially do not possess experience to perform the DSA.

2.3 Conclusion on institutional assignments

It is largely undisputed that the ESM (and possibly a future EMF) will be the central vehicle to provide financial support in the context of any SDRM. The larger the ESM's future potential role in the provision of liquidity to sovereigns, the lesser the need to involve the ECB as the lender of last resort. What is more controversial is the decision which institutions undertake the DSA and the decision – on the basis of the preceding DSA – whether a SDR is actually triggered.

[6] For example, while the financing conditions of EFSF/ESM support for Greece have been considerably softened since 2010, the IMF has insisted on high interest rates on its own loans as these would better reflect the lender's low creditworthiness (Corsetti et al., 2017).

The controversy mirrors a deeper dispute whether transfers can be an acceptable solution for insolvent eurozone sovereigns. Those who want to avoid a transfer solution under any circumstances will stress the need for a very strict and impartial DSA as well as a final decision that gives a substantial say to creditor countries (that would have to bear the burden of the transfer solution). Institutional arrangements that assign an important decision role to the ESM – or even another more independent institution – would be in line with this position. In contrast, those who want to accept transfers as an element of a solidarity union and those who fear high costs of a sovereign debt restructuring will rather favor a more lenient and discretionary DSA. Institutional arrangements that assign the DSA largely under the control of the European Commission with some ECB assistance – without the involvement of another institution – would be the favored decision from this perspective.

3. Triggering the start

3.1 Underlying general problem

One of the potential advantages of a procedurally well-defined SDRM is that it could encounter the "too late and too little" problem, i.e. the frequent and costly delay in dealing with a sovereign insolvency (IMF, 2013). Greece was an example of a clearly insolvent country in 2010, where a private sector debt restructuring was delayed until 2012 when "it was (almost) too late" (Zettelmeyer et al., 2013). Underlying these delays are incentives of politicians and creditors for procrastination. Politicians tend to procrastinate the declaration of insolvency, as such a credit event is a strong signal of government failure and, hence, politically costly (Buchheit et al., 2013; Destais, 2019). Following sovereign defaults, electorate support for the incumbent government plunges and the likelihood of a change in government increases significantly (Borensztein and Panizza, 2009). Hence, incumbent politicians have a strong incentive to delay a necessary restructuring of sovereign debt. These incentives may also imply hesitancy to seek liquidity assistance from a lender of last resort if such an institution exists. Any such application might already be seen as a signal of political failure. Moreover, if the application for liquidity triggers a DSA, national politicians could be afraid of an unfavorable outcome. Thus, procrastination relates to various phases of a sovereign debt crisis. In addition, also creditors have incentives to delay sovereign debt restructuring and even grant new credit to a sovereign with a debt overhang problem. The solvency of the domestic sovereign and its local banking sector is heavily intertwined so that particularly weakly capitalized banks have a high incentive to "gamble for resurrection" by increasing their exposure to highly indebted sovereigns (see section 6). Moreover, politicians and creditors also tandem in their procrastination efforts as politicians engaged in moral suasion and political connectedness have led to an increase in the exposure and home bias of banks in Southern European countries during the eurozone crisis (De Marco and Macchiavelli, 2016; Ongena et al., 2016). This procrastination behavior is further incentivized through the regulatory environment that discounts the credit risk of sovereigns, e.g. with the zero-risk weights for sovereign exposure and in the absence of concentration limits for sovereigns (see section 6). Obviously, the way a SDRM specifies a trigger is of substantial importance for the relevance of the procrastination problem.

3.2 Merits and drawbacks of different SDRM triggers

There are two polar solutions in the spectrum of possible SDRM trigger constructions. On the one side of the spectrum, the decision to trigger sovereign debt restructuring is a full formula-based automatism and would thus not leave any discretion to the responsible institution(s). On the other side of the spectrum, the decision to trigger sovereign debt restructuring would be under the full discretion of the responsible institution(s). Both polar cases have crucial risks and opportunities, which are discussed below.

An objectively quantifiable trigger that leaves no room for interpretations (e.g., the debt-to-GDP level surpasses a pre-defined level) has the advantage to credibly neutralize the above sketched procrastination interests of politicians and creditors. The activation of the SDRM would no longer depend on the liquidity application of a debtor country or a politicized decision of any European institution. This advantage is valuable as procrastination entails economic and social costs, as it prolongs the period of uncertainty, high interest rates, fiscal austerity and recession that characterizes the pre-default phase (Buchheit et al., 2013). The risk of procrastination of debt restructuring is substantial for the eurozone. The European Commission currently views six euro countries "at high fiscal sustainability risk in the medium-term" (European Commission, 2018). Consequently, there exists a high probability that the Greek experience with long delays in debt restructuring might repeat itself in the eurozone unless more credible triggers of restructuring sovereign debt are in place.

However, any automatic formula-based trigger also contains severe downsides. A first criticism is in full analogy to the criticism on simplistic debt rules, such as the early version of the Stability and Growth Pact with its focus on the three percent headline deficit: Debt sustainability depends on a multitude of factors, not only the open public debt and the deficit. Additional important factors that need to be considered are for example implicit debt, the maturity structure of debt, growth potential, taxing capacity, reform capability including political stability, assumptions on risk-adequate interest rates and other external factors. Consequently, it is questionable whether any formula could replace a comprehensive DSA. This recognition implies that any such trigger could lack credibility (Zettelmeyer, 2018). The second challenge of automated triggers, even if they are credible, is the risk of vicious circles in the market for sovereign bonds – particularly once economic and fiscal indicators begin to approach the triggering thresholds (Baglioni and Bordignon, 2019). A formula-based automatic trigger could set in motion a vicious circle of increasing risk spreads, increasing deficits and debt and, finally, the activation of the SDRM even for countries that, initially, are in a state of fundamental solvency. A precisely defined trigger could thus coordinate investors to speculate against a sovereign. This problem is particularly severe under the current fragile conditions of EMU, as several highly indebted EMU sovereigns' current debt indicators being already close to any meaningful trigger threshold. In contrast to a fully automatic trigger, a fully discretionary trigger could contain these financial stability risks through its "constructive ambiguity" as market participants could not predict a restructuring with certainty. However, full discretion in triggering a sovereign debt restructuring risks to aggravate the procrastination problem.

The two problems of procrastination and destructive self-fulfilling debt restructuring expectations cannot be solved at the same time, so that the specification of the trigger to start a sovereign debt restructuring contains a trade-off. The ideal model to end procrastination, i.e. full automatism, entails high risks of self-fulfilling prophecies that result in new liquidity crises. Conversely, the ideal model to contain self-fulfilling debt restructuring expectations, i.e. full discretion, is prone to aggravate the procrastination problem.

This trade-off between ending procrastination and containing self-fulfilling debt restructuring expectations has two consequences. First, preferences for the type of trigger will, to a large extent, depend on the perceived relative costs of both problems. Those who do (not) think procrastination costs are substantial will tend to opt for triggers without (with) a large discretionary leeway. Second, those trigger constructions deserve attention that might alleviate the trade-off by providing hybrid solutions between both polar cases.

These hybrid solutions to alleviate the above described trade-off could take different forms, as highlighted in the following three examples. First, quantifiable indicators can be combined with some leeway for case-specific judgement, as in the proposal for a European Sovereign Debt Restructuring

Regime (Buchheit et al., 2013). Second, instead of applying an automatic formula to start the trigger, the insolvency-illiquidity question could be decided based on a period of probation whose length is limited (Fuest et al., 2016). In this probation, or shelter period, ESM liquidity support could be granted to any eurozone country that complies with reform conditions, but liquidity support would only be granted for a fixed maximum period. The outcome of the shelter period decides whether the debt restructuring procedure needs to be triggered. While the risk of self-fulfilling debt restructuring expectations remain for certain indicator ranges in the first example, or at the end of the shelter period in the second example, compared to fully automatic triggers these self-fulfilling risks are substantially reduced. Third, leeway in the trigger decision is less likely to lead to procrastination if the responsible institution is independent and consequently less prone to political procrastination incentives (e.g. the European Fiscal Board; see also section 2). In sum, these hybrid solutions offer ways to alleviate tensions between ending procrastination and containing self-fulfilling debt restructuring expectations.

3.3 Conclusion on triggering the start of sovereign debt restructuring

Deciding on how to trigger the start of a sovereign debt restructuring is a multifaceted decision and there is no silver bullet for the SDRM trigger. The two polar cases in the spectrum of possible trigger constructions are full formula-based automatism and full discretion of the responsible institution(s). While full automatism would reduce incentives to procrastinate the sovereign debt restructuring decision, full discretion to trigger debt restructuring would contain self-fulfilling debt restructuring expectations in financial markets. The assessment on the trade-off between the two polar cases could change in the future once the financial environment becomes more stable, e.g. with a completion of the banking union, an effective cut of the bank-sovereign-nexus (see section 6) or a solution for high legacy sovereign debt levels. For the time being, the decision on the SDRM trigger must wisely balance the two polar risks, which are procrastination (that is maximized when a political institution has large leeway) and financial stability risks (which are maximized with a rigid formula-based trigger without escape clauses).

4. Designs and size of debt restructuring

4.1 Underlying general problem

Restructuring sovereign debt is defined as "an exchange of outstanding sovereign debt instruments, such as loans and bonds, for new debt instruments or cash through a legal process" (Das et al., 2012). While debt restructuring provides several benefits to the sovereign, such as reduced indebtedness and consequently lowers debt servicing costs that allow for growth stimulating policies, debt restructurings can also cause substantial consequences. For example, debt restructurings have reputational consequences so that creditors might subsequently exclude the sovereign from international capital markets and increase its borrowing costs (Cruces and Trebesch, 2013). Further, output losses might occur (Trebesch and Zabel, 2016) and trade flows might decline (Rose, 2005). In addition, the domestic financial sector might be significantly affected, potentially leading to a credit crunch in domestic lending (Acharya et al., 2018). Moreover, cross-border spillovers, such as financial contagion, might occur (Bolton and Jeanne, 2011), so that the consequences of a sovereign debt restructuring are not limited to the affected sovereign. Importantly, it is not the pure incidence of a sovereign debt restructuring that matters, but the consequences of a debt restructuring are heavily affected by design choices.

Important design choices of a sovereign debt restructuring are its magnitude, type and timing, and all choices entail important trade-offs. The main design choice of restructuring sovereign debt is the magnitude of debt reductions: *sufficient debt reductions* resolve the sovereigns' debt overhang problem, while *insufficient debt reductions* do not resolve the sovereigns' debt overhang problem. While the

absolute magnitude of sustainability-restoring debt restructuring depends on the difference between current indebtedness and expert judgement on a sustainable debt level, variations in the magnitude of debt restructuring have substantial distributional consequences. On the one hand, larger debt restructurings shift the burden of debt restructuring more heavily to (foreign) creditors and/or official lenders, which might increase the severity of punishments by international lenders in the form of capital market exclusions and increased borrowing costs. On the other hand, smaller debt restructurings leave a larger burden of adjustments to the domestic population.

A second design choice of restructuring sovereign debt is the type of debt restructuring: *debt reductions* reduce the nominal (face) value of outstanding debt instruments, while *debt rescheduling* just lengthens the maturity of (the unchanged nominal value of) outstanding debt and potentially involve interest rate reductions. On the one hand, debt reductions provide instant debt relief that can help to immediately stimulate economic growth. On the other hand, debt rescheduling help to promote macroeconomic adjustments and external rebalancing as only the net present value of outstanding debt is reduced by shifting debt payments into the future (Cheng et al., 2018).

The third design choice is the timing of debt restructuring: *preemptive debt restructurings* are debt exchanges that occur before the sovereign defaults on its outstanding debt, while *post default debt restructurings* occur after a sovereign default. On the one hand, preemptive debt restructurings might smooth debt restructuring as the sovereign has not missed any debt payments. However, under positive economic developments or fiscal adjustments the sovereign might have been able to avert debt restructuring. On the other hand, at the inception of post default debt restructurings the standing of the sovereign in international credit markets is already affected due to missed debt payments to creditors. As a consequence, debt restructuring might become more complicated and lengthy.

In the eurozone, special constraints and advantages also affect the restructuring of sovereign debt (Buchheit and Gulati, 2018). Financial institutions hold disproportionally large amounts of domestic sovereign debt ('home bias') so that debt restructuring risks to decapitalize the local banking sector. In addition, contingent liabilities by the sovereign to the financial sector, such as explicit or implicit government guarantees, also intertwine the domestic financial sector and the domestic government ('sovereign-bank nexus'). Moreover, the health of the government and the banking sector are affected by and affect the domestic economic activity (Dell'Ariccia et al., 2018). Beyond this, eurozone governments de facto borrow in a foreign currency (De Grauwe, 2012), so that currency devaluations to repudiate debt and restore competitiveness are impossible. Nevertheless, most sovereign debt of eurozone member countries is legislated by local law, which allows to facilitate efficient and timely debt restructuring (see section 5). In addition, the ESM is able to quickly mobilize funds to lend money to sovereigns experiencing financial difficulties, avoid debt restructurings through ESM bailouts and thus enhance financial stability. However, large eurozone sovereigns might be too big to save through ESM funds alone.

4.2 Merits and drawbacks on different debt restructuring designs

The empirical literature on the effects of sovereign debt restructurings documents that the above discussed design choices of debt restructurings significantly affect its consequences. First, the magnitude of debt restructuring affects borrowing costs and exclusion from financial markets, initial output losses, and the probability of serial sovereign debt restructurings. Larger magnitudes of debt restructurings compared to smaller magnitudes subsequently induce higher borrowing costs and longer periods of exclusion from financial markets (Cruces and Trebesch, 2013). In addition, the initial output loss of debt restructurings with larger magnitudes compared to smaller magnitudes is significantly larger (Trebesch and Zabel, 2016). However, debt restructurings with smaller compared to larger magnitudes significantly increase the probability of a serial sovereign debt restructuring (Schröder, 2014), implying

that the debt overhang problem has not been solved. These results confirm the notion that historically sovereign debt restructurings "have often been too little and too late" (IMF, 2013; section 3).

Second, the type of debt restructuring matters for economic growth, credit quality and macroeconomic adjustments. Debt restructurings increase economic growth and improve sovereigns' credit quality only for debt reductions compared to debt rescheduling (e.g. Reinhart and Trebesch, 2016; Cheng et al., 2018). However, only countries with debt rescheduling undergo a sustained rebalancing of their external sector, and achieve large trade surpluses after the debt restructuring (Cheng et al., 2018). Within debt rescheduling, maturity extensions have a stronger effect on debt sustainability compared to lowering spreads (Corsetti et al., 2018).

Third, the timing of debt restructuring matters for growth, trade and the exchange rate (Asonuma et al., 2016). The authors show that the initial output costs from post default debt restructurings are larger and more protracted compared to preemptive debt restructurings. In addition, the decline in imports is stronger and more prolonged and the fall in exports larger for post default debt restructurings compared to preemptive debt restructurings. Similarly, the decline in the real exchange rate is larger for post default debt restructurings.

Beyond these design elements, debt restructurings also depend on the type of creditors (Cheng, 2019). Sovereign creditors organized in the Paris Club coordinate debt restructuring following a set of pre-defined principles including conditionality, implying that sovereign debtors are required to reach an agreement with the IMF and subsequently undergo macroeconomic adjustment programs. In contrast, private creditors often lead to a disperse creditor structure so that creditor holdouts and litigation becomes more likely (see section 5). Finally, debt restructurings often exclude multilateral creditors, such as the ECB, IMF or multilateral development banks, implying a de facto subordination of creditors.

4.3 Conclusion on the design and size of debt restructuring

Overall, sovereign debt restructuring is an important tool for solving sovereign debt crisis, but its design crucially matters for the consequences. To achieve the desired objectives, policy makers therefore have to carefully trade-off the merits and drawbacks from different design choices. However, many of these design choices depend on the result of the DSA, which can be controversial depending on the involved institutions and the political objective of these institutions (see sections 2 and 3). In the eurozone, the current institutional setup and substantial economic costs of debt restructuring (see section 6) both foster debt restructurings becoming 'too little and too late' as demonstrated by the Greek debt restructuring in March 2012.

5. Role and Details of Collective Action Clauses (CACs)

5.1 Underlying general problem

A key problem in the restructuring of sovereign debt are creditor holdouts and litigation, which are widely recognized as the key reason for inefficiencies and delays in debt restructurings (Das et al., 2012). Given the absence of an international consensus on a statutory sovereign debt restructuring mechanism (Destais, 2019),[7] contractual provisions that specify the minimum vote on modification of payment terms (called collective action clauses, or abbreviated CACs) were introduced internationally to mitigate these costly and prolonged battles after sovereign defaults (Panizza et al., 2009). CACs should thus address the holdout problem by providing a legal underpinning for burden sharing with the private sector, and as a consequence strengthen market discipline (Zettelmeyer, 2018). Without CACs,

[7] Such as the IMF proposal by Krueger (2001).

modification of bond contract terms require unanimity of consensus of creditors, so that the introduction of CACs comprised a fundamental trade-off: ex-post (once debt restructuring negotiations have been triggered), CACs reduce negotiation inefficiencies, but ex-ante (when a debtor country reflects on the costs and benefits of restructuring), CACs increase the temptation of a sovereign to default (Carletti et al., 2018).

Following the emerging market crises in South America in the mid-1990s, CACs were introduced into most foreign law bonds starting in the early 2000s. By 2012, about 90% of emerging market sovereign New York law debt comprised CACs (Bradley and Gulati, 2014). As the result of foreign law bonds, retrospective legislative enactments - that are possible by local-law bonds - could not be passed by the sovereign anymore for these types of bonds. Consequently, legal risks of foreign-law bonds are lower compared to local-law bonds and sovereigns have a higher legal commitment to repay its debt (Chamon et al., 2018). Consistently, foreign law CAC bonds are traded at lower yields compared to similar local-law non-CAC bonds (Carletti et al., 2018). However, local-law bonds continued to exist in parallel to foreign-law bonds, resulting in a structural subordination of sovereign bond contracts. That is, foreign-law bonds are de facto senior, as they are legally more difficult to restructure.[8]

In the eurozone, sovereign debt has been predominantly issued under local-law, but foreign-law bonds often exist in parallel (Chamon et al., 2018). During the European sovereign debt crisis, the Greek sovereign debt restructuring in March 2012 highlighted the consequences of the coexistence of local-law and foreign-law sovereign debt as well as its effects on restructuring sovereign debt. To facilitate the Greek sovereign debt restructuring, Greece passed domestic legislation (the Greek Bondholder Act, on February 23, 2012) to retroactively impose a form of CACs to its existing domestic-law debt. Under the Greek sovereign debt restructuring plan, creditors would take a haircut of 59-65% resulting from maturity extensions and coupon reductions (Zettelmeyer et al., 2013). Local-law bond holders accepted the exchange offer with vast majority and debt restructuring was successful (Baglioni and Bordignon, 2019). However, the legislative amendment could not be applied to Greece's foreign law bonds issued under English law (Zettelmeyer et al., 2013). Subsequently, some creditors of foreign-law bonds engaged in holdouts and were paid out in full as part of the debt restructuring (Zettelmeyer, 2018).

One of the key policy responses to the Greek debt restructuring was the mandatory introduction of CACs into eurozone sovereign debt to reduce the legal uncertainty of future debt restructurings and insure private sector involvement (Gelpern and Gulati, 2013). Specifically, starting from January 1, 2013 all sovereign bond issues with maturities above one year – independent of local-law or foreign-law bonds – mandatorily had to include CACs with identical contract terms across eurozone member states. Payment modifications under these new CACs specify contract amendments on a single series of bonds as well as across different series of bonds.

5.2 Merits and drawbacks of mandatory CACs in eurozone sovereign bonds

In general, there are two (not mutually exclusive) approaches to mitigate the risk of costly and prolonged battles after sovereign defaults. On the one hand, legal solutions such as changes to the ESM treaty or immunization of ESM funds against holdouts would result in an immediate regime change. However, this immediate change might itself trigger a situation of financial instability that could lead to a sovereign default. On the other hand, contractual solutions such as the introduction of CACs into newly issued sovereign debt would result in a gradual regime change that mitigates the risks of financial instability.

[8] See also Bolton and Jeanne (2009) on selective defaults.

However, the mandatory introduction of CACs in sovereign bonds as carried out in the eurozone since 2013 entails two main drawbacks that are discussed below.[9]

First, while a slow transition might mitigate adverse market turmoil, the majority of total outstanding sovereign debt continues to be local-law debt without CACs during the transition phase. This result originates from CACs being only applied to new sovereign bond issuances, so that the existing debt stocks initially remain largely without CACs. Across eurozone sovereigns, the fraction of local law CAC bonds increased from zero to about 13 percent for bonds with maturities between one and 30 years since the start of introducing CACs in January 2013 until June 2014 (Carletti et al., 2018). However, the speed of penetrating outstanding debt with CACs differs widely across countries, and may take more than a decade for certain sovereigns to reach at least 60 percent of outstanding debt (Eidam, 2016). If sovereign debt restructuring becomes necessary despite a low penetration of outstanding debt with CACs, changes in local legislation (as in the recent Greek debt restructuring) might serve as a solution to ensure an efficient and timely debt restructuring (Buchheit and Gulati, 2018).

Second, while eurozone CACs strengthen the legal underpinning of risk-sharing with the private sector, these euro area-CACs so far remain untested and minimum votes to modify payment terms of bonds do not apply across all outstanding bonds. Negotiation inefficiencies could be further reduced by mandatory requiring the application of CACs across all bondholders, using so-called "single limb aggregation" (Bénassy-Quéré et al., 2018). In the Greek sovereign debt restructuring in March 2012, the retroactive introduction of CACs under Greek law was successfully applied in the form of "single limb aggregation" across the totality of outstanding bonds, instead of a bond-by-bond basis (Baglioni and Bordignon, 2019). The introduction of single limb aggregation CACs could therefore facilitate the resolution of future sovereign debt restructurings. In fact, in December 2018 the Eurogroup recommended to euro area leaders to mandatorily introduce these single limb CACs by 2022 (Eurogroup, 2018). However, even despite addressing creditor holdout risk by introducing single limb CACs (and in a state of a fully penetrated outstanding debt stock), creditor holdouts might not be eliminated entirely. An example of the remaining risks of single-limb CACs is the Greek debt restructuring in March 2012, where some single-limb English law debt bondholders successfully engaged in holdouts. Further, despite identical wording of these new CACs in the eurozone, differences across legal systems of the member states could result in a possible fragmentation across eurozone countries as shown for existing eurozone CACs (Carletti et al., 2018). Again, combining legal solutions, such as changes to the ESM treaty or immunizing ESM funds against holdouts, with CACs might offer a solution to further reduce litigation risks from holdouts (Zettelmeyer, 2018).

Importantly, CACs only provide a voting mechanism for debt restructurings to keep governments out of courts, but these contractual provisions cannot replace a statutory sovereign debt restructuring mechanism. For example, CACs and legal solutions provide no guidance on triggering the start of debt restructuring, the time dimension for negotiations, the magnitude of expected losses if CACs were to be used, or the provision of interim financing for the time-period of negotiations (Fuest et al., 2016).

5.3 Conclusion on collective action clauses

In sum, CACs and legal solutions are important elements to reduce ex-post negotiation inefficiencies and delays in sovereign debt restructurings, as demonstrated by the sovereign debt restructuring of Greece in March 2012. Consequently, the mandatory introduction of CACs in eurozone sovereign bonds since January 2013 (and single limb CACs by 2022) are important steps to an enhanced resolution of future sovereign debt crises in the eurozone. Nevertheless, a slow penetration of sovereign debt stocks

[9] As argued above, another important drawback of the introduction of CACs is that it ex-ante increases the temptation of a sovereign to default.

with (single limb) CACs poses a threat on their effectiveness to enhance the resolution of sovereign debt crisis in the near future. The assessment on the trade-off between CACs and legal solutions (such as changes to the ESM treaty or immunization of ESM funds against holdouts) could change in the future, once financial stability risks have been further mitigated (see section 6). Legal solutions beyond CACs could serve as ways to advance the effectiveness of the legal underpinning of debt restructurings beyond CACs. Nevertheless, CACs and legal solutions can only complement a mechanism to regulate sovereign debt restructuring, but not serve as a substitute.

6. Safeguards for financial stability

6.1 Underlying general problem

If the economic costs of restructuring outstanding sovereign debt held by the private sector are too high, it becomes rational for policy makers to bail out highly indebted sovereigns during crises (Zettelmeyer, 2018). Despite the no bail-out clause in the EMU constitution, this rational has been at the core of events during the eurozone crisis. Except for the Greek debt restructuring in March 2012, policies adapted during the eurozone crisis aimed to ensure that peripheral governments were lent money to repay their debt on time and in full amount (Buchheit and Gulati, 2018). These bail-outs were justified by the sizable economic costs that debt restructurings would inflict on the domestic financial sector, the feedback effects to the domestic sovereign ('sovereign-bank nexus') and contagion to other member countries financial sectors and sovereigns. As a consequence of bailing out troubled eurozone sovereigns, the official sector became a large lender to affected sovereigns. Subsequent maturity extensions and interest rate reductions by official sector lenders de facto violated the no bail-out clause through "hidden" debt relief of official sector lenders' debt.[10] Politicians thus quietly used taxpayers' money to bail-out sovereigns, despite publicly calling for private sector involvements initially. The introduction of a sovereign debt restructuring mechanism consequently affects the fundamental trade-off underlying these policy decisions: Either avoid the risks of private sector involvement by the use of public funds to guarantee financial stability, or facilitate private sector involvement and accept the resulting financial stability risks.

Two closely interrelated phenomena lie at the core of elevated financial stability risks from sovereign debt restructurings. First, the 'home bias' in sovereign debt holdings by domestic banks, which result in a disproportionally large exposure to the credit risk of their domestic sovereign. This 'home bias' results from different underlying channels. For example, purchasing risky, high-yielding sovereign debt allows banks to engage in regulatory arbitrage, as it increases the immediate return on equity without the need to increase Tier 1 capital, as the banking regulation assigns a zero risk-weight to sovereign debt. Also, moral hazard motives play a role for weakly capitalized banks, as the downside risk of holding risky domestic sovereign debt is protected by the limited liability in adverse conditions (Acharya and Steffen, 2015). As a result of the missing lender of last resort in the eurozone sovereign bond market prior to the announcement of the ECB's OMT program in 2012, peripheral governments engaged in financial repression by putting pressure on domestic banks to purchase domestic sovereign debt during crises times (Becker and Ivashina, 2018). Further, due to the downside protection by the limited liability of banks, weakly capitalized domestic banks also engaged as buyer of last resort as the returns on domestic sovereign debt are positively correlated with other revenue sources of the bank, which increases profitability in good states (Crosignani, 2017).

[10] See e.g. Buchheit and Gulati (2018) on the restructuring of the first official sector credit facility for Greece.

Second, the 'sovereign-bank nexus' intertwines the credit risks of the sovereign and credit risk of the domestic financial sector. If the sovereign wants to stabilize a stressed financial sector through bank bailouts and guarantees (to banks or deposits) to ensure the provision of financial services during crises, credit risk is transmitted from the financial sector to the sovereign (Farhi and Tirole, 2018). In the other direction, increases in sovereign credit risk reduce the value of domestic sovereign debt holdings on banks' balance sheets and thus reduces the solvency of the banking sector.[11] This effect is amplified through the 'home bias' in sovereign bank lending described above. In addition, deteriorating sovereign credit quality can cast doubt whether the sovereign is able to act as a fiscal backstop for the national deposit insurance regime and consequently trigger bank-runs in the domestic banking sector. Sovereign default and debt restructuring would consequently impose substantial collateral damage on the domestic financial sector and contagion to other member countries (Bolton and Jeanne, 2011).

6.2 Merits and drawbacks of reforms to safeguard financial stability

A key reform to address banks' exposure to eurozone sovereigns' credit risk and the 'home-bias' is to remove regulatory privileges for sovereign debt in the banking regulation.[12] Similar to the regulation of corporate credit risk, regulators could introduce risk weights for sovereign debt in the computation of banks capital requirements, or concentration limits for sovereign debt holdings, or both. Both alternatives would imply a regulatory recognition that sovereign risk is currently not properly reflected. The introduction of risk weights would, however, have large distributional consequences across eurozone member countries due to differences in banks' existing sovereign debt holdings and differences in credit quality across eurozone sovereigns (Baglioni and Bordignon, 2019). For the same reasons, the introduction of concentration limits that depend on sovereign credit-risk would also result in large distributional consequences. However, the introduction of uniform concentration limits across eurozone sovereigns would entail substantially lower distributional consequences, and particularly address banks' 'home bias'. Specifically, banks would not be affected by the credit risk of its domestic sovereign, but exclusively by the degree of its concentrated exposures to individual sovereigns (most prominently being the domestic sovereign). In comparison to risk weights, uniform concentration limits would also avoid automatically increasing capital requirements upon downgrades during sovereign debt crises, and consequently avoid the associated negative consequences on economic activity (Zettelmeyer, 2018). Nevertheless, both risk weights and concentration limits would heterogeneously affect the funding conditions of sovereigns and potentially impair financial stability, as the domestic banking sector of riskier and highly indebted countries might substantially reduce their provision of credit to their domestic sovereign. Nevertheless, if regulatory privileges on sovereign debt are removed, private sector involvement in future debt restructurings becomes more credible.[13] Consequently, market discipline would be strengthened and banks might become more cautious in the provision of credit to highly indebted sovereigns ex ante. To mitigate spillovers from changes in the regulation of sovereign debt exposures, exclusion of some sovereign debt exposures from regulatory changes and long transition periods might be applied.

The establishment of the European Banking Union is another key reform package to reduce the 'sovereign-bank nexus' by cutting the link from bank risk to sovereign risk (Strauch, 2019). While the single supervisory mechanism and the single resolution mechanism have been established and a common backstop to the single resolution fund is politically agreed, the introduction of a European

[11] A third dimension that intertwines credit risk of the government and the domestic financial sector is economic activity (e.g. Dell'Ariccia et al., 2018).
[12] Another reform to weaken the 'sovereign-bank nexus' is the introduction of a Eurozone-wide safe asset (e.g. Brunnermeier et al., 2017).
[13] Credibility can also be increased by ensuring a more efficient and timely debt restructuring through amendments of legislation (see section 4).

Deposit Insurance Scheme (EDIS) remains open. Currently, bank deposits are insured by national deposit insurance schemes, and domestic sovereigns serve as a fiscal backstop. Once deposits are in doubt in major crises and the sovereigns' capacity to insure deposits is questioned, bank-runs can occur and put liquidity strains on the national banking system.[14] With an EDIS, national deposits would be guaranteed at the European level, so that the risk of bank-runs on national banking systems can be substantially reduced. The introduction of an EDIS can consequently reduce the intertwinedness of risks between banks and sovereigns, and enhance financial stability (Schnabel, 2018). Nevertheless, as any insurance scheme, the creation of an EDIS also raises serious moral hazard concerns. Deposit insurance fees need to be differentiated to account for the associated risks, and might consequently vary across banks and countries to reflect the risk profile of individual banks and country-specific risks (Bénassy-Quéré et al., 2018). However, only an equal protection of insured deposits across banks and countries could ensure the highest level of trust of an EDIS. Another concern is that risks from national policies of member states could be shifted to the European level. Finally, legacy issues in the form of the 'home-bias' in national banks' government bond holdings and non-performing loans need to be taken into account, as risk-sharing might otherwise turn into a collectivization of risks and thus transfers. The completion of the European Banking Union with the introduction of an EDIS and removing regulatory privileges for banks' sovereign debt holdings are mutually reinforcing and might thus be coordinated (Bénassy-Quéré et al., 2018).

6.3 Conclusion on safeguards for financial stability

The 'home bias' of peripheral banks' sovereign debt holdings and the 'sovereign-bank nexus' strongly intertwine the credit risk of sovereigns and credit risk of their domestic financial sector in the eurozone. Restructuring sovereign debt consequently entails significant economic costs, so that policies adopted during the eurozone crisis (except for the Greek debt restructuring in March 2012) aimed at bailing-out troubled sovereigns. Removing regulatory privileges for sovereign debt in the banking regulation and completing the European Banking Union through the introduction of an EDIS can both substantially reduce the link between the credit risk of sovereigns and credit risk of their domestic financial sector. However, removing regulatory privileges might itself negatively affect financial stability and introducing an EDIS requires a political consensus on legacy issues, so that transition periods might be applied. However, establishing liquidity provision to solvent but illiquid sovereigns through the ESM/EMF (see section 2) would heavily dampen the negative temporary effects of creditors' provision of liquidity to sovereigns. Once these reforms would have significantly reduced the economic costs of sovereign debt restructurings, debt restructuring in the eurozone would become more credible. A credible sovereign debt restructuring regime could then strengthen the ex-ante market discipline for sovereigns, and consequently also address the build-up of sovereign debt before it becomes unsustainable.

7. Conclusion

Our analysis along different dimensions of a SDRM has clarified that there is no such thing as the optimal SDRM. Its design choices imply decisions on trade-offs and judgements that will differ according to national interests and perceptions of relative costs. For example, politicians from low credit risk countries might be more concerned about a "late" restructuring and the possibility of transfers compared to politicians from high credit risk countries. Further, those who regard sovereign bond

[14] In addition, governments can face a debt rollover crises due to the missing lender of last resort in the Eurozone government bond market. Reforming the ESM to provide short- to medium-term liquidity for pre-qualified sovereigns addresses this problem (Andritzky, 2018).

markets and the banking system in the euro area still as highly fragile might put more emphasis on minimizing the risks from an "early" debt restructuring, even if this might imply liquidity assistance to countries with unsustainable debt levels.

Another overriding insight from our analysis is that the search for a SDRM design should be aware of complementarities. For example, progress on the financial stability frontier can alleviate trade-offs in other dimensions, such as the SDRM trigger. Once the sovereign-bank nexus is successfully loosened, instability risks of a more automatic SDRM trigger would be considerably reduced. Hence, an ambitious SDRM would be consistently embedded into a package of other institutional and regulatory reforms, such as dealing with banks' excessive exposure to sovereigns or legacy issues of sovereign indebtedness. Another example concerns the complementarity between institutional assignment and the SDRM trigger: If the responsible institution for the DSA possesses a high reputation of impartial judgements, concerns about a non-automatic and more discretionary SDRM trigger would decrease considerably. Hence, design choices in one dimension can result in constraining or relaxing consequences for choices in other dimensions. In sum, our analysis implies that there is no convincing reason to further taboo the search for a euro area SDRM.

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