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CORRIGENDUM
This document corrects SWD(2018) 252 final of 24.5.2018.
This version corrects a mistake in Figure 3 on page 9, specifically: the ECB original capital key for France should have read 0.142 rather than 0.242. The other values in the table which depend via algebraic manipulation on this entry are also suitably corrected.
The text should read as follows:

COMMISSION STAFF WORKING DOCUMENT

IMPACT ASSESSMENT

An enabling regulatory framework for the development of sovereign bond-backed securities (SBBS)

Accompanying the document

Proposal for a Regulation of the European Parliament and of the Council

on sovereign bond-backed securities

{COM(2018) 339 final} - {SEC(2018) 251 final} - {SWD(2018) 253 final}

Table of contents

Glossary

Term or acronym	*Meaning or definition*
AIFMD	Alternative Investment Fund Managers
BRRD	Bank Recovery and Resolution Directive (Directive 2014/59/EU)
CCP	Central Counter Parties
CET1	Core Tier-1 Capital
CIU	Collective Investment Unit/Undertaking
CRD	Capital Requirement Directive IV (Directive 2013/36/EU)
CRR	Capital Requirement Regulation (Regulation (EU) 575/2013)
CSD	Central Securities Depositories
DMO	Debt Management Office
EBA	European Banking Authority
ECB	European Central Bank
EIOPA	European Insurance and Occupational Pensions Authority
EMU	Economic and Monetary Union
ESM	European Stability Mechanism
ESRB	European Systemic Risk Board
EU	European Union
HLTF	High Level Task Force
HQLA	High-Quality Liquid Assets
IORP	Institutions for Occupational Retirement Provision
IRB bank	A bank using "Internal Ratings-Based" models to calculate its capital requirements
LCH	London Clearing House
LCR	Liquidity Coverage Ratio
NSFR	Net Stable Funding Ratio
RTSE	Regulatory Treatment of Sovereign Exposures
SA bank	A bank using the "Standardised Approach" to calculate its capital requirements
SBBS	Sovereign Bond-Backed Securities
SCR	Solvency Capital Requirement
SPV	Special purpose vehicle
SSM	Single Supervisory Mechanism
STS securitisation	Simple, transparent and standardised securitisation
TFEU	Treaty on the Functioning of the European Union
UCITS	Undertakings for Collective Investment in Transferable Securities

1. INTRODUCTION: POLITICAL AND LEGAL CONTEXT

A novel concept—that of **Sovereign Bond-Backed Securities, or SBBS** (see Box 1[1])—has attracted the attention of academics and policy makers alike as a possible tool to address the "home bias" in banks' sovereign portfolios (see Box 2) and further weaken the banks-sovereign nexus (see Box 3), two vulnerabilities that were at the heart of the last financial and economic crisis.

SBBS are appealing because, by design, they would not suffer from some of the pitfalls associated with other widely discussed reforms to address these key vulnerabilities, e.g. the introduction of Eurobonds[2] and a reform of the regulatory treatment of sovereign exposure (RTSE) to discourage concentrated investment in sovereign bonds, especially of the riskier ones. Specifically:

1. Differently from Eurobonds, *SBBS would not involve mutualisation of risks and losses among Member States*. Risk/loss mutualisation is seen as problematic by many because it might encourage moral hazard.
2. *SBBS do not present the same risks for financial stability as would stem from an untimely RTSE reform.* It is precisely to ward off such financial stability risks that the Commission's stance on RTSE, as reiterated e.g. in the May 2017 Reflection Paper[3] on deepening the economic and monetary union (EMU), is that it can only happen once Banking Union, Capital Markets Union, and a European safe asset are in place (section 2.3).

SBBSs are *tranches* issued against a diversified portfolio of euro-area central government bonds. The diversification of the underlying portfolio and the conservative tranching threshold (i.e., a sufficiently large loss-absorbing sub-senior tranche) would ensure a very high level of safety for the senior tranche. The tranching would in effect concentrate sovereign risk into the junior and, to a lesser extent, mezzanine tranches. If the latter two tranches are bought by investors whose losses are less likely (than, say, those of banks) to create spillovers to the public purse, the risk of feedback loops in case of stress in one or more euro area sovereigns would be further reduced.[4] [5]

An inter-institutional High Level Task Force (HLTF) was established in mid-2016 under the aegis of the ESRB and the Chairmanship of Central Bank of Ireland Governor Philip Lane to assess the feasibility, merits and risks of SBBSs. The European Commission (henceforth, the Commission) has actively contributed to the work of this task force, which also comprised representatives from 16 national central banks, the ECB, the EBA, the EIOPA, as well as of Member States' Debt Management Offices and academics (for the list of HLTF members, see Annex 1 of the HLTF report).

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[1] See also Brunnermeier et al. (2016b).

[2] A classical Eurobond is a bond guaranteed jointly and severally by all participating Member States.

[3] https://ec.europa.eu/commission/publications/reflection-paper-deepening-economic-and-monetary-union_en

[4] An alternative way to pool sovereign bonds would be in a basket with a specific composition, which would be equivalent to a securitisation with a single junior tranche (see section 6.2.3).

[5] Of course, SBBS would per se not achieve the optimal *overall* diversification of banks' balance sheets. They can help diversify banks' sovereign exposures. To the extent that banks also diversify geographically their other assets (i.e., through cross-border lending to non-financial corporates and households) the sovereign-bank nexus would be further weakened.

Based on the work conducted by the HLTF and its own analysis, in the above mentioned May 2017 Reflection paper on deepening EMU, the Commission has put forward SBBS as a possible tool that could be launched in the short term[6] to enhance diversification of banks' sovereign exposures.

In the Letter of Intent accompanying his 2017 State of the Union Address, President Juncker has committed the Commission to propose by 2018 an "enabling framework for the development of SBBS to support further portfolio diversification in the banking sector."

Finally, in its October 2017 Banking Union Communication, the Commission reiterated its view that SBBS "have the potential to contribute to the completion of the Banking Union and the enhancement of the Capital Markets Union" by "support(ing) further portfolio diversification in the banking sector, while creating a new source of high-quality collateral particularly suited for use in cross-border financial transactions". On this basis, the Communication notes that "building on the outcome of the [ESRB HLTF] work in December 2017 and consultations with relevant stakeholders, the Commission will consider putting forward a legislative proposal for an enabling framework for the development of sovereign bond-backed securities in early 2018."

The HLTF has concluded[7] that, while they would not address fully all the known structural vulnerabilities of the euro area financial sector, SBBSs do have potential to improve on the status quo. However, SBBS are unlikely to emerge under the current regulatory framework, since the latter would impose on them additional charges and discounts (relative to those faced by the sovereign bonds in the underlying portfolio), making SBBS uneconomical to produce and unattractive to hold (see section 2.1).

The HLTF found that a gradual development of a demand-led market for SBBS may be feasible under certain conditions.[8] A key necessary condition, however, is for an SBBS-specific enabling legislation to provide the conditions for a sufficiently large investor base, including both banks and non-banks.

This impact assessment studies, therefore, whether and how to adapt the current regulatory framework to better take into account the features and properties of these novel instruments. Doing so would make it possible for *SBBS to undergo a true "market test"*, which is the only way to ascertain whether they are economically feasible or not once relieved of the existing regulatory hindrances.

[6] Other measures, such as a European safe asset, would require more analysis and more time (again, see EMU reflection paper).

[7] The final report is available at https://www.esrb.europa.eu/pub/task_force_safe_assets/html/index.en.html.

[8] Many market participants have argued strongly that the viability of SBBSs would be greatly enhanced if the junior tranches were supported by some form of public guarantee (for example replies to the public survey, Annex 2, section 1 and DMO's views, annex Annex 2, section 3). As discussed below (see section 5.3), there is no appetite to offer such guarantees. Indeed the key feature of SBBS, which has gained them support among a cross-section of policymakers, is precisely that they would not involve any public support, and that they would rather rely exclusively on mutualisation of risks among private investors.

Box 1: The concept of SBBS

SBBS consist of different claims (tranches) of ranked seniority on an underlying diversified portfolio of (euro area) sovereign bonds put together by a Special Purpose Vehicle (SPV) (see Figure 1). Depending on how the market would develop, one or several arrangers would issue the instrument. The weights of the various sovereign bonds in the underlying portfolio would be fixed (e.g., in line with each country's GDP, or the ECB key), as would their tranching structure (i.e., number of tranches—e.g., a senior, a mezzanine and a junior tranche—and tranching points). The portfolio would initially cover central government bonds of euro area countries. The scheme could start off at a relatively small scale, and would be envisaged to cover up to a fraction of Member States' bonds, so as to leave a balance of national bonds in the market, for market discipline purposes. As mentioned, SBBS would be different from classical Eurobonds in that they would not rely on any risk sharing or fiscal mutualisation between Member States.

Figure 1: Balance sheet of a special-purpose vehicle issuing SBBS with three tranches

Assets	Liabilities
Euro area (central) government bonds (e.g., ECB capital key weights)	Senior Tranche
	Mezzanine trance
	Junior tranche

By virtue of this tranching with seniority, the junior tranche would be first in line to take any losses that might arise in the tail event of a sovereign default. With an appropriate tranching point, the intention is that the senior tranche would constitute "safe" or low-risk assets.[9]

SBBS, and in particular the senior tranche, could potentially yield tangible benefits for the overall financial architecture in Europe. In particular, they would help:

- *Allow banks and other investors to diversify their sovereign bond portfolios*—whose home bias is presently a key conduit of the sovereign-bank nexus—at relatively low transaction costs. This would thus help avoid the financial fragmentation observed over the course of the sovereign debt crisis, when yield differences between euro area Member States widened. With SBBS, safe haven flows would move also across instruments (i.e. from the junior to the senior tranche) rather than just across borders (i.e., from sovereigns with weaker fiscal positions to those with stronger ones.
- *Alleviate safe asset scarcity in Europe*: Expand the supply of (euro-denominated) "safe" (high-rated) assets, which has been falling due to the many downgrades experienced in the wake of the crisis, against the regulation-induced increased demand for high-quality liquid assets, especially in the context of the Liquidity Coverage Ratio (LCR). Importantly, all qualifying euro area Member States would indirectly contribute to such a high-rated asset. So the gains from the "exorbitant privilege" of producing safe assets would be more evenly shared than is the case now.
- *Create a risk-free rate benchmark curve* against which other securities could be priced.
- *Create an asset that the ECB could use*, if they so choose, *to conduct monetary policy operations* without risking been perceived as supporting a particular Member State.

Basing the SBBS' underlying portfolio on the ECB key has several objectives:

- First, it is meant to ensure that the benefits (and any costs) associated with the expanded supply of low risk assets accrue in a balanced manner to all euro area Member States. This is an important consideration, not just in point of fairness, but also in terms of efficiency. Specifically, if SBBS manage to become a 'benchmark'-like security, they (in particular their senior tranche) may be used by investors as a low-risk alternative to build or to unwind

[9] Of course, no asset can be made to be *fully* safe. The analysis by the HLTF shows that a 70-percent thick senior tranche would have a five-year expected loss rate of 0.5% or less ("at least as safe as German Bunds").

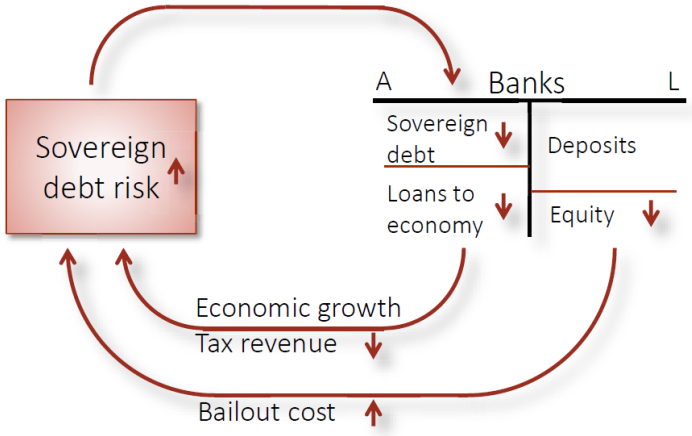
positions in euros. This means, for example, that if there is an increase in the demand for 'low risk' euro exposures, investors could purchase the (senior) SBBS rather than the bonds of the (select) high rated euro-area Member States. As a result, any downward pressure on interest rates would be spread throughout the euro area, and not skewed to benefit only a few Member States and the borrowers in these jurisdictions. This is positive for Member States that would otherwise not benefit from this enhanced demand for euro exposure, and also for high-rated Member States, which otherwise could experience unduly low interest rates, potentially leading in turn to overheating, misallocation of investment, as well as to challenges for some investor classes (e.g., pension funds).

- Second, it is meant to facilitate standardisation of SBBS over time, as the ECB key is relatively stable (especially if applied on multi-year averages of the underlying determinants, e.g. population and GDP levels).
- Finally, it is meant to avoid potential moral hazard associated with other likely candidates for standardised portfolio composition, and in particular with the relative share of outstanding individual governments' debt on the total (as countries with larger debt stocks would then benefit disproportionately).

Box 2: The bank-sovereign nexus

Sovereign and banking stress can reinforce each other through a number of channels, especially in times of economic stress. A worsening of the financial situation of the sovereign leads to deterioration in the market value of government debt, including that held by the banks, reducing their loss absorption capacity (at market prices) and hindering their ability to lend to the economy.[10] In turn, this further depresses economic activity, lowering tax revenue and adding to the funding pressure on the sovereign. In the past, the state was furthermore perceived to provide the ultimate backstop to ensure banking stability, either by injecting capital or by providing liquidity. Therefore, banking stress increased the contingent liabilities for the government, raising its financing costs. This further exacerbated the feedback loop.[11]

Figure 2: The bank-sovereign nexus



Source: Brunnermeier et al. (2016b)

The sovereign-bank nexus was one of the main factors amplifying financial distress in the euro area during the last financial and economic crisis. High stock of public debt in Greece and Italy combined with increased exposure of these countries' banking sectors (and, in the case of Greece, of Cypriot banks also) to sovereign finances. Meanwhile, imprudent lending practices by Irish, Spanish and Slovenian banks built up high and in some cases excessive risk on bank

[10] This channel is exacerbated in countries with high levels of government debt or where there is prevalent home bias in banks' sovereign portfolios (Box 3).

[11] For a more detailed discussion, also Banca d'Italia (2014).

balance sheets, and subsequent public intervention put significant strain on the finances of their respective sovereigns.[12] The concomitant hikes in funding costs put significant strain on economic activity in these countries.

Thus, addressing this feedback loop enhances financial stability and increases resilience. Mitigating the link between sovereign and financial stress through prudent policy making, greater asset diversification and building up credible backstops, would reduce the overall level of risk in the economy. In turn, this would limit the cost of sunspot-driven crises, thereby enhancing financial stability.

Several important steps have been taken in recent years towards a full Banking Union, thus weakening the bank-sovereign nexus. For example, (major) euro-area banks are now supervised at the EU level (by the SSM) and (if necessary) resolved by the Single Resolution Mechanism supported by the Single Resolution Fund. Furthermore, a backstop for the Single Resolution Fund is being established, which means that banks can be resolved efficiently and effectively, irrespective where they are headquartered. Furthermore, the Commission has proposed the establishment of a backstop to the Single Resolution Fund, to be provided by the ESM, or the (future) European Monetary Fund.[13]

Box 3: The home bias in banks' sovereign portfolios

A key factor that strengthens the link from a sovereign to its banks is the so-called "home bias" in banks' sovereign bond portfolios, i.e. banks are typically most exposed to their own sovereign. This home bias actually increased in the wake of the euro area debt crisis, in particular in more vulnerable Member States, even if more recently, also supported by government bond purchases by the ECB, banks have somewhat reduced their holdings of government bonds.

The table in Figure 3 reports the size of banks' holdings of bonds of their own sovereign in EU Member States, both in nominal value as a share of banks' overall sovereign bond portfolios. When this share is disproportionately large (for example, compared to the Member State's share in the ECB capital key), it gives rise to so-called "home bias".

As shown in Figure 3, the degree of "home bias" is not homogenous within the euro area, with the share of exposure to the home sovereign relative to the total of sovereign exposures ranging from 8.3% (Luxembourg) to 61.3% (Slovenia) in the sample. This share is generally well above each Member States' share in the ECB capital key, except for French banks.[14]

Several factors can explain why a bank would prefer holding bonds issued by its home sovereign. The first one is simply the better knowledge of the home sovereign's creditworthiness (see Persaud (2017)), compared to that of more remote sovereigns. Another one refers to possible differences in perceived default probabilities: investors (and banks in particular) might believe that a sovereign in financial difficulty may try to prioritise servicing its domestic debt (and in particular, domestic banks) over bonds held by foreign investors (see Guembel and Sussman (2009)). In addition, banks may also accumulate domestic sovereign exposure if they consider that the additional risk of holding such debt is negligible: if the home sovereign was to fail, the bank is likely to fail anyway, since its exposures to the domestic economy are likely to sour.[15] Finally, domestic banks may be subject to "moral suasion". In particular, government-owned

[12] See Erce. A (2015) for a discussion of the factors which affect the extent of spillovers from banks to the sovereigns, such as the size of the banks' balance sheets, the structure of their liabilities, and the level of non-performing loans.

[13] https://ec.europa.eu/commission/publications/completing-europes-economic-and-monetary-union-factsheets_en

[14] Recent data show a reduction in euro area banks' holdings of government debt by 17% between 2015 and 2017, which thus also reduces their financial connection with their sovereign.

[15] As Horváth, B L, H Huizinga, and V Ioannidou (2015) put it: "*additional domestic sovereign exposure cannot hurt them (banks) much, because they are likely to fail anyway if their sovereign defaults*".

banks and banks under political influence (through government seats at the Board of directors) report higher home bias in sovereign debt, and such moral suasion is stronger in countries under stress (see De Marco and Macchiavelli (2016)).

Figure 3: Banks' exposure to domestic sovereign bonds as of 30 June 2016

	Sovereign bonds (million EUR)	Home sovereign bonds (million EUR)	Home sovereign bonds / total sovereign bonds	ECB key		"home bias" proxy 2/
				Original	Rebased 1/	
Austria	58,968	11,666	19.8%	2.0%	2.8%	16.9%
Belgium	118,370	26,683	22.5%	2.5%	3.6%	19.0%
Cyprus	2,428	907	37.4%	0.2%	0.2%	37.2%
Finland	7,936	1,103	13.9%	1.3%	1.8%	12.1%
France	466,817	136,980	29.3%	14.2%	20.5%	8.8%
Germany	331,943	118,091	35.6%	18.0%	26.1%	9.5%
Greece	55,552	12,333	22.2%	2.0%	2.9%	19.3%
Ireland	30,487	15,301	50.2%	1.2%	1.7%	48.5%
Italy	364,109	152,690	41.9%	12.3%	17.8%	24.1%
Latvia	1,565	262	16.7%	0.3%	0.4%	16.3%
Luxembourg	7,961	657	8.3%	0.2%	0.3%	8.0%
Malta	1,845	869	47.1%	0.1%	0.1%	47.0%
Nederlands	161,124	41,199	25.6%	4.0%	5.8%	19.8%
Portugal	43,333	23,039	53.2%	1.7%	2.5%	50.6%
Slovenia	3,335	2,045	61.3%	0.3%	0.5%	60.8%
Spain	374,275	86,451	23.1%	8.8%	12.8%	10.3%
Total	**2,030,047**	**630,274**	**31%**	69.0%	100.0%	n.a.

Source: EBA 2016 Transparency Exercise; ECB (for capital key)
Notes: 1/ Rebased to 100 using only listed Member States; 2/ difference between figures in third and fifth columns.

Some commentators have associated banks' home bias in sovereign exposure with the regulatory treatment of sovereign exposures, since sovereign debt denominated in the domestic currency is considered risk-free, providing banks with strong incentives for holding such bonds. However, this doesn't explain the prevalence of the home bias in the euro area, since all sovereign bonds from euro area countries are treated in the same way for euro area banks.

2. PROBLEM DEFINITION

2.1. What is the problem?

The problem that the proposed initiative would address is that the current regulatory framework impedes the development by the private sector of SBBS.

This is because, under the current regulatory framework, SBBSs would be treated as securitisation products, and hence significantly less favourably—along several dimensions—than their underlying portfolio of euro area sovereign bonds (see Box 4). For example, banks would face lower capital requirements (indeed, zero) by holding the underlying sovereign bonds rather than SBBS tranches. Moreover, whereas banks currently extensively use euro area sovereign bonds for the purposes of meeting liquidity coverage requirements (LCR and NSFR), as well as collateral (including to access liquidity from the ECB), SBBS tranches would not be eligible for these key purposes.

Thus, unless the regulatory framework is suitably adapted, investors would always rather prefer to invest directly in the underlying government bonds than in SBBS.

This has been confirmed by the many interactions with market participants (both candidate producers and candidate buyers of SBBS) in consultations conducted in the context of the HLTF work on SBBS. It is for this reason that the HLTF report concludes that, "ultimately, the level of investor demand for SBBS and its impact on financial markets is an empirical question, *which can only be tested if an enabling regulation for the securities is adopted*".

Box 4: SBBS versus government bonds in the existing regulatory framework

Under the current regulatory framework, SBBS would be treated as securitised products because they entail tranching and subordination of credit risk. In regulation, these two elements define a securitised product, regardless of the underlying composition of the portfolio or its risk.[16]

As a direct consequence of this fact, SBBS would receive an unfavourable treatment compared with that of the underlying sovereign bonds along several dimensions, as described below.

Capital requirements

For financial institutions (banks), holding a securitised product rather than the underlying portfolio gives rise to higher capital requirements. The justification for such non-neutrality in the treatment of securitisations relative to that of the underlying portfolio comes from model risk (i.e. a higher sensitivity of the securitisation price to errors in estimating probabilities of default, losses given default, and default correlation of the underlying assets). Non-neutrality is also justified by agency risk, since securitisation involves a greater number of parties with potentially conflicting interests (e.g. servicing, counterparty, and legal risk) than does holding the underlying assets.[17]

In particular, as per the Capital Requirements Regulation (CRR, Regulation (EU) No 575/2013, Articles 242-270), generally[18] there is a floor for the risk weight on securitisation positions of 7% for banks using the Internal Ratings Based approach (IRB banks) and 20% for banks using the Standardised Approach (SA banks).

As regards instruments held in the trading book, SBBS would face significant higher charges for interest rate risk. Sovereign bonds in the trading book are subject to a small capital charge for interest rate risk. By contrast, securitised products need to be supported by capital of 8% of the amount calculated under the banking book.[19] Risk weights to account for general risks would be, instead, similar for SBBS and sovereign bonds, if the two instruments have the same duration and market value. In particular, the treatment of specific risk in the Standardised Approach is similar to the one for credit risk, in practice leading to a zero risk weight for specific risk.[20]

SBBS would not qualify as a simple, transparent and standardised securitisation (STS) under the recently approved STS legislation (Regulation (EU) 2017/2402). The latter explicitly excludes securitisations of "transferable securities" (such as sovereign bonds) from the products

[16] Article 4(61) of the CRR.

[17] A third factor in typical securitisation is that the underlying securitised loans are not exposed to market risk (since they are not tradeable), in contrast with the securitised product.

[18] In some cases (see for instance Articles 252 and 260 of the CRR) caps may be allowed that could result in lower risk weights for SBBS tranches than the floors mentioned here. Similarly, Regulation (EU) 2017/2401, which comes into force on 1/1/2019, will allow IRB banks that are capable of assessing the risk characteristics of each individual asset in the underlying pool to apply a maximal capital requirement for securitisation positions equal to the capital requirements if the underlying exposures had not been securitised. Depending on the risk weights of the underlying exposures, this could imply a lower risk weight than the floor, including for non-senior bonds. It needs to be kept in mind that many IRB banks have a risk weight higher than 0% on their sovereign exposures. Thus, even if the cap is applied, the risk weights for senior SBBS would not necessarily be 0%.

[19] Article 337 of the CRR.

[20] Article 336 of the CRR, Table 1 translates a 0% risk weight in the banking book to a 0% risk weight in the trading book.

that may qualify as STSs, since it aims at spurring banks to originate *new loans* (especially to SMEs) in support of the real economy, as opposed to repackaging the debt of financial entities or government bonds. Moreover, for a securitisation to qualify as STS, no single underlying asset can exceed 1% of the total portfolio. In the case of SBBS constructed in line with the ECB capital key, this limit would be exceeded by the sovereign bonds of 11 Member States.

For insurance companies, Solvency II provides two ways of calculating the Solvency Capital Requirement (SCR): an internal model (either full or partial) or the standard formula. The standard formula defines explicitly which risks are to be taken into account in the SCR calculation. By contrast, internal models, which are subject to supervisory approval, give insurance companies a high degree of flexibility. But there is a requirement to take into account all material quantifiable risks that are in the scope of the model in the determination of the regulatory capital requirement.

Under the Solvency II standard formula, any securitisation is subject to capital requirements related to spread risk in the calculation of the SCR. SBBS would therefore be subject to capital requirements for spread risk and put at a disadvantage relative to direct holdings of Member State central government bonds denominated and funded in domestic currency (which would not be subject to such requirements).

A general look-through approach in the standard formula exists under Solvency II for exposures to investment funds, but not for securitised products. Nevertheless, there is a "partial look-through" requirement resulting from the fact that securitisations have to be included in the calculation of the capital requirements for interest rate risk.

Capital rules for pension funds are not fully harmonised at EU level. In particular, applying capital requirements to securitised products is at the discretion of national legislators.

Liquidity and collateral

While all euro area government bonds qualify as level-1 asset under the EU's liquidity coverage ratio (LCR), SBBS would not, by virtue of being considered as securitisation positions. At present, senior tranches of asset-backed securities can be at best level-2b assets and subject to a 25% minimum haircut under specific criteria set out in Commission Delegated Regulation (EU) 2015/61. SBBS would not qualify for this treatment, since sovereign bonds are not included in the list of eligible underlying exposures.[21] The same disparity of treatment between SBBS and their underlying sovereign bonds occurs as far as the net stable funding ratio (NSFR) is concerned, as the latter adopts the same definition of liquid assets as the LCR.

SBBS would compare unfavourably to their underlying government bond also in terms of usability as collateral—a key determinant of financial assets' liquidity. The Financial Collateral Directive (Directive 2002/47/EC) makes no distinction between bonds and securitised products, meaning that it protects them legally in the same way. In practice, market data on the use of collateral in repurchase transactions suggest that only a small share of them use securitised assets as collateral (for example, securitised products are not part of any global collateral baskets of major clearing houses such as Eurex and LCH). In contrast, government bonds are used heavily as collateral and in securities lending. Utilisation rates are about 50% for German, 30% for French and 15% for Italian sovereign bonds.[22] The extent to which SBBS could be usable as collateral is likely to be limited under the current regulatory framework, in part because they are not eligible as collateral in central bank operations[23] (the latter is considered a necessary, but not

[21] Article 13(2)g of Commission Delegated Regulation EU No 2015/61.

[22] Using data from *Markit Securities finance*, the monetary advantage of being eligible for use as collateral would be around 15 basis points when euro area average fees for securities lending are taken as a proxy, and close to 20 basis points for German and French sovereign bonds.

[23] Government bonds are presently not foreseen in the list of eligible assets for eligible securitisations in the ECB's collateral framework. Moreover, all securitisations presently command by default a 15% minimum haircut.

sufficient, condition for usability as collateral in private repurchase transactions—for example central securities depositories (CSD) may accept instruments, beyond sovereign bonds or other publicly guaranteed bonds, if these are eligible at a central bank from which the CSD banking service provider has access to regular, non-occasional credit)**.**

Investment rules and restrictions

For several types of investors, positions in SBBS may be subject to stricter limits than positions in sovereign bonds. As a general rule, banks, insurance companies, but also Alternative Investment Fund Managers (AIFMD) and undertakings for collective investment in transferable securities (UCITS) can invest in securitised products only if originators retain a material net economic interest. SBBS would however not be subject to this limitation, because they can be considered exposures to Member State central governments denominated and funded in the domestic currency of those central governments.[24] However, the following restrictions do apply:

- **UCITS need to respect diversification rules, which may prevent them from holding large volumes of SBBS.** While Member States may authorise UCITS to invest up to 100% in transferrable securities issued or guaranteed by a public body, this exception may not be available for SBBS.[25]
- **The Money Market Funds Regulation currently under negotiation[26] may restrict money market funds from investing in SBBS.** Although the focus of money market funds on investments with short maturities suggests they are unlikely to be the main investors in SBBS across the entire term structure, they could still play a crucial role for the liquidity of SBBS by accepting them as collateral in private repurchase transactions if this would be allowed.
- **Central Counter Parties (CCP) may in principle be able to invest in SBBS under current rules, if they are considered to be highly liquid**. In line with their investment policies, however, they would probably not be able to invest in junior SBBS since these securities would be perceived as too risky.
- **For insurance companies,** the Solvency II framework sets out specific due diligence and risk management requirements for securitisation positions.[27]
- **For IORPs, Article 19 of Directive (EU) 2016/2341, to be transposed into national law by 2019, sets out provisions in relation to the prudent person rule, including limits to excessive risk concentration.** Member States may choose not to apply the diversification requirements to investments in government bonds. Moreover, Member States may impose quantitative restrictions for securitisations. Article 25 of Directive (EU) 2016/2341 specifically mentions the need for an IORP's risk management system to address in a proportionate manner risks which can occur in the area of investments, in particular derivatives, securitisations and similar commitments, where applicable.

2.2. What are the problem drivers?

The key driver of the problem is that the current regulatory framework of securitisations does not adequately take into account all the properties of SBBS. This is not surprising, considering that SBBS are a novel concept that does not yet exist.

[24] See, for example, Art. 255 of Commission Delegated Regulation EU No 2015/35.

[25] Directive 2009/65/EC (UCITS) imposes diversification on UCITS. Although Art. 54 derogates from Art. 52 and the principle of risk-spreading to allow investments up to 100% in transferable securities issued by the same entity (i.e. same issuer or same guarantor), SBBS are currently not listed as possible beneficiaries of this exemption. Moreover, there is a requirement of diversification across different maturities.

[26] Commission proposal COM/2013/615.

[27] Art. 4(5) and (6) of Commission Delegated Regulation EU No 2015/35 requires insurance companies to produce their own internal credit assessment for type-2 securitisations. Art. 256 sets out due diligence and risk management requirements including stress testing for securitisations.

In the current regulatory framework, securitisation products attract higher regulatory charges/discounts than direct investments in the corresponding underlying assets. The framework, in other words, is **not neutral** between investing directly in some assets vis-à-vis investing in structured products backed by these same assets.

The general justification for such non-neutrality comes from *securitisation-specific risks*, having to do primarily with sharply asymmetric information between the originator of the securitisation products and the investors. This asymmetry of information is typically compounded by the opaque nature of the securitised assets and the complexity of the structure.

These risks include:

- *Agency risk.* Originators know substantially more than investors about the assets composing the securitisation pool. This is obviously the case, e.g., with a bank that issues mortgages and then securitises them. An investor does not have access to the same information on the mortgage borrowers as the bank. He/she also can assume that the bank may have an incentive to securitise first/only the least profitable/more risky mortgages. It is because of this agency problem that many institutional investors as well as banks are prevented from investing in securitisations unless the issuer retains a significant "skin in the game".
- *Model risk.* As a result of *tranching*, pay-outs are non-linear (some investors are paid even if others are not). This generates a higher sensitivity of the price of the securitised products to errors in estimating probabilities of default, losses given default, and default correlations of the underlying assets.
- *Legal risks.* These stem from the fact that there is an additional counterpart involved (i.e., the arranger of the securitisation) and the complexity of the product (e.g., generating uncertainty as to the correct application of the payment waterfall under all future scenarios).

Yet, SBBS are a *sui generis* securitisation along several key dimensions:

1. Many of the asymmetries of information and, to an extent, the complexities of the structure are not present when, as is the case for SBBS, the underlying pool is composed of euro area central government bonds. These assets are the workhorse of European financial markets. They are well known and understood by market participants. Moreover, the structure of the underlying asset pool for SBBS would basically be predetermined (e.g., in the basic model, the weights of the individual Member States' central government bonds would be in line with the ECB key). Hence there is no asymmetry of information between the issuer and the investor. Indeed, in theory, the issuer/assembler could be a *robot*.
2. Euro area sovereign bonds are also *traded* (which means, anyone can get a financial exposure to them without having to resort to a securitisation) and (for the most part) liquid (both *de facto* and, equally importantly, *de jure*—in the sense that they are *treated as such* in regulation).

This means that the securitisation-specific regulatory charges are not justified in the case of a securitisation of euro-area sovereign bonds (especially one which is assembled

followed a pre-defined methodology/recipe, as is the case for the particular SBBS studied by the ESRB HLTF, and described in Box 1).

Under the current regulatory framework, SBBS face a similar problem as that which has been addressed with the recent Simple, Transparent and Standardised (STS) regulation. Specifically, the rationale for the recent STS regulation is that, in the presence of securitisations which are structured in a particularly simple, transparent and standardised way, failing to recognise such properties with a specific (and, in practice, more favourable) regulatory treatment would have hindered their development.

Given the special nature of their underlying assets, namely euro-area central government bonds, for SBBS the wedge between the regulatory treatment of (traditional) securitisations and the actual risk/uncertainty of the instrument is even more pronounced than was the case for STS securitisations. This is for two reasons: (1) the underlying assets—namely, euro-area sovereign bonds—are even more simple, transparent and standardised; and (2) euro-area sovereign bonds receive the most favourable regulatory treatment in light of their properties and functions in the financial sector.

In addition, investment decisions as regards government bonds are particularly sensitive to costs and fees (again, because of the volumes involved, the competition, their being in effect "benchmarks", etc.). Relevant costs, from the viewpoint of a financial institution, do include the cost of capital associated with the purchase of such assets. This means that failure to address this regulatory issue is likely to have a correspondingly greater impeding effect on the developments of the market for SBBS than would have, for example, been the case for STS securitisations.

Box 5: Why is regulatory non-neutrality a problem only for SBBS?

Despite facing higher regulatory charges (in the form, e.g., of surcharges in the calculation of capital requirements for banks/insurance companies, or limited/reduced usability of structured products as collateral) than investing directly in the underlying asset pool, market participants typically do engage in assembling, marketing and investing in (traditional) securitisations, such as Mortgage-Backed Securities (MBS).

This is because traditional securitisations create value by not only redistributing the credit risk of the underlying pool, but also by creating *liquidity*. Through traditional securitisation, a set of assets which are typically individually non-tradeable, opaque, and risky, can be repackaged in tranches with different economic features. In particular, the senior tranche, by virtue of the combined support from diversification of the underlying portfolio (which can reduce, and in the limit, eliminate diversifiable risks) and the existence of a sub-senior tranche acting as first-loss absorber, can become a highly-rated, tradeable and liquid asset. Thus, through securitisation, even an investor who is restricted – by either the law or its individual investment mandate/charter – to invest only in liquid and highly-rated assets can gain exposure to projects (e.g., mortgages) which individually would not have had these required properties. Hence this investor may be willing to incur the regulatory charges associated with a securitisation tranche if he/she values high ratings and liquidity sufficiently. Moreover, and importantly, for some underlying assets (in particular, non-traded mortgages or loans issued by a bank), an investor may simply have no other way of securing an exposure than indirectly by buying a stake in the structured product backed by such assets.

These supporting considerations do not apply to SBBS securitisations, given their sui generis nature. In particular, since the underlying assets, i.e. euro area central government bonds, are individually tradeable and liquid, there is no need to resort to a securitisation to gain exposure to such instruments, nor can one, by doing so, gain in terms of, say, liquidity – indeed, if anything,

it is quite likely that until and unless an SBBS market of sufficient size develops, each individual underlying bond would be more liquid than any of the SBBS tranches.

In sum, securitisation in the case of SBBS only serves as a tool to concentrate the risk of the underlying sovereign portfolio in one instrument (the junior tranche), and relieve of it from another (the senior tranche). But there is not much scope for improving on the ratings of the safest of the underlying assets, nor to create liquidity. Thus, unless SBBS securitisations are granted the same treatment as their underlying sovereign bonds, they will not be produced or demanded by the private sector.

2.3. How will the problem evolve?

In the baseline (with no intervention) the regulatory hindrances deriving from the gap between the regulatory treatment of SBBS and that of their underlying sovereign bonds may diminish somewhat over time, in particular for banks, but are unlikely to disappear altogether.

In particular, the recent revision of the CRR (Regulation (EU) 2017/2401), which is expected to come into effect in 2019, could result in reduced regulatory surcharges faced by SBBS vis-à-vis government bonds in terms of Pillar-1 capital requirements. Specifically, under certain conditions (see footnote 18), senior tranches may be able to benefit from a zero risk weight after application of the "look-through" principle, which will be possible not just for banks sponsoring/originating securitisations – as is currently the case – but also for banks investing in them. Non-neutrality for Pillar-1 capital requirement purposes would be established also for sub-senior tranches for the subset of banks using Internal-Ratings Based models (IRBA-banks), but not for others.[28] Nevertheless, important sources of unfavourable regulatory treatment – most notably in terms of liquidity-related regulation – would remain, including for the senior SBBS.

The HLTF report points out that, if RTSE were to be reformed and, for example, capital charges for banks' sovereign exposures were to be introduced and made sensitive to concentration or credit risk, senior SBBS may become more attractive, compared to their underlying sovereign bonds, for banks by virtue of SBBS' greater diversification/safety. This might offset some of the regulatory hindrances associated with "undue" securitisation-related additional regulatory charges. At the same time, the report notes that this finding does not pertain to the overall merits or demerits of RTSE reform.

Therefore, for the baseline, we assume no RTSE change would take place. This is also in line with the conclusion of the discussions at international level (in the Basel Committee on Banking Supervision).[29] Any reform of RTSE would have profound implications in terms of financial stability. Thus the European Commission has clearly stated that it considers that a reform of the prudential treatment of sovereign exposures can only happen after several pre-conditions are in place, including a full Banking Union and substantial progress towards a Capital Markets Union and the existence of a European

[28] See section 2, Annex 4 for some quantitative indication of the extent of the problem even after the entry into force of the new securitisation framework per regulation (EU) 2017/2401, expected for 1/1/19.

[29] The issues discussed are summarised by the Basel Committee in the December 2017 Discussion Paper on "*The regulatory treatment of sovereign exposures*" available at https://www.bis.org/bcbs/publ/d425.htm. In presenting it, the Committee notes that it "*has not reached a consensus to make any changes to the treatment of sovereign exposures, and has therefore decided not to consult on the ideas presented in this paper.*"

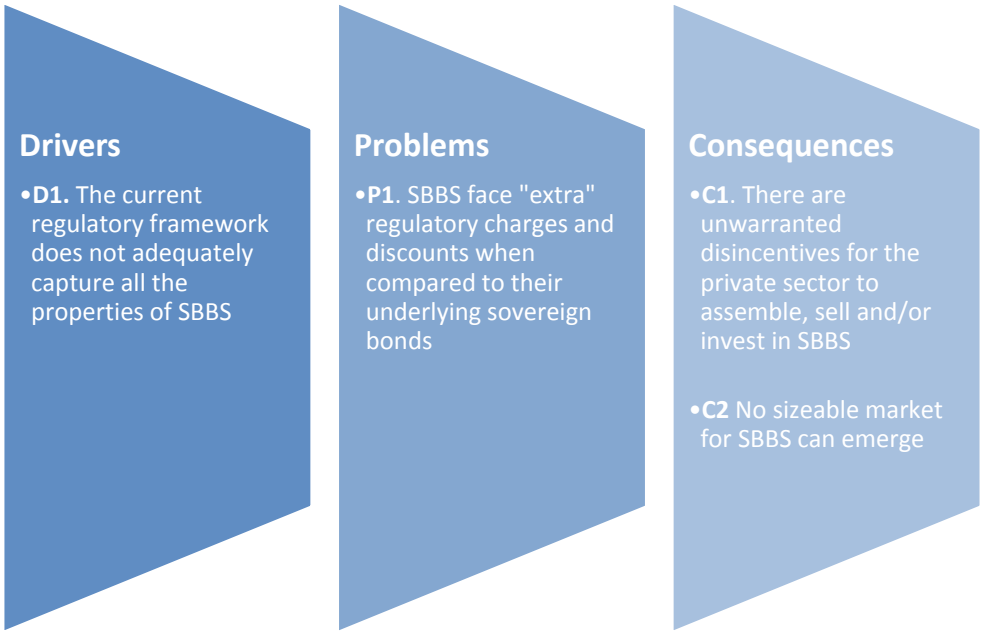
safe asset. In addition, if a level playing field for Europe's financial sector is desired, an agreement at the global level would also be essential.

A European safe asset, a new financial instrument for the common issuance of debt, is a necessary step in the completion of the EMU architecture (European Commission, 2017). It would need to be sizeable enough to become the benchmark for European financial markets, and create a large, homogenous and liquid EA-level bond market, avoiding sudden stops and financial fragmentation, and increasing the total European and global supply of safe assets. The Commission will further reflect on different options for a safe asset for the euro area in order to encourage a discussion on the possible design of such an asset, separately from the present discussion on the introduction of an enabling framework for SBBS.

As regards insurance companies and other asset managers, no changes are expected in the baseline as regards the regulatory disincentives/limits to hold SBBS as opposed to the underlying sovereign bonds.

In a nutshell, Figure 4 summarises the elements of the "problem tree" (i.e., problem, driver, and consequences), as described in section 2.

Figure 4: The Problem Tree



3. WHY SHOULD THE EU ACT?

3.1. Legal basis

SBBS are a tool to enhance financial stability and risk sharing across the euro area. They can thus contribute to the better functioning of the internal market. Article 114 TFEU, that confers to the European institutions the competence to lay down appropriate provisions that have as their objective the establishment and functioning of the internal market, is thus the appropriate legal basis.

3.2. Subsidiarity (Necessity of EU action)

Identified regulatory impediments to the development of SBBS markets are laid down in several pieces of *EU legislation* (e.g. Regulation (EU) 575/2013 (CRR) on the prudential treatment of credit risk or market risk for banks; Delegated Regulation (EU) 2015/35 (Solvency II) on spread risk on securitisation positions for insurance companies; or Directive 2009/65/EC (UCITS), on eligibility criteria, concentration limits and diversification requirements for UCITS). As a consequence, on a point of law, individual Member State action would not be able to achieve the goals of this legislative initiative, i.e. to remove such regulatory impediments, since amendments of EU legislation can only be done through EU action.

But even aside from this legal consideration, action at the Member States' level would be suboptimal. It could result in different instruments being "enabled" in different Member States. This would render the market rather opaque and split market demand in various different instruments, which would make it difficult (or even impossible) for any one of them to acquire the requisite standing in terms of size and liquidity. Furthermore, even if national legislators would address the same instruments by steps to remedy the currently disadvantageous regulatory treatment, a race between national legislation could emerge to offer as favourable as possible regulatory treatment. Furthermore, in both cases, i.e. addressing differently defined products or giving different regulatory treatment, such different national legislations would create de facto obstacles to the Single Market (e.g., high compliance costs for an arranger that would want to operate in multiple jurisdictions). For all these reasons, action at the EU level is necessary and appropriate. These obstacles would have sizeable effects, given the very high integration of the underlying government bond markets and the identical regulatory treatment of these across the EU.

3.3. Subsidiarity (Value added of EU action)

Establishing an appropriate regulatory framework for this novel product, which—as mentioned above, can only be done via action at the EU level—has value added insofar as it may enable the development of an additional market through which financial risks can be better shared, thus promoting financial stability as well as lower overall borrowing costs for sovereigns and private sector agents.

4. OBJECTIVES: WHAT IS TO BE ACHIEVED?

4.1. General objectives

The general objective is to remove identified regulatory impediments against a (privately produced, not mutualised) liquid, low-risk asset, such as the (senior) SBBS. Such an asset could facilitate private sector risk sharing—especially across borders—and risk reduction. This would strengthen the Banking Union.

In particular, as summarised in Box 1 and discussed at greater length in Brunnemeier et al (2016b), ESRB HLTF (2018a) and ESRB HLTF (2018b), a pan-euro area low-risk asset such as the senior SBBS could facilitate the diversification of euro area banks' sovereign portfolios. This would reduce the extent of "home bias" in banks' balance

sheets, which despite recent progress remains rather high in some Member States. This, in turn, would foster stability in the euro area: it would weaken the nexus between banks and their sovereign and it would spread perceived idiosyncratic sovereign risk more widely across borders within EMU.

A low-risk asset like the (senior) SBBS could also help avoid that exogenous capital flows in search of "safety" affect the cross-section of euro area funding costs in an overly unequal manner, as in practice is the case at present since only sovereign bonds of a few Member States are at present perceived to be very low risk. It could also help address the increasing relative scarcity of euro-denominated low-risk/high-rated assets resulting from increasing demand for such assets—also due to regulatory requirements on financial institutions (e.g. Liquidity Coverage ratio (LCR), Net Stable Funding Ratio (NFSR), etc.)—against a background in which the assessed creditworthiness of several EU and euro area Member States has deteriorated in the wake of the global financial crisis.

Importantly, such an asset is meant to be solely based on private-sector initiatives, without the possible support of any (perception of) mutualisation of risks and/or losses among EU Member States. This is a key desideratum, and will need to be kept in mind in determining the specific content of any proposed initiatives.

4.2. Specific objectives

For an asset like the SBBS to be "enabled", the following two objectives would have to be achieved:

1. Eliminate undue regulatory hindrances (i.e., restore regulatory "neutrality" for SBBS securitisations).
2. Encourage liquidity and "benchmark" quality (i.e., the new instrument should be treated like other benchmarks in regulation—de jure liquidity—and should be capable of attaining a sufficient critical mass/standardisation so as to be liquid also *de facto*).

Importantly, removing undue regulatory hindrances, by assuring that the product is treated as its underlying government bonds, is only a *necessary condition* for the development of such markets, but does not guarantee it—after all, SBBS are meant to be developed by the private sector. The actual development of such a market, after the removal of identified regulatory hindrances, will rather depend on the economic viability of the product, i.e. on whether it will be advantageous for investors to acquire them and private arrangers to issue them—this in turn depends on the extent to which the new products would become "benchmarks" and easily traded, among other considerations (e.g., the strength of the demand for sub-senior tranches, etc.). The HLTF report has extensively analysed the issue and concluded that ultimately only a "market test" would be able to settle remaining doubts as to the viability of SBBS. The specific objective of the proposed regulatory framework is indeed to enable such a market test. In contrast, the regulation will not, as discussed further in Section 5.3 below, provide *incentives* to the development of SBBS markets, besides—that is—removing identified regulatory obstacles.

5. WHAT ARE THE AVAILABLE POLICY OPTIONS?

Given the problem definition above, the first policy choice to be made is between keeping the status quo (i.e. "do nothing", or baseline) versus introducing a legislative proposal to enable the development of SBBS market ("an enabling framework for the development of SBBS," in the language of President Juncker's September 2017 Letter of Intent).

If it is found opportune to introduce such a legislative proposal, two main policy choices would need to be made, namely on the scope of applicability of the proposed legislation and on the extent to which the legislation should enable the various tranches. Given this, five main "models" for the proposed legislation are seen as deserving in-depth consideration (see Figure 5). Separately, a third key policy choice has to be made as to how to ensure compliance with the proposed new legislation itself. Here three options are assessed, i.e. self-certification on its own, or complemented, respectively, with a third party assessment or ex-ante supervisory approval.[30]

5.1. What is the baseline from which options are assessed?

The baseline is the *status quo*, i.e. no legislative intervention and unchanged RTSE (see earlier discussion on page 15). In this scenario, SBBS are likely to remain an interesting theoretical construct, but would not be produced and made available to investors. This is because they would face significant additional regulatory charges (e.g., in terms of required capital), discounts (e.g., in terms of eligibility for liquidity requirements), and limits (in terms of investability for some market players) as compared with their underlying sovereign bonds, which will render them unappealing or prohibitively expensive.

To gauge the extent of regulatory hindrance faced by SBBS in the baseline, the HLTF report shows that, if the banks covered by the EBA 2015 Transparency Exercise were to switch all their current holdings of euro-area sovereign bonds into senior SBBS tranches today (so without an "enabling" regulatory framework in place), they would face an increase in aggregate capital requirements in the order of EUR 70 billion (see Annex 4, Section 1). Of course, this is just a gauge, and less extensive switches would result in correspondingly lower capital requirements. At the same time, if banks also bought sub-senior tranches, which currently would face much higher risk weights than senior ones, the capital requirement implications could also be much larger.

These hurdles are likely to remain even after taking into account some regulatory changes which are already in the pipeline, e.g. those stemming from the recent revision of the securitisation framework (Regulation (EU) 2017/2401), due to become effective on 1/1/2019. Regulation (EU) 2017/2401 foresees reduced capital requirements on securitisation positions for banks provided they are at all moments perfectly informed about the composition and risk features of the underlying assets—this condition is likely to be easily satisfied for SBBS (especially if the latter have a narrowly defined "recipe"—see below). Nevertheless, the subset of banks using the Standardised Approach

[30] The problem of how to ensure compliance with a legislation that dictates a specific treatment for a subset of securitisations has already been addressed in the context of the regulation on Simple, Standard, and Transparent securitisations (STS). Thus a similar approach will be used here.

(henceforth, "SA banks") would still face large capital requirements when holding sub-senior tranches under the baseline after 1/1/2019. Section 2 of Annex 4 shows that, for each EUR 100 billion of investment in SBBS, assuming SA banks purchase the three tranches in a balanced manner and in line with their current share of sovereign bonds in the banking book, aggregate risk-weighted assets would increase by some EUR 87 billion (this number would need to be multiplied by a capital requirement ratio, typically in the range of 8-13 percent, to arrive at the implications of the investment in SBBS for capital requirements).

Against this baseline, the alternative option is to intervene by *proposing an "enabling" regulatory framework* that adequately reflects the unique nature of securitisations issued against a portfolio of euro area sovereign bonds. This option can take different declinations, depending on the desired extent to which SBBS are equated—in terms of regulatory treatment[31]—to their underlying components (i.e. euro-area sovereign bonds) and on how precisely one goes about designing any such desired regulatory treatment in practice.

In his Letter of Intent accompanying his September 2017 State of the Union Address to the European Parliament, President Juncker has committed the European Commission to introduce an "enabling framework" for SBBS, in other words to move past the baseline of no intervention.

This course of action is dictated by the potential benefits associated with the concept of SBBS. Although whether or not SBBS, once freed of existing regulatory impediments, will actually take off is difficult to predict, the fact remains that the benefits, in expected terms (i.e., weighted by the probability of them actually materialising), that would stem from the development of a market for SBBS far outweigh the cost of introducing the enabling framework.

Aside from the one-off direct costs of introducing the product regulation (which, it bears recalling, in effect recalibrates existing regulations to allow for a *completely new product*), other possible costs would stem from "unintended consequences" of a developed SBBS market. Importantly, when assessing such possible costs and risks, one has to distinguish between those which result (or are intensified) directly by the existence of SBBS in financial markets, from those that would happen as a reflection of developments in the fundamentals of the underlying sovereign bonds, which would likely affect SBBSs but that would occur regardless of whether SBBS are in the market or not. For the latter set of costs/risks, the relevant yardstick of comparison is whether the presence of SBBS aggravates them or not.

In the former category (i.e., risks stemming directly from the development of SBBS markets), the key one considered both by the HLTF and for this impact assessment has to do with the possibility (flagged, in particular, by euro-area Debt Management Offices) that packaging a lot of a given government's bonds into SBBS could adversely affect the

[31] Note that extending the regulatory treatment of euro-area sovereign bonds to any given SBBS tranche would be tantamount to addressing, for that specific tranche, *all* dimensions of currently differential treatment as described in Box 4.

liquidity of the bonds of said government that remain outside of the SBBS construct. The HLTF has analysed at length the likely effects of SBBS on the liquidity of national sovereign debt markets and it has concluded that, certainly for moderately-sized volumes of SBBS, these are likely to be limited (see, in particular, Volume II, section 4.4 of the ESRB HLTF report and Annex 4.3 of this impact assessment).

In the latter category (i.e., risks that stem from possible developments in the fundamentals of underlying sovereign bonds, e.g. causing the loss of the AAA rating for the senior SBBS tranche), the key question is whether, in a crisis circumstance, the presence of SBBS is stabilising or destabilising. Note that it is quite possible that, during an episode of turbulence linked to marked deterioration in the creditworthiness of one or more euro area sovereigns, it may become difficult or even impossible to assemble SBBS, presumably because there will be no demand for the junior tranche in those circumstances. (In extreme circumstances, the senior tranche might also be downgraded). But this would still leave those sovereigns who do remain creditworthy able to issue their own bonds, while for the others the problem would not be different than if SBBS had never been created. Even if volume of SBBS (temporarily) stops growing in such a circumstance, the stock of already issued SBBS may still prove helpful in channelling financial flows from across national borders (as happens at present, with investors fleeing Member States in trouble and seeking safe haven in "core" Member States) to a "cross-instrument" pattern (i.e., from the junior to the senior tranches). This would be less damaging to the integrity of the euro area. Moreover, bonds packaged in the already issued SBBS would not be "available for sale", which would in itself provide some stabilisation ("fire sale"-driven spikes in individual Member States' funding costs would be avoided).

Others have argued against an enabling regulatory framework on the ground that the product is not viable. For instance, no private issuer may deem SBBS to be sufficiently profitable, or there may not be sufficient demand for the junior tranche. In our view, this is no grounds not to rectify the identified regulatory "failure". Rather, it would just indicate that the above-mentioned "market test" would not have (yet) been successful.[32]

On the basis of the above arguments, this assessment concludes that the Commission has no option but to propose an "enabling framework" and that indeed doing so generates, in expected terms, a net social gain. Section 5.2 describes the intervention options considered, while section 5.3 describes options which have been discarded after careful consideration.

[32] Once regulatory impediments have been eliminated, demand (and thus the development of the SBBS market) could still take place in the future if, say, the overall euro-area/global macroeconomic environment turns more supportive.

5.2. Description of the policy options

Option		Description
1. Scope of applicability of the proposed legislation		
1.1	Only SBBS proper	Only securitisations of euro-area sovereign bonds that comply with the SBBS recipe (see Box 6), i.e. whereby the underlying portfolio comprises all euro-area sovereign bonds with respective weights in line with the ECB capital key (rebased, as necessary, to exclude Member States that either have no or too little outstanding debt or might have lost market access) and which have tranching levels such that the senior tranche is "low-risk" (e.g., the senior tranche is not greater than 70%)[33].
1.2	All securitisations of euro-area sovereign bonds	Any securitisation of euro-area sovereign bonds, regardless of the composition of the underlying portfolio and/or the number and levels of tranches, would be eligible for the regulatory treatment envisaged in the proposed product legislation.
1.3	A basket of euro-area sovereign bonds (no tranching)	Claims on an investment fund which invests fully in a basket of euro-area sovereign bonds, with respective weights in line with the ECB capital key (rebased, as necessary, to exclude Member States that have no outstanding debt and those who have lost market access), without tranching.
2. Extent of "restored" regulatory neutrality		
2.1	Extend the regulatory treatment of euro-area sovereign bonds to *all tranches*	All tranches of the products eligible for the proposed legislation would be given a treatment comparable to that of euro-area sovereign bonds (in particular, no capital requirements, level-1 eligibility for LCR/NFSR purposes, no concentration charges/limits, no investment restrictions.
2.2	Extend the regulatory treatment of euro-area sovereign bonds only to *senior tranches*	Only the senior tranche of the products eligible for the proposed legislation would be given a treatment comparable to that of euro-area sovereign bonds (in particular, no capital requirements, level-1 eligibility for LCR/NFSR purposes, no concentration charges/limits; no investment restrictions). Sub-senior tranches would, instead, have additional charges, liquidity discounts, concentration charges, and investment limits.
3. Compliance mechanism		
3.1	Introduce a self-attestation mechanism	Responsibility for compliance with the criteria envisaged in the legislation will lie with the originator of the securitisation.
3.2	3.1 + third-party assessment	Self-attestation by the originator, complemented by assessment provided by an independent third party.
3.3	3.1 + ex-ante supervisory approval	Self-attestation by the originator, complemented by ex-ante supervisory approval.

[33] See footnote 9 for an explanation of how the 70% threshold is arrived at in the HLTF report.

5.3. Options discarded at an early stage

Regulatory incentives

In addition to the options set out above and discussed in more detail below, a related but different one has been considered, namely going beyond the mere levelling of the regulatory playing field for SBBS by providing them the same treatment as for sovereign bonds, to actually providing them a *preferential* regulatory treatment (i.e., outright regulatory incentives).

The main advantage of such approach is that the demand for SBBS would be correspondingly boosted and the potential benefits of SBBS would materialise faster and at a larger scale.

There are two main drawbacks, however. First, using the regulatory framework to the advantage of this new product could, at least in a transition phase, destabilise (some) national debt markets, as demand for SBBS might replace, rather than complement, demand for stand-alone national sovereign bonds. Second, regulatory incentives could be seen as a signal that the Commission, and more generally the European authorities, stand ready to bail out investors, should these novel structured products encounter problems. Such expectations would be highly detrimental, as they could lead to moral hazard on the part of Member States and of investors.

On the basis of the above considerations, such an option has been discarded. The proposed legislation would aim at treating SBBS as much as possible as euro-area sovereign bonds (i.e., restore "regulatory neutrality"), but not better/more favourably.

Public issuance

A second option, discarded after careful consideration, is that of a *public* issuer/arranger for SBBS (this could be either an existing institution, such as the ESM, or a newly created public SPV). A public arranger could benefit from economies of scale (which would ease the viability test for SBBS) and may meet greater confidence from market participants from the very start. However, entrusting a public authority with such task would shift a well-established private-sector activity to the public sector. This might also mean that the possible link and synergies of such activity with that of (private-sector) market-making of government bonds could not be reaped.

Furthermore, deploying a public issuer could also result in some mutualisation of risks (for example, in terms of warehouse risk for any period between the assembling of the SBBS portfolio and the selling of all the tranches), which could result in moral hazard (this concern has been raised by several observers/stakeholders, including Debt Management Officers—see Annex 2). Also, a public arranger would need some funds (for example a one-time fixed endowment of a limited quantity of paid-in capital) for the purpose of assembling SBBS cover pools. Providing a public arranger with any public funding or support may increase the risk that market participants misperceive such activity as providing an implicit guarantee for SBBS payment flows.

On the basis of the above considerations, such an option has been discarded. The proposed legislation would aim at removing the impediments for *private sector* production/use of SBBS. Once again, it bears reminding that removing the identified regulatory impediments enables the development of this novel private financial instrument, but in no way guarantees it. It may well be the case that, quite aside from the regulatory framework, assembling SBBS will prove too costly/insufficiently remunerating for the private sector. The viability of SBBS might also be a function of the more general economic backdrop, e.g., the level of interest rates and/or expected fiscal and real developments.

6. WHAT ARE THE IMPACTS OF THE POLICY OPTIONS?

6.1. Scenarios and benchmarks of benefits and costs

6.1.1. Scenarios

To cater for a wide range of possibilities, the impact of different intervention options has been assessed under two different scenarios: a *limited volume* scenario, whereby SBBS reach an overall volume of EUR 100 billion, and a *steady state* scenario whereby SBBS reach an overall volume of EUR 1,500 billion.[34] The final scale of the SBBS market will depend on the instruments' overall attractiveness for the market, given that the legislative intervention is only a necessary but not necessarily sufficient condition for SBBS's development.

6.1.2. Benchmarks of benefits and costs

As regards the choices with respect to the scope of applicability of the proposed legislation (section 6.2 below) and the extent to which the regulatory treatment afforded to euro area sovereign bonds (henceforth, "benchmark" regulatory treatment) is also provided to the various SBBS tranches (section 6.3 below), the following benefits and costs have been assessed:

- reduction in capital requirements (benefit);
- reduction in liquidity of national sovereign debt markets (cost);
- impact on volume of sovereign bonds rated AAA (benefit/cost);
- reduction in holdings of domestic sovereign bonds (benefit);
- impact on share of sovereign bonds rated AAA in banks' balance sheets (benefit/cost);
- facilitating cross-border integration and the reduction of asymmetric shocks (benefits).

The benchmarks used are the evolution in % compared to the baseline scenario (current situation), or the amount of regulatory hindrance faced in the baseline (no intervention) by SBBS instruments, except for the liquidity of national debt markets as well as the last

[34] Both scenarios are considered in the HLTF report. In particular, as regards the steady state scenario, the HLTF considers an amount of EUR 1,500 billion as indicative of the size that an SBBS market could achieve while maintaining an adequate secondary market free float in national sovereign bond markets.

criteria (integration of capital flows cross-border), where the analysis remains mainly qualitative.

For the third key choice, i.e., the certification model (section 6.4 below), the main benefit to be assessed is the increased investor confidence while costs include both the potential moral hazard and the administrative burden for stakeholders. The assessment remains mainly qualitative for that option.

6.2. Scope of applicability of the proposed legislation

This section describes and assesses the scope of applicability of the product legislation, i.e. the range of sovereign bond-backed securities to which the legislation would apply. The two polar options are, thus, applying the proposed product legislation to *any* securitisation of sovereign bonds, or only to a particular combination of sovereign bonds (whether tranched or in a "simple" basket).

6.2.1. Option 1.1: only SBBS proper

Option 1.1 deals with one extreme, where the legislation would be made applicable only to SBBS proper, i.e. securitisations of euro area sovereign bonds which meet the official "SBBS recipe".

Box 6: The SBBS structure

A set SBBS structure (i.e., a methodology to assemble SBBS), e.g. a fixed portfolio of euro area sovereign bonds with known weights (e.g., in line with the ECB capital key—see Box 1) and specified tranching points, is helpful to create a standardised product, which in turn enhances the product's appeal (e.g., in terms of liquidity).

However, there may be circumstances in which some changes in this set structure are warranted. For example, an EU Member State may join the euro area. Or a Member State issues too little debt, so that it becomes difficult if not altogether impossible for arrangers to acquire the necessary amount of bonds of that Member State as prescribed by the current structure. Or it may be necessary (respectively, possible) to reduce (resp., increase) the size of the senior tranche if the ratings of the underlying euro area sovereign bonds deteriorate (resp., improve).

For such exceptional cases the regulatory framework should foresee safeguards, which allow for controlled and limited modifications of the set SBBS structure. The trade-off is between adapting the product to the changed reality and safeguarding standardisation. Efficiency will likely call for minimizing the changes to the set structure as much as possible.

Who would set the SBBS structure and through what procedure would it be changed?

There are in principle three avenues:

1. A public agency (e.g., ESMA) could be tasked, in the enabling regulation, to spell out the initial SBBS recipe and to propose adjustments to it when necessary. These proposals would be akin to regulatory technical standards, which are approved by the Commission.
2. The Commission itself could define and adapt the official SBBS recipe by way of Implementing Decisions.
3. Alternatively, a private entity (e.g., a consortium of arrangers) could set out, and change as appropriate, the "standard" for the SBBS product.

These avenues will be explored in the drafting of the legislative proposal, with a view to maximize the likely chance of success of the product (including by underpinning market confidence and legal certainty, e.g. with respect to its eligibility for the proposed regulatory treatment) and minimize administrative burden.

Should the product legislation apply only to SBBS proper, thanks to the ensuing induced standardisation, a sizeable market for this particular instrument is likely, although by no means certain, to develop. This, in turn, could enhance liquidity and appeal of the new instrument, and provide greater incentives for banks and other financial institutions to invest in them. This prospect in itself may be an important factor in generating sufficient demand. So, a narrower scope of applicability of the proposed legislation may be 'enabling' in and of itself, as far as the ultimate development of SBBS is concerned (see responses to the public survey on liquidity and standardisation in Annex 2, section 1).

One critical feature of the SBBS proper is the tranching of the instrument which should ensure that the senior tranche is granted a AAA rating (note that this may require adjusting the size of the tranche over time in response to future economic, financial and political developments – see Box 6). Assuming the senior tranche at a 70% tranching point is granted a AAA-rating (i.e., is considered as safe as the safest assets in circulation), the Commission's analysis (see section 4 in Annex 4) shows that the introduction of the SBBS could increase the volume of AAA sovereign bonds available in the euro area by some 2% (in the *limited volume* scenario) and up to 30% (in the *steady state* scenario) compared to the baseline with no legislative initiative and thus no SBBS.

Under this option, the impact on the diversification of banks' sovereign portfolios would range from a reduction by 3% of domestic sovereign holdings to a reduction of those holdings by 34%, depending on the scenario (*limited volume* vs *steady state* scenario). Similarly, the share of government bonds rated AAA on banks' balance sheets would increase by about 40% under the *steady state* scenario (from 24% to 32% or 33% depending on the regulatory treatment), but remain roughly unchanged under the *limited volume* scenario (see section 4, Annex 4).

A key concern raised by several stakeholders is that SBBS might adversely impact the liquidity of national sovereign debt markets. These concerns are the more relevant the smaller the national sovereign bond market (this is, e.g., in particular the case for small Member States) and the larger the overall volume of SBBS. Given the importance of such concerns, the HLTF has conducted an in-depth analysis, which is summarised in Section 3, Annex 4. The main conclusion is that the ultimate impact on the liquidity of the national sovereign bond market results from two opposing channels: On the one hand, as the size of SBBS market increases, the liquidity for the remaining national bonds outside the SBBS scheme could suffer because of the reduction in the residual outstanding float. On the margin, this could lead to higher funding costs for the most affected Member States and a hampered price discovery process.[35] On the other hand, SBBS might attract additional demand for national sovereign bonds, and thereby add to their liquidity (this is especially true for those sovereigns that are not typically in the radar screen of large global investors—which is also often the case for smaller Member States). SBBS portfolios would also support prices, and thus be liquidity-enhancing—as bonds included therein could not be sold abruptly in episodes of turbulence.

[35] For this reason, as has been done for example for the ECB's Public Sector Purchase Program, caps could be envisaged on the share of outstanding sovereign bonds of individual Member States that can be used for SBBS.

The impact of option 1.1 on different stakeholders depends on different factors, such as the regulatory treatment of the SBBS tranches (see options 2.1 and 2.2) and the market size SBBS would ultimately achieve. Annex 3, Table 7 and Table 8 give some overview of expected impacts compared to the benchmark scenario (in particular for models 1 and 2). For banks, other investors and arrangers the impact is expected to be (very) positive given the availability of a new standardised and profitable product. For supervisors, administrative expenses will depend on the model chosen for ensuring and monitoring compliance (see section 6.4). They may be larger if a certification of each issuance is required compared to the self-certification option. But in any case these expenses are likely to remain small (since all that would be required would be monitoring compliance of the underlying portfolio with the ECB capital key and that the tranching levels are appropriate) and to be outweighed by the enhanced stability of the financial system from greater diversification in banks' sovereign portfolios and weakened bank-sovereign nexus. As discussed above, some national sovereign bond markets could be adversely affected in terms of residual floating stock of debt, but these effects would materialise only if SBBS reach a truly large scale and could in any case be counterbalanced by the increased demand for such bonds.

Neither option 1.1, nor any of the other options discussed below, is expected to impact directly on retail investors, households or SMEs, because they would unlikely be active in SBBS markets. At the same time, these sectors would benefit indirectly—including from enhanced confidence—to the extent that the above-mentioned macroeconomic and financial-stability benefits materialise.

Neither option 1.1, nor any of the other options discussed below, is expected to have a direct social impact, environmental impact or impact on fundamental rights.

6.2.2. Option 1.2: All securitisations of euro area sovereign bonds

Option 1.2 envisages that the legislation is made applicable to *any* securitisation of sovereign bonds, or at least of those sovereign bonds that are actively traded. After all, the economic considerations as to why otherwise such securitisations would stand no chance of being produced and demanded have a rather general applicability.[36]

This option would thus provide the widest possible scope of applicability of the legislation, and would also maximize the scope and flexibility for economic agents to take advantage of securitisation techniques to better share and allocate euro-area sovereign risk. It may also simplify the necessary market infrastructure, e.g., in terms of ascertaining/certifying eligibility of any candidate securitisation for the product legislation, thus minimising administrative and other costs (more on this in section 6.4 below).

The disadvantage of Option 1.2 would be that it is unlikely that any given securitisation of sovereign bonds, among the infinite possible varieties, would become prominent or established in the market, and thus gain the role and carry out the functions of a liquid benchmark security. Yet, liquidity is clearly an essential feature for any security to be

[36] At present, EU banks can, for example, apply zero risk weights to their holdings of any and all EU sovereign bonds denominated in the sovereign's own currency.

appealing for investors to hold, in particular for securities which are closely related to sovereign bonds—the benchmark "safe assets" *par excellence* for investors (see Annex 2, in particular the responses to the public survey on liquidity in section 1, the summary of the Industry Workshop in section 2, and the summary of the dedicated DMO workshop in section 3). Unless these new securitisation products acquire sufficient liquidity, it would for example be unlikely that banks would hold them in lieu of their current (liquid, but often too concentrated) holdings of sovereign bonds.[37]

For the same reason, the extent to which this option would generate a product with net benefits accruing uniformly across euro-area Member States is unclear. It would depend on the products that would actually be launched in the market and on which ones (if any) become more commonly used over time.

The impact of option 1.2 on the volume of AAA assets and on the composition of sovereign portfolios on banks' balance sheets would greatly depend on the structure of the products issued and purchased by banks. However the expected lack of liquidity for those products probably prevents their wide dispersion, so that the related impacts (compared to the baseline scenario) are expected to be small.

The impact of option 1.2 on different stakeholders depends on different factors, such as the regulatory treatment of the various tranches (see options 2.1 and 2.2) and the market size they would ultimately achieve. Overall, the impact on banks and other investors may be positive or neutral, as new products become available, although their attractiveness is questionable given their lack of standardisation and ensuing likely lack of liquidity. The impact on arrangers is expected to be positive or neutral, depending on the profitability of the product and the market size. For supervisors, the impact crucially depends on the market structure and is difficult to predict ex-ante. As regards the impact on national sovereign bond markets, the impact depends mainly on the size/attractiveness of these new products. The bigger their market, the more they become a competing product for sovereign bonds and may affect sovereign bond market liquidity. At the same time, funding costs could be positively affected though reduced bank-sovereign nexus risks. See Annex 3 (in particular models 3 and 4) for further details.

6.2.3. Option 1.3: A basket of euro-are sovereign bonds (with weights according to the official "SBBS recipe")

Option 1.3 concerns making the legislation applicable to a specific portfolio of sovereign bonds, i.e. one whose individual weights are in line with the official "SBBS recipe" as presented in Box 6 (so this portfolio would be the same as that used for SBBS, but without tranching). In what follows, such a product will be referred to as the "basket". Restricting the applicability of the proposed legislation only to this basket, as opposed to *any* basket, is in the interest of facilitating, through standardisation, the emergence of a benchmark liquid asset.

Functionally, this basket would be equivalent to a securitisation with a single tranche. However, from a regulatory point of view it is not a securitisation, as there is no

[37] Therefore providing such a wide range of securities with benchmark treatment in terms of regulatory liquidity may well be unwarranted.

tranching element when constructing the product, which is one of the two defining features of securitisation. The other defining feature is the pooling of various types of contractual debt. This means that it may not suffer from the same regulatory hindrances faced by securitisations of sovereign bonds.

The actual treatment of a claim on this basket in the baseline would depend on the specifics of the setup. Such 'claims' at present may take different forms (e.g., they could be covered bonds, corporate bonds, or units in a Collective Investment (so called Collective Investment Units or CIUs)). Their regulatory treatment, including eligibility for an application of the 'look through' principle as far as CRR-driven capital requirements, may vary accordingly.

Even though under the proper setup (i.e. as CIUs) investments in this basket may not face unfavourable treatment in terms of capital requirements, they are still likely to face other hindrances, especially in terms of no or incomplete eligibility for liquidity coverage requirements (LCR).[38] Thus an enabling framework would need to tackle at least these constraining factors and could result in a standardisation of these claims (which would all be structured to benefit from the regulatory treatment granted by the enabling framework).

As for Option 1.1, if the product legislation would apply only to this basket (as opposed to any conceivable basket of euro area sovereign bonds), a sizeable market for this particular instrument is more likely to develop, thanks to the induced standardisation, although again by no means certain. Thus, also in this case a narrower scope of applicability may be more 'enabling' than a wider one.

As for SBBS proper (option 1.1), this basket is by construction a product whose net benefits would accrue to all euro-area Member States. Through it, Member States that have a small and relatively illiquid sovereign debt market may be able to tap additional demand. A well-developed market for such basket could also favour a more uniform repercussion on national funding conditions from exogenous increase (say, from outside the euro area) for euro area exposure. This would be positive for Member States that would otherwise not benefit from this enhanced demand for euro exposure, but it is also good for the high-rated Member States, which until now serve as "safe havens" in a crisis, leading to higher fluctuations in their government debt interest rates and unduly low interest rates that could lead to overheating, misallocation of investment, and to challenges for some investor classes (e.g., pension funds).

As there is no tranching, this basket only provides diversification of risk, which on its own is insufficient to generate a low-risk asset. We estimate that this basket would reduce the amount of domestic bonds held by banks in a range of 3% to 34% compared to the baseline scenario, depending on the scenario (*limited volume* versus *steady state*) analysed (see section 5, Annex 4).

[38] If structured as shares in a CIU, investments in a basket (option 1.3) would, per Article 15 of the LCR Delegated Regulation, be eligible under certain conditions to the LCR buffer up to a maximum amount of EUR 500 million (the amount is limited as this is a deviation from Basel intended for small credit institutions) with a 0% haircut (as the underlying assets are government bonds), provided they respect the general and operational requirements to be included in the buffer (amongst which historical liquidity).

Although this basket would exhibit much lower price volatility than individual government bonds, its credit risk would be higher than that of many individual sovereign bonds. The rating of such basket is not expected to be the highest possible ("AAA" in the terminology of major credit rating agencies), with the immediate consequence that the overall amount of AAA-rated sovereign bonds available in the euro area would sharply decrease in the market (-25%) if such baskets were to reach a significant market size (e.g., in the envisaged steady state scenario). In the *limited volume* scenario, the effect would be smaller (-3%) (see section 4, Annex 4). In fact, assets based on this basket would be riskier than the current portfolios of most banks.[39] Inducing greater diversification could therefore increase the total exposure of banks to sovereign risk for a given volume of sovereign debt holdings. It is estimated that in the *steady state* scenario the share of sovereign bonds rated AAA on banks' balance sheets could decrease from 24% to 19% for euro area banks (see section 4 in Annex 4). However, conversely, the share of rather lower-rated government bonds would also decrease.

The effects of the development of a market for such a basket instrument on the liquidity and funding conditions on national sovereign bond markets presents the same opportunities and challenges as discussed for Option 1.1 above.

Given the specificities of this basket, the impact of option 1.3 on different stakeholders is expected to be neutral or unclear (see also Annex 3). While there could be a positive effect for banks, other investors and arrangers given the availability of a new standardised product, its overall profitability is questionable. As for options 1.1 and 1.2 the impact on supervisors crucially depends on the market structure and is difficult to predict ex-ante. The effect on DMOs and sovereign bond market liquidity is comparable to the one of option 1.1.

6.2.4. Impact summary and conclusions

The main considerations weighing in favour or against the three options considered in this subsection are summarised in Table 1 below.

Overall, while conceptually all securitisations and baskets of sovereign bonds would face some kinds of regulatory hurdles, it may be preferable to specifically adapt the regulatory framework only for one specific securitisation and one specific basket, e.g. those issued against a portfolio respecting the "SBBS recipe" as described in Box 6 (as is the case for the SBBS proper). This would enhance the likelihood that a structured product of euro-area sovereign bonds becomes sufficiently traded so as to gain "benchmark"-type appeal.

[39] See section 2.2 of Volume 1 of the HLTF Report.

Table 1: Option 1 (scope of applicability): summary assessment

Specific Objectives	Option 1.1 Only SBBS proper	Option 1.2. All securitisations of euro area sovereign bonds	Option 1.3 A basket of euro-are sovereign bonds with weights in line with ECB capital key
Ensure regulatory playing field between the asset and the underlying government bonds	(++) It addresses the identified regulatory issues for the SBBS product.	(++) The issues arising when the securitisation framework is applied to securitisations of sovereign bonds are addressed in a comprehensive manner. (+) Gives maximum flexibility to market participants as how to use securitisation techniques to better manage risk associated with fluctuations in perceived creditworthiness of euro area sovereigns	(+) It addresses any regulatory issues for the basket.
Facilitate liquidity and benchmark quality of the asset	(++) the narrow applicability of the product regulation could help ensure that all issuers of these new products pool and tranche euro area sovereign bonds in the same way. This would contribute to the emergence of a standardised product, which could underpin greater liquidity and appeal, including as a "natural" way for non-euro area investors to gain euro-denominated (low) risk exposure.	(-) the general applicability of the product regulation would reduce the likelihood that a (finite number of) securitisation product(s) would emerge as "benchmarks". This may limit the extent to which individually any such product would be seen as a liquid asset. (-) Moreover, many securitisations could combine sovereign bonds with varying credit ratings, without any particular criterion. This would per se lower the "brand" value of the product class.	(+) To the extent that the proposed regulation would offer a more favorable treatment to this particular basket, it may incentivise issuers of baskets of government bonds to pool euro-area sovereign bonds in the same way. This would contribute to the emergence of a standardised product.

6.3. Extent of 'restored' regulatory neutrality

This section assesses whether regulatory neutrality should apply to all tranches or only to the most senior one, i.e. whether the most favourable regulatory treatment (currently applicable to each and every component of the underlying portfolio of sovereign bonds) should also apply to the whole SBBS instrument. This issue does not concern the basket (option 1.3), as there is only one 'tranche', or only one type of security (which is either given equal regulatory treatment to EU sovereign bonds or not).

Consider, for example, the determination of capital requirements associated with banks' investments in tranches of a securitisation of sovereign bonds. In this case, complete regulatory neutrality would require setting a zero risk weight for all tranches. Alternatively, one could give the zero risk weight only to the senior tranche[40] and positive risk weights to the sub-senior tranches, e.g. in proportion to their relative (estimated) risk/volatility. In this case, regulatory neutrality would remain incomplete: the regulatory playing field with euro-area sovereign bonds would become level for senior tranche, but not for sub-senior ones.

Similar considerations could be made as regards other key aspects of legislation. For example, one could decide to grant the same regulatory status of sovereign bonds, i.e. full eligibility (with no haircuts) for level-1 treatment in the determination of compliance

[40] Feedback from market participants has confirmed that a zero risk weight is essential for the senior tranche—which, by virtue of its enhanced safety, is likely to have a very low yield—to be attractive for banks, including as an alternative to holding (concentrated) portfolios of sovereign bonds.

with liquidity-based requirements (such as LCR and NFSR), to all tranches of a securitisation of sovereign bonds, or alternatively only to the senior tranche.

The considerations in favour of the former or the latter approach are discussed next.

6.3.1. Option 2.1: Extend the regulatory treatment of euro area sovereign bonds to all tranches

Option 2.1 extends the regulatory treatment of euro-area sovereign bonds to all tranches of an SBBS, which restores 'full neutrality'.

Full neutrality would maximize the 'enabling' effect of the legislation:

1) From the perspective of capital requirements, assigning zero risk weights to all tranches would, for example, allow banks to hold any given fraction of their aggregate portfolio of euro-area sovereign bonds in the form of these tranches, without facing additional capital requirements.
2) From the perspective of liquidity coverage requirements, full eligibility for LCR/NFSR purposes for all tranches—would be more 'enabling' than any other alternative regulatory status because it would ensure that the development of an SBBS market does not trigger a (regulatory) liquidity 'squeeze'. To understand why this is the case, consider that at present all euro-area sovereign bonds are fully eligible to meet the liquidity requirements (they are, in technical terms, level-1 High-Quality Liquid Assets, or HQLA). If all tranches of a securitisation are also made eligible for level-1 HQLA, then the supply of HQLA would not change regardless of the amount of euro area government bonds which are assembled into these new securitisations (that is, regardless of the volume of these new instruments).

Regarding the benefits and costs in terms of availability of AAA-rated sovereign bonds and composition of sovereign portfolios on banks' balance sheets, the impacts are similar to those described in section 6.2 for the SBBS proper (option 1.1) and would depend on the scenario. In particular, in the *limited volume* (respectively, *steady state*) scenario, the volume of AAA sovereign bonds in the euro area would increase by 2% (respectively, 30%), banks' holdings of own-sovereign bonds would decline by 3% (respectively, 34%), and the share of AAA bonds in banks' sovereign portfolios would increase by 24% (respectively, 32%) (see Annex 4, sections 4 and 5).

The impact of option 2.1 on different stakeholders depends on different factors, such as the scope of applicability of the proposed legislation (see options 1.1 and 1.2) and the market size SBBS would ultimately achieve. Overall, the positive impact on banks, other investors and arrangers given the minimised regulatory charges may be greater if standardisation of the product was guaranteed. As for the options discussed above, the impact on supervisors crucially depends on the market structure that develops. As regards the impact on DMOs, the impact depends mainly on the size/attractiveness of SBBS as well as the structure of the national sovereign bond market. Some national sovereign bonds may be affected more than others and the bigger the size of the SBBS market, the larger the possible implications for national sovereign bonds. See Annex 3 (in particular models 1 and 3) for further details.

6.3.2. Option 2.2: Extend the regulatory treatment of euro area sovereign bonds only to senior tranches

Option 2.2 extends the regulatory treatment of euro-area sovereign bonds only to the senior tranche of a securitisation.

In this case the proposed legislation would be less 'enabling' and would (by design) level the regulatory playing field only up to a point, i.e. only for the senior tranches.

Under this scenario, any switch by banks from direct holdings of sovereign bonds to tranches of securitisations of sovereign bonds would result either in increased capital requirements, or in banks having to sell off the part of their sovereign exposure equivalent to the sub-senior tranches to keep their capital requirement unchanged. Either way, the perceived risks faced by banks would have declined, or countered with greater loss absorption capacity (see also Annex 3 for estimates of the impact on banks). This in itself would be positive for financial stability considerations.

As regards government funding costs, the effects of incomplete regulatory neutrality would depends on banks' reaction (in particular, on the extent to which banks switch their current sovereign bond holdings into these new products), on the elasticity of supply of bank (equity) capital, and on the elasticity of the demand by other investors for any sovereign risk divested by banks. For example, the impact on funding costs would be reduced, and in the limit disappear, if other investors that are not subject to capital requirements would readily purchase sub-senior tranches sold by banks. Member States with higher debt would be more affected by any increase in their funding costs.

Similarly, if junior tranches were not made fully eligible for HQLA status when it comes to compliance with LCR/NFSR liquidity requirements, then the greater the amount of such securitisations which is assembled, the larger the effective reduction of HQLA-eligible securities available to market participants,[41] which may result in increased price for residual HQLA securities (i.e., a reduction in interest rates) and/or in pressures for banks to increase the liquidity of their other assets (e.g., scaling down their maturity transformation activities).

Regarding the benefits and costs in terms of availability of AAA-rated sovereign bonds and composition of sovereign portfolios on banks' balance sheets, the impacts are similar to those describes for option 2.1, except than the share of AAA bonds in banks' sovereign portfolios would reach 33% under the most optimistic scenario (see Annex 4, sections 4 and 5).

As for option 2.2, the impact of option 2.1 on different stakeholders depends on different factors, such as the scope of applicability of the proposed legislation (see options 1.1 and 1.2) and the market size SBBS would ultimately achieve (see Annex 3). As indicated above, a more risk-sensitive treatment of the non-senior tranches would contribute to making the overall financial system more stable. Thus the impact on supervisors is

[41] Of note, and in contrast to what happens for example with the ECB's purchase programs, sovereign bonds underpinning a securitisation would not be envisaged to be lent out for liquidity/collateral purposes—they would be effectively withdrawn from the market as far as the total supply of HQLA is concerned.

expected to be positive. The impact on DMOs/sovereign bond market liquidity is unclear depending on different variables but is overall expected to be limited (see Annex 4, section 3).

6.3.3. Impact summary and conclusions

The considerations militating in favour of full neutrality for all tranches versus full neutrality only for senior tranches are summarised in Table 2 below.

On balance, levelling the regulatory playing field for all tranches maximizes the enabling nature of the proposed product legislation, and would also minimize any capital requirement or liquidity squeeze that would result, especially in the presence of a large switch in banks' portfolios out of direct holdings of sovereign bonds and into such tranches. At the same time, especially for sub-senior tranches, some discrepancy might emerge between, for example, the granted HQLA status in terms of liquidity requirements and the actual market liquidity exhibited by the security.

Table 2: Option 2 (extent of restored regulatory neutrality)—summary assessment

Specific Objectives	Option 2.1. Extend the regulatory treatment of euro area sovereign bonds to all tranches	Option 2.2. Extend the regulatory treatment of euro area sovereign bonds to senior tranches only
Ensure regulatory playing field between the asset and the underlying government bonds	(+) All the regulatory hindrances to the development of markets for securitisations of sovereign bonds are removed. (+) The enabling nature of the regulation is maximized, since the capacity to offer senior tranches also depends on the demand for sub-senior tranches (the issuers are not supposed to retain any risk associated with their securitisation activities)	(+) The senior tranches are given "benckmark quality" regulatory treatment, thus ensuring them a level-playing field with the underlying sovereign bonds. Moreover, the differential treatment may underscore their added safety. (+) More "prudent" treatment of sub-senior tranches--particularly important if the securitised portfolio is not sufficiently diversified or heavily exposed to low-rated sovereigns. (-) Demand for sub-senior tranches may be less forthcoming, especially from banks.
Facilitate liquidity and benchmark quality of the asset	(+) No capital requirements and liquidity pressures resulting from any switch by banks from direct sovereign bank holdings to tranches of securitisations of sovereign bonds--banks' incentive to switch is maximized. (+) No aggregate "liquidity squeeze" that would result if assembling securitisations of sovereign bonds would reduce HQLA level-1 eligible assets. (-) A mismatch might emerge between the regulatory treatment of a securitisation tranche as liquid and its actual liquidity exhibited in the marketplace--this is especially likely for sub-senior tranches, in particular those issued against non-diversified portfolios.	(+) The differential regulatory treatment could underscore the enhanced safety of senior tranches. Especially if a standardised senior tranche emerges in the market, it may more naturally become a benchmark.

6.4. Ensuring compliance with SBBS criteria and consistency in implementation[42]

This section describes and assesses three policy options to ensure that any given financial instrument complies with the eligibility criteria specified in the product legislation. This

[42] Given the similarities of the issues at stake, this section draws on the impact assessment of the STS regulation at: https://ec.europa.eu/info/publications/impact-assessment-accompanying-proposals-securitisation_en

is a crucial aspect for investors' trust, which is itself particularly important in determining the chances of success of a completely novel product. Irrespective of the decision taken on the options described in this section, four general principles must apply and contribute to the proper implementation of the product legislation.

(a) Ensuring investors' due diligence (investors' responsibility): The compliance mechanism is not intended to provide an opinion on the level of risk embedded in the securitisation, nor any guarantees of payouts. The scope of the compliance assessment should be strictly limited to criteria establishing the 'foundation approach', namely applying to the structure of the instrument. Investors should continue performing careful due diligence of any securitisation of sovereign bonds before investing.

(b) Responsibility to comply is first on originators. Originators (or arrangers) of SBBS instruments should bear primary responsibility toward ensuring that their product fulfils the criteria. They will have to attest that the product is meeting all SBBS criteria. The onus would remain on originators as they are in possession of the most complete information regarding the product and are the best placed to make the determination on the characteristics of the instruments.[43] In addition, if the originator is found liable for misleading or false attestation, sanctions on originators would be much more effective than sanctions on the securitisation vehicle itself.

(c) Sanctions should be in place for non-compliance. There is a need for appropriate sanctioning measures for participants in the SBBS market to set the right incentives. For originators, the measures would refer to normal supervisory sanctioning powers. Sanctions should be both proportionate and dissuasive to prevent investors being misled and could range from pecuniary fines to a prohibition against further issuances for a pre-determined period of time. There is also a need to consider the implications on investors (e.g. what happens if a securitisation is re-qualified as non-qualifying for the new regulatory treatment). Investors would, for example, no longer benefit from incentives attached to the 'SBBS category'. In this case, a transitional period could be foreseen for investors, e.g. to prevent fire-sales. Specific sanctions should also be applied to any independent third parties involved in the process.

(d) Appropriate public oversight. In the course of their regular assessments of prudential requirements (e.g. onsite/off-site examination of solvency requirements), supervisors will verify compliance with the eligibility criteria. This monitoring is important to ensure the accuracy of prudential ratios, since these new products would benefit from a specific prudential treatment. Specific monitoring arrangements should also be defined for originators of SBBS instruments—especially if they are not already under supervision, for example by virtue of not being banking entities—and for potential third parties.

6.4.1. Option 3.1: A compliance mechanism based on self-attestation

Under this option, the responsibility for determining compliance with SBBS criteria would lie with originator firms, which would be legally liable for attesting that all criteria

[43] This information advantage is however very limited in the case of either SBBS or the basket, since the underlying assets—i.e., euro-area government bonds—are well known to all investors, and they are routinely traded (so that a relevant price signal is in nearly all circumstances available).

were met. They would be required to disclose this attestation in the offer documents after an appropriate assessment of each of the criteria. Ex-post oversight would be carried out as in normal supervisory activities. The eligibility of an SBBS securitisation for the envisaged prudential treatment would therefore still be subject to supervisory checks.

(a) Effectiveness

The attestation would establish legal liabilities for originators, which would create a safeguard for investors. This approach would not fully eliminate investors' concerns about conflicts of interests by originators that may affect the objectivity of their attestation. Therefore misleading self-attestation is the main risk of this approach. Yet it needs to be kept in mind that, given the specialness of the underlying assets (i.e., euro-area government bonds), there is little if any scope for discretion on the part of the originator in how to assemble the product, especially when the "recipe" is basically given (as is the case under Options 1.1 and 1.3). The risk can be further lowered by ensuring that false self-attestation would have serious consequences for the originators if unveiled for example in the course of an inspection by supervisors.

These supervisory checks, which could be carried out on a risk basis, would provide the overarching guarantee of the correct functioning of the system

Nevertheless, incentives would remain for investors to carry out due diligence (again, this is expected to be not too involved, thanks to the nature of assets underlying these new structures and the (simple) requirements to qualify for the envisaged regulatory treatment. Needless to say, due diligence on the part of investors is key for a safe and sustainable market.

This approach does not limit in any way the recourse to validation by third parties of a deal's SBBS status. If the latter will provide value added to investors and originators, they will require it and a market will arise. It should be noted that, given the specialness of the new products, the role of a third-party validator would likely be quite limited, possibly to merely confirming that the structure does contain the stated sovereign bonds in the stated quantities (and thus confirm, quite trivially, whether these align or not with the ECB capital key). Differently from other securitisations, in other words, third-party validators would not need to offer opinions nor due extensive diligence on the underlying assets, as these are well-known.

(b) Efficiency and impact for stakeholders

This option would increase originators' liability in case of wrongdoing, while maintaining investors' due diligence incentives. Since supervisors would only be involved ex-post when reviewing prudential requirements, it could be argued that this setup would minimize expectations on the part of investors of "bailout" by public entities if something goes wrong (compared to a setup where investors buy the new product on the basis of a certification by a public entity—see option 3.3 in section 6.4.3). In addition, third parties could anyhow be involved in the compliance mechanism if the markets value such an involvement and are therefore willing to pay for it. This option will therefore not limit in any way the development of third party validation schemes. If these will provide value added to investors, these should require it and issuers should adapt.

This approach would have limited novel financial implications for public budgets, since supervisors would check compliance ex-post in the course of their routine supervisory activities. Originators would have to support the self-attestation costs, which should however be quite small (the extent to which these are translated to investors would depend on the competitiveness of the market). In the absence of an ex-ante public intervention, this approach would not eliminate regulatory risks for investors as self-attested SBBS instruments could be re-qualified at a later stage.

6.4.2. Option 3.2: Option 3.1, with the involvement of third-parties

Similar to option 3.1, option 3.2 would rely on self-attestation by originators. It would, however, be complemented by the mandatory involvement of a third party, for certification and/or for management purposes. As investors may have concerns with fraudulent declarations by originators, they might view self-attestation as not sufficient to build the critical amount of trust for the SBBS market to take off. A control system relying on independent third parties could thus be established to prevent the issuance of non-compliant SBBS instruments.

This option could build on EU procedures in place to establish labelling in other areas.[44] 'Control bodies' could be designated to perform specific checks to assess compliance with the eligibility criteria. These bodies would in turn respect requirements defining the nature, frequency and conditions of their controls. A specific oversight or licensing regime would have to be developed in order to authorise and monitor these independent bodies.

(a) Effectiveness

Under option 3.2, the self-attestation would be complemented by an independent review of compliance with the eligibility criteria. This approach would help address any concerns related to the truthfulness of originators' prospectuses, providing additional confidence to investors. Appropriate safeguards would be needed to prevent and address potential conflicts of interests with originators, especially if third parties were to rely on "issuer-pays" models.

If properly performed, third-party reviews would give additional assurance to investors. The drawback is that the third-party review may induce lower scrutiny and due diligence by investors. It should be noted that, in the case of tranched products, to some extent relieving investors of the need to do due diligence could be considered as part and parcel of the creation of a "liquid low-risk asset", as arguably one feature of such an asset is that it can and will be traded with "no need to ask questions". To the extent however that sub-senior tranches are not standardised, reducing incentives for due diligence by investors can be suboptimal.

(b) Efficiency and impact for stakeholders

This option would rely on private sector entities to perform independent assessments of SBBS. Several entities may enter into this market and competition could limit the costs

[44] For instance for organic products (i.e. Council Regulation n°834/2007)

for issuers. Involving private entities would make the mechanism more flexible and scalable to market activities. However, it would also imply additional costs, though as discussed these could be expected to be small since the third-party validator/reviewer merely needs to confirm that the content of the structure is exactly as advertised in the prospectus.

This approach would have similarities with other EU policy, in particular the procedures for EU labelling. Public oversight of the independent entities could also build on the approach developed for the registration and oversight of credit rating agencies. It is important to note that this approach may present similar issues and risks causing 'overreliance' on third parties, as has arguably been the case with credit rating agencies. Originators and investors may favour this option, if they would share part of the liabilities with third parties. Their increased confidence notwithstanding, investors would not get full regulatory certainty, as the final prudential determination of compliance would remain with the supervisors.

6.4.3. Option 3.3: Option 3.1 with ex-ante supervisory checks on each issuance

Similar to option 3.1, option 3.3 would rely on the self-attestation of originators, complemented by ex-ante checks by supervisory authorities. This option would offer a higher degree of credibility due to the specific status of supervisory authorities. Furthermore, prudential authorities benefit from a wider overview of market practices and are less likely to be subjected to issues related to information asymmetries. Moreover, with no ’issuer-pays’ model, no conflicts of interest should arise.

This approval mechanism would be developed for each issuance of the new instrument. This would ensure that each individual issuance meets the eligibility criteria. Compared to the previous options it would, however, imply higher compliance costs for securities regulators, but again should not be too expensive because of the simple nature of the instrument and its underlying assets. Checking the legal setup, for example in terms of the correct specification of the waterfall of payments in case of an SBBS proper, may be more costly. But it is likely that a standard setup would emerge, reducing such monitoring costs over time.

Alternatively, an 'issuer-based approach' could be developed. This would mainly focus on processes implemented by originators to ensure compliance with eligibility criteria. This would result in a kind of license granted by the authorities. The initial licensing or approval would be comprehensive and detailed, and thus somewhat more resource intensive, but it would reduce the subsequent compliance costs, as originators would not be required to renew approval for every new transaction. This setup would thus favour large originators, which could amortise the licensing costs over larger volumes.

(a) Effectiveness

Instead of relying on independent third parties, supervisors would directly assess the compliance with eligibility requirements. This approach would be the most powerful to ensure investors' confidence. This option would contribute to a sustainable development of these new markets, while reducing the risks of confidence crises and attendant spillovers, which in the limit could jeopardise financial stability.

However, reliance on supervisors would reduce substantially investors' incentives to perform thorough due diligence. It could also generate expectations of "bailouts", should the products experience difficulties. Also, this would reduce the responsibility of issuers, as supervisory approval would be necessary.

(b) Efficiency and impact for stakeholders

This option would be the most efficient in terms of ensuring the credibility of the new products. However, it would require greater public resources as supervisory authorities would have to take on new tasks. These costs would, of course, be minimized if the "SBBS proper" model is chosen, whereby detecting non-compliance with the given "recipe" (i.e., portfolio weights and tranching levels) would be relatively straightforward.

While investors and originators may appreciate the legal certainty associated with a supervisory review, supervisory authorities may face additional liabilities and concerns about moral hazard issues.

6.4.4. Impact summary and conclusion

Error! Reference source not found. summarises the relevant considerations.

Table 3: Option 3 (Compliance mechanism)—summary assessment

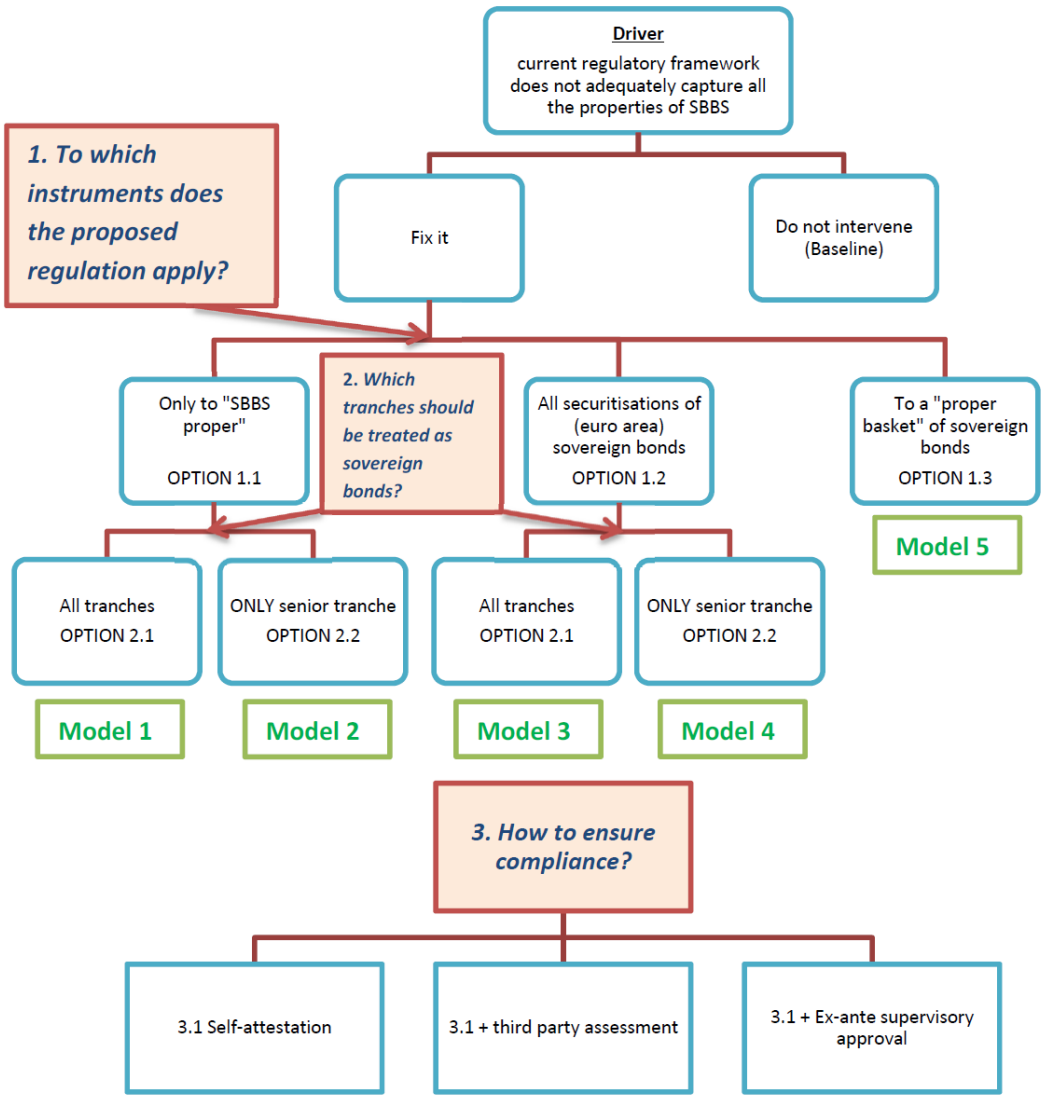
Option/ Specific objectives	**Option 3.1: Compliance mechanism based on self-attestation by originators**	**Option 3.2: Option 3.1 with the involvement of third-parties**	**Option 3.3: Option 3.1 complemented by ex-ante supervisory checks on each issuance**
Effectiveness	(=) Investor confidence would depend on reputation of issuer and potential sanctions (++) Reduced "moral hazard" risks as incentives for due diligence remain high	(+) Investor confidence would be increased as independent assessment of eligibility criteria will be available (-) Increased "moral hazard" risks as incentives to investors' due diligence are weaker	(++) Strong and positive effects on investor confidence (--) Increased "moral hazard" risks as investors might come to expect public backing for the product.
Efficiency	(+) Limited costs for public finance and public authorities resources.	(+) Higher flexibility and scalability of the process (-) Additional costs for originators and need to introduce public oversight for 3rd parties	(-) Public authorities would need more resources to take up new tasks
Impact on stakeholders	(+) Better alignment of incentives between originators and investors (liability for potential risks) (-) Investors would not benefit from external support in assessing compliance with eligibility criteria.	(+) Would provide additional confidence to investors in assessing compliance with eligibility criteria (-) Even with 3rd parties involved, final prudential decisions would remain a competence for supervisors	(=) Greater legal certainty for investors-originators, but concerns on the scalability and timeliness of the mechanism (-) Potential reputation risks for public authorities

Although the extent of asymmetric information between originators on one side and investors/supervisors on the other is even less than in the case of the STS securitisation, Option 3.1, i.e. attestation by originators, comes across also here, like in the case of the STS securitisations, as the preferred setup to ensure compliance with the eligibility criteria of the new products. This setup would ensure that originators remain liable for issuing instruments meeting eligibility criteria and should incentivise investors to perform appropriate due diligence, while minimizing novel costs on supervisors (as well as moral hazard concerns). Issuers should face appropriate sanctions if they make wrong declarations. This approach could be combined with option 3.2, but on a non-mandatory basis. Originators would still have the possibility to ask for a review by an independent third party if they consider that this would provide added value.

7. HOW DO THE OPTIONS COMPARE?

The options described in the previous section can be combined to form "models" which in turn can inform the proposed product legislation.

Figure 5: The decision tree



In particular, Figure 5 shows how combining the options considered in terms of scope of applicability of the legislation (section 6.2) and extent of restored regulatory neutrality (section 6.3) generates five distinct models, which will be compared in this section. Note that the arguments underpinning the superiority of the self-attestation model (Option 3.1) as setup to ensure compliance with the proposed legislation are largely independent of the options considered in sections 6.2 and 6.3. Therefore Option 3.1 would be used regardless of the specific model chosen, and it is not discussed further in what follow.

The comparison among the five models with the baseline (no regulatory intervention) is summarised in Table 4. The first two rows of the Table capture the extent to which each model advances the achievement of the specific objectives set out for the legislative intervention, namely securing "regulatory neutrality" for the new product vis-à-vis euro area sovereign bonds and facilitating their liquidity (de jure and de facto) and scope for becoming "benchmark-like" instruments. The other rows assess the various models against other desirable objectives.

Table 4: Assessment

		Model 1 Only SBBS proper; Treat all tranches as euro area sovereign bonds	**Model 2** Only SBBS proper; Treat only Senior tranches as euro area sovereign bonds	**Model 3** All securitisations; Treat all tranches as euro area sovereign bonds	**Model 4** All securitisations; Treat only Senior tranches as euro area sovereign bonds	**Model 5** Proper SBBS basket; Treat basket as euro area sovereign bonds
Effectiveness	Regulatory Neutrality	yes	partial	yes	partial	yes
	Liquidity/benchmark quality	yes	yes	no	no	partial
Other positive effects	Minimizes capital requirements?	yes for SBBS	no, sub-senior tranches would still command high risk weights for SA banks	yes	no, sub-senior tranches would still command high risk weights for SA banks	yes
	Assembling of the product does not result in reduction of HQLA assets	yes	no	yes	no	yes
	Does not impair liquidity of national sovereign bond markets	Ambiguous (*). Effects likely to be small if market size is limited	Ambiguous (*). Effects likely to be small if market size is limited	Effects (if any) likely to be small.	Effects (if any) likely to be small.	Ambiguous (*). Effects likely to be small if market size is limited
	Helps expand amount of low-risk assets	yes, senior SBBS is low-risk	yes, senior SBBS is low-risk	uncertain	uncertain	no
	Facilitates banks' diversification	yes	yes	uncertain, it depends on what product is developed	uncertain, it depends on what product is developed	yes
	Facilitates cross-border financial integration	yes especially thanks to the standardization	yes especially thanks to the standardization	yes	yes	yes
	Facilitates bank de-risking	yes	yes, and more than Model 1, since there would be a built-in incentive to offload junior tranches	uncertain, it depends on what product is developed	uncertain, it depends on what product is developed. But more than Model 3, since there would be a built-in incentive to offload junior tranches	uncertain, as it depends on the product. Less than Model 2, since the asset would be diversified, but without the protection of the junior tranche
	Facilitates smooth absorption of asymmetric capital flows	yes	yes	uncertain, it depends on what product is developed	uncertain, it depends on what product is developed	yes

The different models perform differently against the various criteria. In particular, models 1, 2 and 5 (in which the legislation would apply to products with pre-specified

structures) would fare better than models 3 and 4 (in which the proposed product legislation would apply to any and all securitisations of euro-area sovereign bonds) in developing a standardised product, which – as also underlined by stakeholders in the ESRB public consultation (see Annex 2, section 1) and industry workshop (see Annex 2, section 2) – is key for the liquidity and attractiveness of the new product.

Models 1 and 2, allow the creation of a new euro-denominated, euro area representative low-risk synthetic asset (the senior tranche), which could over time compete in the international financial markets with such benchmarks as bonds from the US or Japan (Models 3 and 4, which lack standardisation, would not).

Model 5, despite featuring standardisation, does not quite achieve that, because it does not feature tranching (and thus added "protection" to at least the senior tranche). Indeed, Model 5 could over time even result in an aggregate reduction of AAA-rated assets (see Annex 4.4). It might also not deliver on de-risking banks' bond portfolios as assets based on this basket would be riskier than the current portfolios of most banks, thus banks would have no incentive to swap into this asset. On the other hand however, it offers the very positive feature of avoiding the complexities associated with securitisations[45] (which Models 3 and 4 would not).

So, the choice between Models 1 and 2, on one hand, and Model 3 on the other, comes down to the relative importance attached to creating a synthetic low-risk asset versus keeping things simple.

The choice between Models 1 and 2 comes down to a trade-off between maximizing the "enabling" effect of the proposed regulation (Model 1) versus maximizing its financial stability benefits (Model 2).

By providing the most favourable regulatory treatment to all tranches, thus for example ensuring that the development of SBBS markets does not adversely affect banks' access to high-quality liquid assets, Model 1 is by definition more "enabling" than Model 2.[46] Model 2, however, could give greater benefits in terms of overall risk reduction if it led to a transfer of riskier sovereign exposures from banks to other investors which are better equipped to handle them and whose financial difficulties would not be expected to put any direct pressure on public finances of individual Member States.[47] Of course, a necessary condition for this "good equilibrium" to emerge would be that SBBS would prove economically viable even in the presence of remaining regulatory hindrances of various types on sub-senior tranches.

[45] E.g., properly enforcing the waterfall of payments in the case some underlying bonds experience debt service difficulties.

[46] Recall that, for senior tranches to be "produced", issuers/arrangers have to be confident that sufficient demand also comes forth for sub-senior tranches.

[47] It may be worthwhile noting that setting out incentives whereby banks would not want to hold sub-senior SBBS tranches (as would be the case in Model 2) does not mean that banks' total exposure to EU sovereign risk must necessarily decline, as banks could decide to switch their entire current holdings of EU sovereign bonds into senior SBBS. Again, as discussed in Section 6.3.2, the net effects on the funding costs of euro-area sovereigns would depend on several factors, including the elasticity of demand for sub-senior SBSB by investors not subject to CRR requirements (e.g., hedge funds).

8. PREFERRED OPTION

8.1. Preferred model

Our analysis shows that, given the importance of standardisation for the development of a benchmark-type asset, Models 3 and 4 are likely to be inferior.

As far as the remaining models are concerned, however, each has different strengths in addressing different issues. No clear conclusions thus emerge from the analysis as to a single best model (understood as a single collection of best options) in terms of both effectiveness and efficiency. Political considerations will be required, therefore, to prioritise the choices, based on the impacts and trade-offs presented in the preceding sections.

Regarding the regulatory treatment of the different tranches of the product, Model 1 would restore full regulatory neutrality, which would maximize the 'enabling' effect of the legislation. Model 2 would be less 'enabling' than model 1 and would (by design) level the regulatory playing field only up to a point, i.e. only for the senior tranches. It might, however, lead to greater de-risking by banks, and thus greater financial stability benefits, if—despite the higher charges on sub-senior tranches—SBBS nevertheless proved viable. Model 5 would be enabling to the extent only that it is de facto the regulatory treatment that is currently hindering the instrument's natural emergence.

Regarding the choice of the compliance mechanism, as with the STS securitisation, a model based on attestation by originators, possibly complemented by third party certification on a voluntary basis (option 3.1 in section 6.4), is the preferred option as it would ensure that originators remain liable for issuing instruments meeting eligibility criteria and incentivise investors to perform appropriate due diligence, while minimizing novel costs on supervisors (as well as moral hazard concerns).

8.2. REFIT (simplification and improved efficiency)

This initiative introduces new rules for a new financial instrument, namely SBBS. This initiative simplifies the regulatory treatment of this instrument and should enable the development of a new market. Simplification concerns several aspects, including the restrictions on investing in these instruments by some financial institutions.

9. HOW WILL ACTUAL IMPACTS BE MONITORED AND EVALUATED?

In terms of securing the specific objectives (i.e., eliminate regulatory hindrances and contribute to the liquidity of the new products, including by granting them "benchmark" regulatory treatment), if either model 1 or 3 is chosen, all that can be achieved by legislation is indeed achieved once the proposed legislation is approved and enters into force (because only a standardised product would then be made eligible, capital requirements would be effectively eliminated, and the best possible treatment as far as liquidity coverage requirements would be granted). For model 2, which would involve some calibration (e.g., for the risk weights of sub-senior tranches for pillar-1 capital requirement purposes), regular monitoring after sufficient data has become available (say, in three or five years) would be helpful to ascertain whether the calibration chosen remains appropriate.

In terms of the general objective to enable markets for these new products, (i.e., SBBS or baskets, depending on the model ultimately chosen) the impact of the legislation will be assessed by monitoring the extent to which these new products will be actually assembled and traded, and—in turn—how much they contribute to the benefits measured by the benchmarks presented in section 6.1.2 (e.g., expanding the amount of low-risk assets, reducing the "home bias" in banks' sovereign bond portfolios, etc.). Information on the amount of SBBS assembled and traded is expected to be readily available, including because of the envisaged notification and registration requirements for each issuance. As regards the other benchmarks, data on the aggregate amount of euro-denominated low-risk (e.g., AAA-rated) instruments, or on the ratio between banks' holdings of bonds issued by their own government relative to their total holdings of sovereign bonds, or on the relative share of highly-rated sovereign bonds on banks' balance sheets are also readily available. The extent of their impact on the liquidity of national sovereign bond markets will also be assessed, using traditional measures of liquidity (e.g., bid-ask spread, volume traded, etc.). It is proposed that the Commission produces a report five years after the entry into force of this regulation, and at 5-yer intervals thereafter.

When interpreting the results of the afore-mentioned monitoring activities, it needs to be kept in mind, however, that both the development of this new market and the evolution of most if not all of the above-mentioned benchmarks depend on several other factors which are independent of, or may be only tenuously linked to, the regulatory framework. This is likely to make it difficult to disentangle the effects of the proposed legislation per se. In particular, for example, the supply of new products is also likely to depend on such factors as the legal costs (i.e., lawyers' fees) of setting up the issuing vehicle, the ease of procuring bonds of sufficiently uniform terms on either the secondary or primary market, the costs of servicing the structure, etc. Similarly, the demand of SBBS will depend on the overall interest rate environment, the risk appetite, and the demand from various investor types for the different tranches, etc. Market developments may also well be non-linear, as it is in the nature of the envisaged product that it benefits from returns to scale from size and network externalities. Thus, for example, if the product appears to attract sufficient investor interest, it is possible that debt managers may decide to organise dedicated auctions for the production of SBBS, with standardised bonds of varying maturities. This would, in turn, reduce production costs and could accelerate the growth of the market.

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ANNEX 1 PROCEDURAL INFORMATION

1. LEAD DG, DECIDE PLANNING/CWP REFERENCES

Directorate-General for Financial Stability, Financial Services and Capital Markets Union (DG FISMA).

DECIDE FICHE PLAN/2017/1678

2. ORGANISATION AND TIMING

Adoption expected in May 2018

3. CONSULTATION OF THE RSB

An upstream meeting was held on 20 October 2017.

The draft report will be sent to the Regulatory Scrutiny Board (RSB) on 19 January 2018.

The RSB meeting took place on 14 February 2018.

The RSB delivered a positive opinion with reservations on 16 February 2018.

4. EVIDENCE, SOURCES AND QUALITY

This impact assessment is based primarily on the analysis done by the ESRB HLTF. The report of the ESRB HLTF was published on 29/01/2018. The European Commission (DG FISMA and DG ECFIN) contributed intensively to the overall analysis of the HLTF and its report. The assessment is based on analytical analysis, a public stakeholder consultation, a stakeholder workshop and bilateral meetings with stakeholders.

In particular these include the following:

- A dedicated industry workshop was held in Paris in November 2016 (https://www.esrb.europa.eu/news/schedule/2016/html/20161209_esrb_industry_workshop.en.html).
- A public survey/questionnaire was run on the ESRB website at the end of 2016/ early 2017 (https://www.esrb.europa.eu/mppa/surveys/html/ispcsbbs.en.html).
- A workshop to gather the views of the Public Debt Managers (DMOs) was conducted in Dublin on 20 October 2017.
- Statistics and data from various sources, including ECB, EBA, Eurostat.
- Academic (economic) literature (see List of References of the ESRB HLTF report volume I and II, as well as of this document).

For a detailed description of the methodological approach, analytical methods, and limitations of the evidence underpinning this impact assessment, see Annex 4.

ANNEX 2 STAKEHOLDER CONSULTATION

As part of its feasibility assessment of SBBS, the HLTF has conducted a public consultation in late 2016 on the ESRB website, and has sought input and feedback from the industry and from Public Debt Managers (DMOs), including through two dedicated workshops, respectively an open one in November 2016 in Paris and a closed-door one in October 2017 in Dublin. The outcomes of these consultations are presented in this annex.

On this basis, and considering that the proposed initiative, by its very nature, would not directly affect retail consumers or investors, it has been decided that no further public consultation is necessary.

1. RESULTS FROM THE ESRB PUBLIC SURVEY ON SOVEREIGN BOND-BACKED SECURITIES[48]

The ESRB HLTF on safe assets ran an industry survey to consult with stakeholders on various open questions regarding the possible implementation of SBBS. The questionnaire sought feedback on several key issues that have been identified internally by the task force, as well as some concerns that have arisen following the bilateral market intelligence meetings. The survey was published on the ESRB website on 22 December 2016 and closed on 27 January 2017.

The survey received 15 credible responses from four investment banks, three commercial banks, four asset managers, three funds and one clearing house. The raw data has been carefully analysed and various useful insights have emerged. Overall the responses were in line with feedback that task force members have received in bilateral meetings, but some unexpected responses were also given (such as on the expectations for the senior bond's credit rating). A breakdown of answers on key questions and general conclusions drawn from the survey are shown below.

1.1 Senior SBBS

To what extent do you perceive a shortage of low-risk and highly liquid euro assets?

Respondents seem to agree that there is an issue with the supply of safe assets.

Answer Breakdown:

2 felt that there is Considerable Shortage

8 felt there is Partial shortage

4 do not believe that there is a shortage of safe assets. In particular 1 highlighted that there is "No shortage in terms of availability - the price is just high, but low-risk and highly liquid assets can always be purchased".

1 did not answer

In which asset class would you categorise senior SBBS?

There seems to be a division amongst market participants as to the asset classification of SBBS. This is not inconsistent with the feedback received in Paris and bilateral meetings,

[48] Prepared by staff of the ESRB's Secretariat. The survey itself is introduced at this address: https://www.esrb.europa.eu/mppa/surveys/html/ispcsbbs.en.html and presented here: https://epsilon.escb.eu/limesurvey/123521?lang=en

as many admitted that they could see arguments for an SBBS being both a bond and a structured product.

Answer Breakdown:

6 perceive it is a government/supranational bond only

6 perceive it as a structured product only

3 perceive as both a bond and a structured product

One respondent noted that for the Senior SBBS to be classified as a government bond it would need to meet structural ("fixed rate, bullet nominal"), regulatory ("ECB collateral, solvency capital for banks and insurance equal to govies") and market transparency ("rules of issuance, timing") requirements.

There are several ways to measure credit risk. How would you score these different risk measures in terms of their usefulness for evaluating the properties of senior SBBS?

	Very Useful	Useful	Partly Useful	Not Useful	No Answer
Probability of Default	7	4	0	0	3
Expected Loss	7	3	1	0	3
Value at Risk	4	6	2	0	2
Expected Shortfall	3	4	2	0	5
Marginal Expected Shortfall	1	4	1	1	7
CoVar	2	4	1	0	7

If you have chosen "other" in question 3, above, please elaborate on the additional risk measure to which you referred.

Two respondents indicated that different risk metrics to the one above would be very useful. Specifically one referred to the relationship of SBBS with the euro swap rate. The other hinted on the importance of "Stress loss under extreme but plausible market conditions" and default correlations.

One respondent indicated that "Markets would probably price this on an expected loss basis (CDO type pricing)."

What spread (in basis points) would you expect in the yield-to-maturity of 10-year senior SBBS relative to 10-year benchmark German bunds? If possible, specify the precise expected spread in the free text box.

Answer Breakdown:

1 Between -50bp and 0bp

7 Between 0bp and 50bp

4 Between 50bp and 100bp

2 Did not answer

Which long-term credit rating would you expect to be assigned to senior SBBS?

At the Paris workshop, several participants expressed scepticism that senior SBBS could achieve a AAA rating. However, most survey respondents felt that senior SBBS would be rated AAA.

Answer Breakdown:

8 AAA

7 AA

Low-risk assets typically appreciate in value during periods of stress. If perceived sovereign risk were to increase, would you expect the value of senior SBBS to increase, stay the same, or decrease?

Surprisingly, respondents were split on this question. Analytical work done by experts of the task force indicates that there is negative correlation between the yields of the tranches in stress times. Investors would flee from riskier securities and seek haven in safe assets. Respondents do not unanimously share this finding, however.

Answer Breakdown:

6 Increase

5 Decrease

1 Other: "Decrease if Eurozone crisis"

3 Did not answer

How important is the liquidity of senior SBBS?

Respondents perceive liquidity of the senior bond as Very Important. This is in line with the feedback perceived in bilaterals and in Paris.

Answer Breakdown:

13 Very Important

2 Did not answer

To ensure adequate liquidity of senior SBBS, which categories of maturities would need to be issued?

There seems to be a slight preference from respondents for the term structure of SBBS should cover the most liquid points vs the entire curve.

Answer Breakdown:

6 Issuance at most liquid points of the curve

5 Issuance at all points of the curve (from the very short to the very long end)

4 Did not answer

To ensure adequate liquidity of senior SBBS, to what extent is it important for them to be highly standardised? Or could there be some degree of flexibility (e.g. regarding portfolio weights)?

Respondents clearly prefer a high standardisation of SBBS, which reflects the importance of homogeneity across different SBBS series.

Answer Breakdown:

9 High standardisation – the prospectus should fix portfolio weights with no scope for deviation

4 Medium standardisation – the prospectus should allow only very limited deviation (within a small min/max range)

2 Did not answer

What is the minimum total notional value of senior SBBS necessary to ensure adequate liquidity?

Respondents do not seem to agree on an exact figure but consensus is that the notional should be relatively high. Specifically, most agree that any size below 250bn will not result in a liquid enough market. A relatively high number of participants did not answer this question.

Answer Breakdown:

2 More than 1500bn

1 Between 1000-1250bn

2 Between 500-750bn

2 Between 250-500bn

2 Less than 200bn

6 Did not answer

What is the minimum monthly issuance of senior SBBS (in terms of notional value) necessary to ensure adequate liquidity?

Similar to the previous question, there is no clear answer as to what precise monthly issuance size can guarantee adequate liquidity. It seem that a target around the EUR 10 billion mark could suffice. A relatively high number of participants did not answer this question.

Answer Breakdown:

1 More than EUR 20 billion

2 Between EUR 15 billion and EUR 20 billion

4 Between EUR 10bn and EUR 15 billion

2 Between EUR 5 billion and EUR 10 billion

1 Less that EUR 5 billion

5 Did not answer

Why might your institution hold senior SBBS?

	Responses
Asset-Liability Management (of maturity mismatch)	5
Collateral	8
Investment Return	4
Liability-driven Investment	2
Liquid store of value	9
Regulatory requirements	7
Safe store of value	4

Assuming that senior SBBS are designed such that they meet your requirements in terms of credit and liquidity risk, what percentage of your institution's current holdings of central government debt could be replaced by senior SBBS?

Overall it seems that the substitutability should be quite low in absolute values but it is very consistent with an incremental approach to SBBS market development. Answers to the survey indicate that institutions would be willing to substitute, on average, around

10% of their holdings into SBBS. A high number of participants did not answer this question.

Answer Breakdown:

1 More than 100%

1 90-100%

1 20-30%

2 10-20%

2 0-10%

8 Did not answer

1.2 Junior SBBS

In which asset class would you categorise junior SBBS?

Here we observe that many respondents have different views on senior vs junior SBBS. Many indicated that the senior could be classified as a bond think that the junior is only a structured product. This divergence in perception is likely to have arisen due to the different risk profiles of the two tranches. More risk averse market participants are hesitant to see the junior SBBS being treated like a bond (either in regulation or as an investment opportunity), even though transparency and the look-through approach can be applied in the same manner as in the senior SBBS.

Answer Breakdown:

3 Bond only

8 Structured product only

2 Both bond and structured product

2 Did not answer

One respondent noted that that junior SBBS could be perceived as a bond as long as structural, regulatory and market transparency rules are satisfied (see the same question for senior SBBS above).

There are several ways to measure credit risk. How would you score these different risk measures in terms of their usefulness for evaluating the properties of junior SBBS?

	Very Useful	Useful	Partly Useful	Not Useful	No Answer
Probability of Default	6	3	0	0	5
Expected Loss	5	4	0	0	5
Value at Risk	4	3	1	0	6
Expected Shortfall	3	3	0	0	8
Marginal Expected Shortfall	2	2	0	1	9
CoVar	2	1	2	0	9

If you have chosen "other" in question 2, above, please provide an explanation.

One respondent indicated that different risk metrics to the ones above would be very useful: "Stress loss under extreme but plausible market conditions" and default correlations.

Also one respondent indicated that "Markets would probably price this on an expected loss basis (CDO type pricing)."

Which long-term credit rating would you expect to be assigned to junior SBBS?

7 respondents indicated a non-investment grade rating, while 8 felt the junior could get a maximum of BBB.

What spread (in basis points) would you expect in the yield-to-maturity of 10-year junior SBBS relative to 10-year benchmark German bunds? If possible, specify the precise expected spread in the free text box.

A relatively high number of participants did not answer this question.

Answer Breakdown:

2 More than 300bp

3 Between 200bp and 300bp

3 Between 100bp and 200bp

1 Other: "This would depend on the credit rating achieved by, and the underlying structure of these products."

6 Did not answer

Any mispricing between the replicating portfolio of junior and senior SBBS and the underlying portfolio could in principle be arbitraged away. To what extent would you expect such arbitrage to take place?

Most respondents seemed to agree that there will be some excess spread. Its size is debatable but the key insight here is that markets expect excess spread to exist. A relatively high number of participants did not answer this question.

Answer Breakdown:

4 Negligible arbitrage, excess spread would be significant

5 Some arbitrage, excess spread would be small

1 Significant arbitrage, excess spread would be negligible

5 Did not answer

Would a contractual **unbundling option – whereby an investor holding a replicating portfolio of junior and senior SBBS could swap that portfolio for the underlying sovereign bonds – facilitate arbitrage?**

Respondents seem to agree that unbundling would facilitate arbitrage, albeit to varying degrees. A relatively high number of participants did not answer this question.

Answer Breakdown:

2 Yes, unbundling option is critical for arbitrage to work

3 Yes, but arbitrage will work even without the unbundling option

2 Somewhat but other frictions would still prevent full arbitrage

1 No, unbundling option would not work, and arbitrage will be limited

7 did not answer

Would junior SBBS' property of embedded leverage enhance their attractiveness in terms of expected return?

There seems to be an agreement that the embedded leverage property of SBBS could play a role in attracting higher demand. A high number of participants did not answer this question.

Answer Breakdown:

2 Certainly yes

4 Probably yes

1 Maybe

8 Did not answer

Would sub-tranching **junior SBBS for example in the form of a 15%-thick tranche of equity SBBS** and **a 15%-thick tranche of mezzanine SBBS enhance total demand for the securities?**

Answers are consistent with market intelligence meetings, where market contacts showed more willingness to invest in a mezzanine tranche rather than a 30% thick first loss piece.

Answer Breakdown:

2 Certainly Yes

6 Probably Yes

2 Maybe

2 Probably No

3 Did not answer

One of the "Probably no" respondents, provided further clarification for his answer. Specifically, they believe that a mezzanine tranche could enlarge potential investors at the detriment of the placing capabilities of the smaller and riskier junior tranche. The only caveat to that would be to ensure that the structure is eligible for amortizing cost under IFRS 9. Such eligibility is achieved only if there is a tranche below the bond in question and the mezzanine bond could achieve it. They see the lack of existence of amortising cost treatment as a non-starter for many potential buyers.

How important is the liquidity of junior SBBS?

Respondents feel that liquidity of the junior bond is important but not the same extent as for the senior bond.

Answer Breakdown:

5 Very Important

4 Important

1 Neutral

1 Not Important

4 Did not answer

To ensure adequate liquidity of junior SBBS, to what extent is it important for them to be highly standardized in a master prospectus? Or could there be some degree of flexibility (e.g. regarding portfolio weights)?

Similar to the senior bond, there is a lot of merit in having a high degree of homogeneity among different SBBS series. A relatively high number of participants did not answer this question.

Answer Breakdown:

7 High standardization - the prospectus should fix portfolio weights with no scope for deviation

2 Medium standardization - the prospectus should allow only very limited deviation (within a small min/max range)

6 Did not answer

Why might your institution hold junior SBBS?

	Responses
Asset-Liability Management (of maturity mismatch)	0
Collateral	2 (provided it is accepted by the ECB)
Investment Return	6
Liability-driven Investment	0
Liquid store of value	1
Regulatory requirements	1
Safe store of value	1

Other reasons: Market making and hedging.

Note that MMFs and CCPs indicated that the junior bond would not be eligible for them to hold.

Assuming that junior SBBS are designed such that they meet your requirements in terms of credit and liquidity risk, what percentage of your institution's current holdings of central government debt could be replaced by junior SBBS?

Respondents mentioned very low degree of substitutability (expected given the different nature and perception of junior SBBS relative to central government bonds). A high number of participants did not answer this question.

Answer Breakdown:

1 10-20%

2 0-10%

2 0%

10 did not answer

What changes to the design of junior SBBS would make **them more attractive?**

Some participants feel that the junior SBBS does not offer enough to motivate outright investment. The feedback received from answers to the open question was that there must be additional buffers to protect from the high risk exposure. Some proposals are:

- "A third tranche"

- "Since the junior would resemble Greece (and get similar characteristics) a 5% equity tranche placed at the ESM (with partial corresponding reduction of the Greece program) should be introduced."
- "Public issuance and guarantee"
- "Overcollateralization"
- "Ensure bullet nominal structure by
    - an exact matching of capital redemption for bond constituents and SBBS Notes
    - a similar timing for the issuance of the SBBS and the bond constituents
- Also a Fixed rate bond requires a good certainty of coupon payments. If the bonds are paying different coupons at different payment dates, best would be to have a small coupon to ensure good coupon coverage and certainty, with a mechanism to deal with excess spread, and some adjustment of the issue price to adjust the junior SBBS yield."

1.3 Regulation

What areas of regulation currently disincentivise the development of SBBS? Explain your answer in the free text field.

	Yes	Comments
Capital Regulation for banks	5	"0% risk weight necessary" "Large Exposure Limits, Leverage Ratio, Capital Requirements" "they are a structured product"
Liquidity Regulation for banks	5	"HQLA eligibility is key for banks" "LCR" "Would need 100% liquidity against them" "SBBS should be LCR eligible"
Insurance regulation	2	"Solvency 2"
Investment fund regulation	1	
Pension fund regulation	1	
Capital bank collateral eligibility	3	"Eligibility as collateral by the ECB is key for banks" "SBBS should be an eligible asset with a haircut corresponding to its reduced risk"
Other	3	"all regulation types should adjust to these instruments for acceptance as collateral or 'safe assets'" "Index rules and guidelines" "individual sovereign risks can be accessed through present markets. little value in bundling risks without sharing them."

Other Comments:

- "We do not support a change in the current banking regulation for sovereign exposures. Nevertheless, we consider that the success of Senior SBBS would somehow be linked to this regulatory change in the underlying assets."
- "Solvency capital requirements for banks and insurance holding the SBBS should be similar to those of govies: no capital charge, no securitisation treatment, no concentration risk."

In your opinion, in the regulatory framework, should SBBS be treated according to:

This result confirms the work of Workstream B of the task force, which is operating according to the look-through approach. It is also in accordance with the feedback received in meetings, where participants felt that it would be unfair to SBBS if the look-through approach was not applied. Answers to the question are strongly in favour of the look-through approach:

Answer Breakdown:

10 Look-through approach (two emphasized that it should get 0% rw even with a possible introduction of RTSE)

3 Current regulation on securitised products

2 did not answer

How should voting rights be allocated?

Respondents concluded that voting rights should be allocated according to investors' holdings. A high number of participants did not answer this question.

Answer Breakdown:

3 Voting rights should be transferred to investors in proportion to their holdings of junior and senior SBBS

1 Voting rights should be transferred to investors in proportion to their holdings of senior SBBS

1 Voting rights should be concentrated in the special vehicle

10 did not answer

1 respondent commented that "a trustee should handle the voting rights and represent the Noteholders."

What other considerations should inform the design of a regulatory framework for SBBS?

Answers:

- "EMIR regulation change to allow recognition of full portfolio margining benefits on SBBS."
- "A guaranteed repo market or liquidity provider available to exchange SBBS for cash to post as collateral for variation margin under centrally cleared swaps would be highly important to us."
- "If they are anything other than pari-passu with governments from a regulatory perspective the project will not work. Likely there will have to be a relative advantage to hold them, to encourage the market initially."
- "The success of ESBies is conditional to its regulatory treatment in banking, insurance and pension funds regulation. For ESBies, an special treatment should be granted in the following areas:
    - Credit risk: ESBies should not follow the current regulation for securitized products. Instead, they should receive a 0% risk weight that reflects their condition as a risk-free asset.
    - Liquidity risk: ESBies need to be recognized as a High Level Liquid Asset, so that they are eligible to comply with the Liquidity Coverage Ratio.

- Market risk: In line with credit and liquidity risk, ESBies should also keep the preferential treatment that now is granted for national sovereign debt.
- Moreover, and to reflect the own nature of ESBies as a diversified asset, they should be exempted from the large exposure limit.
- Finally, it is also necessary that they are recognized by the ECB as collateral for monetary policy operations and also by Central Counterparties in market operations.

It is necessary to consider that the previous regulatory adjustment would need a greater one, which is the change of the current regulatory treatment of the underlying assets, that is to say national sovereign exposures. This potential change would come with great challenges itself and should be designed and implemented globally, to avoid creating an un-levelled playing field across jurisdictions."

1.4 Economics of SBBS issuance

What **are the reasons for the current non-existence of sovereign bond-backed securities?**

Both the task force and feedback from the market intelligence meetings stressed that regulation has been the main impediment. Even though respondents seem to agree with that, it is interesting to note that they have also cited various other reasons that have not been considered so far.

Answer Breakdown:

1 The regulation of both sovereign bonds and securitised products

6 The regulation of securitised products

1 The regulation of sovereign bonds

5 Did not answer

5 Other citations:

- Structuring costs
- Warehousing and execution risks
- High degree of complexity
- 2 people felt that the sum of its parts has little to offer compared to the individual components
- 1 indicated that "Until now there was not a perceived market shortage of low-risk and highly liquid assets, so there was no need of SBBS under the current regulatory framework."

What would be the most significant operational fixed and variable costs related to SBBS issuance?

	Yes
Special servicer fees	2
Trading costs	2
Credit rating fees	2
Legal costs	2
Administrative costs	2
Costs related to funding the warehouse	2

Other comments:

- capital cost / balance sheet use (ROE)
- regulatory burden of holding
- similar to that of ETF(those above + observability)

It is interesting to note that one respondent believes that **"**Issuance costs (rating, servicer, administrative, legal costs) are probably minimal given the size expected".

Would it be most practicable for assembly of the underlying portfolio to take place via purchases of central government bonds **on the primary markets, purchases on the secondary markets, or by using existing portfolios?**

We observe a very interesting conclusion here. Respondents did not feel that the primary market is a necessary condition for successful issuance. This is contrary to the suggestion in the Industry Seminar that DMO coordination would be vital (or the best solution operationally) for the success of the issuance process.

Answer Breakdown:

7 New purchases from the primary market

3 New purchases from the secondary market

3 Use existing portfolios

3 cannot know

2 did not answer

One respondent noted that the secondary market could be used to recycle the bonds the Eurosystem already holds.

Given the current characteristics of primary and secondary government bond markets, would it be feasible to assemble the underlying portfolio and place all of the corresponding senior and junior SBBS within one week, using all available technical devices (e.g. advanced book-building)?

Of those that answered most feel that it would be possible. This implies may not be a big impediment for an issuer to overcome. A relatively high number of participants did not answer this question.

Answer Breakdown:

1 Yes

3 Probably Yes

2 Probably not

3 Cannot Know

6 did not answer

It is worth noting that none of those who answered "Probably Not" feel that warehousing is a significant cost. Of the 2 people who answered "Cannot Know", 1 thinks that such cost would be recouped by revenues but the other believes that warehousing is a Very Significant cost.

To what extent would coordinated DMO issuance in the primary market help to alleviate this warehousing problem?

Respondents agree that DMO coordination would help in alleviation of the warehousing problem. A high number of participants did not answer this question**.**

Answer Breakdown:

3 Significant Alleviation

2 Partial Alleviation

1 Not relevant or necessary, as the warehousing problem is anyway minimal

9 did not answer

In view of the likely fixed and variable cost structure of SBBS issuance, how many different SBBS issuers do you expect that the market could sustain in equilibrium?

Respondents do not feel that there is enough room in the market for many issuers. A high number of participants did not answer this question.

Answer Breakdown:

2 2-5 issuers

5 1 issuer

8 Did not answer

Could SBBS issuance be a profitable operation? Explain your answer in the free text field.

Most respondents could not give a definitive answer, but some positive feedback was received. It is interesting to look at the comments provided in the free text field, as 4 respondents feel that SBBS issuance would be a profitable operation provided that certain preconditions are met.

Answer Breakdown:

2 Yes ("The consolidated yield of SBBS could in the end become more attractive than the yield combination of the underlying components, provided the product structuring is made in a way to drive the market to consider those products as standalone credits rather than structured products (hence 1 single public issuing entity, high standardization, large volumes by issue (benchmark+taps), dedicated DMO issues to avoid duration mismatch costs, warehousing costs, complexity, and capacity to build exact same portfolio for arbitrages.")

2 Probably Yes ("trading spreads and short term funding profits of unsold bonds")

6 Cannot Know

5 Did not answer

Who should arrange and service the special vehicle?

Respondents are clearly in favour of a public entity issuing SBBS. This result is very much in line with feedback in other fora, where investors have stated that they would prefer some form of public guarantee. Even if the SBBS are in the balance sheet of a privately owned institution, any involvement of a public entity would provide assurance.

Answer Breakdown:

9 Public Sector entity

1 Public-private entity

5 Did not answer

Insofar as the special vehicle is arrange by private-sector entities, would these private-sector entities necessarily be primary dealers on sovereign debt markets, or could other types of entities do the job?

Respondents seem to agree that primary dealers should be arranging the SBBS issuing entity. A high number of participants did not answer this question.

Answer Breakdown:

5 Yes - primary dealers have a natural advantage in arranging SBBS vehicles.

2 No - SBBS vehicles could be arrange by other financial institutions as well as (or instead of) primary dealers

8 Did not answer

Would your institution consider becoming an SBBS issuer?

Most of the institutions that answered the survey do not have any experience as primary dealers so it is unlikely that they would ever engage in SBBS issuance. Those institutions that would consider issuing would do so only if there were considerable regulatory sponsorship and enough demand. One respondent stated that their institution would only consider being an arranger and not an issuer.

Answer Breakdown:

1 Yes

7 No

3 Under Certain conditions

4 Did not answer

One respondent indicated that they would consider being market makers of SBBS.

What changes in the regulatory or market environment would make SBBS issuance more attractive?

Most of the responses hinted to the importance of changing the regulatory regime. Specific comments can be seen below:

- "Promote them above ordinary derivatives through regulation."
- "Lower regulatory capital cost."
- "Pari - passu or better ranking vs euro area government bonds"
- "Look through acceptability, not considered as securitisation"
- "As stated before, we consider that the success of Senior SBBS is conditional to their regulatory treatment (they should receive a beneficial treatment in terms of credit, market and liquidity risk and in terms of large exposures limits) and to the regulatory treatment of the underlying assets. Moreover, they should be recognised by the ECB as collateral for monetary policy operations and also by Central Counterparties for market operations. Nevertheless, we consider it key that any changes need to be implemented at one time. Europe cannot afford to be stuck half-way of the implementation process of such a change."
- "Change in the design of the risk, effective liquidity in the market for SBBS which suppose there is a real need for this product among the investors."
- "Arbitrage free haircuts of SBBS and bond constituents, similar liquidity of SBBS and constituents"

What do you expect to be the likely impact of SBBS on market conditions for sovereign bonds?

This is an open question and a single conclusion cannot be drawn. There were mixed responses, with many assuming a negative impact. All the answers are illustrated below.

- "It depends on their popularity and demand. I am sceptical that they will become a large portion of the market."
- "Less sovereign bonds direct issuance"
- "Less supply, but also less demand, possibly leading to difficulty establishing a liquid curve for some issuers."
- "Negative impact on spreads and liquidity on some of the underlying sovereign bonds."
- "In theory if they are successful then government bond liquidity will decline as more bonds go into SBBS. Market determination of intra-EMU spreads will be challenging as they will reflect liquidity more than fundamentals."
- "With the introduction of SBBS as a new asset class the current void in the middle of the European sovereign debt market spectrum would be filled."
- "Very limited, if issuance came from publicly held debt"
- "If successful, they would extract attractive reserve assets but may reduce liquidity in individual country Eurozone bonds."
- "We think that It is likely that for some countries, the expected sovereign issuances are higher than their participation in ESBies, leaving a remaining pool of national debt in national sovereign markets. The implicit reduction of these markets will have significant negative consequences for sovereign debt not included in the pool for ESBies. These bonds will face a sharp decrease in its liquidity, increasing liquidity the premia and negatively affecting the operations in these markets, with increased transaction costs. A solution needs to be foreseen for this type of situations."
- "It really depends on the SBBS reaching the level where they are liquid."
- "The SBBS would contribute to the emergence of an harmonised EU sovereign bond market, with some mutualisation achieved through structural features rather than policy making."

2. SUMMARY OF THE INDUSTRY WORKSHOP[49]

On 9 December 2016, the ESRB held an industry workshop on Sovereign Bond-Backed Securities (SBBS), hosted by the Banque de France. The purpose of the workshop was to discuss the feasibility of creating a market for SBBS. Discussions were held under Chatham House rules. This summary of proceedings is intended to capture in anonymised form the main insights emerging from each session.

The workshop revealed a broad diversity of views with respect to SBBS' feasibility. Overall, participants underlined the necessity for deeper financial integration in Europe. There was a mix of views as to whether SBBS represent the correct product with which to achieve deeper integration: some participants expressed fundamental scepticism, while some others thought that a functioning market for the securities could develop under certain conditions. The discussions delivered a set of useful insights to inform the

[49] This summary was prepared by staff of the ESRB's Secretariat.

ongoing work of the ESRB High-Level Task Force, which currently has an open mind with respect to all aspects of security design.

Several participants in the ESRB industry workshop referred to ESRB Working Paper no.21 in their remarks. They saw it as a natural reference point, since the working paper represents the original inspiration behind the creation of ESRB High-Level Task Force on Safe Assets. However, the task force is not an intellectual prisoner to the working paper. In several ways, internal thinking in the task force has diverged from the working paper, following policy discussions. For example, the task force envisages a considerably smaller size of the SBBS market than is suggested in the working paper. Insights from the workshop will allow the task force to further develop and enrich the basic idea of Sovereign Bond-Backed Securities.

Session 1: Motivation

Session participants defined "safe" in terms of low liquidity risk, low volatility risk and low default risk. "Safety" is therefore a *relative* concept along these three dimensions. One participant emphasised the importance of low liquidity risk and low volatility risk in (the creation of) "safe assets": while important, low default risk was second-order, in their view. This implies that an SBBS market should be *liquid* first and foremost. Two participants agreed that a liquid SBBS market could be achieved by announcing a calendar of regular issuance, such that market players would have a reasonable expectation of large volume in steady-state. In addition, SBBS' design should be as simple as possible, such that even relatively unsophisticated investors would be comfortable trading and holding them. Corresponding repo and futures markets would also need to be developed to ensure liquidity. One participant emphasised the importance of the securities' inclusion in benchmark indices.

One participant pointed to the role of (Senior) SBBS in generating a euro area wide benchmark risk-free rate curve. At present, many market players use national curves for discounting. This exacerbates financial fragmentation, particularly in an environment in which cross-country spreads are high. Moreover, a full term-structure of maturities would help to boost SBBS' market liquidity.

One expressed scepticism regarding safe asset scarcity, but also emphasised that Eurobonds, embedding joint liability among nation-states, would be preferable to SBBS. In their view, "synthetic Eurobonds" (i.e. SBBS) without joint liability may pose a problem for certain investors reluctant to hold structured products. Moreover, the creation of SBBS may send a (negative) signal to markets regarding the limits of European ambition. There is also a communication challenge related to the proposed new treatment of simple and transparent securitizations and its interaction with a policy announcement pertaining to the creation of an SBBS market. On the other hand, a successful SBBS market could help to revive the broader European securitization market. Nevertheless, the issuance of a new securitization product is seen as challenging in view of these instruments' history over the financial crisis.

Participants broadly agreed that an SBBS market would need initiation by the public sector, including via:

- *DMO coordination*: DMOs could coordinate issuance for the fraction of their calendar that is intended for SBBS.
- *Regulatory treatment*: A necessary condition for the creation of an SBBS market would be the application of a "look-through approach" to the regulatory treatment of SBBS, such that they would be treated *consistently* with the underlying sovereign bonds. Without consistency of treatment, would-be investors would (be forced to) treat SBBS as structured products, both in terms of regulation and with respect to their investment mandates, thereby shrinking the investor base. For one participant, a regulatory treatment of sovereign bonds that imposed soft or hard concentration charges would encourage marginal portfolio shifts in favour of SBBS. This was deemed preferable to risk-based capital charges.
- *Simplicity*: SBBS should share the characteristics of straightforward fixed income securities. A simple structure – with fixed portfolio weights on the asset side, and a maximum of three tranches on the liability side – would encourage investors to view SBBS as a bond rather than as a structured product.
- *Liquidity*: The SBBS market should be liquid, including in the build-up phase, when volumes are below those in steady-state. Liquidity would be supported by a transparent timetable of SBBS issues, such that investors would have a reasonable expectation of adequate volumes.
- *Clear restructuring procedures*: Investors need clarity regarding the work-out procedure in the event of a (selective) sovereign default.

Session 2: Sovereign debt markets

Session 2 participants emphasised the importance of DMOs' objective of minimizing borrowing costs to the taxpayer. Part of these costs is due to the liquidity premia paid by DMOs. It is therefore important to minimize liquidity premia by ensuring continued liquidity in existing sovereign debt markets. The SBBS market should therefore be designed in a way that does not impair liquidity in underlying sovereign debt markets. Although one participant emphasized that SBBS would harm price discovery on sovereign debt markets, most thought that a gradual (rather than rapid) development of an SBBS market – initially in "experimental" or "proof of concept" fashion – would be the least disruptive. Gradual development would allow market players and regulators to learn about the impact on secondary market liquidity and to calibrate the program accordingly.[50]

At the same time, Session 2 participants reiterated the main insight of Session 1 regarding the importance of ensuring SBBS market liquidity. This could be compatible with a slow, experimental approach to market development if investors were to harbour reasonable expectations regarding the steady-state size of the SBBS market. With a transparent calendar of regular and moderately sized issuances, several participants

[50] In another session, a workshop participant noted that a fraction of the underlying portfolio could be used in repo transactions. This could generate income for the SPV arranger – thereby encouraging new entrants to capture such expected profits – and alleviate collateral scarcity in sovereign bond markets. As such, this proposal could alleviate concerns regarding the impact on secondary market liquidity.

expressed confidence that adequate SBBS market liquidity would emerge, aided by the development of functioning repo and futures markets.

Some participants expressed reluctance to build a regulatory treatment that would be attractive for SBBS while penalising existing sovereign debt.

Participants thought that the most feasible way to gradually introduce an SBBS market would be for DMOs to coordinate issuance on the fraction that is intended for SBBS, for example by pre-agreeing to execute a (private) placement of their bonds with an SBBS-issuing entity. Moreover, bonds would ideally be homogenous in terms of their characteristics (e.g. maturity, coupon), thereby ensuring commonality of cash flows to the SBBS-issuing entity over its lifetime. Most bonds would continue to be sold using the existing mix of placements, syndications and auctions; the current market microstructure would therefore persist, thereby limiting the effect of SBBS on secondary market liquidity, and ensuring DMO autonomy with respect to the timing and characteristics of the (vast) majority of their issuance calendar.

With regard to market making activities, one participant said that market making for the senior tranche might be possible, while market making in the junior tranche would be more difficult. Moreover, the profitability for market makers might be lower in the SBBS market than on current national sovereign debt markets.

Session 3: Commercial banks

As in earlier sessions, several participants expressed scepticism regarding a regulatory regime that would impose risk-based capital charges on sovereign debt. Instead, participants favoured incentives for diversification to alleviate banks' current home bias. SBBS could represent such an incentive for diversification, particularly if coupled with soft charges for concentrated portfolios. At the same time, for some participants such a home bias is a rational behaviour, aiming at minimising asset-liability mismatches.

In general, participants expected that the yield on Senior SBBS would have a positive spread with respect to comparable German bunds, particularly in the early stages of the market when liquidity would be at its thinnest. One participant said that the Senior SBBS yield would most likely be somewhere between the German bund yield and ESM bond yield.

Several Session 3 participants emphasised the attractiveness of the broad asset class of supranational and sub-sovereign debt, which offers moderate pick-up in terms of yield for the same regulatory treatment as central government bonds. SBBS could tap into this existing investor base, conditional on regulatory changes that would carve-out SBBS from the existing treatment of structured products. An analogy is provided by covered bonds, for which the existence of strong national laws ensures low spreads. On the other hand, one participant thought that a consistent treatment of SBBS relative to the underlying would be insufficient to engineer demand for SBBS. Banks in core countries would still be reluctant to rebalance their portfolios towards Senior SBBS (owing to worries regarding redenomination risk), whereas banks in vulnerable countries would be reluctant to forego the high returns expected from holding domestic sovereign debt. In their view, regulators would need to implement a *favourable* treatment of SBBS (relative

to the underlying), but this would have the undesirable side effect of crowding-out demand for the remaining float of national debt.

Several participants argued that the proposed calibration for the junior tranche (30%) would be too high relative to the size of the potential investor market. In this respect, sub-tranching would reduce the size of the high-yield first-loss piece that would need to be placed with investors but would add to the complexity of the product.

One participant highlighted a dilemma whereby – on the one hand – SBBS issuance entails a natural monopoly, but public-sector issuance of SBBS would entail implicit risk-sharing among nation-states. Overcoming this dilemma would require changes to the features of SBBS issuance that imply natural monopoly. One such change could be the coordinated DMO issues suggested in Session 2.

Session 4: Non-bank Investors

Session 4 participants began by highlighting their reasons for holding sovereign bonds. Several participants pointed to the role of liability-driven investment, which calls for long-dated, fixed-income assets. For these buy-and-hold investors, liquidity is less important; instead, what matters is low credit risk combined with non-negative returns.

Participants emphasised that the attractiveness of SBBS is a relative value proposition. Investment decisions would be based on SBBS' expected risk/return relative to other investible assets.

- One participant expressed a preference for Senior (rather than Junior) SBBS, conditional on regulatory reform that would define SBBS as sovereign bonds rather than structured products. To be used as a duration instrument, Senior SBBS would ideally need to be rated AAA, with a moderate pick-up compared with other AAA-rated assets. Transactions costs for trading SBBS would also need to be low.
- Another participant claimed that risk managers would treat SBBS as a securitization, regardless of the existence of regulation that may define it otherwise. This could impede the extent to which Senior SBBS could be used to manage duration risk.
- Another participant claimed that redenomination risk should be taken into account because it influences ratings and pricing.
- A third participant said that they may hold Junior SBBS in (relatively niche) funds that permit holdings of structured products. In their view, Senior SBBS would only be held by sovereign bond funds if they were to comprise part of the benchmark against which performance is evaluated. In general, holding Senior SBBS in a sovereign bond fund would be difficult or impossible in the absence of changes to the mandates of such funds that otherwise prohibit holdings of structured products. This would require investors to perceive SBBS as a non-securitised product.
- Two participants claimed that the "maths don't add up" in terms of the likely yield on Senior and Junior SBBS relative to the underlying. In their view, prospective holders of Junior SBBS would require a very high return, such that the Senior SBBS yield would be negative in the current environment.

Session 5: Demand for junior SBBS

Session participants agreed that regulatory change would be necessary to ensure the success of an SBBS market – echoing earlier contributions. One participant noted that – even with regulatory reform – holders of SBBS would continue to bear "regulatory risk" (as the future framework could again be changed to penalize SBBS, just as recent reforms have penalized ABS).

Participants discussed the size of the potential investor base for Junior SBBS. One participant said that Junior SBBS represents "high octane" sovereign risk, and would therefore compare naturally to emerging market sovereign debt. There is an investor base for such risk exposure, but it is relatively niche. Another participant said that investors would evaluate the relative attractiveness (in terms of risk/return) of Junior SBBS compared with (high-yield) corporate bonds. This suggests finite investor capacity for high-yield debt instruments. As such, there may be a natural limit on the size of the SBBS market. The point at which this limit is reached could be identified by a step-by-step approach to growth in the SBBS market.

Several participants expressed concerns regarding high correlations between the underlying sovereign bonds' probabilities of default. The unconditional probability of sovereigns' default is lower than the default probability conditional on the default of (other) sovereigns. Modelling such conditional probabilities is difficult, however, and subject to considerable parameter uncertainty. Before the crisis, the market had amassed a rich stock of expertise capable of pricing such securities in the presence of parameter uncertainty. While this expertise has now atrophied, it could be revived by an active SBBS market.

One participant noted that collateralized debt obligations require a positive arbitrage margin in order to generate profits. Some prospective CDOs generate a *negative* arbitrage margin, and do not function for that reason. The same challenge applies to SBBS. To maximize the probability of a positive arbitrage margin, SBBS issuer(s) could engage in "ratings optimization" with respect to the tranches. This suggests that at least three tranches would be warranted (namely first-loss, mezzanine and senior). Such investor catering could be done by the market via "re-securitizations", conditional on regulatory reform to accommodate $SBBS^2$ as well as SBBS.

One participant argued that SBBS could increase the probabilities of sovereigns' defaults in equilibrium. Default would be less costly insofar as banks rebalance their sovereign portfolios away from their current home-biased holdings in favour of Senior SBBS. This changes sovereigns' cost/benefit calculation, as a default would be less destructive for the domestic banking sector and therefore for the functioning of the real economy. At the margin, then, widespread holdings of Senior SBBS in the banking sector could make sovereign default more likely.

Session 6: Risk measurement

All participants took a generally conservative approach to SBBS' risk measurement. In terms of credit risk, this implies an underlying assumption of high correlations during stress events. In terms of liquidity risk, this implies a working assumption of low liquidity until proven otherwise.

Several participants noted that correlation among underlying sovereign bonds' default probabilities is important for measuring SBBS' risk but difficult to quantify. A conservative approach would assume high correlations, particularly during crisis episodes. Very high correlations would imply that the Senior SBBS would struggle to achieve a top rating with 30% subordination, particularly given that the underlying portfolio is "lumpy" as it is comprised of just 19 sovereigns (so that discrete default events have large effects).

One participant noted that the probability of default of the Junior SBBS would be at least as high as the highest probability of default in the underlying portfolio. Some credit ratings take expected recovery rates into account, such that Junior SBBS could benefit from a better rating than implied by its probability of default, but it was noted that recovery rates are subject to a high degree of uncertainty. Another participant emphasised the importance of achieving clarity ex ante on the work-out arrangements for Junior SBBS in the event of a default on the underlying bonds.

3. MAIN TAKEAWAYS OF THE CLOSED-DOOR DMO WORKSHOP

The HLTF organised a closed-door workshop with DMOs on 20 October 2017 in Dublin. The workshop intended to offer DMOs an opportunity to express their views on the SBBS proposal and to seek their expertise on specific (technical) issues.

DMOs raised concerns regarding the design and implementation of SBBS and highlighted that, in their view, SBBS would not be the appropriate tool to break the bank-sovereign nexus nor to implement a euro area low-risk asset. More specifically, DMO's concerns related to the impact on national sovereign bond markets (in particular liquidity), the implications of primary and/or secondary market sovereign bond purchases by SBBS issuers, and the possible regulatory treatment of SBBS.

On sovereign bond market liquidity: DMOs stressed that liquidity and transparency on a marketable volume of debt are a prerequisite for a well-functioning market. Thus, SBBS would need to be issued in a sizeable amount (up to EUR 2 trillion) in order to be accepted and bought by investors. This, however, could have a negative impact on the remaining national sovereign debt markets (reducing liquidity, increasing refinancing costs, in particular for small and medium sized sovereign debt markets).

On primary and secondary market purchases by the SBBS issuer: The HLTF considered both secondary and primary market purchases (including dedicated issuances) as ways for SBBS issuers to build their underlying sovereign bond portfolios. DMOs stated that either option would cause problems for sovereign issuers, as they would disrupt market functioning. Further, both options would require a risk-taking treasury function for SBBS issuers, which—in case of a public issuer—could give rise to mutualisation of risks. Regarding the proposal for dedicated issuances, DMOs stressed that it would violate their legal obligations not to offer preferential access and would have a negative impact on the functioning of sovereign debt markets, notably on market access, debt rollover in each country, and price formation disruptions.

On the regulatory treatment of SBBS: DMOs highlighted that any regulatory intervention should not include privileges for SBBS compared to the underlying sovereign bonds, as this would lead to higher funding costs for sovereigns. They questioned whether, without regulatory privileges SBBS could ever become viable.

ANNEX 3 WHO IS AFFECTED AND HOW?

1. PRACTICAL IMPLICATIONS OF THE INITIATIVE

This annex assesses the different impacts of the identified policy options (models) on the main stakeholders, as well as on the aggregate financial sector. The key stakeholders that would be affected by the proposed legislation include banks (and other financial institutions subject to CRR/CRD), other asset managers, the arrangers/issuers of the product, supervisors, and debt management officers (as proxies for the effect of the legislation and of SBBS on the national sovereign debt markets).

The impact, both in terms of potential benefits and potential costs, would depend on the size ultimately achieved by the market. Since the proposed intervention is an enabling legislation, and considering that the product to be enabled does not currently exist, whether or not the market for such product will take off or to what extent is difficult to predict with certainty. Nevertheless some general considerations can be offered to help gauge the legislation's possible ultimate impacts, and the channels through which these would come about. The general costs and benefits, irrespective of the specific option or scenario considered, are summarised in Table 5 and Table 6, respectively. Table 7 and Table 8 summarise the possible impact more specifically per stakeholder and respectively for a scenario in which the enabled product reaches only a limited size, and one in which instead the product reaches a macro-economically significant size (*steady state* scenario)[51]. Lastly, Table 9 focusses specifically on the compliance costs for stakeholders.

[51] For example, either EUR 500 billion, which the HLTF report currently envisages could be reached within 10 years, or EUR 1,500 billion, which the HLTF considers as the steady state size of the market, taking into account constraints which are necessary to safeguard market functioning and price formation.

Table 5: Overview of the benefits

I. Overview of Benefits (total for all provisions)		
Description	***Amount***	***Comments***
Direct benefits		
Eliminated regulatory surcharges	#NA.	*Capital requirements*: At present, holding SBBS would be associated with positive capital requirements. The proposed legislation would either completely eliminate these (models 1 and 5) or eliminate them for senior tranches (model 2). *Liquidity coverage requirements:* banks would be able use these new products to meet liquidity coverage requirements, which is not possible under the current regulatory framework. These benefits would increase with the market size of the new instrument. Some indicative calculations to gauge the economic significance of these benefits are provided in Annex 4.
A new product becomes available	#NA.	A new instrument would become available for banks, insurance companies, pension funds and other investors. Two scenarios have been analysed. A "limited" scenario, in which SBBS develop very gradually and reach a limited volume (EUR 100 billion) and a "steady state" one where SBBS reach a macroeconomically significant volume (EUR 1,500 billion). The actual size of the SBBS market will depend on the instruments' overall attractiveness for market participants.
A more stable financial system	#NA.	A quantitative assessment is difficult, because of the significant uncertainty on the extent to which the market would develop. Nevertheless, from a qualitative perspective, the new instrument could contribute to financial system stability at large as it would weaken the bank-sovereign loop. Further, as a share of the outstanding sovereign bonds would be held in SBBS portfolios, these bonds would not be quickly sold off in times of financial market stress.
Expand the investor base for European sovereign debt	#NA.	A quantitative assessment is difficult, because of the significant uncertainty on the extent to which the market would develop. Nevertheless, from a qualitative perspective, benefits could be large. In particular for smaller Member States whose sovereign bonds may not be on the radar screen of investors, demand coming from the SBBS issuer would facilitate Debt Management Offices debt placements.
Indirect benefits		
Indirect benefits on retail investors, households or SMEs	#NA.	These sectors do not benefit directly as they are unlikely to be active in the SBBS market. They might benefit indirectly – including from enhanced confidence and lower borrowing costs – to the extent that the above-mentioned benefits in terms of enhanced financial stability materialise.

Table 6: Overview of the costs

II. Overview of costs							
		Citizens/Consumers		**Businesses**		**Administrations**	
		One-off	Recurrent	One-off	Recurrent	One-off	Recurrent
For all considered models	Direct costs	None	None	None for SMEs and other Non-Financial Corporations For issuers of the new product, see Table 9	None for SMEs and other Non-Financial Corporations For issuers of the new product, see Table 9	Creation of a new legislation	Supervision of SBBS (depending on the model, these costs range between limited and moderate)
	Indirect costs	None	If the introduction of SBBS were to impact sovereign bond market liquidity, this could lead to higher financing costs for Debt Management Offices, which would in the end be carried by the tax-payer. The analysis conducted by the HLTF suggests that any such costs would be limited (see also Annex 4.3)	None	None	None	None

In general terms, the enabled product would entail the following benefits: eliminate unjustified regulatory surcharges which allows for the development of a market of a new instrument, lead to a more stable financial system and expand the investor base for national sovereign bonds (see Table 5). On the contrary, the costs for citizens, businesses and administrations appear to be limited (see Table 6).

More specifically (see Table 7 and Table 8), as regards *banks and other financial institutions* subject to CRR/CRD, under all models the proposed legislation would have a positive (or, in the limit, neutral) impact in both scenarios. The legislation could unlock the assembling and use of new financial products, all of which could—to varying degree—potentially be used by banks to enhance their risk management.[52] With the first two models, which would ensure greater standardisation in these new markets, banks may have greater incentives to invest, because the new products would have many of the features of the benchmark government bonds that banks currently invest in, at least from

[52] See Annex 4, section 5 for some calculations on the impact of the introduction of SBBS on banks' sovereign portfolios under both the *limited volume* scenario and the *steady state* scenario.

a regulatory perspective.[53] Model 1 is the most favourable for the banks (under both scenarios), because besides gaining access to a potentially liquid product, they would be able to invest in all of its tranches without facing additional capital charges or liquidity discounts.[54] In contrast, with model 2, banks would have an incentive to buy only senior tranches.[55]

As regards the *issuers/arrangers*, under all models the proposed legislation would have a positive (or, in the limit, neutral) impact in both scenarios. The impact overall crucially depends on whether the product would be profitable to arrange or not. Again, model 1 seems to be the most favourable for arrangers in both scenarios.

When it comes to the *supervisors* the impact under the different policy options crucially depends on the market infrastructure. It is impossible to predict the impact ex ante. While the impact would be positive if the product enhances stability of the overall financial system through more diversified banks (most likely under models 1 and 2), some policy options might increase the costs for supervisors given the non-standardisation and different regulatory treatment of the tranches (e.g. model 4).

The impact on *DMO's* depends mainly on the market size of the new product (*limited volume* scenario vs *steady state* scenario; but also models 1/2 vs. models 3/4) and the size of the national sovereign bond market. Especially Member States with low debt levels might be affected more markedly. Under the *steady state* scenario, large amounts of SBBS would reduce the amounts of sovereign bonds floating on the market. This could, for some Member States, result in lower trading and lower liquidity. Under the *limited volume* scenario (any such negative impact would be limited.[56] At the same time, the fact that national bonds are bound in the SBBS portfolio/basket, contributes to greater support in time of volatility, as bonds in the SBBBS structures/basket would not be sold off. To the extent that SBBS would make the overall financial system more resilient, they could also help lowering sovereign funding costs.

Regarding compliance costs, only the costs associated with the preferred compliance setup (that is, option 3.1—self attestation) are assessed. Those are based on the following actions, which need to be undertaken by different stakeholders for the issuance and distribution of the new product (we consider in what follows only models 1,2 and 3, i.e. those for which issuers have to assemble a pre-determined portfolio of euro area sovereign bonds (in line with the ECB key):

Action 1: Debt issuance by **DMO**

[53] For example, in models 1 and 3, all tranches would be made fully eligible for liquidity-related requirements—even though as new products the extent to which they would be liquid in practice is unknown a priori.

[54] Depending on the demand for bank loans, the extent to which any investment into these tranches would be an addition to a bank's existing sovereign portfolio or rather a reshuffling of the latter may vary. For example, if demand (and profitability) of bank loans is strong, so that investment in low-risk but also low-yielding assets such as sovereign bonds is minimized (and possibly strictly dictated by regulatory requirements), it is likely that banks would switch their existing sovereign portfolios into these new products, if they purchase the latter at all. In contrast, in a situation where banks have excess liquidity, it is possible that they might decide to add to their existing sovereign exposures via these new products.

[55] The same logic applies to models 3 and 4.

[56] See Annex 4, section 3 for an analysis of the impact of SBBS on national sovereign bond markets, in particular liquidity.

Action 2: Structuration of the product by **Arranger** (purchase of underlying sovereign bonds, drafting of legal documentation for the transaction (including, where relevant, the tranching method and the payment waterfall), issuance of self-attestation)

Action 3: Potential certification (non-mandatory) by **Third party**

Action 4: Distribution of the SBBS by **Arranger** on the basis of self-attestation and potential certification by third party

Action 5: Due diligence carried out by **Investors** to check the product is compliant

Action 6: Supervisory oversight of regulated investors by **Supervisors**

It is to be noted that those actions are not necessarily taken in a chronological order, since for instance the pre-marketing and book building of the product can start before the underlying sovereign bonds are issued. Similarly, distribution arrangements/agreements can be entered into before the Arranger puts together the relevant portfolio (and issues the tranches, if relevant).

2. SUMMARY OF COSTS AND BENEFITS

Table 5 and Table 6 summarise the costs and benefits in general terms. Table 7 and Table 8 sketch out a summary of the costs and benefits of the five models on for different stakeholders, first for a limited development of the product and second for the steady state where the product reaches a macroeconomically significant size. Table 9 focusses on the compliance costs for stakeholders, on the basis of the actions describe above.

Table 7: Impact Assessment Analysis, by Stakeholder Type (limited volume scenario)

	Model 1 Only SBBS proper; Treat all tranches as euro area sovereign bonds	**Model 2** Only SBBS proper; Treat only Senior tranches as euro area sovereign bonds	**Model 3** All securitisations; Treat all tranches as euro area sovereign bonds	**Model 4** All securitisations; Treat only Senior tranches as euro area sovereign bonds	**Model 5** Proper SBBS basket; Treat basket as euro area sovereign bonds
Banks	Positive. New products become available, with minimised regulatory charges.	Positive. New products become available, with minimised regulatory charges. Banks would face high charges if they invest in sub-senior tranches. This may, however, lead them to de-risk.	Positive/Neutral. Access to more products. But products may not be attractive if not liquid/standardised.	Positive/Neutral. New products become available, some with reduced/no regulatory charges. But products may not be attractive if not liquid/standardised.	Neutral. Access to a new standsardised product. But product may not be attractive from a risk-return perspective and assets based on the basked would be riskier than the current portfolios of most banks.
Other investors	Positive/Neutral. Some new products become available, which may have benchmark-like properties.	Positive/Neutral. Some new products become available, which may have benchmark-like properties.	Positive/Neutral. New products become available, with minimised/no regulatory charges. But products may not be attractive if not liquid/standardised.	Positive/Neutral. New products become available, with minimised/no regulatory charges. But products may not be attractive if not liquid/standardised.	Neutral. Access to a new standsardised product. But product may not be attractive from a risk-return perspective.
Arrangers	Possibly positive. A market may develop out of standardisation, with no regulatory disincentives, and it would have to be profitable for the product to be viable (though competition among potential issuers could bring any rent down to zero).	Possibly positive. A market may develop out of standardisation, with no regulatory disincentives, and it would have to be profitable for the product to be viable (though competition among potential issuers could bring any rent down to zero). More challenging than model 1 because the potential investor base for sub-senior tranches is more restricted.	Neutral. Little structure means maximum flexibility. But market may not develop for lack of standardisation → not profitable.	Neutral. Little structure means maximum flexibility. But market may not develop for lack of standardisation → not profitable. Moreover finding buyers for sub-senior tranche may be more challenging.	Neutral. A market may develop out of standardisation, but it would have to be profitable for the product to be viable.
Supervisors	Depends on market infrastructure, but positive if financial system is overall more stable.	Depends on market infrastructure, but positive if financial system is overall more stable.	Depends on market infrastructure.	Depends on market infrastructure. May be more costly to monitor/enforce than model 3.	Depends on market infrastructure.
DMOs	Unclear. Some products could compete with some sovereign bonds. But effects likely to be small if market is small.	Unclear. Some products could compete with some sovereign bonds. But effects likely to be small if market is small.	Unclear. Some products could compete with some sovereign bonds. But effects likely to be small if market is small.	Unclear. Some products could compete with some sovereign bonds. But effects likely to be small if market is small.	Unclear. Product could compete with some sovereign bonds. But effects likely to be small if market is small.

Note: this table characterises the main impacts on the key stakeholders in a scenario in which the enabled product achieves only a limited size.

Table 8: Impact Assessment Analysis, by Stakeholder Type (steady state scenario)

	Model 1 Only SBBS proper; Treat all tranches as euro area sovereign bonds	**Model 2** Only SBBS proper; Treat only Senior tranches as euro area sovereign bonds	**Model 3** All securitisations; Treat all tranches as euro area sovereign bonds	**Model 4** All securitisations; Treat only Senior tranches as euro area sovereign bonds	**Model 5** Proper SBBS basket; Treat basket as euro area sovereign bonds
Banks	Very positive Additional benchmark-type products are now available at no/low regulatory charges. The senior tranche, being low risk, can be quite effective at isolating banks from idiosynchratic gyrations in the price of individual euro area sovereign bonds.	Very positive Additional benchmark-type products are now available at no/low regulatory charges. The senior tranche, being low risk, can be quite effective at isolating banks from idiosynchratic gyrations in the price of individual euro area sovereign bonds. Banks would face charges if they held sub-senior tranches. But this may lead them to de-risk.	Positive/Neutral. Access to more products. But products may not be attractive if not liquid/standardised.	Positive/Neutral. New products become available, some with reduced/no regulatory charges. But products may not be attractive if not liquid/standardised.	Neutral. Access to a new standsardised product with no regulatory charges. But product may not be attractive from a risk-return perspective and assets based on the basked would be riskier than the current portfolios of most banks.
Other investors	Positive. Additional benchmark-type products are now available, offering different risk-return profiles which may cater to different clienteles	Positive. Additional benchmark-type products are now available, offering different risk-return profiles which may cater to different clienteles	Positive/Neutral. New products become available, with minimized/no regulatory charges. But products may not be attractive if not liquid/standardised	Positive/Neutral. New products become available, with minimized/no regulatory charges. But products may not be attractive if not liquid/standardised	Neutral. Access to a new standsardised product. But product may not be attractive from a risk-return perspective.
Arrangers	Positive. A new market is now available, evidently profitable (though competition among potential issuers would bring any rent down to zero). The new product may attract demand which is *additional* with respect to the demand of underlying bonds. Hence the overall size of the industry (e.g., primary dealers) may be boosted.	Positive. A new market is now available, evidently profitable (though competition among potential issuers would bring any rent down to zero). The new product may attract demand which is *additional* with respect to the demand of underlying bonds. Hence the overall size of the industry (e.g., primary dealers) may be boosted. More challenging than model 1 because the potential investor base for sub-senior tranches is more restricted.	Positive if the market development is all on one or a few products only, which then become attractive/profitable thanks to standardisation. Otherwise, neutral.	Positive if the market development is all on one or a few products only, which then become attractive/profitable thanks to standardisation. Otherwise, neutral. Investor base for large quantities of sub-senior tranches may be more challenging than under model 3.	Neutral. A market may develop out of standardisation, but it would have to be profitable for the product to be viable.
Supervisors	Positive. Banks are likely to be more diversified, which makes the financial system more stable. This is likely to outweigh any costs from ad-hoc supervision/certification/licensing duties.	Positive. Banks are likely to be more diversified and to have carved out the most volatile exposures, which makes the financial system more stable. This is likely to outweigh any costs from ad-hoc supervision/certification/licensing duties.	Depends on market infrastructure and on the extent to which the new products are used by financial sector players, and banks in particular, to effectively reduce risks.	Depends on market infrastructure and on the extent to which the new products are used by financial sector players, and banks in particular, to effectively reduce risks. Monitoring/enforcing costs are likely to be greater than in model 3 but so is also the de-risking potential fior banks.	Depends on market infrastructure.

Note: this table characterises the main impacts on the key stakeholders in a scenario in which the enabled product reaches a macro-economically significant size.

Table 8 (continued):

	Model 1 Only SBBS proper; Treat all tranches as euro area sovereign bonds	**Model 2** Only SBBS proper; Treat only Senior tranches as euro area sovereign bonds	**Model 3** All securitisations; Treat all tranches as euro area sovereign bonds	**Model 4** All securitisations; Treat only Senior tranches as euro area sovereign bonds	**Model 5** Proper SBBS basket; Treat basket as euro area sovereign bonds
DMOs	Unclear. To the extent that SBBS render the financial system more resilient (e.g., weaken bank-sovereign loop), they could help lower sovereign funding costs. Large amounts of SBBS would reduce the amounts of sovereign bonds floating on the market. In some cases (e.g., especially for Member States with relatively low debt) this could result in reduced trading/liquidity. This would need to be juxtapposed to any benefit from greater support in time of volatility, since bonds in SBBS structures would not be sold off.	Unclear. To the extent that SBBS render the financial system more resilient (e.g., weaken bank-sovereign loop), they could help lower sovereign funding costs. Big volumes of SBBS would reduce the amounts of sovereign bonds floating on the market. In some cases (e.g., esp. for Member States with relatively low debt) this could lead to reduced trading/liquidity. This would need to be juxtapposed to any benefit from greater support in time of volatility (bonds in SBBS structures would not be sold off). The effect of greater banks' incentives to offload junior tranches depends on the elasticity of demand for senior tranches by banks and for all tranches by other investors.	Unclear a priori. "Successful" products could compete with some sovereign bonds. And, depending on what these successful products bundle together, the liquidity on some sovereign debt market could be affected. The extent to which funding costs are lowered from reduced "doom loop" risk is difficult to assess a priori.	Unclear a priori. "Successful" products could compete with some sovereign bonds. And, depending on what these successful products bundle together, the liquidity on some sovereign debt market could be affected. The extent to which funding costs are lowered from reduced "doom loop" risk is difficult to assess a priori. The effect of greater banks' incentives to offload junior tranches would depend on the elasticity of demand for senior tranches by banks and for all tranches by other investors.	Unclear. The proper SBBS basket could compete with some sovereign bonds. Large amounts of proper SBBS baskets would reduce the amounts of sovereign bonds floating on the market. In some cases (e.g., especially for Member States with relatively low debt) this could result in reduced trading/liquidity. This would need to be juxtapposed to any benefit from greater support in time of volatility, since bonds in the SBBS basket structure would not be sold off.

Note: this table characterises the main impacts on the key stakeholders in a scenario in which the enabled product reaches a macro-economically significant size in the steady state.

Table 9: Overview of compliance costs, option 3.1

	DMO	Arranger	Investor	Supervisor	Third party validators
Action (1)	No compliance costs are expected for DMOs compare to the baseline scenario Some costs could arise if DMOs have to increase the coordination of their issuance activities (e.g., issue similar maturities at similar times). Such coordination is not necessary, however, and would presumably be undertaken only if deemed worthwhile.	-	-	-	-
Action (2)	-	Compliance relies on arranger, however the self-attestation does not entail any administrative burden compared to the structuration of other products. The ESRB HLTF estimates upfront costs of EUR 1.15 million and annual costs of EUR 3.26 million for an SBBS programme of EUR 6 billion (see ESRB HLTF report, section 4.1.2)	-	-	-
Action (3)	-	-	Such costs would ultimately need to be borne by investors; however since the mechanism is not mandatory, this would not in any event undermine the viability of the product. In addition, and as explained in greater detail in section 6.4, these costs are likely to be small, given the limited nature of the certification/review.	-	The compliance costs associated with non-mandatory third party certification would depend on the level of competition on this market. These costs are likely to be small, given the limited nature of the certification/review (basically, confirming that the stated sovereign bonds are effectively in the underlying portfolio and in the stated quantities).

Action (4)	-	No additional cost compared to the distribution of other structured products	-	-	-
Action (5)	-	-	No administrative cost is required from investors; regulated investors will however need to ensure the product purchased complies with regulatory requirements; this is however inherent to the activities of regulated investors and likely to be relatively inexpensive, given the pre-determined structure of the product and the fact that it hinges on euro-area sovereign bonds.	-	-
Action (6)				Supervisors will perform their controls as for any other assets held by regulated investors. This does not entail additional costs compared to the baseline scenario	

The preferred setup for ensuring compliance (option 3.1) does not entail any additional cost compared to the regular conduct of business. The only potential compliance costs may arise from the recourse to a voluntary certification by an independent third party, in which case the costs would be ultimately borne by investors. Those costs remain hypothetical, and their quantification would depend on a wide range of factors, such as the market structure for such business. They are likely to be small, given the limited nature of the certification/review (basically, confirming that the stated sovereign bonds are effectively in the underlying portfolio and in the stated quantities). The voluntary recourse to such mechanism ensures that it would not undermine the viability of the SBBS.

ANNEX 4 ANALYTICAL METHODS

This annex covers analytical assessments to provide evidence on (1) the extent of "hindrance" faced by SBBS at present (pre-1/1/2019); (2) the extent of "hindrance" faced by SBBS at post 1/1/2019; (3) the extent to which SBBS would impact remaining national debt markets; (4) an estimation of the impact on the volume of AAA assets; and (5) and estimation of the impact on the composition of banks' sovereign portfolios.

1. EVIDENCE ON THE EXTENT OF "HINDRANCE" FACED BY SBBS AT PRESENT

This annex is based on the assessment undertaken by the ESRB HLTF, presented in section 5.5 in volume II of the report and focuses on evidence on the extent of "regulatory hindrance" faced by SBBS under current regulations (pre-1/1/2019).

The analysis compares the impact on banks' and insurance companies' capital requirements[57] if existing sovereign exposures were replaced by senior SBBS under the current regulatory regime.[58]

Analysis for banks

It compares two scenarios:

- Scenario 1 – status quo: SBBS do not exist, and banks hold their existing sovereign bond portfolios. This is the status quo benchmark against which the alternative with SBBS is measured.
- Scenario 2 – banks replace their entire sovereign bond portfolios by senior SBBS under current regulatory treatment. Banks' SBBS holdings are treated according to current securitisation regulations (Articles 242-270 of the CRR) and receive a risk weight of 20% for credit risk. The look-through approach would apply for the concentration risk charge. This means that the share of each sovereign in the SBBS (multiplied by the total holdings that are exchanged for SBBS) would be set against the bank's Tier 1 capital to determine whether and in which concentration bucket the exposure to that sovereign would fall. In the case of partial substitution, this amount would have to be added to the remaining sovereign holdings of each sovereign.

The data used comes from the EBA 2015 Transparency Exercise for end-June 2015 and includes 105 EU banks at the highest level of consolidation. The data includes exposures to central government, regional government and local authorities. The composition of SBBS is assumed to include only euro area sovereign bonds. Further, it is assumed that senior SBBS obtain a rating within credit quality step 1.

As an illustrative exercise, banks are assumed to exchange their entire portfolio of sovereign holdings for senior SBBS. This exercise thus generates an upper bound estimate of the additional capital requirements to which SBBS are subject in the current

[57] As regards liquidity coverage requirements, banks would be able use SBBS to meet liquidity coverage requirements, which is not possible under the current regulatory framework. This would thus constitute a benefit which would increase with the volume of the new instrument.

[58] The analysis of the ESRB HLTF is much wider and covers the impact on capital requirements under different possible RTSE reform options.

regulatory framework, as less comprehensive switches would be associated with lower associated capital requirements.[59] The results are presented in Table 10. They clearly show that the status quo would lead to a higher cost of holding SBBS versus holding the underlying directly, given SBBS would have a high credit risk weight of 20% for senior SBBS under current regulation (Scenario 2). This treatment to which they would be subject under existing regulation reveals a key reason for the non-existence of SBBS.

Table 10: Capital charges for euro area sovereign exposures or senior SBBS under the two scenarios (assuming 100% substitution)

Regulation of (the underlying) sovereign bonds	**Scenario 1** (current sovereign bond holdings; no SBBS)		**Scenario 2** (SBBS: current securitisation regulation, credit RW: 20%)	
	EUR billion	As a % of CET 1 capital	EUR billion	As a % of CET 1 capital
Status quo	0	0	70.7	5.0

Notes: Total capital needs refer to the capital banks would have to raise to keep their current CET1 capital ratio constant.
Source: Report of the ESRB HLTF.

Analysis for insurance companies

A similar analysis has been conducted on the implications for insurance companies[60] replacing their sovereign holdings with senior SBBS. Table 11 shows estimates of the absolute and relative increase in the Solvency Capital Requirement (SCR) for euro area solo insurance companies if they were to reinvest their current holdings of euro-denominated sovereign bonds into senior SBBS, and if they are assumed to be treated under current regulatory rules. These figures underline that under the existing regulatory treatment insurance companies would have no incentive to hold SBBSs compared to sovereign bonds.

Table 11: Increase in SCR requirements for euro area solo insurance companies

	Status quo: Treatment of sovereign bonds	**Scenario 1a:** Treatment of senior SBBS as type 2 securitisation	**Scenario 1b:** Treatment of senior SBBS as type 1 securitisation
Increase in SCR (EUR billions)	0	963	166
Relative increase in SCR (%)	0	262	45

Notes: Type 1 securitisations are "high quality" securitisations, while all others are covered under type 2 securitisations.
Source: Report of the ESRB HLTF.

[59] At the same time, if banks were to switch not just into *senior* but also *sub-senior* SBBS tranches, the resulting capital requirements would actually be correspondingly larger, since sub-senior tranches under the current regulatory framework would warrant higher risk weights than senior ones.

[60] Euro area insurers hold assets of EUR 7.3 trillion. The current allocation of all euro area insurers to Euro sovereign bonds is EUR 1.500 billion. The average duration is 8.96 years.

2. EVIDENCE ON THE EXTENT OF "HINDRANCE" FACED BY SBBS AT POST 1/1/2019

As discussed in the main text, even after the entry into force of Regulation (EU) 2017/2042 on 1/1/2019, banks using standardised approach for the determination of capital requirements would not be able to apply a full look-through (and thus benefit from zero risk weights) to sub-senior tranches of SBBS.

To gauge the extent of this hindrance, albeit somewhat indirectly, we have calculated the proportion of sovereign bonds which at present are assessed under the standardised approach.

Using the granular data of the EBA 2017 transparency exercise as of 30 June 2017, we compare for each bank in the EBA sample (133 banks) the share of government and central bank exposures assessed under the standard method and the IRB method for prudential purpose. We then calculate the amount of sovereign bonds hold by those banks which mainly use the standard method.

The exercise shows that:

- 98 out of 133 banks mostly use the standard approach and would thus be subject to stiff capital requirements if they switched their sovereign holdings into the three tranches.
- Some 37% of all sovereign bonds in the sample are currently held by those banks which mostly use the standardised approach.

In addition, since the sample of the EBA includes the most complex banks in the EU, which are also the most likely to use the IRB approach, our results remain conservative and tend to underestimate the overall use of the standard method by EU banks.

Therefore the hindrance in the status quo would be rather significant. Indeed, assuming that banks fully switch their current holdings of sovereign bonds for balanced positions in all the three SBBS tranches (i.e., invest respectively 70% in the senior, 20% in the mezzanine and 10% in the junior) and assuming that the mezzanine (respectively, junior) tranche would attract a capital charge of 80% (respectively 1250%), equivalent to a quality step 4 (respectively, 17 or higher, including not rated) in the table of Article 264 of Regulation (EU) 2017/2401 (rescaled for STS-like securitisations), aggregate risk-weighted capital would increase by about EUR 1,675 trillion.[61]

Of course, this is an upper limit, and its value depends on the assumptions made (including on the risk weights warranted by the sub-senior tranches). A more limited switch, for example, would be associated with correspondingly lower capital charges: assuming that the SBBS market reaches EUR 100 billion, as in the *limited volume* scenario discussed in section 6.1 of the main text, and that SA banks would buy some EUR 62 billion of this amount (in line with their current shares of government bonds in the overall banking book), aggregate risk-weighted assets would increase by some

[61] To translate this figure into an estimate of the aggregate increase in capital requirements, an assumption is necessary on the aggregate (average) capital requirement ratio. For example, a capital requirement ratio of, say, 8 % would lead to an increase in aggregate capital requirements of EUR 134 billion.

EUR 87 billion. For the *steady state* scenario in which SBBS reach a much larger scale (i.e., EUR 1,500 billion), the equivalent calculation yields an increase in aggregate risk-weighted assets to the tune of EUR 1.3 trillion. (SA) Banks could also decide to only switch into senior tranches (provided some other investors purchase the sub-senior tranches), in which case they would face no additional capital requirements.

Even these large amounts are much reduced relative to what would prevail before the coming into force of Regulation (EU) 2017/2042 on 1/1/2019. The corresponding calculation for a full switch (respectively, a switch of EUR100 billion) would yield additional risk-weighted assets of EUR 2,985 trillion (respectively, EUR155 billion). This larger amount reflects: (i) the fact that, in the status quo and before 1/1/2019, also IRB banks would face capital charges on their holdings of tranches; and (ii) that also the senior tranche would face a positive risk weight (assumed at 20% in this calculation).

3. PRESENTATION OF THE ANALYSIS BY THE ESRB LIQUIDITY WORKING GROUP ON THE EFFECTS OF SBBS ON NATIONAL SOVEREIGN BOND MARKET LIQUIDITY

This section of annex 4 presents the assessment undertaken by the ESRB HLTF, shown in section 4.4 in volume II of the report on the possible impact of SBBS on sovereign bond market liquidity.

Concerns were raised regarding the impact of SBBS on sovereign bond market liquidity. Given that one fraction of currently outstanding central government debt securities would be "frozen" into SBBS portfolios they would be unavailable for trading.[62] The analysis in the ESRB report derives the implications of SBBS from the liquidity impact of the Eurosystem's Public Sector Purchase Programme (PSPP).

On the other hand, SBBS would represent new securities with liquidity of their own. In principle, SBBS could have properties that are comparable to current sovereign bonds, including high liquidity and collateral eligibility. With a mature SBBS market, such properties could have positive spillover effects with respect to national sovereign debt markets. In this section these channels are referred to as the 'spillover effect' of SBBS.

At the same time, SBBS may also help to relieve scarcity of low-risk assets, which is perceived by some market participants. German sovereign bonds in particular appear scarce relative to demand, given the role of those bonds in acting as a benchmark asset for the entire euro area. However, with a higher supply of low-risk assets (senior SBBS), the excess demand for German sovereign bonds may be smaller. Using SBBS for repo markets instead of sovereign bonds would contribute towards smooth market functioning: for every 26 units of German bonds retained by SBBS issuers, there would be 70 units of senior SBBS.

In the presence of both freezing effects and spillover effects, the net effect of SBBS on the market liquidity of national sovereign markets is prima facie ambiguous. The liquidity of SBBS and sovereign bond markets therefore depends on their relative size

[62] This could be mitigated by allowing SBBS issuers to lend out the securities in reverse repos, as it is currently done under the Eurosystem's implementation of its Public Sector Purchase Programme (PSPP). This would however be at odds with the presumption that issuers would be mere pass-through vehicles.

and the corresponding strength of the offsetting freezing and spillover effects. If spillover effects dominate, both SBBS and sovereign bond markets could be liquid. On the other hand, if freezing effects dominate, there would be a trade-off between the liquidity of SBBS and that of sovereign bonds. Also, there is a clear trade-off as the extent to which SBBS may affect national sovereign debt markets depends on SBBS market size: a large SBBS market implies adequate liquidity of the asset, but potentially at the expense of national sovereign debt market liquidity. On the contrary, a small SBBS market would have limited knock-on effects to national sovereign debt markets, but may consequently itself be illiquid.

To shed more light on the expected net effect of SBBS on market liquidity, the rest of this section examines the freezing and spillover effects in turn.

Liquidity impact

The PSPP[63] programme is analogous to SBBS insofar as sovereign bonds are removed from the secondary market but may be available for securities lending. It should however be noted, that there are two key caveats to the conceptual analogy between PSPP and SBBS: First, the analysis only holds if an SBBS market – and in particular a large SBBS market – develops only after an unwinding of PSPP, as both measures together could have an impact on liquidity of sovereign bond markets given their "freezing effect". Second, the analogy between the two instruments is imperfect insofar as SBBS and PSPP entail some important differences. In particular: (1) In parallel to the PSPP, the Eurosystem implements a securities lending facility to support secondary market liquidity by alleviating bond scarcity. (2) The PSPP is implemented in a market-neutral manner, including with respect to maturities (eligible maturities range from 1-30 years). However, in the early phase of the SBBS market, SBBS issuers might focus on certain points of the curve – most likely 5- and 10-year debt securities – in order to build liquid benchmarks to aid price discovery and facilitate the development of a futures market referenced to SBBS. (3) While SBBS issuers could buy the SBBS cover pool on both the secondary and the primary market, purchases under the PSPP take place exclusively in secondary markets. (4) Purchases under the PSPP take place in a continuous manner to avoid excessive market disruption, while purchases of the SBBS cover pool would most likely take place in lumpy batches, corresponding to discrete SBBS issuance dates. (5) An SBBS program would differ from the PSPP insofar as the former constitutes a partial replacement of long-term bonds with different long-term bonds, while the PSPP is essentially a partial replacement of long-term bonds with broad money. This implies that SBBS could be a source of liquidity and hedging opportunities that would help dealers to provide market liquidity elsewhere.

Nevertheless, the Eurosystem's PSPP represents a significant “stress test” of the likely impact of SBBS on sovereign bond markets, since aggregate PSPP holdings (as of

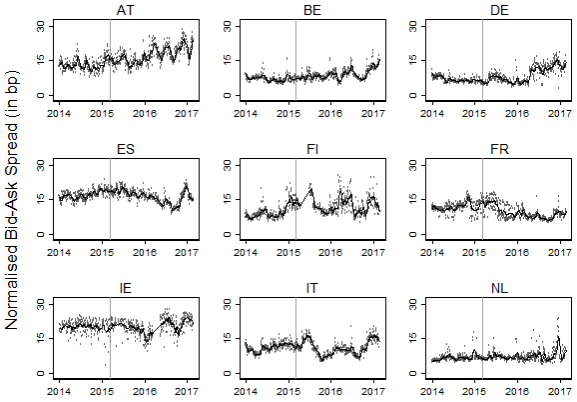
[63] The Eurosystem’s public sector purchase programme (PSPP) was implemented from 2015. It entails purchases by the ECB and euro area national central banks of government debt securities and other eligible public sector securities from the euro area. Purchased securities are effectively “frozen” on the collective balance sheet of the Eurosystem, and are only available for use in securities financing transactions under the conditions of the securities lending facility.

February 2017) amount to just under EUR 1.4 trillion, which is at the very upper range of likely SBBS market size in its early years.

Sovereign bond market liquidity can be proxied by price-based and volume-based indicators. The analysis reports time variation in three liquidity indicators, two of which are price-based and one of which is volume-based. In principle, the time variation in these indicators provides suggestive evidence regarding the limited impact of PSPP on sovereign debt market liquidity.

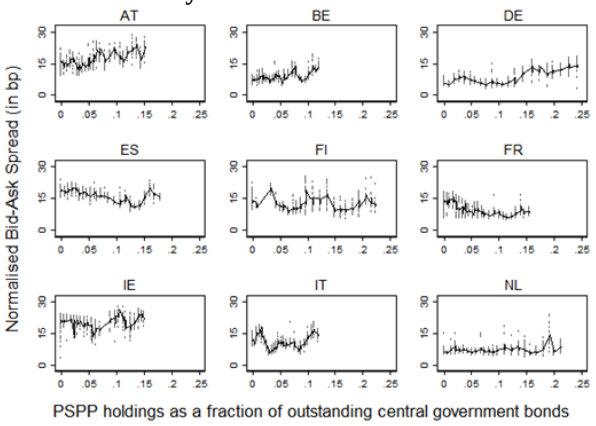
As a first indicator bid-ask spreads at daily frequency from January 2014 to February 2017 from MTS are obtained.[64] Figure 6 plots these bid-ask spreads over time by country. Visually, there is no apparent general level shift in bid-ask spreads following the commencement of PSPP purchases in March 2015, denoted by the vertical black line in the figure. Figure 7 plots the bid-ask spread against the fraction of outstanding central debt securities held by the Eurosystem under the PSPP to shed more light on the relationship between bid-ask spreads and the PSPP. Overall, both figures do not show any systematic evidence that PSPP holdings are associated with increases in bid-ask spreads. The only Member States where bid-ask spreads appear to increase somewhat are Germany and Austria. In particular for Germany[65] this has to be considered with caution, given the relatively low turnover of German Bunds on the MTS platform.

Figure 6: Normalised bid-ask spreads in bps over time



Source: Report of the ESRB HLTF; Data: MTS.

Figure 7: Average best daily bid-ask spreads against the fraction of outstanding government debt securities held by the Eurosystem under the PSPP



Source: Report of the ESRB HLTF; Data: MTS.

The second indicator is also price based and consists of a proprietary liquidity index computed by Tradeweb[66]. Figure 8 shows Tradeweb's index plotted against time while in

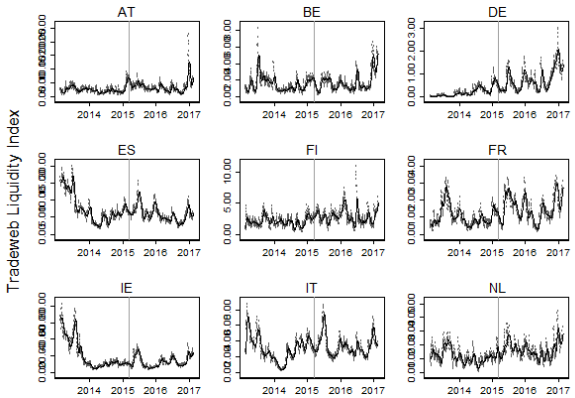
[64] MTS is an interdealer platform, focussed on euro-denominated securities and serves as a backstop for dealers who are unable to manage their inventory through customer relationships. MTS bid-offer spreads therefore tend to be relatively static and wider than actual market spreads in the more liquid market segments. In the MTS dataset, bid-ask spreads are measured in basis points as the difference between the best bid and ask price posted on the domestic and European MTS platforms, normalised by the mid-price, and averaged over each trading day. Bids and asks are posted with respect to benchmark 10-year national sovereign bonds.

[65] This is consistent with the findings of Schlepper et al. (2017) regarding overall Bund scarcity.

[66] Tradeweb is a request-for-quote trading platform focused on the dealer-to-customer market segment. Differently to MTS data (where data are based on quotes) Tradeweb data are based on transaction prices, i.e. those generated by actual trades. Tradeweb's index is intended to measure liquidity levels within specific

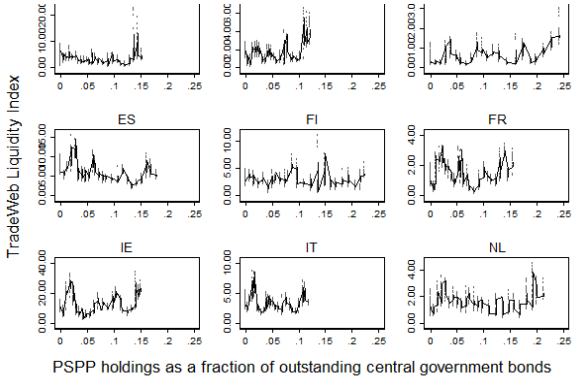
Figure 9 it is plotted against the fraction of outstanding central government debt securities held by the Eurosystem under the PSPP. Despite the higher volatility in the Tradeweb index[67], there is no systematic upward trend in Tradeweb's liquidity index across countries. Nevertheless, in the case of some countries, there appears to be a slight worsening in the liquidity index at the beginning of 2017.[68]

Figure 8: Tradeweb liquidity index over time



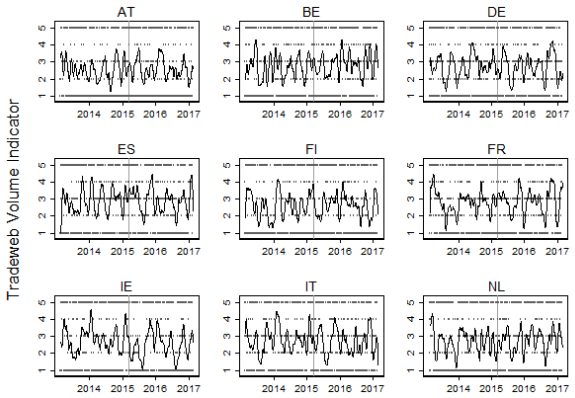
Source: Report of the ESRB HLTF; Data: Tradeweb.

Figure 9: Tradeweb liquidity index against the fraction of outstanding government debt securities held by the Eurosystem under the PSPP



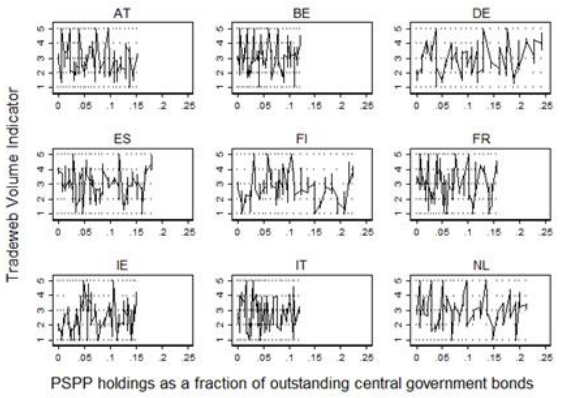
Source: Report of the ESRB HLTF; Data: Tradeweb.

Figure 10: Tradeweb volume indicator



Source: Report of the ESRB HLTF; Data: Tradeweb.

Figure 11: Tradeweb volume indicator against the fraction of outstanding government debt securities held by the Eurosystem under the PSPP



Source: Report of the ESRB HLTF; Data: Tradeweb.

The third indicator is volume-based and computed against both time (Figure 10) and against the fraction of outstanding central government debt securities held by the Eurosystem under the PSPP (Figure 11). The variable is calculated as the ratio of the day's notional traded volume over the average daily notional traded volume over the preceding 90 days. This ratio is then mapped to one of five categories, so that the Tradeweb volume indicator is a categorical variable, which can take the value of any

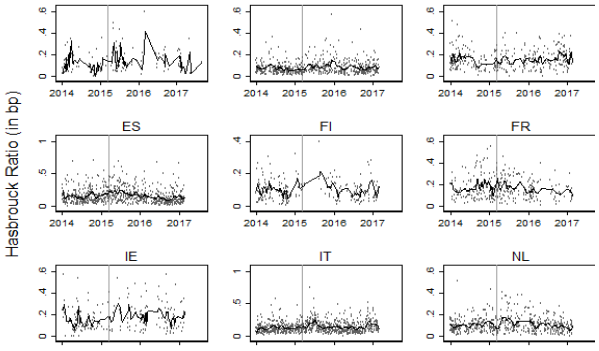
fixed income markets, based on transaction prices relative to the mid-price. The vertical lines refer to 9 March 2015, the beginning of the PSPP.

[67] Tradeweb's index is more volatile because it is based on trade sizes that are generally much smaller and variable in size than those on MTS, as they reflect customer requests-for-quotes from a smaller number of dealers. By contrast, the MTS platform is a transparent limit order market which is very competitive.

[68] The data sample ends early 2017. To fully assess this apparent development, it would be important to obtain more recent data over 2017, given that PSPP holdings have continued to increase.

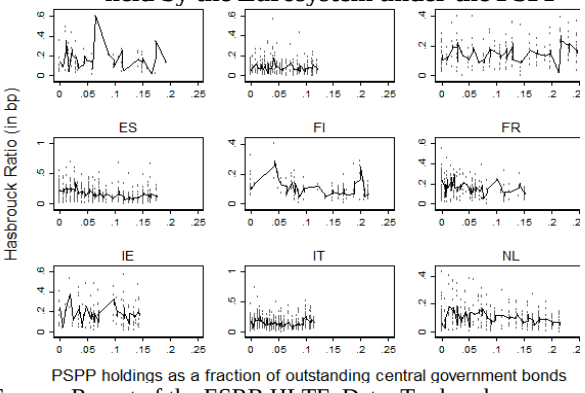
integer between 1 and 5 inclusive, where 1 corresponds to low turnover and 5 to high turnover.[69] Across countries, the average value of the volume indicator is 2.8 over 2014-16, suggesting a mild reduction in volumes traded. However, there is no change over time: the indicator stands at 2.8 in 2014, 2015 and 2016, i.e. before and after the introduction of the PSPP. The fourth indicator illustrates the effect of liquidity via the Hasbrouck ratio. This is the ratio of the logarithmic daily price difference over total turnover. Figure 12 plots the Hasbrouck ratio over time and Figure 13 against PSPP holdings. Again, this indicator is in line with the findings illustrated in the previous figures: there is not an observable worsening of liquidity over the program.

Figure 12: Hasbrouck ratio over time



Source: Report of the ESRB HLTF; Data: Tradeweb.

Figure 13: Hasbrouck ratio against the fraction of outstanding government debt securities held by the Eurosystem under the PSPP



Source: Report of the ESRB HLTF; Data: Tradeweb.

Lastly, a regression analysis is performed to provide a more rigorous assessment of the impact of PSPP on sovereign bond market liquidity. In particular, panel regressions are estimated, with normalised bid-ask spreads regressed on time and country fixed effects, as well as the magnitude of PSPP holdings.

The relationship between cumulative bond purchases and normalised bid-ask spreads is not linear. The model that best describes the data is cubic in nature. This means that normalised bid-ask spreads (=dependent variable) are regressed on the first, second and third powers of cumulative PSPP purchases ("pspp_cogovdebt", "pspp_cogovdebt2", "pspp_cgovdebt3"), as well as time and country fixed effects.[70]

Table 12: Results of fixed effects panel regression

	Coefficient	Standard error	P-value
pspp_cgovdebt	0.0052111	0.00192	0.007
pspp_cgovdebt2	-0.0003711	0.0001223	0.002
pspp_cgovdebt3	0.0000104	0.00000273	0
Constant	0.17423696	0.0024821	0

Source: Report of the ESRB HLTF.

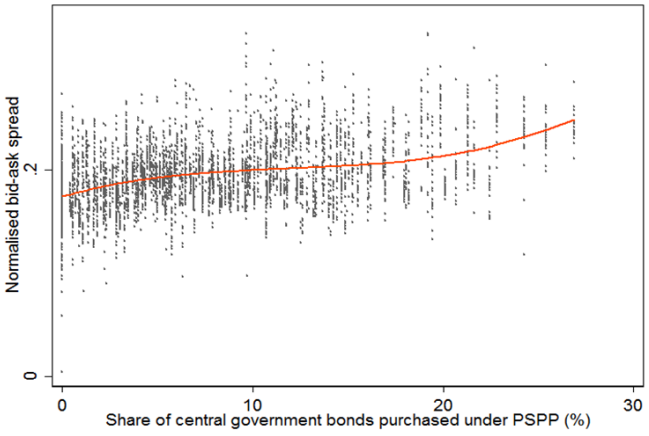
[69] In particular, a value of 1 corresponds to ratio of less than or equal to 0.8, i.e. a "very low" turnover on that day relative to the preceding 90 days; a value of 2 corresponds to a ratio between 0.8 and 0.9, i.e. a "below average" turnover; a value of 3 corresponds to a ratio between 0.9 and 1.1, i.e. "average" turnover; a value of 4 corresponds to a ratio between 1.1 and 1.2, i.e. "above average" turnover; and a value of 5 corresponds to a ratio of more than 1.2, i.e. "very high" turnover.

[70] The first three powers of the cumulative PSPP purchase, country and time dummies are the independent variables.

The results of the panel regression (see Table 12) indicate that, controlling for unreported time and country fixed effects, the normalised bid-ask spreads are only slightly affected by PSPP purchases. As is evident from the table, the effect of the programme on normalised bid-ask spreads is statistically significant, yet only minor in terms of economic magnitude, as the figure below reveals.

Figure 14 plots the predicted level of normalised bid-ask spreads for different levels of PSPP purchases using the results of the regression above. Specifically, the red line plots the forecasted normalised bid-ask spread of euro area sovereign bonds for different levels of cumulative PSPP purchases[71]. The dots depict the actual normalised bid-ask spread observations for each country, net of the country and time fixed effects calculated in the panel regression.

Figure 14: Actual vs fitted values of normalised bid-ask spreads net of country and time fixed effects, plotted against cumulative share of central government bond purchases under the PSPP



Source: Report of the ESRB HLTF.

It is clear from the figure that the impact of the PSPP on bid ask spreads is low. The mean share of PSPP purchases in February 2017, across the countries in the sample, was around 17%. For that value, we can observe that the mean euro area normalised spreads show a very small increase, by approximately 3 basis points. As program purchases move toward the issuer limit of 33%, the regression model predicts a small deterioration in liquidity: PSPP holdings at the 26% mark is associated with around 6 basis points increase in spreads. However, only 3 countries surpassed the 20% mark by end of February 2017, and the red line extends to account for the highest observed share of central government bond purchases (Germany at 26%).

The analysis above has shown that the impact of the PSPP on sovereign bond market liquidity was limited. Only in some Member States normalised bid-ask spreads show a minor to mild increase.[72]

[71] The fitted values in the red line are a forecast of euro area aggregate normalised bid-ask spreads and are estimated using the coefficients in Table 12 on different values of cumulative PSPP purchases across countries for each month in the time series.

[72] Overall, these findings are consistent with those of Schneider, Lillo and Pelizzon (2016), who analyse sovereign bond market liquidity over 2015 (in the months immediately following the commencement of the PSPP). They find that five and 10-year Italian sovereign bonds remained liquid and stable over 2015, consistent with the stable bid-ask spreads plotted for Italy in Figure 6. However, they also find that 30-year Italian sovereign bonds turned illiquid over the same period, which is consistent with the view that PSPP may have somewhat larger effects on liquidity levels in already less liquid segments of the market. Similarly, using a high-frequency, transaction-level analysis of Bundesbank purchases of German bonds in the framework of the PSPP, Schlepper, Hofer, Riordan and Schrimpf (2017) find that the price impact of purchases was stronger when markets were less liquid. However, the exception to this generally benign finding is Germany, where PSPP purchases appear to have induced a temporary deterioration in market liquidity over short periods. In their analysis of PSPP purchases of German bunds, Schlepper et al (2017) find that bid-ask spreads widened for purchased securities, particularly when compared to non-eligible

Spillover effects

The following analysis – also performed by the ESRB HLTF[73] – shows that given the relative neutrality (as compared to the PSPP) with respect to duration[74], positive spillover effects may arise from SBBS owing to their provision of (i) collateral services and (ii) hedging opportunities, conditional on SBBS attaining adequate liquidity and a regulatory level playing field for SBBS.[75] Overall, assuming regulation does not penalise netting excessively, there is in prospect a significant improvement in trading costs across all European sovereign debt markets if SBBS effectively become benchmark securities.

(i) Provision of collateral services: While repo markets in sovereign bonds are well developed, this would not necessarily be the case for SBBS. Such an active repo market could however develop over time, once the SBBS market increases in size and the necessary infrastructure has developed.

(ii) Provision of hedging opportunities: If SBBS are adequately liquid, banks and other investors could use an SBBS portfolio to hedge short or long positions in sovereign bonds. SBBS could serve as relatively low-cost hedging instruments with euro area wide characteristics, and would be particularly valuable to dealer banks that provide quotes in sovereign bond markets.

For the subsequent assessment the following assumptions and data are used:

- It is assumed that SBBS markets would be deeper and more liquid than smaller euro area sovereign bond markets.
- Estimated SBBS yields, based on an approach developed by Schönbucher (2003)[76], are used to examine the effects of hedging. The yield estimation method relies on a simulated default-triggering mechanism and a market-based indicator of default probability applied to the underlying securities. Figure 15 shows the time series behaviour of yields on SBBS under two alternative subordination assumptions (a) 70:30 and b) 70:20:10) and of a selection of sovereign bond yields (c). All data used in the analysis has been converted to price and then daily holding period returns, with an assumed duration of 9 years.
- Hedging effectiveness of SBBS is assessed by measuring the magnitude and stability of time-varying correlations between single SBBS (portfolios) and individual sovereign bonds.
- Correlations are measured using a range of methodologies, including dynamic conditional correlating using CDD-GJR-GARCH(1,1) modelling.

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bonds, while market depth was somewhat reduced for purchased securities (up to EUR 1.6 million per EUR 100 million purchased), compared to non-purchased eligible bonds.

[73] See chapter 4.4.2 of volume II of the ESRB HLTF report.

[74] The PSPP provides liquidity to financial markets by swapping medium- and long-term debt securities for central bank reserves. By contrast, an SBBS programme would swap national debt securities for SBBS securities of identical duration.

[75] An example, where securitisation improves market quality more widely than seems plausible at first glance is the "to-be-announced" Agency Mortgage Backed Securities market in the US. An analysis concludes that the presence of the "to-be-announced" market has had widespread beneficial effects on liquidity even where mortgage pools are not cheapest to deliver on the "to-be-announced" contract (Gao et al. (2017).

[76] See section 1.4 of the ESRB HLTF report for details on the estimation of SBBS yields.

- Subsequently, diversification benefits are measured by comparing the variance of a portfolio of hedged positions (with weights based on debt outstanding) compared with the variances in the component markets. The hedge selection and assessment follows closely the comprehensive approach of Bessler et al (2016).[77]

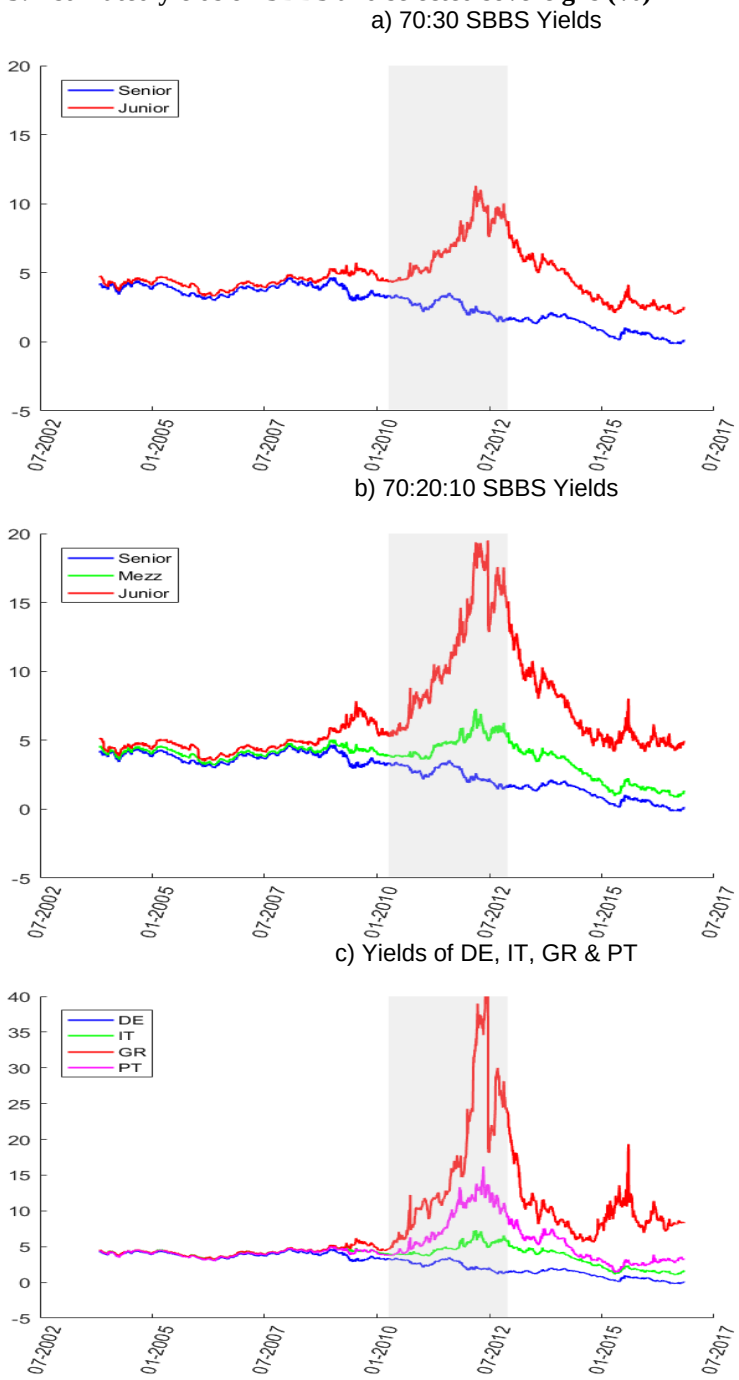
The results of the hedging effectiveness are presented in Table 13 – Table 15. The effectiveness for each hedge is assessed by comparing (taking the ratio of) the hedged and unhedged standard deviation of returns and Values-at-Risk (i.e. the average of the ratio of the 5% and 95% Value-at-Risk). The results show that in the pre-sovereign debt crisis period hedge effectiveness is high for all Member States (Table 13). The best hedges are highlighted in bold. In the case of the single hedge, it is the senior-SBBS that gives the best protection. In almost all cases of a combined hedge (2 tranches) provides some marginal improvement in hedge effectiveness compared to the single tranche hedge. In many cases the best overall hedge is achieved with a combination of the three SBBS tranches, but this might not be worthwhile from a cost perspective. Table 14 shows the summary statistics for hedged/unhedged relative risks during the sovereign debt crisis. For the single (senior) tranche hedge, only Germany remains well hedged. Roughly half of the risk is avoided by single SBBS hedging for the case of Finland and the Netherlands. The two and three tranche hedges generally lead to some small but significant risk reduction for most sovereigns compared to the single tranche hedge. Table 15 shows the results for the post-crisis recovery period (07/2012-Q4/2016). Using composite hedging usually reduces the risks by half or more, with the exceptions of Greece and Portugal.

The daily return on the hedged and unhedged positions for the case of hedging with just the senior and for the case of hedging with a mixture of the senior and the mezzanine tranche are shown in Figure 16 – Figure 18. The figures show in general that hedging is very effective in the pre-sovereign debt crisis period in reducing the variance of returns (with some isolated exceptions). Hedging is not effective for high-risk sovereigns during the height of the sovereign debt crisis but effectiveness returns to some extent during the recovery. In general the combined hedge works better than the single hedge in the crises and recovery periods. As regards particular countries, Figure 16 shows that hedging is quite consistently effective for core countries (DE, FR and NL, and the same counts for AT and FI which are not displayed). In these cases, the composite hedge seems to eliminate the occasional blips present in the single hedge case. For non-core Member States results are less clear: Figure 17 shows the cases of BE, ES and IT and clearly reveals how idiosyncratic the effects are during the crisis. It is interesting that the composite hedge (senior and mezzanine) works better than the single hedge during the crisis and recovery (apart from one particular day). This tends to improve further with the inclusion of the junior SBBS as a hedge instrument (this more general case is not displayed in the figure but can be seen from the tabulated results yet to be discussed). Figure 18 shows the more volatile cases of GR, IE and PT. There is also evidence of hedge ineffectiveness during the crisis with improvement only obvious during the recovery for IE and PT. Again, the composite hedge is better than the single hedge during the recovery for these countries and is particularly good in protecting from the more

[77] See section 4.4.2 of the ESRB HLTF report for further model details, used data and results.

extreme movements. Although hedging is often ineffective in these cases one has to acknowledge that these are small markets and their idiosyncratic riskiness could easily be diversified as part of a cross-country portfolio.

Figure 15: Estimated yields on SBBS and selected sovereigns (%)



Source: ESRB HLTF report. Note: Shaded area is euro area Sovereign Debt Crisis period (11/2009-08/2012).

Table 13: Hedge Effectiveness: Pre-Sovereign Debt Crisis

Hedge =	Snr	Mezz	Jnr	Snr-Mezz	Snr-Jnr	Mezz-Jnr	Snr-Mezz-Jnr
AT(i)	**0.38**	0.39	0.65	0.33	**0.3**	0.5	0.28
AT(ii)	**0.27**	0.28	0.65	0.23	**0.18**	0.43	0.16
BE(i)	**0.35**	0.37	0.64	0.28	**0.25**	0.48	0.23
BE(ii)	**0.29**	0.3	0.63	0.24	**0.2**	0.42	0.17
DE(i)	**0.21**	0.22	0.68	**0.16**	**0.16**	0.54	0.13
DE(ii)	**0.15**	0.19	0.69	0.14	**0.12**	0.51	0.11
ES(i)	**0.45**	**0.45**	0.64	0.38	**0.34**	0.47	0.31
ES(ii)	**0.38**	0.39	0.64	0.31	**0.27**	0.42	0.25
FI(i)	**0.3**	0.31	0.65	0.28	**0.25**	0.54	0.24
FI(ii)	**0.21**	0.23	0.64	0.19	**0.16**	0.47	0.16
FR(i)	**0.28**	0.29	0.63	0.22	**0.2**	0.47	0.17
FR(ii)	**0.24**	0.25	0.63	0.19	**0.16**	0.41	0.12
GR(i)	**0.64**	0.67	0.73	0.54	**0.49**	0.51	0.45
GR(ii)	**0.54**	0.56	0.67	**0.4**	**0.4**	0.42	0.33
IE(i)	**0.58**	0.6	0.74	0.53	**0.49**	0.61	0.48
IE(ii)	**0.34**	0.38	0.67	0.3	**0.28**	0.48	0.28
IT(i)	**0.5**	0.53	0.65	0.37	**0.35**	0.41	0.28
IT(ii)	**0.44**	0.5	0.63	0.31	**0.3**	0.36	0.23
NL(i)	**0.31**	0.32	0.63	0.25	**0.22**	0.46	0.19
NL(ii)	**0.23**	0.25	0.64	0.2	**0.17**	0.42	0.14
PT(i)	**0.5**	0.52	0.66	0.41	**0.37**	0.46	0.33
PT(ii)	**0.38**	0.4	0.62	0.31	**0.27**	0.39	0.23

Source: ESRB HLTF report, Note: Rows(i) contain the ratio of the standard deviation of the hedged returns relative to the unhedged. Row(ii) contain the average of the ratio of the 95th and 5th quantiles of the distributions of the hedged returns relative to the unhedged returns.

Table 14: Hedge Effectiveness: Sovereign Debt Crisis

Hedge =	Snr	Mezz	Jnr	Snr-Mezz	Snr-Jnr	Mezz-Jnr	Snr-Mezz-Jnr
AT(i)	**0.76**	0.89	1	**0.68**	0.84	1.04	0.74
AT(ii)	**0.68**	0.81	0.98	**0.59**	0.61	0.95	0.59
BE(i)	0.97	**0.96**	0.98	**0.73**	1.1	0.84	0.8
BE(ii)	**0.98**	**0.98**	1	**0.73**	0.9	0.83	0.71
DE(i)	**0.32**	1	1.07	**0.28**	0.33	1.04	0.29
DE(ii)	**0.31**	1.04	1.05	**0.27**	0.31	0.95	0.27
ES(i)	**1.01**	1.1	**1.01**	**0.67**	1.1	0.69	0.72
ES(ii)	**0.97**	1.15	1.05	0.71	0.87	**0.66**	0.65
FI(i)	**0.48**	0.93	1.03	**0.48**	0.51	1.06	0.53
FI(ii)	**0.46**	0.96	1.02	**0.46**	**0.46**	1.04	0.45
FR(i)	**0.77**	0.88	1	**0.65**	0.85	1	0.69
FR(ii)	**0.7**	0.88	1.02	**0.62**	0.68	1.02	0.62
GR(i)	**1**	1.01	**1**	1	**0.85**	**0.85**	0.83
GR(ii)	**0.96**	1.13	1.11	**1.02**	1.26	1.28	1.23
IE(i)	**1.02**	1.07	**1.02**	**0.97**	1.01	0.98	1.01
IE(ii)	**0.99**	1.06	1.03	0.95	**0.92**	0.93	0.94
IT(i)	**1**	1.1	1.01	**0.56**	1.18	0.61	0.63
IT(ii)	**1.02**	1.13	1.03	0.6	0.91	**0.57**	0.56
NL(i)	**0.51**	0.91	1.02	**0.52**	0.54	1.07	0.57
NL(ii)	**0.47**	0.94	1.05	**0.48**	**0.48**	1.03	0.49
PT(i)	**1.01**	1.05	**1.01**	0.99	1.01	**0.98**	1
PT(ii)	**1.01**	1.02	**1.01**	0.95	**0.9**	0.92	0.91

Source: ESRB HLTF report, Note: Rows(i) contain the ratio of the standard deviation of the hedged returns relative to the unhedged. Row(ii) contain the average of the ratio of the 95th and 5th quantiles of the distributions of the hedged returns relative to the unhedged returns.

Table 15: Hedge Effectiveness: Post-Sovereign Debt Crisis

Hedge =	Snr	Mezz	Jnr	Snr-Mezz	Snr-Jnr	Mezz-Jnr	Snr-Mezz-Jnr
AT(i)	**0.55**	0.78	1	0.53	**0.51**	0.9	0.51
AT(ii)	**0.49**	0.75	1	0.47	**0.43**	0.86	0.44
BE(i)	**0.56**	0.74	0.98	0.52	**0.47**	0.87	0.48
BE(ii)	**0.5**	0.72	0.97	0.47	**0.43**	0.85	0.43
DE(i)	**0.27**	0.87	1.04	**0.26**	0.27	0.92	0.25
DE(ii)	**0.28**	0.9	1.04	**0.27**	0.27	0.93	0.26
ES(i)	0.98	1.02	**0.97**	0.68	0.74	**0.58**	0.57
ES(ii)	0.96	**0.94**	0.96	0.71	0.72	**0.59**	0.57
FI(i)	**0.48**	0.84	1.01	0.47	**0.45**	0.91	0.45
FI(ii)	**0.41**	0.82	1.01	0.4	**0.38**	0.89	0.38
FR(i)	**0.5**	0.73	0.98	0.45	**0.42**	0.85	0.41
FR(ii)	**0.46**	0.72	0.98	0.44	**0.39**	0.84	0.39
GR(i)	**1**	1.07	1.07	**0.92**	**0.92**	1.02	0.92
GR(ii)	**1.05**	1.06	1.08	**1.03**	1.11	1.17	1.12
IE(i)	0.9	**0.89**	0.97	0.79	**0.78**	0.81	0.73
IE(ii)	0.86	**0.83**	0.95	**0.71**	0.72	0.77	0.65
IT(i)	0.97	1.01	**0.96**	0.59	0.72	**0.5**	0.47
IT(ii)	**0.93**	0.95	0.96	0.59	0.66	**0.48**	0.46
NL(i)	**0.47**	0.82	1.01	0.46	**0.44**	0.91	0.44
NL(ii)	**0.4**	0.82	1	0.39	**0.36**	0.89	0.35
PT(i)	**1**	1.02	1	0.87	0.85	**0.79**	0.79
PT(ii)	**0.99**	1.02	1	0.87	0.83	**0.75**	0.74

Source: ESRB HLTF report, Note: Rows(i) contain the ratio of the standard deviation of the hedged returns relative to the unhedged. Row(ii) contain the average of the ratio of the 95th and 5th quantiles of the distributions of the hedged returns relative to the unhedged returns.

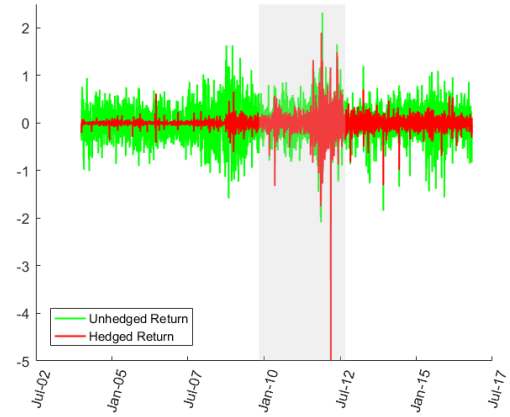
Figure 16: Single & Composite Hedging (DE, FR, NL) – returns measured in bps (left axis)

(a) DE: Single (senior) Hedge

(b) DE: Composite (sen+mez) Hedge

(c) FR: Single (senior) Hedge

(d) FR: Composite (sen+mez) Hedge



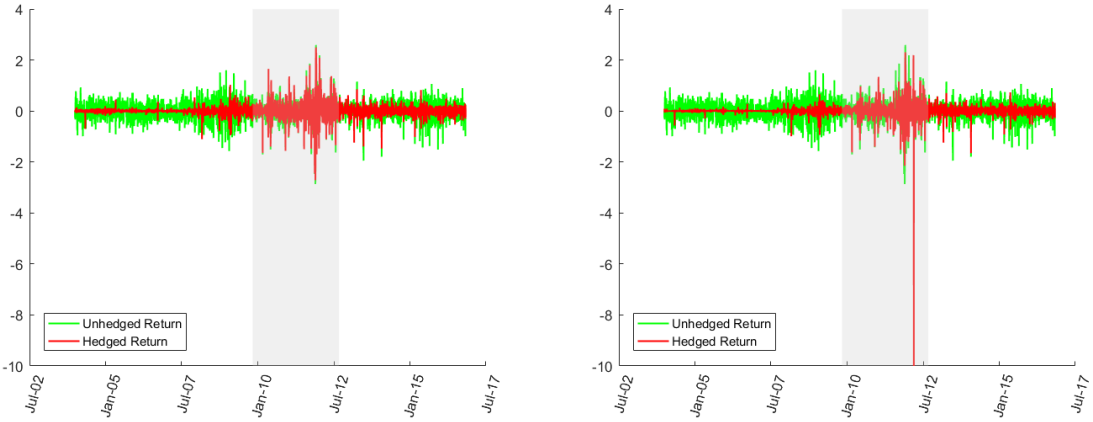
(e) NL: Single (senior) Hedge

(f) NL: Composite (sen+mez) Hedge

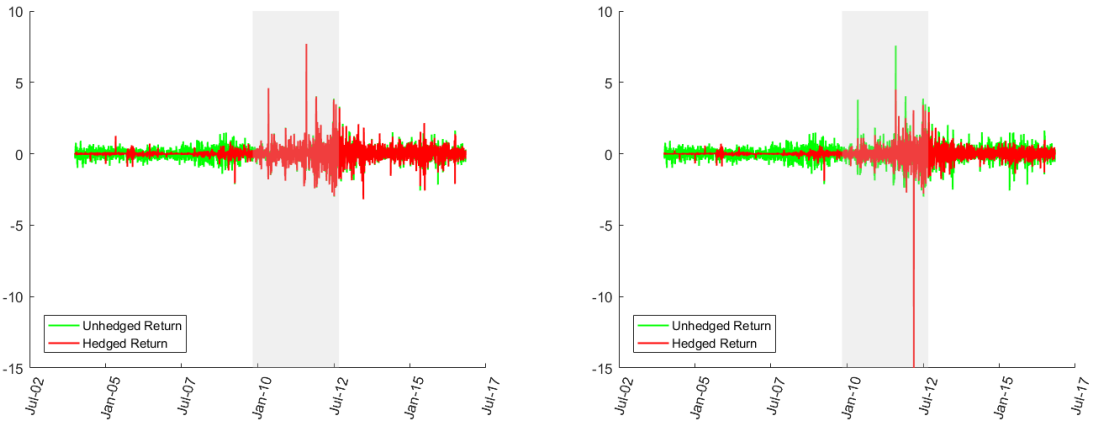
Source: ESRB HLTF report.

Figure 17: Single & Composite Hedging (BE, ES, IT) – returns measured in bps (left axis)

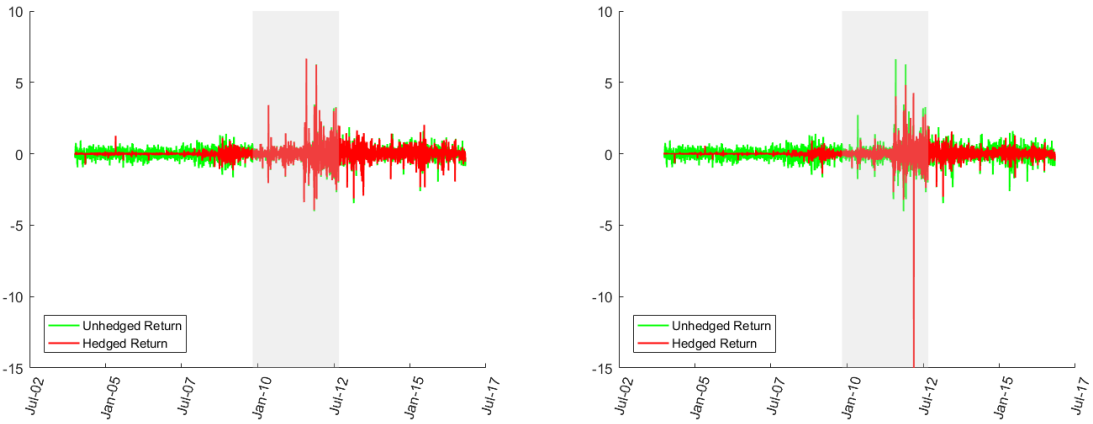
(a) BE: Single (senior) Hedge (b) BE: Composite (sen+mez) Hedge



(c) ES: Single (senior) Hedge (d) ES: Composite (sen+mez) Hedge



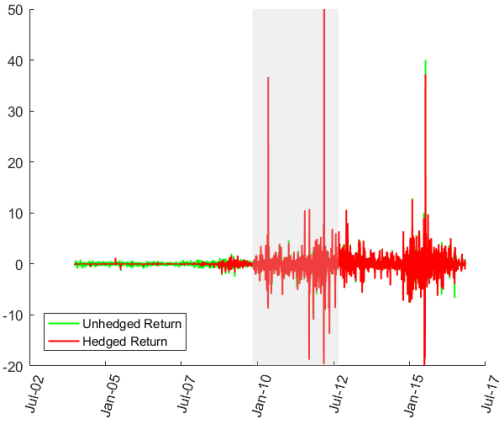
(e) IT: Single (senior) Hedge (f) IT: Composite (sen+mez) Hedge



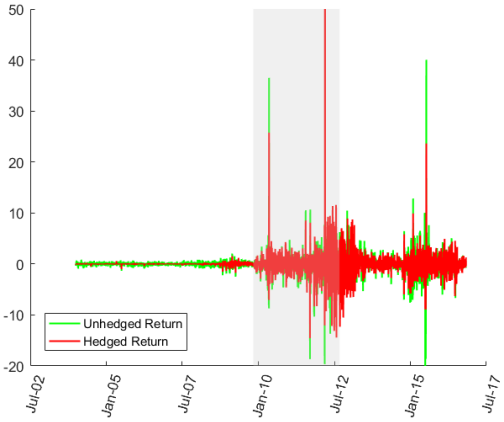
Source: ESRB HLTF report.

Figure 18: Single & Composite Hedging (GR, IE, PT) – returns measured in bps (left axis)

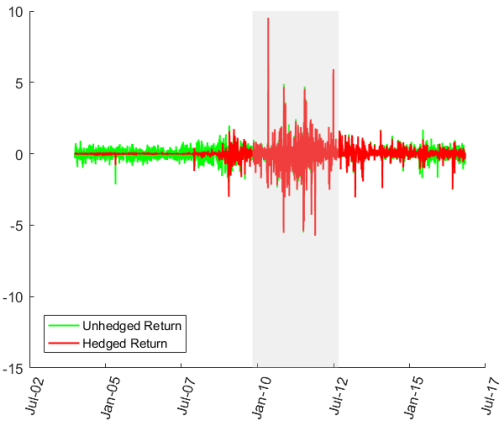
(a) GR: Single (senior) Hedge



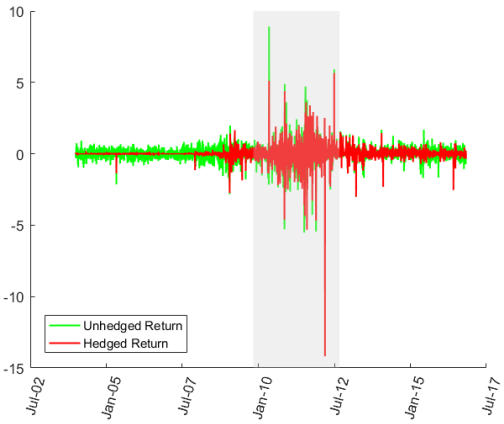
(b) GR: Composite (sen+mez) Hedge



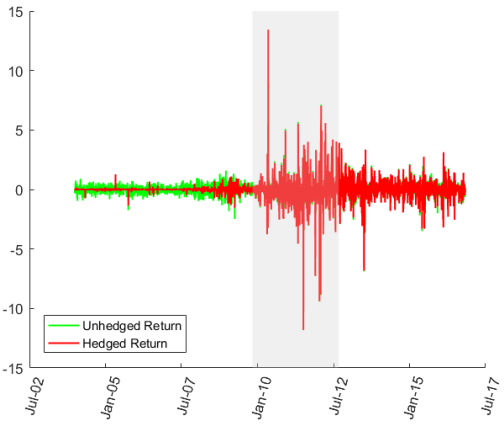
(c) IE: Single (senior) Hedge



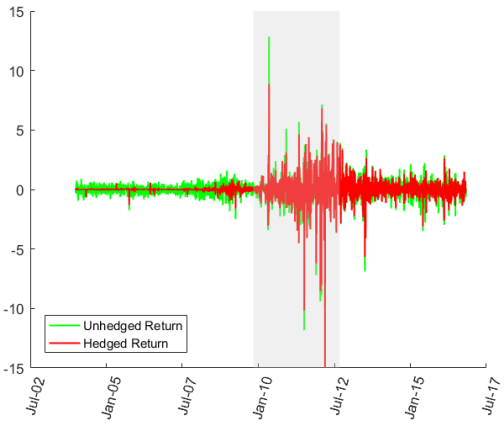
(d) IE: Composite (sen+mez) Hedge



(e) PT: Single (senior) Hedge



(f) PT: Composite (sen+mez) Hedge



Source: ESRB HLTF report.

4. IMPACT ON THE VOLUME OF AAA ASSETS

An estimation of the impact of the introduction of SBBS on the volume of AAA assets available in the euro area has been carried out to compare the respective benefits of a tranched product ('SBBS proper', i.e. Models 1 and 2) and the untranched basket (per Model 5).

The calculation is based on Eurostat data on euro area central government debt as of December 2016[78], as well as Standard & Poor's ratings of euro area sovereign governments on the same date[79].

The composition of the SBBS portfolio is based on the ECB capital key for each euro area government. Two scenario are considered: a scenario where SBBS develop gradually and reach a limited volume only (*Limited volume scenario*), and a *steady state* scenario with significant volumes of SBBS.

The estimation is based on a static approach, whereby the impact of the SBBS introduction is assessed against the volumes of central government debt as of 2016. While this approach ignores the future evolution of (i) central government debt stocks and (ii) euro area sovereign ratings over the forthcoming years, it nevertheless allows for a robust comparison of the expected effects of options 1.2 and 1.3.

The analysis assumes that the senior tranche of the 'SBBS proper' will be granted an AAA rating, while an untranched basket would not. The results are displayed in Table 16.

Table 16: Impact of the SBBS on the volume of AAA assets in the euro area

(% of EA government debt rated AAA)	**Limited volume scenario**	**Steady state scenario**
SBBS proper (Models 1 and 2)	+2%	+30%
Basket (Model 5)	-2%	-25%

Source: European Commission

As shown in Table 16, the impact is negligible in the *limited volume* scenario (Year 5 after a gradual introduction), while in the steady state it could increase the amount of euro area sovereign debt rated AAA by up to 30%, subject to the tranching of the SBBS product. Indeed, a mere basket would conversely negatively impact the amount of EA government debt rated AAA by 25% in the *steady state* scenario, since the basket is not expected to be rated AAA.

[78] Downloaded from Eurostat website on 21 December 2017 at 10:42.
[79] Downloaded from S&P website on 21 December 2017.

5. IMPACT ON THE COMPOSITION OF BANKS' SOVEREIGN PORTFOLIOS

The impact of the introduction of the SBBS on banks' sovereign portfolios has been assessed under both the *limited volume* scenario and the *steady state* scenario. This calculation does not assess separately the SBBS proper from the basket, since the diversification effect is assumed to be similar.

Using the data of the EBA transparency exercise as of 30 June 2017 and the latest ECB capital key, the analysis calculates, for each bank in the sample (96 banks of the euro area), the reduction in domestic holdings if banks decided to switch some of their domestic holdings for new SBBS bonds. For sake of simplicity, it is assumed that each bank would switch a proportion of its euro area sovereign portfolio similar to the overall ratio of SBBS relative to the universe of euro area central government bonds, in each scenario. It is also assumed that banks would only switch domestic government bonds insofar as their weight in the bank's portfolio exceeds the capital key of that government (home bias).

Table 17: Impact of the SBBS on the diversification of banks' sovereign portfolios

(Reduction of domestic holdings in %)	**Limited volume scenario**	**Steady state scenario**
SBBS proper (Models 1 and 2)	-3%	-34%

Source: European Commission

Table 17 shows that the impact would be small in the *limited volume* scenario, but significant under the *steady state* scenario. Under those assumptions, the home bias in the sample of euro area banks covered by the EBA transparency exercise would be reduced by 42%.

Using the same sample of bank and the same assumptions, the impact of the introduction of SBBS on the amount of AAA assets held in banks' sovereign portfolios is assessed. The analysis is carried out for three models: model 1, model 2 and model 5. It is assumed in model 2 that banks would only hold the senior tranche of the SBBS proper, while in model 1 they would hold all the tranches. The junior and mezzanine tranches of the SBBS proper (model 1 and 2) as well as the basket (model 5) are expected to be rated below AAA.

Table 18: Impact of the SBBS on the amount of AAA assets in banks' sovereign portfolios

(share of sovereign holdings rated AAA in %)	**Actual**	**Model 1**	**Model 2**	**Model 5**
Limited volume scenario	24%	24%	24%	23%
Steady state scenario	24%	32%	33%	19%

Source: European Commission

As reported in Table 18, the impact would be negligible in the *limited volume* scenario, and noticeable and positive in the *steady state* scenario for the SBBS proper option (model 1 and 2), while it would be negative in the case of baskets (since the share of AAA sovereign assets would drop from 24% to 19%).