

Annex 5

Incentives in prudential regulation

Disclaimer: This note reflects the discussion in the Insurance Expert Group (IEG). It is a compromise and does not express the unanimous views of the IEG members on all the topics covered. Some members consider it too early to assess and judge S2, as it is not yet in place. As such, not all topics covered should be considered the policy stance of the institutions that the members of the IEG work for.

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Summary

1. As set out in the Insurance Expert Group (IEG) mandate, this note examines incentives and disincentives, as regards financial stability and the economy as a whole, of prudential regulation and accounting treatment, in particular pro-cyclical effects and arbitrage incentives. Our focus is on Solvency II (S2), although we also briefly cover relevant accounting standards and international IAIS initiatives on insurance regulation. We also consider the direct and indirect impacts of other prudential regulations (CRD IV, BRRD and EMIR) on insurers¹.
2. This note seeks only to analyse the incentives and disincentives regarding financial stability and the economy: it does not seek to review the Directive's micro-prudential purpose or effectiveness. With this regard it recognises that S2, by applying a common risk-sensitive and market-consistent regime to European insurers, will mark a major step forward in modernising and harmonising European insurance regulation. It will replace Solvency I (S1), a relatively risk-insensitive framework under which a patchwork of different regulatory regimes has developed. The IEG emphasises the need for quick and efficient implementation of S2 – it should be urgently implemented in its current form due to the shortcomings of the S1 factor-based framework.
3. The main objective of S2 is to adequately protect policyholders and beneficiaries. Financial stability is another objective which should also be taken into account, but should not undermine the main objective.² Nonetheless, later revisions (via Omnibus 2, O2) did consider some issues relevant to financial stability to a greater degree than the original Directive. Although in many cases these objectives are aligned, S2 has not been specifically designed to tackle risks to financial stability.
4. Pure mark-to-market valuation and risk sensitivity leads to volatility of insurers' balance sheets and could imply incentives for pro-cyclical investment behaviour.³ Because of their long-term liabilities, life insurers have long-term investment horizons. If insurers do not face the risk of forced asset sales in stresses, short-term volatility in market prices should not affect them from an economic perspective. Pure mark-to-market valuation, although preferred to historical cost-based approaches, therefore has distorting effects in the case of extreme short-term market moves, such as those witnessed in the recent crisis. In sharp downturns insurers may need to sell off assets with a high capital requirement in order to remain solvent, and during asset price bubbles they may have large capital surpluses which they could be incentivised to use to further drive up asset prices. There are a number of measures included in S2 which are intended to tackle these effects and such behaviour. First, the capital charge for equity holdings tightens and loosens in periods of relatively high and low equity prices respectively. Second, a "long-term guarantees package" has been introduced.
5. Some measures in the long-term guarantee package, in particular the volatility adjustment (VA), are largely designed to reduce "artificial" volatility in balance sheets and to tackle fire

1 The IEG has not further analysed the incentives of the preferential treatment of sovereign risk in S2. See, for this analysis: ESRB, Report on the regulatory treatment of sovereign exposures, March 2015.

2 Recital 16 of the S2 Directive.

3 Bank of England and the Pro-cyclicality Working Group, Pro-cyclicality and structural trends in investment allocation by insurance companies and pension funds: A Discussion Paper, July 2014, Box 1.



sales in periods of stress⁴. In most practical cases, the VA lowers reserving requirements, depending on the spreads in the markets, for all liabilities compared with the valuation of liabilities using the risk-free rate. In addition, in the case of financial market distress and a breach of the Solvency Capital Requirement (SCR), supervisors can extend the recovery period to up to seven years, provided that an exceptional adverse situation in the market is declared to exist by EIOPA and that there is a recovery plan in place. This is consistent with recent evidence on regulatory flexibility applied by national authorities in the crisis, which appears likely to have been successful in staving off fire sales. A further long-term guarantee measure, the matching adjustment (MA), also lowers reserving requirements in most practical cases according to spreads, but does not explicitly target fire sales. Instead, it means that for certain eligible, matched assets and liabilities, insurers can hold these assets without the risk of forced sales. S2 does not contain requirements to build up resilience in upturns on top of regulatory requirements for macro-prudential purposes via capital buffers or add-ons to reserving requirements, if that is deemed necessary⁵. This is different from the buffers in banking regulation, where CRD IV requires banks to build up macro-prudential buffers on top of micro-prudential requirements. Instead S2, in order to better reflect the business model of insurers, temporarily alleviates reserving requirements to avoid the “artificial” volatility of balance sheets and fire sales. Because insurers might expect that requirements will be lowered in periods of stress, they could, under certain conditions, be incentivised to take on more risks in upturns. This might, in turn, create additional potential for pro-cyclical behaviour. However, this argument and the efficacy of the long-term guarantee measures rely heavily on the behaviour of insurers, which at this stage is difficult to predict. For instance, in the case of a breach of the SCR, insurers face the risk that the extension of the recovery period might not be granted by the supervisor or could be revoked should the adverse financial situation cease to exist⁶.

6. The application of the VA or the MA is intended to remove the impact of “artificial” volatility in market prices on own funds that is not justified from an economic or regulatory perspective (e.g. where insurers do not face the risk of forced asset sales in stresses, or where a widening of interest spreads is largely due to the “irrational” behaviour of markets rather than reflecting a change in the underlying risks). Accordingly, the application of the VA or MA is largely expected to reduce the level of technical provisions relative to the valuing of technical provisions using the “pure” risk-free rate. Only in rare market conditions when spreads are lower than the “fundamental spread”, could the VA and MA lead to an increase in the level of technical provisions, and hence a decrease of available own funds, depending on the final calibrations.
7. Currently, (end-February 2015), the amount of the VA as calculated by EIOPA has considerably decreased compared with the level as at year-end 2013, reflecting a much lower level of spreads in both corporate and sovereign debt markets. In the current environment of

4 Omnibus 2 Directive, Recital 32.

5 S2 is a micro-prudential framework that is risk-sensitive and tries to “fairly” portray the solvency of one particular insurer at a point in time. Strictly speaking, it is questionable whether that aim is compatible with a macro-prudential policy to build up reserves in good times, which can be seen as a mis-valuation of the financial situation in good times and a misrepresentation of the financial situation in bad times, by releasing those “hidden” reserves.

6 The supervisor has measures to intervene if there is market-wide evidence of following false incentives. The LTG measures rely on the supervisor’s approval. Also, certain approvals can be revoked.



very compressed spreads, the VA is slightly positive for all but one currency⁷. The VA for the euro would have been only slightly negative in 2000 and 2007⁸. This reduction of capital can be substantial and may pose risks. The 2014 EIOPA stress test results show that the long-term guarantee measures would have dampened the effect (decreasing the surplus of assets over liabilities) in the most severe stress scenario of participating insurers, with EUR 195 billion at year-end 2013⁹. If they were forced to sell assets in stresses at prices lower than the value of the liabilities they are being sold to match, insurers would suffer losses – reductions in capitalisation might make insurers less able to absorb this and other risks. Examples of such cases include liquidity pressure because of surrenders (note that S2 does contain a lapse module in its capital requirement¹⁰), and the persistence of perceived temporary financial market distress.

8. The application of parts of the long-term guarantee (LTG) package could, under certain scenarios, lead to insurers having insufficient resources to meet liabilities.¹¹ First, depending on their scale, **temporary** reductions in capitalisation might, in some cases, leave insurers vulnerable to further shocks, e.g. should they need to sell assets due to liquidity pressure on the liability side (e.g. from increased surrenders). Second, also depending on their scale, the **permanent** or **long-standing** application of reduced reserving and capital requirements might also mean that insurers have insufficient assets to meet liabilities as they fall due.¹² Note that the MA incentivises insurers to hold on to their assets until maturity. However, we note that, as part of the application process, to be able to apply measures from the LTG package, insurers need to provide evidence of their ability to earn the guaranteed rates, including the LTG adjustments, in practice. Thus, the burden of ensuring that solvency adequacy is also produced under the macro-prudential scenarios described in this analysis falls on the supervisor responsible for the approval. Measures have been added in S2 that may help to counteract the unintended consequences of the reductions in capitalisation. First, insurers assess, in their Own Risk and Solvency Assessment (ORSA), their current and future capital needs given the risks they currently run and they intend to run in the future, and given potentially changing financial conditions. Supervisors can use this to encourage, but not to directly require, insurers to hold more capital, or to discuss changes in the risk profile the undertaking is facing. Second, insurers that use the long-term guarantee measures are required to disclose to supervisors and to the public the impact of these measures on their solvency positions. Third, insurers using the MA or VA are required to have a liquidity plan. Fourth, there is some scope for supervisory approval and discretion over the application of some long-term guarantee measures. Fifth, insurers breaching their capital requirement, if these measures are not in place, are required to provide a plan to correct this hypothetical

7 EIOPA, Technical document for the calculation of the risk-free rate, February 2015.

8 Bank of England and ESRB calculations based on the above EIOPA document and applying simplifications (see note on Incentives in prudential regulation).

9 EIOPA, Insurance stress test report, 2014; the number takes into account the loss absorption capacities of deferred taxes and technical provisions.

10 Article 26 DR (EU) 2015/35 recognises external factors that may influence lapse behaviour. Article 40 excludes the “TP as a whole” calculation where lapse is a contractual policyholder option.

11 Or insufficient resources to compensate a transferee undertaking to take their liabilities on, which is the basis of Solvency II market consistency.

12 Note that the lower reserving and capital requirements (relative to those calculated using the risk-free rate) under the matching adjustment reflect that for matched, eligible assets and liabilities, insurers can hold assets to maturity and so do not face (non-credit) market risk. As this is a permanent, structural feature, permanent application is appropriate.



breach. Finally, supervisors can apply a capital add-on if the risk profile of the firm deviates significantly from the assumptions underlying those measures, or if the governance of the undertaking fails to take appropriate measures¹³. In combination, the measures could help to discourage any inappropriate risk-taking or the emergence of financial stability risks from reductions in capitalisation, arising from the long-term guarantee measures. However, as noted above, S2 does not contain the flexibility for supervisors to require the building of resilience for purely macro-prudential purposes.

9. In combination, these measures and tools may help to discourage any inappropriate risk-taking or the emergence of financial stability risks from reductions in technical provisions arising from application of the LTG. However, the Pillar 1 measures of S2 do not explicitly contain the flexibility for supervisors to require insurers to build resilience for purely macro-prudential purposes or to build resilience above the SCR if that is deemed necessary. Under Pillar 2, however, the undertaking is obliged to perform an extensive ORSA, during which it should carry out a forward-looking assessment of its compliance, on a continuous basis, with regulatory capital requirements over its business planning horizon. This also requires the undertaking to take into account potential adverse developments in the future. Another very important tool to build resilience above the SCR is stress testing – both internal stress testing (obligatory under S2) and external stress testing through EIOPA. We note that the argument for building up resilience above the SCR rests on the assumption that insurers behave opportunistically and operate at the minimum level of capital, without building resilience for a future crisis. This assumption may be not realistic, given the need for insurers to demonstrate that they are solvent at any point in time, and given the volatility of their solvency position. It should also be emphasised that it is not yet clear to what extent insurers will react to any unintended consequences implied by the LTG and how effective the proposed mitigants might be – neither can be known for sure until S2 has been implemented. This is also the reason why O2 has introduced a specific task for EIOPA to analyse the functioning of LTG measures on an annual basis during the first years of implementation and to provide an opinion to the EU COM by 2020 on the assessment of the application of such measures, including the implications for financial stability, (after consulting the ESRB).
10. Some other features in S2 may raise concerns about insurers' ability to meet or transfer their liabilities. For instance, the risk-free interest rate to discount liabilities is assumed to have an "ultimate forward rate", which is currently set by EIOPA at 4.2%. This assumption helps to stabilise this risk-free interest rate, but its level is currently well above the market expectations indicated by long-term swap rates. Furthermore, many large insurance groups S2 application will rely heavily on internal models. The use and supervision of these internal models should be informed by the lessons in the banking sector in this regard. There may be other scenarios where insurers' ability to meet their liabilities is weakened, for example, should there be concerns from a macro-prudential point of view concerning the calibrations of the standard formula. Finally, a number of recent downward revisions to the S2 standard formula calibrations are intended to stimulate long-term investments by insurers, while still properly capturing the risks. From a macro-prudential perspective, the favourable changes for certain

13 The main liquidity risk (contractual discontinuity options) is governed by Article 79 S2 and Articles 26 and 40 DR. The SCR for lapse risk is covered by Article 105 (3)(f) S2 and Articles 118 and 142 DR (similar references for non-life and health). Article 79 explicitly recognises external factors (financial/non-financial). In addition, Article 37 (1)(d) Dir. 2009/138/EC incl. Omnibus II Dir. 2014/51/EU amendments explicitly includes LTG measures in the applicable triggers for a capital add-on.



markets should be accompanied by the ability to tighten them if risks start to build or the need for a stimulus disappears. The changes to the standard formula reflected market conditions and risks at that time. Should these change, S2 does not have the flexibility to increase them again (apart from foreseen revisions of some calibrations in 2018 and the framework in 2021). This may, to an extent, be offset by many (major) firms using internal models, where the calibration will be determined by, and tailored to, a firm's own specific risk profile, and all quantifiable risks must be captured.

11. Under Pillar 2, insurers are obliged to perform an extensive ORSA. This includes a forward-looking assessment of its compliance, on a continuous basis, with the SCR and an assessment of its overall solvency needs beyond its regulatory capital requirements. This also requires insurers to take appropriate management action as regards potential adverse developments in the future and the outcomes of stress tests. It may lead to insurers holding more capital than their SCR and may help supervisors to encourage insurers to hold this surplus. However, supervisors cannot use the ORSA directly to set a capital requirement above the SCR or a capital add-on.¹⁴
12. S2 is a complex framework. This was underlined by EIOPA's fifth Quantitative Impact Study.¹⁵ Since then, the complexity has only increased with the introduction of the long-term guarantee package. This complexity, in particular, relates to the liability side of insurers' balance sheets, for instance the calculation of technical provisions, including the assessment of contract boundaries and the valuation of options and guarantees. The EIOPA 2014 stress test shows that these elements have a large impact on solvency positions. Lack of clarity or different national implementations may lead to a lack of credibility and market discipline. Cooperation and coordination between NSAs is therefore essential as S2 is implemented in 2016, to ensure the common application of the regulatory framework and enhance market discipline. There is currently no simple backstop requirement in S2, which could impede this.
13. Incentives to move risks, especially within financial conglomerates, cannot be ruled out due to differences between S2 and CRD IV. It is difficult to compare capital charges between both regimes, given their completely different approaches. Different academic studies arrive at different conclusions: the studies which exclude diversification benefits and loss absorption effects seem to imply higher capital charges for insurers, while inclusion of these elements in the scientific models seems to imply lower charges for insurers. In addition, the quality requirements for capital are lower in S2.¹⁶
14. Arbitrage may also occur in the application of macro-prudential tools in the banking sector. There may be cases where the activities and risks being targeted by the use of such tools in the banking sector could migrate to insurers either directly or indirectly via funding or credit instruments. Such migration may be a problem if it frustrates attempts to reduce systemic risk, such as imprudent lending or the build-up of indebtedness in the housing market. However, there may also be cases where such migration is beneficial – e.g. if it allows the activity to continue with less maturity/liquidity mismatch, or if it reduces particular fragilities in the banking sector.

14 Recital 36 and Article 45 of the S2 Directive.

15 EIOPA Report on the fifth Quantitative Impact Study (QIS5) for S2, 2011

16 Thiabeault, A. and Wambeke, M. ,“Regulatory impact on banks’ and insurers’ investments”, September 2014.



15. Other sources of risks that insurers may pose to financial stability that are not captured by S2 may be captured by other regimes. Notably, those posed by interconnectedness and non-traditional and non-insurance activities (see the chapter on sources of systemic risks) are intended to be captured by IAIS measures for G-SIIs. The IAIS measures currently in place do not address pro-cyclicality for a wider range of insurance companies.

1. Introduction

16. As set out in the mandate for the Insurance Expert Group (IEG), the purpose of this note is to examine incentives and disincentives, as regards financial stability and the economy as a whole, of prudential regulation and accounting treatment, in particular pro-cyclical effects and arbitrage incentives.
17. Our main focus is on S2 as the European prudential (re)insurance regulation applying from January 2016. We also briefly cover the relevant accounting standards and IAIS initiatives on standards applying to Global Systemically Important Insurers (G-SIIs) and Internationally Active Insurance Groups (IAIGs), but note that these are still partially under development. We consider, too, the direct and indirect impacts of other prudential regulations (including EMIR and CRD IV) on insurers, and their interaction with S2.
18. This note is structured as follows:
- Section 2 covers S2, including a short description of its key features;
 - Section 3 considers the interaction of S2 with other prudential regulation;
 - Section 4 looks at recent IAIS developments; and
 - Section 5 briefly covers accounting treatment.

2. Solvency II

2.1. Description

19. Solvency II (S2) is the forthcoming prudential regulation for EU (re)insurers, applying from January 2016. It was agreed in 2009 (S2 2009) and amended in substance by the Directive 2011/89/EU in 2011 (regarding financial conglomerates) and by the Omnibus II (O2) Directive in 2014. It will replace Solvency I (S1), the European framework introduced in the 1970s. S1 is a relatively risk-insensitive framework as it is calculated by applying fixed ratios to life technical provisions and non-life premiums or claims. Technical reserves are generally valued in nominal or “book” terms and assets to cover technical provisions are subject to quantitative and qualitative restrictions. However, major risks are reduced in some jurisdictions, e.g. through strict limits for risky assets. S1’s prescription of a minimum set of harmonised rules has resulted in a patchwork of supplementary national regulatory regimes being developed. As such, S2 will mark a major step forward in harmonising European insurance regulation and encouraging market integration.
20. The features of the existing regulatory landscape in Europe have also driven another key objective of S2: that of introducing a market-consistent, risk-sensitive regime. In principle, this implies a number of micro- and macro-prudential improvements relative to the book-value/historical-cost type and risk-insensitive requirements which are featured under S1 – in



this regard S2 marks a major advancement in modernising European insurance regulation. In practice, however, following the financial crisis a number of concerns have been raised as to how well market consistency and risk sensitivity attain some of these benefits, and concerning the potential risks/unintended consequences associated with their application. A key focus of this note is to look further at some of these concerns, and discuss the tools proposed in S2 to help mitigate some of these concerns.

21. S2 is designed in three pillars, similar to the Basel supervisory framework for banks, but different in content. **Pillar 1** sets out the basis for the valuation of assets and liabilities (including technical provisions), quantitative capital requirements, and the quality of the capital resources which can be used to meet these requirements. **Pillar 2** covers the qualitative requirements for governance and risk management of the insurer, the supervisory review process of the supervisor and the Own Risk and Solvency Assessment (ORSA) of the insurer. **Pillar 3** comprises public disclosure and regulatory reporting requirements.
22. S2 will achieve the key objective of risk-sensitivity via Pillar 1, through the introduction of risk-sensitive capital requirements and market-consistent valuation of assets and liabilities. S2 introduces two risk-based capital requirements for unexpected losses.¹⁷ The higher Solvency Capital Requirement (SCR), calibrated to a 99.5% probability of survival over one year; and the lower Minimum Capital Requirement (MCR), calibrated to an 85% probability of survival over one year. A ladder of regulatory intervention spans the two: breach of the SCR requires an escalating intensity of regulatory action; breach of the MCR may require the removal of regulatory authorisation. (Re)Insurance undertakings can either apply an (partial) internal model, subject to supervisory approval, or a standard formula of prescribed stresses to determine their SCR. Undertakings applying the standard formula can use, or may be required to use, “undertaking specific parameters” (USPs) for some risk modules to better reflect their own risk profile in the SCR calculation. The methods for deriving USPs are standardised and the use of them is subject to the formal approval of the competent supervisory authority.
23. “Market consistency” in S2 involves market-valuing assets and liabilities (as opposed to using book or nominal values as under S1). The S2 Directive achieves the latter by discounting expected insurance liability cash flows (i.e. claims of policyholders) with a risk-free interest rate curve. Market consistency in S2 aims to ensure that an insurer holds enough reserves to pay for its liabilities to be transferred immediately to another undertaking on a going-concern basis. To achieve this, S2 technical provisions include a risk margin in addition to the expected cost of claims. This compensates the transferee undertaking for uncertainty concerning the expected value of those liabilities.
24. S2 also introduces in its Pillar 2, a “prudent person principle” which requires that insurers only invest in assets and instruments whose risks the insurer can properly identify, measure, monitor, manage, control and report, and appropriately take into account in the assessment of

17 Rec. 64 Directive 2009/138/EC: the Solvency Capital Requirement should be determined as the economic capital to be held by insurance and reinsurance undertakings in order to ensure that ruin occurs no more often than once in every 200 cases or, alternatively, that those undertakings will still be in a position, with a probability of at least 99.5 % to meet their obligations to policyholders and beneficiaries over the following 12 months. That economic capital should be calculated on the basis of the true risk profile of those undertakings, taking account of the impact of possible risk-mitigation techniques, as well as diversification effects.



its overall solvency needs. Specific quantitative and qualitative limits on investments in place under S1 are dropped, at least partly, for insurance undertakings underlying S2.

25. The S2 Directive was amended by the Omnibus II (O2) Directive in 2014. Amendment was needed in light of the Lisbon Treaty and the creation of the European Insurance and Occupational Pensions Authority (EIOPA). The revisiting went beyond these largely technical changes. Negotiations focused on the long-term guarantees (LTG) package, a set of measures of which a stated objective was to mitigate the impact of “artificial” volatility on the balance sheets of insurers offering long-term insurance.
26. One of the key LTG measures is the matching adjustment (MA). The MA is an undertaking-specific adjustment to the discount rate (risk-free interest rate) used to value certain long-term, predictable and illiquid insurance liabilities such as annuities where assets, covering these liabilities, can be held to maturity. Another key LTG measure is the volatility adjustment (VA). Similarly to the MA, it is calculated as an adjustment to the risk-free interest rate. But unlike the MA its explicit aim, according to the O2 Directive, is to prevent pro-cyclical investment behaviour, by mitigating the effect of exaggerations of market spreads. It is optional and can be applied to all insurance obligations without any conditions regarding asset liability matching and/or the ability to hold assets to maturity. For both the VA and the MA, undertakings will be required to draw up a liquidity plan, which will be instrumental in assessing the extent of the asset/liability cash-flow (mis)match. A further key plank of the LTG package is a transitional period of 16 years, which will allow insurers to gradually phase in the S2 valuation of liabilities (from 2016 to 2032), subject to supervisory approval and an obligation for the undertaking to set up a phasing-in plan.
27. Another key element of S2 is equivalence. Put simply, equivalence allows EU firms to apply local solvency standards to their non-EEA business where these standards are deemed equivalent to S2. Regimes outside the EEA may be recognised by the Commission, for a provisional period, as equivalent to S2, subject to certain criteria. The duration of this provisional equivalence is ten years, which can be renewed for an additional ten years.
28. S2 permits an extension of the recovery period in the case of a breach of the SCR, subject to certain conditions and circumstances, including exceptional adverse market conditions. On the other hand, it provides for limited regulatory intervention to apply capital add-ons to capital requirements in a narrow set of prescribed circumstances. In short, add-ons can be used when the supervisory authority concludes that the (re)insurer’s system of governance deviates from the standards prescribed by S2, or the risk profile of the (re)insurer undertaking deviates significantly from the assumptions underlying the SCR calculation, or those underlying the LTG package.
29. In contrast to regulation in the banking sector, and having being designed pre-crisis, S2’s main objective is policyholder protection. Financial stability and fair and stable markets are other objectives of insurance and reinsurance regulation and supervision, but they should not undermine the main goal. This subordination is reflected in the capital requirements prescribed by S2, which capture only risks faced by insurers, and not the risks that insurers’ activities may pose to the stability of the financial system, which is one of the key aspects of macro-prudential supervision.
30. Nonetheless, there **is** a financial stability objective, and O2 has begun considering issues that are relevant for financial stability to a greater degree than S2 in 2009. As such, whilst some elements of S2 address issues which have implications for financial stability, S2 has not been



specifically designed to tackle risks to financial stability, or more generally, macro-prudential issues.

31. The ESRB highlighted concerns about risks to financial stability and macro-prudential issues in S2/O2 in its letter (“Macro-prudential perspectives on Solvency II/Omnibus II”) to trilogue parties, dated 29 June 2012. It outlined four broad areas of concern with regard to general macro-prudential issues which it argued required careful attention and further detailed analysis, as well as regulatory and supervisory action going forward. First, concerning the risk of regulatory arbitrage between insurance and banking regimes. Second, the need for consistency of objectives of regimes – for e.g. the role of S2 in influencing insurers’ demand for long-term assets at a time when banks are being required to lengthen the maturity of their funding. Third, regarding the potential risks arising from inadequate modelling of correlations of individual risks on insurers’ balance sheets. Fourth, the complexity of S2 and an overreliance on internal models.
32. The letter also outlined more specific concerns about the potential unintended consequences of the LTG package, which was under consideration at that point in time:¹⁸
 - an undercapitalisation of the sector against the risk that, in some adverse scenarios, premature sales of assets in illiquid markets may be needed to meet some liabilities;
 - an undermining of the credibility of insurers’ balance sheets in the eyes of investors;
 - a distortion of insurers’ incentives – for example on asset allocation – that could exacerbate, rather than mitigate, pro-cyclicality;
 - an exacerbation of moral hazard, given that some of the measures operate asymmetrically, i.e. only during periods of stress.
33. Further investigation of these concerns was subsequently made a key element of the IEG’s mandate. In accordance with this mandate, and in the context of the ESRB’s letter, the following sections identify and assess financial stability risks and macro-prudential issues relating to the final S2 package in more detail. This includes an assessment of the tools introduced to the package intended to mitigate risks. We also assess the macro-prudential benefits associated with the introduction of S2.

3. Pro-cyclicality and distortion of investment incentives

3.1. How pro-cyclicality might arise and its impacts

34. As discussed in other IEG papers on sources of systemic risks and interconnectedness, asset allocation by insurers could pose material risks to financial stability in term of pro-cyclical behaviour.¹⁹ The recent crisis has seen a number of European regulators take action to limit

¹⁸ We note that the final LTG differed from that proposed at the time of the ESRB’s letter. Whilst the elements of the LTG that raised these concerns have been retained, and in some cases strengthened, the final LTG package which contained tools which were intended to mitigate some of these risks. These issues are discussed further in this note.

¹⁹ The terms pro- and counter-cyclicality relate to investment behaviour of insurers. This is different from banking, where these terms mostly relate to banks’ supply of credit and banks’ amplification of the financial cycle. Insurers are not typically major issuers of credit, but are large investors and may, through their investment behaviour, contribute either to asset price bubbles and crashes, or act as a shock absorber.



the threat of fire sales of assets by insurers.²⁰ The regulatory regime can potentially act as an unintended driver or intended mitigant of such pro-cyclicality, but this depends on its design and on whether it is binding on insurers or not (if not, other non-regulatory factors may affect behaviour).

35. There are a number of micro- and macro-prudential benefits of the introduction of a market-consistent, risk-sensitive regime under S2. Market consistency allows market developments to be reflected in the value of insurers' balance sheets, which has two main benefits. First, it helps risks to be efficiently priced by insurers. Second, regardless of risk pricing, the market price represents the amount insurers would receive for assets should they sell them at any point, meaning that the balance sheet reflects the true ability of the insurer to meet claims should they arise at that point. Alternatively, market consistency measures the ability of an insurer to compensate another insurer at market prices for taking on their liabilities. Market consistency is therefore an important prudential guard against under-reserving and against the mispricing of risk. The principle of risk sensitivity is a key prudential tool for promoting resilience by requiring insurers to hold more capital against higher risks.
36. There are several reasons why pure market consistency may not be a fully desirable feature of prudential regulation: 1) not all insurance obligations are due immediately, so pure market consistency would show volatility which might not be relevant for insurers; 2) pure market consistency may exacerbate market cycles; 3) concern about the efficiency of the market (e.g. as regards risk pricing); 4) concern as to how risks are modelled (including overreliance on credit ratings and internal models). Despite these concerns, however, because of their benefits market consistency and risk sensitivity are widely considered to be better than the alternatives. The above drawbacks have a number of implications: this section looks further at these concerns in the context of pro-cyclicality in more detail and assesses tools proposed in S2 to help mitigate some of these concerns; Section 2.3 discusses their consequences for capitalisation.
37. In principle, the pure application of a market-consistent, risk-sensitive regulatory framework (in particular, assets are marked to market and liabilities are valued using a market-based risk-free discount rate), can create pro-cyclicality in insurers' capital resources or own funds relative to requirements. This is because insurers' existing holdings of assets (other than risk-free assets) will increase (decrease) in value relative to risk-free liabilities during upturns (downturns).
38. There are two processes at work that drive these effects. If insurers hold risky assets and value liabilities using a risk-free interest rate there may be a change in own funds due to:
 - **changes in risky asset spreads over the risk-free interest rate.** This means that the value of assets will change relative to the value of liabilities²¹. We would expect spreads

20 In the past, supervisors were able to act with discretion to stave off fire sales by amending or waiving regulatory requirements, e.g. in the UK with the aim of preventing equity sales following the dotcom crash in the early 2000s, and in Denmark in 2008 to stop sales of mortgage bonds.²¹ We note that this paper does not discuss the case of a perfectly matched insurer investing only in fixed income securities, where intermediate market risk fluctuations are not relevant from an economic perspective. Instead, we focus on market disruption scenarios and business models where intermediate value fluctuations may be relevant from a financial stability perspective.

21 We note that this paper does not discuss the case of a perfectly matched insurer investing only in fixed income securities, where intermediate market risk fluctuations are not relevant from an economic perspective. Instead, we focus on market disruption scenarios and business models where intermediate value fluctuations may be relevant from a financial stability perspective.



to fall during upturns and therefore riskier asset prices to increase relative to safe assets – this is a characteristic description of a financial market upturn. Such increases in relative value might be driven by factors including decreases in risk premiums (which can reduce discount rates). Prices may also increase as a result of increases in expected profitability (so expected dividends increase, raising, for example, equity prices). The reverse can be expected in stresses, with spreads widening and the value of risky assets declining relative to risk-free assets.

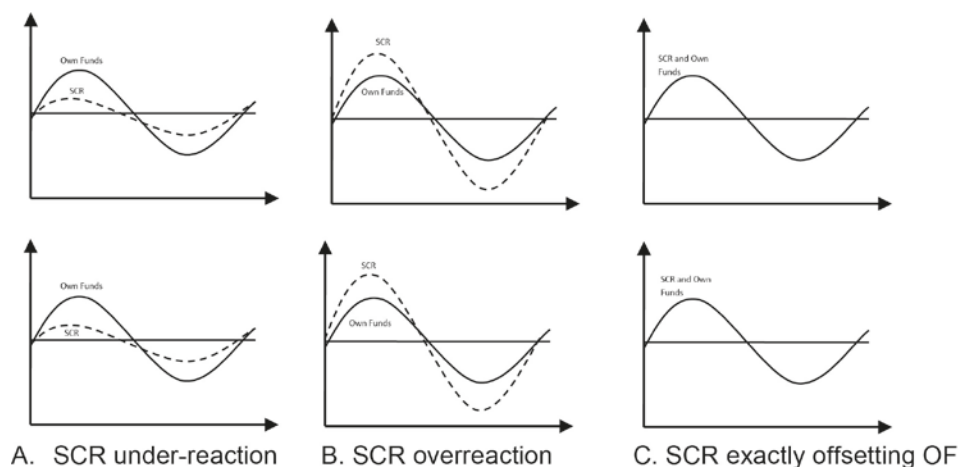
- **changes in the risk-free interest rate.** If the insurer is duration-matched, the impact of changes in the risk-free interest rate will be zero as assets and liabilities will move together in response to changes in the risk-free rate. However, if the insurer is mismatched and holds assets which are shorter-dated than liabilities (the typical manner in which life insurers are often mismatched)²², then the increase in liabilities arising from a fall in risk-free interest rates will be greater than the increase in assets. Since risk-free interest rates often fall in stresses due to a flight to safety, insurers which are mismatched with shorter assets will experience a fall in own funds during stresses.
39. These effects may work together or oppose each other. For insurers that are duration matched, only the first effect, which implies a pro-cyclical movement in own funds, will occur. For insurers that are mismatched, with asset durations shorter than liability durations (the typical manner in which a life insurer is mismatched)²³, both effects will work in the same direction as pro-cyclical movement in own funds, exacerbating the impact. For insurers that are mismatched, with asset durations longer than liability durations, the second risk-free interest rate effect will be counter-cyclical and may offset, or even outweigh, the spread effect. Furthermore, the closer the assets the insurer holds are to the risk-free assets, the smaller the spread effect will be. A perfectly duration-matched insurer holding only risk-free assets will, in this stylised example, experience no change in own funds.
40. All things being equal, this effect will mean that capital resources will increase during periods of rising asset prices (assuming falling risk-free asset prices), and decrease during periods of falling asset prices (and probably increasing risk-free asset prices).
41. The crucial question is whether capital requirements move in the same direction, and sufficiently, to offset this effect. If so, then there is no capital shortage. However, the SCR was not designed specifically to offset such changes in own funds, but rather to reflect the specific risks that an insurer is facing. In an economic downturn, these risks are not necessarily lower.
42. Even though the exact behaviour in practice will probably only be known after introduction of S2, in theory there are three possible situations: the SCR reacts to risks stronger than the own funds, it reacts under-proportionately or in exactly the same way.

22 See EIOPA Insurance Stress Test report, November 2014.

23 See EIOPA Insurance Stress Test report, November 2014.



Figure 1



43. Under the assumption of effective micro-prudential supervision Case B can be ruled out, since it would imply that capital requirements are not met in upturns. Case A is likely, because the SCR capital charges for most risks are fixed percentages (typically less than 100%) of asset values. Case C would materialise²⁴ if the capital charges for all the business that the insurer is engaged in were 100%. This implies that the closer its capital charges are to 100% (e.g. the riskier the business of an insurer is) the less incentives it is likely to have for pro-cyclicality in our simplified example, due to this specific effect, *ceteris paribus*.
44. If capital requirements do not fully offset such changes in capital resources, then insurers can be expected to face pro-cyclical movements in resources relative to requirements. This means they have capital in excess of requirements in upturns and capital shortfalls in severe stresses.
45. Such pro-cyclical movement in capital relative to requirements may be exacerbated if (risk-sensitive) capital requirements increase during stresses and fall during booms. This could occur where requirements are mechanically linked to credit ratings which decline in stresses and increase in booms, such as the capital charges on corporate bonds in S2. This could also occur where internal model calibrations are pro-cyclical, e.g. where they are based on point in time or short runs of market information.
46. In practice, of course, the regulatory regime is more complex and other factors (regulatory and non-regulatory) could affect both the dynamics of capital resources relative to requirements and the resulting incentives for asset allocation. For example, certain liability types, like unit-linked products, can pass asset price changes on to policyholders (creating loss absorbency of technical provisions, along with some other features). This stylised example simply illustrates how the mechanics of pro-cyclicality could arise.
47. Faced with such pro-cyclical movement in resources, insurers may, in principle, face incentives to “use” capital exceeding requirements in booms, e.g. by taking on more risky assets or liabilities, and/or by paying out higher dividends in good times. However, if insurers do this in an imprudent way, failing to anticipate or build extra resilience against future risks,

24 In a very simple capital framework ignoring, for example, diversification.

they may find themselves capital constrained when a stress hits suddenly, as in the case of a crisis, even though their SCR will rise with increased risk-taking, without delay.²⁵ In response, they may try to preserve capital by selling risky assets and moving into less risky/risk-free assets. This would allow them to reduce capital requirements and also to hedge further falls in the risk-free interest rate associated with flights to safety. This may happen sharply in the form of fire sales, and may trigger feedback loops in asset prices. The box below sets out a stylised example of how market-consistent valuations can impact capital resources.

Box 1

mark-to-market valuation – reality check

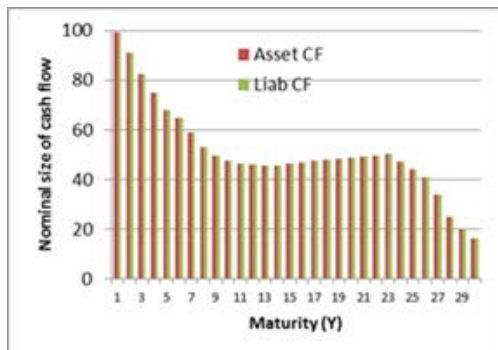
As an illustration, we set out a stylised example of how pro-cyclicality in insurers' capital resources can arise. For the purposes of this simplified example, we assume that the insurer's base currency is the euro, and the fixed cash flows of assets and liabilities are perfectly matched, as illustrated in Figure 1. Furthermore, we assume that the asset portfolio is held to maturity and comprises only AAA euro-denominated sovereign bonds that are the basis for derivation of the ECB AAA curve for the euro area. If, for the sake of simplicity, we assume that this is the same curve used to value liabilities, as a result of the perfect cash-flow hedge, in theory, there is no credit spread or interest-rate risk. The insurers' capital available to that required (as the difference between assets and liabilities) will remain constant.

If, however, the insurer holds risky assets, then the relative value of its liabilities and assets (and so capital available) will change over time. If capital requirements do not change to fully absorb changes in capital available, then the insurer's solvency ratio will change. This can be seen in Figure 2, which shows the historical developments of the present values of assets (PVA) and liabilities (PVL). It shows that for this example, mark-to-market valuation alone can cause a 10%+ shortages of assets versus liabilities.

25 Recital 63 of the S2 Directive: "In order to ensure that insurance and reinsurance undertakings hold eligible own funds that cover the Solvency Capital Requirement on an ongoing basis, taking into account any changes in their risk profile, those undertakings should calculate the Solvency Capital Requirement at least annually, monitor it continuously and recalculate it whenever the risk profile alters significantly." Article 102 of the S2 Directive: "1. [...] If the risk profile of an insurance or reinsurance undertaking deviates significantly from the assumptions underlying the last reported Solvency Capital Requirement, the undertaking concerned shall recalculate the Solvency Capital Requirement without delay and report it to the supervisory authorities. 2. Where there is evidence to suggest that the risk profile of the insurance or reinsurance undertaking has altered significantly since the date on which the Solvency Capital Requirement was last reported, the supervisory authorities may require the undertaking concerned to recalculate the Solvency Capital Requirement".

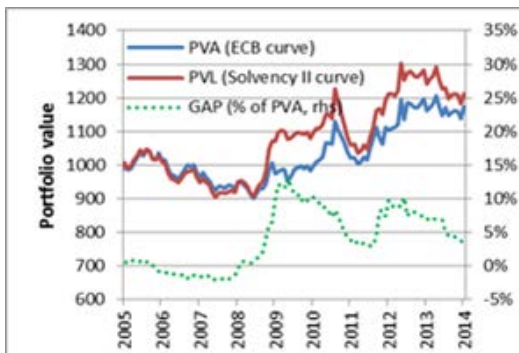


Figure 2.
Cash flow profile values.



Calculations based on Bloomberg data and the constant portfolio assumption; GAP is defined as $(PVL-PVA)/PVA$.

Figure 3
Historical developments of mark-to-market values.



Calculations based on Bloomberg data and the constant portfolio assumption; GAP is defined as $(PVL-PVA)/PVA$.

48. The pure use of market-consistent **valuation** and risk-sensitive **capital requirements** implies incentives for pro-cyclicality. Clearly, such incentives are greater the more binding capital requirements are, i.e. the more an insurer operates in accordance with its capital requirement. Where insurers choose to hold more capital than that required by the SCR, because of the ORSA (which requires a prospective assessment of capital levels, although without quantitative requirements) or their own preferences regarding capital needs, to satisfy investor preferences²⁶ or to secure a particular credit rating, they have, in principle, more leeway for capital resources to fall before they hit regulatory minimums. However, in such cases similar incentives for pro-cyclicality arise from any capital floors implied by targeting such non-regulatory objectives.

3.2. Valuation adjustments by LTG measures

49. As discussed in Section 2.1, S2 contains two adjustments to the risk-free discount rate: the matching adjustment (MA) and the volatility adjustment (VA). Both mechanisms aim to counteract the unintended consequences stemming from the pure application of the market valuation.
50. Although the MA and the VA can, in theory, take positive and negative values, it is expected that in practice the MA and the VA will both typically be positive adjustments, i.e. produce a reduction in reserving requirements in stresses or periods of increased spreads, but they will only rarely require reserving requirements to be increased (relative to what they would have been when discounted using the risk-free rate) in good times when spreads are low. There is a possibility that in exceptional circumstances of very low spreads, the MA and the VA could become negative, but this would require spreads to be less than expected losses due to defaults or downgrades. At the end of February 2015, the VA as calculated by EIOPA had

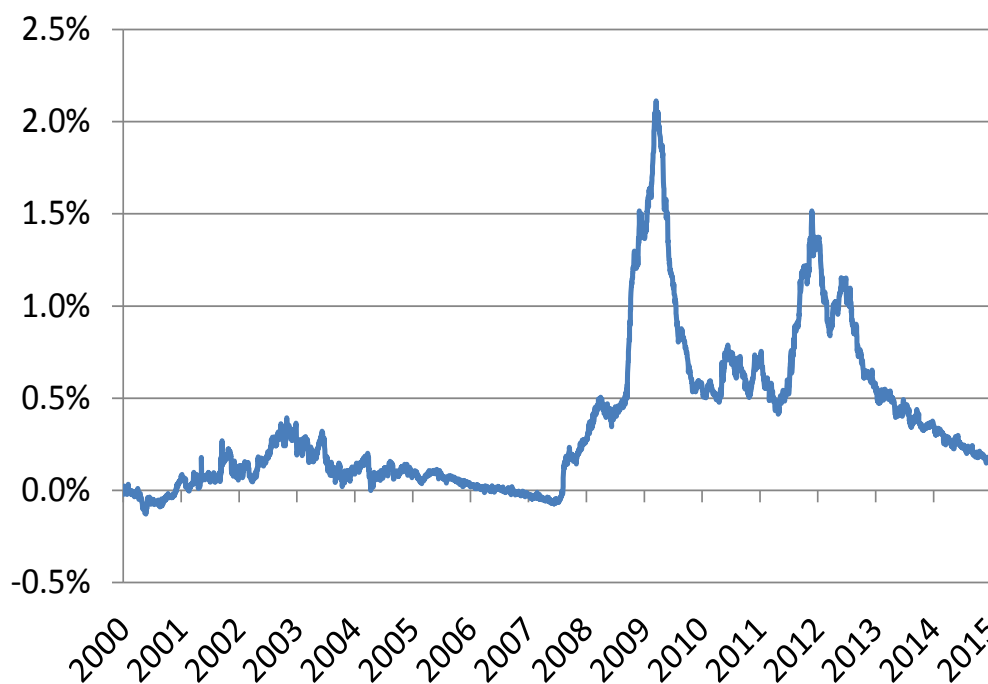
²⁶ For example to hold a constant buffer over regulatory requirements, or to hold a particular capital buffer higher than that implied by the SCR.



decreased considerably (but was still positive) compared to the level at end-2013, reflecting the very low spreads in corporate and bond markets (with a few exceptions). Using the EIOPA document on the calculation of risk-free interest rates²⁷ and some simplifications it can be shown that the VA has only been slightly negative in 2000 and 2007 (Chart 1).

Chart 1

The hypothetical volatility adjustment for the euro



Notes: Method derived from the EIOPA technical document on the calculation of the risk-free interest rate (February 2015). Assumed are constant weights for government bond investments and corporate bonds investments. Assumed is a reference portfolio of only Italian, German and French government bonds and investment-grade corporate bonds. Instead of the fundamental spread floors have been applied (30% for sovereigns and 35% for corporates). No rolling averages have been calculated for the long-term average spreads.

51. The rationale for each of the two tools differs. The MA is intended to reduce technical provisions/reserving requirements to reflect the fact that where certain long-term, predictable and illiquid insurance liabilities are closely matched with assets, and the insurer can ensure it holds those assets to maturity, it does not need to reserve for spread risk (as it does not face those risks – as noted in O2 “where insurance and reinsurance undertakings hold bonds or other assets with similar cash-flow characteristics to maturity, they are not exposed to the risk of changing spreads”). Insurers using the MA, however, are required to reserve for credit losses on asset, since these can damage their ability to meet their liabilities (whereas non-credit market losses should not if they can hold to maturity). The MA is an undertaking-specific measure as it is calibrated on the real assets held by undertakings to cover the best estimate of the liabilities and it is subject to the approval of the national supervisor. The criteria for

²⁷ EIOPA, Technical document regarding the risk free interest rate term structure, 23 February 2015.



approval, set out in Article 77b of S2, are crucial to ensure that there is no systematic misuse of the MA and that the MA does not imply perverse incentives for the asset investment of insurers. These approval procedures are further subject to EIOPA technical standards, based on specific requirements for the use of the MA as set out in the S2 Directive and the Delegated Acts.

52. The primary purpose of the MA is therefore to adjust the valuation to reflect the illiquidity of liabilities. Its intention is not to mitigate pro-cyclicality, although its application will mitigate some pro-cyclicality in resources relative to requirements. To qualify for the MA, an underlying assumption is that insurers can hold the assets to maturity, which in itself should preclude the possibility of pro-cyclical asset reallocations. The MA can only be applied to liabilities where the assets covering these liabilities can be held to maturity. This requirement is the key to evaluating the use of the MA. If assets need to be sold before maturity (except in the circumstances outlined in O2), this assumption no longer holds and the reduction in reserving requirement might have been unjustified.
53. The purpose of the VA is explicitly described in O2 as being the prevention of pro-cyclical investment behaviour by allowing the calculation of the technical provisions “to mitigate the effect of exaggerations of bond spreads”. The VA is conceived as an optional adjustment to the relevant risk-free interest rate curve used to calculate the technical provisions. More simply, the adjustment allows for an upward (or downward in very limited cases) shift of the S2 risk-free interest rate with which the liabilities are discounted. This results in a partial reduction of the “artificial” volatility which characterises the financial market in times of stress. The aim of the measure is thus to reduce the effect of market volatility on the regulatory balance sheets of insurance undertakings, turning insurers away from pro-cyclical behaviour in times of stress (avoiding sudden fire sales of assets), which is welcome from a financial stability perspective.
54. VA may be considered a permanent measure, working especially in some specific circumstances when stressed market situations induce high spread volatility, which does not directly relate to changes in the undertaking’s risk profile (the solvency position of insurers would not reflect the actual risk they face).
55. The VA will be based on reference portfolios calculated by EIOPA for the relevant currencies of those undertakings and, where necessary, to ensure representativeness (i.e. where national spreads exceed a certain amount above spreads on the currency portfolios) on reference portfolios for national insurance markets. The final adjustment is calculated by adjusting the risk-corrected spread by 65%. The VA can be applied to all liabilities without requirements for matching or for the ability to hold to maturity that apply in the case of the MA. Member States may choose to require supervisory approval for the use of the VA.
56. The intention is that the reduction in reserving requirements in stresses implied by the VA will counter the risk of fire sales and sudden exits from asset markets. This should prevent the damage to financial stability created by pro-cyclical behaviour in stresses and preserve the capacity of insurers to invest in long-term assets. The box below sets out a case study of how the VA is calculated and how it works to prevent fire sales.



Box 2

The VA

The VA is a percentage of the risk-adjusted spread yielded by a reference portfolio of assets which will vary in composition from country to country. Firms are allowed to add 65% of the spread on their designated reference portfolio to the risk-free interest rate. The measure is based on a risk-corrected currency spread and, where some specific circumstances are met, a risk-corrected country spread.

$VA_{currency} = 0.65 * S_{RC-currency}$ RC = risk-corrected (here risk-corrected means that the spread is already reduced by the fundamental spread, i.e. the portion of the credit spread truly attributable to the default risk of the issuer). RC for sovereign Member States' central governments and central banks is calculated as 30% of the simple credit spread average over a 30-year time horizon; RC for exposure to other central governments and central banks is 35%.

The currency component applies when both the following conditions are met:

$RC\ Spread_{country} > 100\text{bps}$ and $RC\ Spread_{country} > 2 * RC\ Spread_{currency}$,

(Risk-corrected spread at country level is higher than 100bps; risk-corrected spread at country level is at least twice the risk corrected-spread at currency level.)

the national specific component is activated in addition and the following formula is applied (containing both VA components):

$$VA_{total} = 0.65 * \left(S_{RC-currency} + \max(S_{RC-country} - 2 * S_{RC-currency}; 0) \right)$$

Below, a stylised simulation of the effect of a VA for an insurer in a “stressed country” compared to one in a “non-stressed country” is provided. For the sake of simplicity the example considers a portfolio made up only of bonds, and reports the effect of the VA on the own funds of the undertakings without taking into consideration the effect on the capital requirement.

At time “t” (prior to the crisis) both undertakings have in their portfolio their respective “home” bonds, and both undertakings are in equilibrium as the reference curve is the risk-free one (we assume it to be a flat curve for the sake of simplicity). If we assume that in a moment “t+” (the moment in which the crisis starts) the market will call for higher country-specific spreads, the situation of the two insurers will change according to whether:

- 1) the curve used to discount the liabilities is the risk-free curve;
- 2) the curve used to discount the liabilities is the risk-free curve + volatility adjustment.

The following example shows that both insurers will benefit from the volatility adjustment; the relief will be limited and for the undertaking in the stressed country only partial compared with the effect of the bond spreads.



t				a) without volatility adjustment				t+							
risk free								b) with volatility adjustment							
risk free rate		1,40%		risk free rate		1,40%		average spread EU (bps)		40		average spread stressed country (bps)		117	
technical provisions (principal)		100		technical provisions (principal)		100		Application Ratio		65%		risk free rate		1,40%	
technical provisions (maturity)		10		technical provisions (maturity)		10		technical provisions (principal)		100		technical provisions (maturity)		10	
interest EU technical provisions		1,40%		interest EU technical provisions		1,40%		interest EU technical provisions		1,66%		interest stressed country technical provisions		1,90%	
interest stressed country technical provisions		1,40%		interest stressed country technical provisions		1,40%		bonds (ZCB principal)		100		bonds (ZCB principal)		100	
bonds (ZCB principal)		100		bonds (ZCB principal)		100		bonds (maturity)		10		bonds (maturity)		10	
bonds (maturity)		10		bonds (maturity)		10		interest EU bonds		2,12%		interest EU bonds		2,12%	
interest EU bond		1,40%		interest EU bonds		2,12%		interest stressed country bonds		2,93%		interest stressed country bonds		2,93%	
interest stressed country bonds		1,40%		interest stressed country bonds		2,93%									
Stressed country's undertaking				Stressed country's undertaking				Stressed country's undertaking							
		20,00 equity				20,00 equity				20,00 equity				20,00 equity	
		0,00 NAV				-12,10 NAV				-7,92 NAV				-7,92 NAV	
		20,00 OF				7,90 OF				12,08 OF				12,08 OF	
bonds	87,02	87,02	technical provisions	bonds	74,92	87,02	technical provisions	bonds	74,92	82,84	technical provisions	bonds	74,92	82,84	technical provisions
cash	20,00			cash	20,00			cash	20,00			cash	20,00		
Total	107,02	107,02	Total	Total	94,92	94,92	Total	Total	94,92	94,92	Total	Total	94,92	94,92	Total
EU undertaking				EU undertaking				EU undertaking							
		20,00 equity				20,00 equity				20,00 equity				20,00 equity	
		0,00 NAV				-5,94 NAV				-3,74 NAV				-3,74 NAV	
		20,00 OF				14,06 OF				16,26 OF				16,26 OF	
bonds	87,02	87,02	technical provisions	bonds	81,08	87,02	technical provisions	bonds	81,08	84,82	technical provisions	bonds	81,08	84,82	technical provisions
cash	20,00			cash	20,00			cash	20,00			cash	20,00		
Total	107,02	107,02	Total	Total	101,08	101,08	Total	Total	101,08	101,08	Total	Total	101,08	101,08	Total
t				t+				t+							
risk free				a) without volatility adjustment				b) with volatility adjustment							
risk free rate		1,40%		risk free rate		1,40%		average spread EU (bps)		40		average spread stressed country (bps)		117	
technical provisions (principal)		100		technical provisions (principal)		100		Application Ratio		65%		risk free rate		1,40%	
technical provisions (maturity)		10		technical provisions (maturity)		10		technical provisions (principal)		100		technical provisions (maturity)		10	
interest EU technical provisions		1,40%		interest EU technical provisions		1,40%		interest EU technical provisions		1,66%		interest stressed country technical provisions		1,90%	
interest stressed country technical provisions		1,40%		interest stressed country technical provisions		1,40%		bonds (ZCB principal)		100		bonds (ZCB principal)		100	
bonds (ZCB principal)		100		bonds (ZCB principal)		100		bonds (maturity)		10		bonds (maturity)		10	
bonds (maturity)		10		bonds (maturity)		10		interest EU bonds		2,12%		interest EU bonds		2,12%	
interest EU bond		1,40%		interest EU bonds		2,12%		interest stressed country bonds		2,93%		interest stressed country bonds		2,93%	
interest stressed country bonds		1,40%		interest stressed country bonds		2,93%									
Stressed country's undertaking				Stressed country's undertaking				Stressed country's undertaking							
		20,00 equity				20,00 equity				20,00 equity				20,00 equity	
		0,00 NAV				-12,10 NAV				-7,92 NAV				-7,92 NAV	
		20,00 OF				7,90 OF				12,08 OF				12,08 OF	
bonds	87,02	87,02	technical provisions	bonds	74,92	87,02	technical provisions	bonds	74,92	82,84	technical provisions	bonds	74,92	82,84	technical provisions
cash	20,00			cash	20,00			cash	20,00			cash	20,00		
Total	107,02	107,02	Total	Total	94,92	94,92	Total	Total	94,92	94,92	Total	Total	94,92	94,92	Total
EU undertaking				EU undertaking				EU undertaking							
		20,00 equity				20,00 equity				20,00 equity				20,00 equity	
		0,00 NAV				-5,94 NAV				-3,74 NAV				-3,74 NAV	
		20,00 OF				14,06 OF				16,26 OF				16,26 OF	
bonds	87,02	87,02	technical provisions	bonds	81,08	87,02	technical provisions	bonds	81,08	84,82	technical provisions	bonds	81,08	84,82	technical provisions
cash	20,00			cash	20,00			cash	20,00			cash	20,00		
Total	107,02	107,02	Total	Total	101,08	101,08	Total	Total	101,08	101,08	Total	Total	101,08	101,08	Total

Under certain circumstances the benefit could be limited (and for the stressed country not even able to restore the situation to par), which makes this measure a kind of brake that discourages sudden forced sales of assets in a context of turbulence and prevents (at least temporarily) possible chain reactions which could end up exacerbating pro-cyclical behaviour (an anti-cyclical measure). To this end, the VA should discourage “panic/herding” behaviour in which investment/divestment decisions are triggered not by the true credit situation of the issuer, but by other causes.

EIOPA recently published the country-specific VAs. These are small for all currencies and all countries, given the current low spreads. Only for Greece is it substantial (92 bps) given its government bond spread at that time of almost 8%.



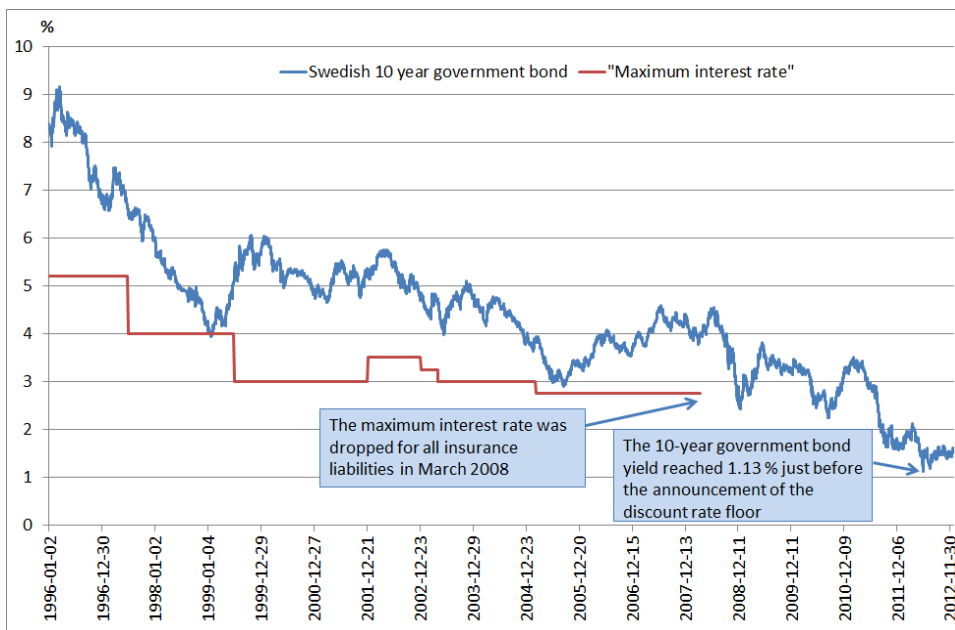
57. There are a number of examples of supervisors applying similar types of measure (although typically on a discretionary basis) in the past to successfully stave off the risk of, or reduce the impact of, fire sales. In the box below the measure in Sweden is described as an example.

Box 3

A floor on the discount rate: the Swedish experience

At the end of the 1990s, Sweden introduced fair value as the main valuation principle for insurance assets. In the case of life insurers' liabilities, the choice of a discount rate is critical, given that the duration of liabilities can often be 40-50 years. From the mid-1990s, Sweden applied the EU life insurance directive's model, where the "maximum discount rate" cannot exceed 60% of a long-dated government bond yield. This maximum discount rate provided for a relatively stable valuation of liabilities. Fair value accounting was extended to liabilities in 2006. Using market interest rates as discount rates has helped align incentives from a risk management perspective, although it has also caused pro-cyclicality in bond markets.

Chart 2



During the second quarter of 2012, the euro area sovereign debt crisis led to German bond yields falling to unprecedented levels, causing Swedish bond yields to reach critical levels where some firms would have had to make significant portfolio adjustments, with potentially harmful long-term



effects on pensions. There was a strong market reaction on 7 June 2012 when the discount rate floor was announced. The Swedish 10-year government bond yield jumped from 1.13% to 1.47%.²⁸

Finansinspektionen, the Swedish supervisory authority, introduced an optional floor on discount rates. The floor allowed firms to calculate discount rates based on market quotes at a historical date. This meant that firms no longer needed to hedge liabilities against the risk of market interest rates falling below the floor. However, firms were still exposed to losses on their asset holdings.

The Swedish experience highlights the role of changes in accounting and valuation rules as potential macro-prudential tools. The objective of the authorities was to break the vicious circle of asset reallocations, price falls and solvency pressures. Other examples exist. In the autumn of 2008, one month following the Lehman default, the IASB introduced the possibility for financial institutions to use historical cost accounting for fixed income portfolios. This allowed banks to take a longer-term perspective and eased pressure to liquidate portfolios and generate fire sales.

-
58. As discussed above, capital resources relative to requirements could contract in stresses. All things being equal, just meeting its SCR in a boom would make it likely that an insurer would not meet its capital requirements if these were based solely on a valuation of technical provisions using the risk-free interest rate and applying the 99.5% SCR²⁹ without buying either reinsurance or derivatives, selling riskier assets, or regulatory intervention. The VA reduces total capitalisation requirements (technical provisions plus capital requirements) in an attempt to counter the sudden sale of assets which, in turn, could result in pro-cyclicality. By acting to limit falls in capital resources (relative to requirements) the VA could create incentives to take on more risk³⁰ than is implied by the SCR in the absence of the VA.³¹ This could have the effect of encouraging insurers to take on more risk and so earn higher returns (compared to a situation where technical provisions, when calculated applying a basic risk-free rate and applying the 99.5% SCR), using the now-available capital resources, in the knowledge that the deterioration in regulatory solvency positions in stresses will be eased by the VA. This alone could contribute to financial stability risks in the system by stoking up asset prices and contributing to the underpricing of risks.³² The following diagrams illustrate the effect, and also exemplify that it depends on several assumptions: 1) if the SCR follows the effects in own funds with a time lag, then the room for risk-taking is smaller; 2) the portfolio is held constant (e.g. depending on the actual behaviour of the insurer, the SCR might even increase in a crisis); 3) the behavioural assumptions for the insurer are crucial: below we assume that the insurer increases its risk up to the maximum level at which it will still not violate the SCR in a crisis.

28 However, the large daily change was partly a catch-up effect as June 6 was a national holiday in Sweden and interest rates rose in the euro area that day.

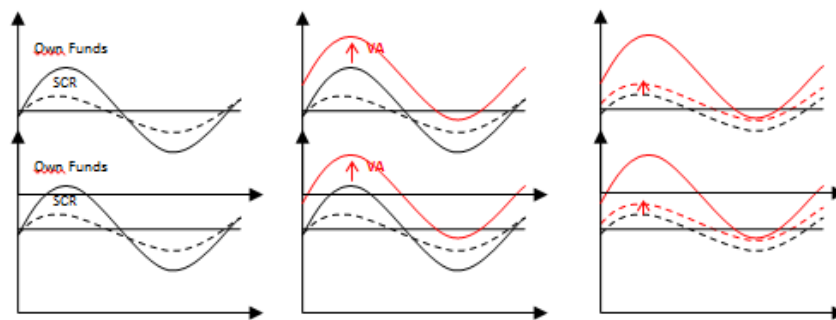
29 By using this term, we do not imply that there is an SCR on another confidence level. Instead, it is intended to contrast a situation without the application of the LTG with a situation where it is applied.

30 We discuss the different types of risk-taking in the following text.

31 Please note that the VA addresses only market distortions of volatility.

32 Note that the SCR captures only risks faced, not those posed by insurers, and therefore does not capture the risks to the system implied by this measure. The governance and disclosure requirements which accompany the measure, especially with respect to liquidity management, aim at avoiding at least part of the negative effects described above.

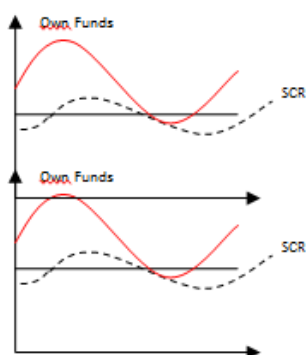




A. Pre-VA

B. VA increases own funds

C. The insurer "anticipates" VA and takes additional risk



D. Effect of a time lag on the incentives for insurers

59. Another relevant aspect is what risks an insurer can take during an upturn. While for banks the risk-taking is clearly on the asset side, for insurers the situation is less clear. Some insurers may choose to leave their insurance business as it is and move into riskier assets, which would induce the effects described above. However, insurers may also choose to write new policies, putting the emphasis on their liability risks. Certainly, new insurance business goes hand in hand with premiums that need to be invested, but this need not be in risky assets. Overall, if the bulk of risk-taking is on the liability side, then it would not contribute to the spike-up in asset prices and thus an exacerbation of the asset pricing cycle. In those cases where the risk-taking on the liability side involves writing policies that are more liquid, i.e. where guaranteed amounts can be withdrawn easily by policyholders, this might increase incentives for pro-cyclicality as assets may need to be sold in downturns.
60. If pro-cyclicality does occur, there may be second-round effects. The reference portfolio for the VA will be updated annually to reflect changes in aggregate asset holdings of insurers.^{33,34}

33 Note that the reference portfolio is probably not completely "perfect" from the start. Only bonds (corporate and sovereign bonds) are part of the asset portfolio: other asset classes are not (e.g. equity, property).

34 EIOPA, technical document regarding the risk-free interest rate term structure (2015).

In that case, the more risk insurers take, the more relief will be needed in stresses to prevent any breach of capital requirements and, arguably, fire sales.

61. If insurers do take more risk, and the VA is updated to reflect these riskier portfolios, then this could result in the VA increasing, which may further reduce the ability of regulation to disincentivise risk taking. The implication is that the VA may exacerbate pro-cyclicality, or at least may fail to mitigate it, in the long run.
62. As already mentioned, the VA is applicable to all liabilities, even those that can be accessed by policyholders in the short run. In these cases, the reduction in reserving requirements implied by the VA might mean that insurers do not have sufficient reserves to meet policyholder claims, should these be material and sudden. This is a particular concern if policyholders are more likely to make claims in large numbers – which may be the case in stresses. This might be exacerbated should policyholders become aware of the reduction in reserving implied by the VA. Such action by policyholders (or the expectation/fear of such action), although evidence suggests this happened rarely under Solvency I, could prompt the insurer to fire sell riskier and/or less liquid assets in an attempt to meet claims and/or to assuage policyholder concerns, offsetting or outweighing the disincentives for pro-cyclicality implied by the VA. The risks will be higher for products which offer relatively high guarantees and that can be easily surrendered prematurely (see the note “Sources of systemic risks”).
63. However, the risk of such shortfalls will be much lower where there are significant disincentives to access policies, such as when penalties or contractual, regulatory or fiscal mechanisms apply, or when policyholders have no access (or access that is uncorrelated with financial market conditions, e.g. most types of general insurance claims). These tools have generally proven to be effective, even during the recent financial crisis. In particular, the minimum guaranteed return embedded in the contracts (with profit policies) has generally (but not always) worked as an effective deterrent in the situation of a volatile or low-yield financial market, as it makes the contracts an instrument of effective wealth protection (yielding less but less risky) and policyholders would plausibly resort to other type of divestment before surrendering a long-term insurance contract.
64. Finally, the use of a representative basket of assets in calculating the VA might also encourage insurers to herd into that basket (in particular to shed assets riskier than the basket in downturns) so as to minimise volatility in their capital resources. However, the new asset allocation will be reflected in the updated reference portfolio. This could mean that, as any incentives to fire sell that do persist affect the asset portfolio in general, fire sales might have more severe consequences as insurers will be selling similar assets at the same time.

3.3. Capital requirements related to pro-cyclicality

65. Under S2 the SCR is calibrated on a series of stresses against key risks impacting all balance sheet components on both the asset (i.e. market risks) and liability side (i.e. underwriting risks)



and interest rate risks). Capital requirements are thus linked to the level of risk on both sides of the balance sheet.³⁵

66. As regards the spread risk in the S2 standard formula, the S2 SCR standard formula shock is applied as fixed percentages of typically less than 100% of asset values, depending on duration and the rating of assets. The SCR is equal to the loss (VaR at a confidence level of 99.5%) in the basic own funds that would result from that loss. With this approach, the capital requirement partially absorbs the change in resources following an asset price shock. All things being equal, and following our stylised simplified example of how pro-cyclicality might arise, this means that capital resources will increase (decrease) relative to requirements in upturns (stresses).³⁶
67. The S2 framework has been designed to avoid high and “artificial” volatility in the own funds and hence volatility of the solvency position of insurers, especially for those managing long-term life business.³⁷ A key feature of the S2 standard formula is its mechanic nature, but the Delegated Regulation on S2 foresees that the Commission should review, before December 2018, the appropriateness of the methods, assumptions and standard parameters used when calculating the standard formula.
68. The above problem of pro-cyclicality in capital requirements may be mitigated or exacerbated by some internal models, depending on the approach taken (through the cycle or point-in-time modelling). Pro-cyclicality in modelling credit risk was a key issue in banks’ internal modelling in the crisis. In S2 there is no requirement to choose from a list of existing approaches and insurers have more freedom to design their own. The supervisor should evaluate, during the application period, the appropriateness of the assumptions behind the internal model designed by the insurers. In S2 there is no specific requirement to calibrate the model counter-cyclically (requirements increase (decrease) proportionally in upturns (stresses)), or to calibrate the model on a “through the cycle” basis or to avoid pro-cyclical calibrations (where requirements decrease (increase) proportionally in upturns (stresses) – e.g. point-in-time modelling).
69. Because insurers cannot choose from a list of approaches, as is the case for banks, specific risks for individual insurers can be modelled more appropriately and homogeneity of insurance internal models may be less likely than for banks. Where insurers use common methodologies or inputs, there is a greater risk of insurers acting in concert, and so increasing the impact (and feedback of) any pro-cyclicality. The notion of overreliance on models is pertinent to many financial sectors. In the case of insurance, there are several providers of vendor models for specific risks, which are usually supplemented by own models operated by the large insurers. The overreliance will therefore most likely be a critical issue for those small and medium insurers that do not use the standard formula and have to rely on vendor models.

35 Article 101 of the S2 Directive states: “The Solvency Capital Requirement shall be calibrated so as to ensure that all quantifiable risks to which an insurance or reinsurance undertaking is exposed are taken into account. It shall cover existing business, as well as the new business expected to be written over the following 12 months. With respect to existing business, it shall cover only unexpected losses. It shall correspond to the Value-at-Risk of the basic own funds of an insurance or reinsurance undertaking subject to a confidence level of 99.5 % over a one-year period.”

36 Capital surplus is normally expected to decrease in downturns. If requirements moved exactly to absorb changes in resources, then surplus (free capital) would remain constant, which would ruin the objective of prudential regulation which is to provide a benchmark of insurers’ financial health.

37 Further detail on how pro-cyclicality in resources relative to requirements might arise in such a stylised example here is set out in Bank of England and Pro-cyclicality Working Group (2014).



70. The problem of choosing models and approaches which impacted behaviour which then fed back into values and through the model back into behaviour, was a key concern on the banking side in the crisis. It is worth noting that this issue can only be relevant for insurers on the asset side, and to liabilities where these have the potential for such endogenous behaviour (e.g. surrenders or lapses). Liabilities which materialise without reference to market conditions (such as typical general insurance events) cannot be subject to such endogeneity. Diversification in modelling and approaches may result in less coordinated reactions, and so reduce the impact of any incentives for feedback behaviour specifically, or pro-cyclicality more generally.
71. Any pro-cyclicality (or lack of counter-cyclicality) could be exacerbated where capital requirements are linked to credit ratings, or undertakings' behaviour is influenced by credit ratings, as any pro-cyclical movement in credit ratings will feed through to proportionally higher capital requirements in stresses, and lower requirements in upturns. In S2 it is therefore foreseen that insurers, in order to avoid overreliance on external credit ratings in the calculation of technical provisions and the SCR, will assess the appropriateness of those external credit ratings as part of their risk management by using additional assessments, in order to avoid any automatic dependence on external assessments. In addition, they will use their own internal assessments in the case of large or complex exposures.
72. Next to the VA, the S2 capital requirement framework provides for other relief in stresses: insurers can receive the allowance to extend the recovery period in the event of a breach of the SCR for a period of up to seven years in the case of exceptional adverse conditions, including (i) an unforeseen, sharp and steep fall in financial markets and (ii) a persistent low-interest rate environment. Where an extension is allowed for the undertaking concerned, it has to submit a progress report to the supervisory authority every three months, setting out the measures taken and the progress made to re-establish the level of eligible own funds covering the SCR or to reduce the risk profile to ensure compliance with the SCR. No extension is possible for breaches of the MCR. The case is less clear as regards the incentives of this measure. Generally, this entails insurers having a put option on their own assets, similar to the too-big-to-fail (TBTF) state. Thus, it could imply perverse incentives for insurers to take on more risk in upturns which could exacerbate, rather than mitigate, pro-cyclicality. However, the supervisor has no obligation to activate the exception and the possibility of its activation depends on market conditions. The insurer cannot, therefore, count on it, unlike in the case of TBTF. In other words, the insurers must face the possibility that they might fail before the exception is activated.

3.4. Safeguards against pro-cyclicality

73. As discussed above, S2 contains a number of mechanisms that attempt to counteract pro-cyclicality, and a number of these are likely to be effective during stresses in helping to mitigate the risk of fire sales. When assessing these mechanisms, however, it is important to note that it is not clear how S2 will impact behaviour in practice – this cannot be known for certain until it has been implemented. In Sections 2.2.1 and 2.2.2 we discussed the uncertainty concerning the actual behaviour of the SCR compared with own funds – this is an aspect of particular importance that will be clarified once S2 is in place. S2 has some provisions which may have the direct or indirect effect of mitigating these unintended impacts to some extent.



74. First, S2 includes some provisions for applying capital add-ons should the risk profile of the firm deviate significantly from the assumptions underlying the VA or MA. It is not clear whether these add-ons could be used to systematically increase resilience in upturns acting against the incentives for changes in asset allocation implied by the application of the VA to provide relief in stresses. It may be possible to use these add-ons should the firm demonstrate pro-cyclical behaviour whilst using the VA, since the clearly-stated objective of the VA is to prevent pro-cyclical investment behaviour. If so, this could be a powerful tool to prevent insurers from taking on excessive asset risk in booms where this is driven by the VA, directly addressing the effects of such pro-cyclicality in terms of upward pressure on asset prices, but also by reducing the risk of under-reserving (and the attendant risks for pro-cyclicality) when the VA is applied in stresses. However, it is not clear to what extent and how an add-on can be used in this way, and it will not apply automatically (and so with certainty) in the way that the VA will apply in stresses. It may not be possible to use it to tackle other ways of taking on risk in upturns (such as paying away dividends). As certain criteria must be met before capital add-ons can be applied by supervisors, they may not act as a very effective source of discipline. If a capital add-on is effective, it will not be possible to use it to tackle pro-cyclical behaviour that does not arise from the VA, such as search-for-yield behaviour.
75. Second, S2's standard formula does provide for some counter-cyclical movement in equity capital requirements (the "Symmetric adjustment of the equity capital charge"). This is symmetric, i.e. decreasing in downturns and increasing in upturns. It follows from the underlying assumption of mean reversion of equity prices. It is automated (based on a formula) and it is capped at +/- 10% either side of the 99.5% SCR capital requirement; the box below explains how it works. The equity dampener is, in principle, an effective counter-cyclical buffer on equity holdings but, given the limits to its size, scope of application and its design, the effects still need to be proven. For example, the index lags market developments and the dampener is calculated based on a pre-defined formula, without supervisory discretion. There is a risk that such a design might mean that the adjustment will not respond appropriately to market conditions. All in all, it is a precedent for establishing the principle of tightening requirements in good times.



Box 4

The “Symmetric adjustment of the equity capital charge” in S2

The S2 directive requires the equity risk sub-module calculated with the standard formula to include a symmetric adjustment to the capital charge. The adjustment is based on a function of the current level of an equity index and a (weighted) average of that index, calculated over three years. It is the same for all undertakings, and the equity index must represent a typical portfolio held by undertakings. The symmetric adjustment has an upper and lower bound of +/-10% compared to the standard equity capital charge

The symmetric adjustment is defined as $\frac{1}{2} \left(\frac{P_t - \bar{P}_{36m}}{\bar{P}_{36m}} - 8\% \right)$ where P_t is today's price and \bar{P}_{36m} is the average of the daily levels of the equity index over the last 36 months. It therefore assumes an annual return of approximately 5% (8% in 1½ years). This means, for example, that if equity prices are currently 14% higher than the historical average, the capital requirement will increase by 3%.

The capital charge for equity is therefore higher as a share of equity held in upturns (when equity prices are high) than in downturns. This requires insurers to hold more capital in “good times” and allows them to release it in “bad times”.

76. Third, supervisors have some ability to tackle pro-cyclicality arising from internal models. Supervisors can reject models if they consider the methodology used to be inappropriate. However, S2 does not give a detailed steer on what scope supervisors have to reject explicitly on the grounds of pro-cyclicality, given that S2 is silent on this. In banking, the problem of pro-cyclical modelling of credit risk has been partly countered by requiring banks to calculate the parameters “through the cycle”.
77. Fourth, Pillar 2 and 3 measures may be able to lean, to some extent, against some incentives for pro-cyclicality. The “prudent person” principle can be used to ensure that insurers monitor and manage risks, and it may be possible to demonstrate that taking on excessive risk in upturns contradicts the objectives of S2. Insurers will need to demonstrate that they can manage liquidity risk, which could lean against some pro-cyclicality (if taking on riskier assets increases liquidity risks in stresses). This mitigant could be helped by the requirement for insurers to maintain a liquidity plan, projecting the incoming and outgoing cash flows in relation to the assets and liabilities subject to the VA and MA.
78. Risk management rules require insurers to assess and report on their ability to manage risks and meet their SCR on a forward-looking basis. For example, the ORSA requires insurers to assess their continuous compliance with the SCR in a forward-looking manner. However, like the rest of S2, such measures cannot be used by the regulator to directly compel the insurer to build up additional capital in upturns for macro-prudential purposes, that is sufficient in the scenarios described above (and nor was it the purpose of the ORSA or LTG to do this). Given the automated, permanent nature (necessary to counteract the uncertainty associated with the activation process) of the already-discussed LTG measures, insurers may anticipate such relief when assessing their forward-looking ability to meet the SCR.

3.5. Conclusion

79. In its pure form, market consistency and risk sensitivity could imply pro-cyclical incentives. A number of measures have been introduced in S2 to try to tackle such incentives. These measures are largely designed to tackle pro-cyclicality in periods of stress, and they appear



likely to be effective at heading off fire sales in those cases. However, in some cases the automatic and permanent application of such measures and their application in practice mostly in periods of stress could act to increase regulatory incentives to take on excessive risk. This, in turn, could increase risk-taking behaviour which might then result in more underlying potential for pro-cyclicality. S2 contains a number of measures that are designed to help counteract some of these unintended consequences. It is not yet clear to what extent insurers will act on incentives, and how effective mitigants might be – neither can be known for sure until S2 has been implemented. However, except possibly for the adjustment in the equity module as described in paragraph 77, we could not find evidence that the measures in S2 contain the flexibility for supervisors to require insurers to build resilience for macro-prudential purposes: specifically, to build resilience above the SCR, if this is deemed necessary. We note that this could also help to reduce the need for relief in stresses and the risk of under-reserving arising from that relief.

4. Risks arising from reductions in capitalisation

4.1. How reductions in capitalisation might arise and their impacts

80. The ESRB's letter of June 2012 raised the risk of "systematic undercapitalisation". As discussed previously, various measures in S2, such as the extension of the period in which insurers can breach the SCR, and the VA and MA, will reduce capitalisation (technical provisions and capital) relative to the valuing of technical provisions using the risk-free interest rate and capital requirements at 99.5%.
81. On the one hand, the application of the VA and MA will serve to remove the impact of artificial volatility in market prices, which is not justified from an economic perspective (e.g. where insurers do not run the risk of forced sales in stresses or where spreads are not appropriately reflecting the underlying risks). On the other hand, application of parts of the VA and MA might, under certain scenarios, lead to insurers having insufficient resources to meet liabilities, which could become a macro-prudential concern if it is a system-wide phenomenon.³⁸
82. First, depending on their scale, temporary reductions in capitalisation might, in some cases, leave insurers vulnerable to further shocks, e.g. should they need to sell assets due to liquidity pressure on the liability side (e.g. from increased surrenders). Second, also depending on their scale, the permanent or long-standing application of reduced reserving and capital requirements might also mean that insurers would have insufficient assets to meet liabilities as they fall due. The degree to which such reductions in capitalisation could be a problem depends on a number of factors including:
 - (i) how liquid the liabilities are (how likely are they to be surrendered etc.)³⁹;
 - (ii) other factors affecting the ability of insurers to hold assets to maturity or for very long periods, such as the ability to match asset and liability cash flows, the

³⁸ Or compensate a transferee undertaking to take their liabilities on, which is the basis of S2 market consistency.

³⁹ We note that the SCR already contains a charge for an increase in lapses. The risks we discuss here are that the actual lapses are above that level, for example during a run.



predictability of cash flows and co-movement of asset and liability cash flows (e.g. in the case of unit-linked products);

- (iii) the scale of the reduction in requirements relative to the capitalisation required when valuing technical provisions using the risk-free rate and applying the 99.5% SCR; the bigger the reduction, the more likely the risk that there will be inadequate resources to meet liabilities;
- (iv) the length of application of the reduction – the longer the application, the greater the chance that there will be inadequate resources to meet liabilities when they fall due;
- (v) the vulnerability of firms to further shocks during the period in which they hold less capital.

83. Widespread reduction in capitalisation (relative to the that required when valuing technical provisions using the risk-free rate and applying the 99.5% SCR) with the potential to expose insurers to vulnerabilities, could pose financial stability risks in a number of ways:

- First, it means that insurers may be vulnerable to the same risks at the same time, e.g. in a financial crisis, increasing the risk of correlated failure or distress, which could impact on the provision of key services (since any substitutability is lacking).
- Second, where insurers are insufficiently resilient against credit or market risk for particular asset types (or are concerned that they may be), this may result in coordinated asset sales when the risk materialises (or is perceived to be about to materialise).⁴⁰
- Insurers may also face incentives to take excessive risks once risks have crystallised in order to “gamble for resurrection”, i.e. insurers may increase risks instead of derisking in order to make up for losses incurred. Such (excessive) risk taking may increase systemic risks in the financial system.⁴¹ However, whilst “gambling for resurrection” is recognised in the literature as a possible scenario, the immediate reflection of increased risk in the SCR should, to some extent, discourage such behaviour.⁴²
- Fourth, if insurers offer liabilities that can be accessed easily (e.g. low surrender penalties) by policyholders, material reductions in capitalisation could make the sector more vulnerable to mass surrenders or “run-type” withdrawals.

84. It is difficult to assess the aggregate scale of any problems arising from reductions in capitalisation (relative to that required when valuing technical provisions using the risk-free interest rate and applying the 99.5% SCR). However, the 2014 EIOPA stress test results provide some insights. In the baseline, participating insurers (making up approximately 60% of

40 Undercapitalisation on particular asset types may, to some extent, be curtailed by the holistic approach of S2, consisting not only of the SCR calculation in Pillar I, but also of the correctives in Pillar II (ORSA/risk identification process). However, capital add-ons can only be applied in prescribed circumstances where the risk profile of the firm deviates from that underlying the SCR, or that underlying the LTG measures, or where there is deviation from governance standards. Add-ons cannot be used to address risks where the risk profile does not deviate from assumptions underlying the SCR or LTG measures, or to address risks arising from the ORSA (Article 45(7) of the S2 Directive (2009) “The own-risk and solvency assessment shall not serve to calculate a capital requirement. The Solvency Capital Requirement shall be adjusted only in accordance with Articles 37, 231 to 233 and 238).”

41 Please note that “excessive risk-taking” behaviour may work only temporarily, as an increase of risk would be reflected in Pillar I (SCR) as well as in Pillar II (ORSA etc.). This will inevitably come to the knowledge of the supervisors.

42 For example, Plantin and Rochet (2007).



the market in the EU) on aggregate have a surplus of assets over liabilities of EUR 637 billion. When using the LTG measures (and considering the loss absorption capacities of deferred taxes and technical provisions) their surplus is reduced by 37% compared with the baseline. Without these LTG measures (but still considering the loss absorption capacities of deferred taxes and technical provisions) their aggregate surplus of assets over liabilities would be reduced by 68% compared with the baseline. The impact of the LTG measures is thus EUR 195 billion. This should be seen as the lower bound, as not all insurers participated in the stress test (approximately 60%) and the LTG measures were used in this stress test by 79% of the large groups (top 30) and 37% of the rest of the participating insurers.

4.2. Risk-free rate to discount liabilities

85. The risk-free rate to be used to discount future liabilities is not directly observable in financial markets and is therefore calculated. It is composed of the following elements:

- the market interest rate swap rates or, where swap markets are not deep, liquid and transparent, government bond rates, for maturities up to a last liquid point (e.g. 20 years for the euro);
- a deduction of a credit spread to account for the credit risk in the market swap rates/government bond rates;
- for the euro, an assumed ultimate forward rate of 4.2%, used to extrapolate forward rates for maturities of more than 20 years up to 60 years and beyond. The discount rates are derived from the forward rates by an assumption of arbitrage-free rates. For other currencies, other rates and maturities apply, although the mechanism is the same.
- The LTG package (see 1.1 and 1.3.3).

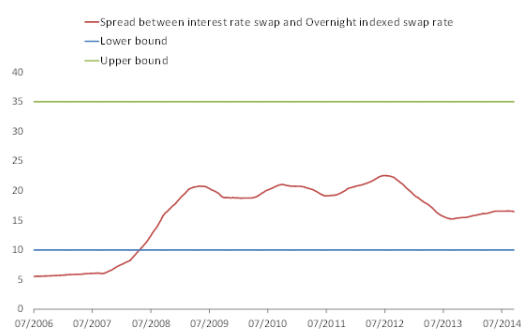
The effects on life insurers' balance sheets of small changes of these elements are very large, given the high proportion of long-term liabilities on their balance sheets.

86. The credit adjustment is set between 10 and 35 bp. If the real credit risk surcharge in market swap rates is higher than 35 bp, the risk-free interest rate would be set too high and the technical provisions would be calculated too low. Similarly, if the actual long-term interest rate turned out to be lower than 4.2% (and the factors driving this were decisive for the UFR as well⁴³), the risk-free interest rates beyond 20 years would be set too high and the technical provisions would be calculated too low. In this case, both could lead to risks arising from capitalisation levels across the sector. Charts 3 and 4 show that for this conjuncture the credit adjustment corridor seems well-calibrated but the calibration of the ultimate forward rate is much higher than the market expectation indicated by swap rates. An ultimate forward rate set too high/low would result in under/over-reserving for long-term liabilities.

43 We note that the long-term interest rate observable on the market and the UFR are not identical. We also acknowledge that it is difficult to define a "true" level of the UFR. S2 has recognised the difficulty of defining such a level and therefore puts an emphasis on two main drivers of long-term expectations: inflation and real rates. In a similar vein, we base our analysis on the assumption that there are common factors and considerations driving both. This has two implications for the presented analysis: 1) the information conveyed by the markets about common economic factors should not be ignored when setting the UFR; 2) the relevance of market rates may change in the case of portfolio transfer; 3) a final conclusion about the extent (and presence) of the risk of under-reserving cannot be made solely on the basis of the presented swap rates.

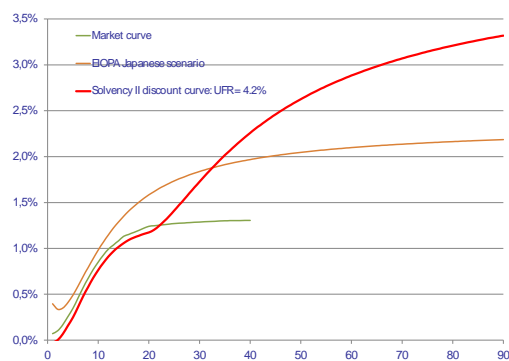


Chart 3
Credit spread versus the corridor (basis points)



Source: ESRB based on Bloomberg.

Chart 4
The current Sol II discount curve⁴⁴



Source: Solvency II curve published by EIOPA, Reuters data and ESRB Secretariat calculations.

4.3. VA and MA

87. As discussed in the preceding sections, the rationale for the reduction in reserving requirements implied by the MA reflects the fact that qualifying liabilities pose lower market/liquidity risk when backed by fixed-income instruments held to maturity. Where this is genuinely the case, the incentives implied by the MA to hold more illiquid assets may be desirable. However, this assumes that insurers are properly capitalised against the credit risk they face and that they hold their assets until maturity. Increased incentives to sell assets may arise if insurers are inadequately capitalised against such risks, which may be particularly likely to crystallise in stresses. The reduction in the floor on reserving requirements for credit risk in the MA and the VA in the O2 negotiations may be a concern in this case. In the final O2 Directive the floor on credit risk reserving requirements in the MA and VA was reduced to 35% of long-term average spreads for corporate bonds and 30% for government bonds, from 75% previously.
88. As noted previously the VA may be applied to liabilities that are in some cases more liquid compared with those relating to MA (i.e. may be short-term in maturity or may include in the contracts surrender options, and can be realised or accessed by policyholders in the short-term). In these cases, applying a higher discount rate might result in technical provisions being insufficient to meet expected cash flows. In that case, some portion of assets in excess to those covering technical provisions would be needed to meet expected cash flows. If insurers were to operate exactly at the level where they use up all of their own funds, other than technical provisions, this is critical. Since assets above technical provisions are used to meet the SCR, some portion of capital covering the SCR would need to be diverted to meet expected cash flows, meaning that there might not be enough true capital to meet the SCR. Thus, the insurer would be capitalised at a level lower than 99.5% VaR.

44 Note: The chart shows the discount curve in the “Japanese” scenario of the 2014-EIOPA stress test, the Solvency II discount curve (May 2015) and the market swap curve (end-May 2015).



89. Any problems arising from this reduction in capitalisation will crystallise as losses when the reduction in reserving requirements implied by the VA and MA (at least for the reduction in credit reserving requirement) might mean that insurers do not have sufficient reserves to meet policyholder claims, should these be material (e.g. where correlated in stresses).
90. We note the possibility of second-round effects, if concerns about the level of capitalisation were to further reinforce policyholder surrenders or lapses. The risk of such shortfalls will be much lower where there are significant disincentives to access policies, such as where penalties apply, or where policyholders have less or no access (or access that is uncorrelated with financial market conditions, e.g. most types of general insurance claims). The risks will be higher for products which offer relatively high guarantees that can be easily surrendered, as potentially the case for variable annuity or unit-linked annuities with guarantees. Note that S2 contains a capital charge for lapse risk.
91. EIOPA is required, on an annual basis until 2021, to report to the Council, Parliament and Commission the impact of the application of LTG measures, and to provide an opinion to the Commission as regards the assessment of the application of such measures, including the implications for financial stability (after consulting the ESRB).

4.4. Standard formula

92. Another potential source of undercapitalisation can be the standard formula capital charges when they require less capital than is necessary to cover the underlying risk.
93. The box below shows as an example the calibration of the interest rate risk module in S2.

Box 5

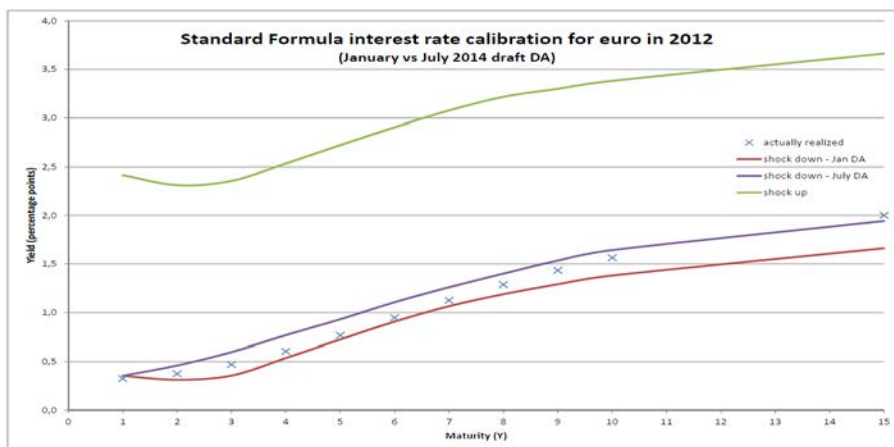
The interest rate module in the SCR standard formula

Interest rate risk is an important risk for life insurers. Its calibration has been subject to change, before the July 2014 draft Delegated Acts (DA) of Solvency IIS2, where the “at least 100 bps downward shock condition” has been removed. This follows from the assumption that a large decrease of interest rates in a low interest rate environment is very unlikely. Consequently the SCR for the interest rate decrease scenario and consequently the total SCR in some cases is expected to be materially lower than before (no data available to estimate the effect). A simple test against experience reveals that the declines in 2012 interest rates are larger than the calibrated downward shocks. Insurers thus would have had too little capital to withstand the real downward shocks.



Chart

Standard formula interest rate calibration for euro in 2012



94. A number of recent revisions to the S2 standard formula in the delegated acts are intended to stimulate long-term investments by insurers, while properly capturing the risks. The changes reflect the market condition and risks at that time. Should these change, S2 does not have the flexibility to tighten them again.
95. Overall, the mechanical nature of the standard formula, and the inability to adjust it in the short term as a result of changed market conditions, is a significant concern. However, the Pillar 1 requirements are complemented by Pillar 2 requirements which introduce more flexibility in S2.
96. More generally, there is a concern that in extreme situations, as exposed in the crisis, the Value-at-Risk approach (used to derive the SCR) could potentially underestimate extreme events.⁴⁵ The 1 in 200 probability of failure implied by the model could, in reality, understate the actual probability of failure, given the rarity of significant financial stability stresses and the inherent difficulty of capturing them in models. It should be noted, though, that other risk measures or time horizons may be used in internal models, as long as their results can be (and are) translated back to the 99.5% VaR for supervisory purposes.

4.5. Use of internal models

97. In principle, there are a number of advantages to using internal models in the context of ensuring adequate capitalisation. The key is that internal models allow risks to be assessed with more sophistication than when using the standard formula. In addition, some insurance risks – such as catastrophe risk – are so specific that their representation in any standard formula is not trivial. Moreover, internal model users are subject to a tailored reporting

45 Basak and Shapiro, Value at risk-based risk management: Optimal policies and asset prices, October 2009.



requirement with regard to supervisors, which should fit the specificities of the internal model in use.

98. However, internal models may also pose risks should insurers use them to lower their capital requirements. This may be mitigated to some extent by supervisors' ability to give prior approval before a model is used to calculate the SCR and, once approved, ongoing assessment by supervisors, and undertakings cannot simply go back to the standard formula when they wish.⁴⁶ Moreover, supervisors can require insurers to use an internal model if the standard formula is inappropriate. Once they are using an internal model, there may be incentives for insurers to reduce requirements over time, thus requiring active monitoring by supervisors. EIOPA is therefore developing "internal model ongoing appropriateness indicators" and benchmarking tools to monitor the application of internal models.
99. Standard or commonly-used modelling techniques employed in internal models may also leave them prone to underestimation of risk. Aside from the more general concern about the use of Value at Risk (see above), it is a common view in the literature that the failure of banking models in the crisis was due to the material underestimation of correlations of modelled risks in the crisis.⁴⁷ The fact that financial risks do not exhibit multivariate normality or stationary correlations was already known in academia, but largely ignored by the banking industry.
100. In the banking sector, the international and European standard setters have recognised in several studies that there is significant variation in the outputs of internal models used to calculate regulatory capital.⁴⁸ The analyses stated that differences in modelling choices are the most significant drivers of this variation in risk-weighted assets across banks. As S2 allows for internal models for the first time, the experience of the banking sector should be taken into account and so it should be ensured that unjustified variations in the results of internal models are avoided.
101. We note that there are pros and cons for the similarity of internal models. The more similar they are, the more insurers behave in the same way and the more pro-cyclicality is exacerbated, as described in the prior section. Also, as insurers are sometimes writing a wide range of risks (e.g. crop versus life versus trade credit insurance) and different models may be needed to adequately reflect the different risks. However, a variation in the sense of arbitrary assumptions that lead to lower capital levels is obviously detrimental to financial stability. We believe that in the current approval process for internal models, these risks will be considered appropriately.
102. In the banking sector, several proposals have been made: improving public disclosure, narrowing the range of modelling choices for banks (e.g. floors) and further harmonising

46 Please note that Article 117 of the directive stipulates that under duly justified circumstances and subject to approval, a firm can return to using the standard formula instead of the internal model. Furthermore, Article 118 stipulates that in the case that an internal model no longer fulfils all test and standards (ongoing compliance requirements), the company has to restore this compliance (through a plan). If this plan cannot be implemented, the supervisor can revert the firm to the standard formula.

47 Cannata, Quariagliello (2009), "The Role of Basel II in the Subprime Financial Crisis: Guilty or Not Guilty?", CAREFIN Research Paper No 3/09, January.

48 Basel Committee on Banking Supervision, Consultative Document: Fundamental review of the trading book: A revised market risk framework, October 2013.



supervisory practices with regard to model approvals. These could inform the discussion on internal models in the insurance sector as well.

4.6. Extension of the recovery period for breach of the SCR

103. The possibility to extend the recovery period leaves the SCR intact, but allows insurers to take longer (up to seven years) to recover from breach in the case of exceptional adverse conditions and under the condition of a realistic recovery progress plan. This might lead to problematic reductions in the capitalisation of insurers by enabling them to hold less than their SCR for a period of up to seven years. As in other cases where capitalisation is inadequate, this might crystallise upon further shocks (on the asset and liability sides) which may result in the insurer having insufficient reserves to meet policyholder claims. The recovery plan and the (at least annual) ORSA should try to capture, and to indicate, management actions in the case of further shocks, by using appropriate stress scenarios and methods.

4.7. Inadequate recognition of equivalence of third country solvency regimes

104. Currently, there is no global solvency framework comparable to S2 in place for insurance regulation. Solvency regimes in countries outside the EEA may be recognised by the European Commission, subject to certain criteria, as equivalent to S2 or transitionally equivalent (the duration of this transitional equivalence is ten years that can be renewed for an additional ten years). In such circumstances national supervisors may decide to allow firms to use the local capital requirements for subsidiaries in those countries outside the EEA for calculating group solvency, when the use of Method 2 (deduction and aggregation) has been authorised by the group supervisor.
105. If national supervisors decide to allow the use of local capital requirements in cases where the local regime is not genuinely equivalent to S2 standards, then this may incentivise firms to export risks to jurisdictions that, in practice, have lower capital requirements, leaving the group potentially with less capital than necessary on a S2 basis⁴⁹.
106. Similarly, reinsurance regimes in countries outside the EEA are assessed and declared equivalent or otherwise. If they are equivalent, the risk reduction of a reinsurance contract with a reinsurer in that third country is the same as a contract with a reinsurer in the EEA. If the regime in the country outside the EEA is not truly equivalent, but nonetheless regarded as such, this will give incentives to reinsure in those countries while enjoying reduced capital requirements under S2.

4.8. Safeguards against problems arising from reductions in capitalisation

107. A number of features of S2 that might be considered potential safeguards against the various potential sources of problems arising from reductions in capitalisation (relative to those that S2

⁴⁹ We refer to equivalence according to Article 227. We also note the recent opinion of EIOPA on this issue, available at <https://eiopa.europa.eu/Publications/Opinions/Opinion%20on%20group%20solvency%20calculation%20in%20the%20context%20of%20equivalence.pdf>



requires when valuing technical provisions using the risk-free rate and applying the 99.5% SCR) are discussed in this section.

108. First, insurers need supervisory approval to use the MA. In addition, there is a possibility (an option in the S2 Directive) for Member States to allow the use of the VA only after supervisory approval. However, as S2 is yet to be introduced, it is unclear to what extent supervisors will make use of these powers in order to prevent potential problems. It is not clear either to what extent concerns about problems caused by the reduction in capitalisation arising from the VA can be used to justify rejection (since reducing reserving requirements in stresses is the fundamental feature of the VA).
109. Second, S2 has some provisions for applying capital add-ons should the risk profile of the firm deviate from the assumptions underlying the standard formula of the SCR, the VA and MA, or if the system of governance of an undertaking is found to deviate from the requirements of S2.
110. Third, O2 added more requirements relating to governance, disclosure and supervisory reporting with the aim of helping to discourage distortive use of the LTG measures. O2 requires insurers to separately disclose to the public and the supervisor the financial position, also without applying LTG measures. Ongoing compliance with capital requirements must be assessed in the Own Risk and Solvency Assessment (ORSA) with and without the use of the MA, VA and transitional measures. The report to supervisors must include an annual assessment of the sensitivity of technical provisions and eligible own funds to the assumptions underlying the LTG measures. Moreover, where a reduction of the MA or the VA to zero would result in non-compliance with the SCR, the undertaking should also submit an analysis of the measures it could apply in such a situation to restore compliance.⁵⁰ A recovery plan is therefore not required, and it is unclear to what harder measures the supervisor can resort if the analysis submitted by the company is not deemed to be satisfactory.
111. Information on the use of LTG measures will be made public through the Solvency and Financial Condition Report, which will contain: (1) a description of the matching adjustment and the portfolio of obligations and assigned assets to which the MA is applied, as well as a quantification of the impact of not applying the MA on the financial position of the undertaking; and (2) a statement on whether the VA, the transitional measure on risk-free interest rates or the transitional measure on technical provisions are used and quantifications of the impact of not applying each of these adjustments on the financial position of the undertaking.
112. The obligatory public disclosure of the impact of the LTG package may induce insurers to hold more capital if investors, ratings agencies and policyholders are concerned about reductions in capitalisation arising from their application. Harmonisation of reporting and disclosure requirements in this regard may make it easier for supervisors and stakeholders more generally to assess the degree of financial soundness, and could be useful in fostering peer comparison and pressure. Market discipline, however, cannot always be relied upon and where it can, investors may have different risk appetites from regulators and policyholders. Policyholder pressure may be exercised, although, as noted before, such scrutiny of insurers' reserving and capital positions may be questioned, except in a few cases of larger policyholders with more sophisticated risk assessment and monitoring processes.

⁵⁰ Article 2, point 10 of Omnibus 2.



113. Where insurers use the MA or VA they must also maintain a liquidity plan, projecting the incoming and outgoing cash flows in relation to the assets and liabilities subject to the MA and the VA. Whilst these measures cannot themselves be used to induce insurers to hold more capital, they may incentivise this at the margins. In addition, it may be possible for insurers to use the liquidity plan in concert with the prudent person principle to reduce the risk of capitalisation being insufficient, by changing investment strategy. Finally, the liquidity plan may aid supervisors in determining whether assumptions underlying the VA or MA have been deviated from in assessing the case for a capital add-on, although we note that the cases in which these can be used are limited (as explained above).
114. Fourth, there are also safeguards applicable when an extension of the recovery period for breach of the SCR is applied. The undertaking has to submit a progress report to the supervisory authority every three months, setting out the measures taken and the progress made to re-establish the level of eligible own funds covering the SCR, or to reduce the risk profile to ensure compliance with the SCR. If no progress is made due to a lack of management action by the undertaking, the supervisory authority may revoke the extension granted. Other than that, when the MCR is breached no extension of the recovery period can be authorised.
115. Fifth, supervisors may be more able to tackle concerns about capitalisation in internal models, as they can reject models if they consider the methodology used to be inappropriate. However, they may be unable to tackle any concerns about capitalisation levels arising from the underlying VaR methodology, as this is prescribed by the Directive. S2 also lacks some of the further powers being considered in banking to address concerns about inadequate capitalisation in internal models. First, S2 does not routinely require insurers to calculate and publish both capital requirements on internal models and standard formula (as requirements for banks to calculate and publish both the capital requirement based on the IRB approach and the standardised approach), but supervisors can request this. Second, Basel III has complemented the capital requirement regime with a rule-based leverage ratio, which fulfils the role of a backstop. S2 as it stands lacks such requirements and measures, although EIOPA is developing “internal model ongoing appropriateness indicators” (“IMOGAPIs”) which are less risk-sensitive and independent from the internal models and can be used to monitor the application of internal models.
116. Sixth, lapse risk is included in the SCR. Some concerns relating to the possibility that capitalisation could be insufficient to enable liabilities to be met in some cases follow from lapse risks. S2 takes into consideration a mass lapse event as one of the shocks in the standard formula. The SCR is therefore increased, given this risk.
117. It is not clear how much supervisors can do if they have concerns about the overall level of capitalisation from a macro-prudential point of view. Add-ons can only be used under specific circumstances, which are linked to governance deficiencies and to whether a firm’s risk profile deviates from the assumptions underlying the SCR, or measures such as the VA or the MA. It does not appear that they can be used to tackle inadequate capitalisation on a system-wide basis arising from the assumptions underlying the measures themselves. Additionally, should standard formula capital requirements be lower than what is considered to be prudent from a macro-prudential point of view, either for particular assets or in total, supervisors may wish to tighten requirements but are unable to do so, given the narrow scope for using capital add-ons.
118. Reviews by the Commission of the LTG measures and the standard formula mandated by the final S2 Directive may permit the revision of parameters when unintended consequences of



LTG application may arise, or when there are material concerns about inadequate capitalisation arising from the standard formula.⁵¹

5. Interconnectedness and NTNI

5.1. Risks arising from interconnectedness and NTNI

119. As discussed in the note on the interconnectedness of the EU insurance sector and the note on sources of systemic risks, risks to financial stability can arise when insurers become heavily interconnected with other parts of the financial system and when their behaviour or distress, as well as the behaviour and distress of others, could damage third parties/themselves through these interconnections. Some risks may be associated with more traditional activities, such as the risk of pro-cyclicality and are transmitted through asset holdings (see Section 3), others with non-traditional and non-insurance activities (NTNI) such as securitisations, securities lending, derivative transactions and direct lending.
120. The SCR takes into account insurers' interconnectedness in the context of their exposures to different asset markets. However, as a micro-prudential requirement, the SCR will not take into account the externalities posed to the system or real economy of those interconnections. These considerations will therefore need to be covered under Pillar 2 if found to be significant. Perhaps partly related to this, and key, is that the standard formula does not differentiate between (and within) exposures to other financial institutions and other assets.⁵² We note that the IAIS and FSB design and introduce measures for G-SIIs, including HLA, to cover such externalities. Thus, what we are referring to are the externalities posed by all European insurers that apply S2 and are not designated as G-SII.
121. S2 does not apply any distinction between traditional insurance and NTNI, and the capital requirement, in particular, is structured around risks drivers (interest rates, spread, equity etc.) rather than insurance products and activities. S2 will therefore capture only the micro-prudential aspect of the associated risks. There may also be purely macro-prudential risks that are not captured by S2.
122. It is worth noting that the development of some products classified as NTNI, involving maturity/liquidity mismatch, such as variable annuities, may be incentivised by features of S2. For example, should the LTG package result in a lowering of reserving requirements for liquidity/market risks, this might incentivise insurers undertaking activities involving more liquidity/market risk, although S2 has not yet been implemented and it remains to be seen whether this risk will materialise.

51 The European Commission has already scheduled a review, at least of some standard formula parameters, by the end of 2018, see Recital 150 of the Delegated Regulation on S2.

52 There are differentiated charges for covered bonds and securitisations which are securities that tend to be issued by financial institutions, but asset classes are not explicitly divided by issuer (e.g. there is no specific class for bank equity or senior bonds issued).



5.2. Safeguards against risks arising from interconnectedness and NTNI

123. There are some curbs on interconnectedness implied by S2; key is the capital requirement for concentration risk. This applies to a single name, however, and does not take into account concentration of exposures to issuers from the same sector. Diversification benefits in the SCR may also encourage insurers to spread asset allocation across different types of asset (e.g. equity versus loans and bonds) although in the standard formula these categories are very broad and do not allow for any benefit of diversification between sectors. The prudent person principle may provide useful qualitative support here, requiring firms to understand and monitor concentrations of exposures geographically and by industry where this is not captured by the standard formula. Furthermore, granular reporting requirements under S2 may enable supervisors to better understand and monitor concentrations.⁵³ Nonetheless, the inherent micro-prudential objective of S2 means that only one side of interconnectedness – risks in the system to which the insurer is exposed – can be taken into account. The potential risks posed to the system by the insurer's interconnections with it cannot be accounted for either in the SCR or via supervisory flexibility to require insurers to build up capital to reflect the risks posed to the system.
124. S2 includes group supervision next to supervision of solo undertakings. This concept allows the inclusion of all the related entities (holding companies, credit institutions, financial institutions, investment firms) of the group under group solvency. Group and solo supervision combined allows the identification of the risks related to concentration of exposures and intragroup transactions which can affect the financial position of the group and which are difficult to identify when looking just at solo entities. However, once these risk concentrations and intragroup transactions have been identified, and if they are considered detrimental to financial stability, it is unclear what the group supervisor can do to limit these, given the fact that S2 does not explicitly aim at capturing the macro-prudential risks that an insurer can pose for the market.

6. Complexity

125. S2 is a complex regime, as underlined by the EIOPA Quantitative Impact Assessment, No 5 (QIS5). This is not surprising, given its scope and its aim of providing a uniform and consistent framework for the prudential supervision of insurers. Complexity, in particular, relates to the liability side of insurers' balance sheets, for instance the calculation of technical provisions, including the assessment of contract boundaries and the valuation of options and guarantees which requires the application of actuarial standards as well as expert knowledge and judgment. These elements have a large impact on the technical provisions, the SCR and therefore on the perceived solvency position of insurers, as shown by QIS5 and the 2014 EIOPA stress test. Since QIS5, the complexity has increased with the addition of the LTG measures, which has allowed insurers to calculate their technical provisions using various adjustments to the risk-free interest rate curves.

⁵³ We note that S2 does not include investment limits. Solvency I did but was a risk-insensitive regime whereas S2 does not place limits on investment but instead seeks to ensure that insurers properly manage and are capitalised against market risks.



126. In principle, accuracy is a benefit of this complexity, but this is not always the case. Lack of clarity may lead to a lack of credibility of balance sheets and solvency positions giving rise to macro-prudential concerns. This holds both for experts and for market participants. For example, in the US it has been shown that the equity-to-assets ratio is an equally good, or even better, indicator of financial distress than the much more complex US risk-based capital standards.⁵⁴ Cooperation and coordination between NSAs is therefore essential as S2 is implemented in 2016, to ensure the common application of the regulatory framework and enhance market discipline and transparency.
127. Pillar 3 requirements ensure that insurers disclose certain effects of the application of the LTG package, but not the other assumptions for the calculations of the technical provisions, most notably the assumptions as regards the contract boundaries, loss absorbency of technical provisions and deferred tax assets. In this context it should be noted that S2 does not contain a simple risk-insensitive backstop requirement.⁵⁵ Only users of internal models are required to calculate additional indicators.

7. Macro-prudential flexibility and objectives

128. As noted in section 2.1, the main objective of S2 is policyholder protection. Financial stability and fair, stable markets are other objectives of insurance and reinsurance regulation and supervision which should also be taken into account, but should not undermine the main objective. This is different from the banking sector, where in response to the financial crisis, revisions to Basel II and Basel III understandably put more emphasis on financial stability.
129. One could argue that a side effect of the pursuit of the policyholder protection objective is the attainment of the financial stability objective. By making all insurers sound this should reduce the prospect of disruption through insurer failure. However, this argument seems to ignore a number of factors.
130. First, insurers may pose risks to financial stability not just by their failure but also when they are “alive”, i.e. on a going-concern basis. A key example of this is when pro-cyclicality behaviour is not properly addressed (see Section 3). Micro-prudential regulation which aims to reduce the risk of failure for policyholder protection purposes cannot fully address such risks from a macro-prudential perspective. It can only (or primarily) take into account risks faced by insurers, not those posed by them to others, in the financial system. Second, micro-prudential regulation targeting policyholder protection objectives alone does not always capture the risks (i.e. negative externalities) posed by insurers to the rest of the financial system through their failure, e.g. through interconnectedness.
131. A key concern is that the capital and reserving requirements of S2 do not account for risks posed by insurers to the system, should these prove to be material. Another key concern is that, apart from, possibly, the adjustment in the equity module, there is no evidence that S2 gives supervisors the flexibility to require insurers to build resilience above the SCR either ahead of stresses, or to take into account particular risks posed for macro-prudential

54 Pottier and Sommer (2002), “The effectiveness of public and private sector summary risk measures in predicting insurer insolvencies”, *Journal of Financial Services Research*, 21.

55 In the banking sector the leverage ratio is an example of such a backstop requirement.



purposes. Pillar 2, and especially the obligatory macroeconomic stress testing, has increased the importance of the assessment of the systemic impact of insurers, but there are no tools in S2 to directly address potential systemic risks.

132. Second, and this was not considered in the preceding sections, insurers may undertake activities which benefit financial stability, and micro-prudential regulation may not reflect such benefits (positive externalities). All things being equal, this might imply lower requirements than those on a purely micro-prudential basis. However, to guard against the build-up of system-wide risks and changing costs/benefits over time, flexibility to adjust requirements over time (except for planned reviews) would also be needed. Furthermore, a major element of the financial stability and growth benefits of insurers undertaking certain activities may be as much a reduction of the amount of these activities done by others in the system, who pose greater risks to the system when undertaking those activities. Examples might include illiquid, long-dated, investments such as infrastructure projects. Arguably, certain types of life liability are better suited to such activities than shorter-term liquid liabilities such as bank deposits, as they are better matched. By taking on such activities insurers may be able to reduce system-wide maturity/liquidity transformation and leverage, and so reduce systemic fragility, although any costs imposed by insurers doing more of these activities would also need to be borne in mind.⁵⁶
133. In assessing what regulatory incentives (if any) are needed to encourage such activity by insurers, the regulatory treatment of such activity for other sectors is relevant. This is discussed further as part of Section 3, which covers the interaction of S2 with other prudential regulations.

8. Conclusions

134. It is difficult to judge the macro-prudential and financial stability impacts of S2, given that it is not yet in operation.
135. However, there are concerns that through its micro-prudential focus, S2 may insufficiently address key macro-prudential issues and financial stability risks posed by insurers. Key examples include risks posed through interconnectedness and NTNI. In some cases, S2 treatment may potentially exacerbate risks to financial stability – in particular with regard to mechanisms which allow resilience to be weakened in stresses. This may lead to increased (or unmitigated) incentives for pro-cyclicality and problems arising from reductions in capitalisation relative to that required when valuing technical provisions with the risk-free interest rate and applying the 99.5% SCR. However, we cannot draw conclusions as to insurers' behaviour until after implementation of S2. Furthermore, the ongoing discussions at IAIS level (as stated in Section 4) may also have a significant impact on the overall evaluation.

⁵⁶ For example insurers may be less suited to such types of investment because of inexperience in credit or liquidity risk assessment of such projects.



9. The interaction of Solvency II with other prudential regulation

136. There are a number of ways in which different prudential regulation can, in principle, negatively interact with each other from a macro-prudential perspective.
- **Regulatory arbitrage** – where the same risks are treated differently in different sectors and the migration of such risks to the most lenient treatment (e.g. at financial conglomerates) could lead to such risks being undercapitalised in the system as a whole, and potentially to further risks, e.g. increased complexity, opacity and interlinkages.
 - **Contradictive incentives** – where regulations are optimal for their respective sector in isolation, but when added together across sectors regulations may contradict each other, and/or contradict overall system-wide goals.
 - **Amplifying incentives** – regulations of different sectors may lead to cumulative effects and herding behaviour.
 - **Increased interconnectedness** – regulations may lead to higher cross-sectoral links, which may increase the risk of spillovers of financial market turmoil from one sector to another.
137. In the following sections S2's interaction with CRD IV/CRR (Section 3.1), the BRRD (Section 3.2) and EMIR (Section 3.3) is briefly assessed, with the focus especially on the four macro-prudential considerations above. This assessment relies on, and complements, the analysis of the Joint Committee of the ESAs.⁵⁷

9.1. CRD IV

138. In 2013, the CRD IV package for banks came into force. The package consists of a Directive (CRD) and a Regulation (CRR), and transposes the Basel III capital standards on banks into EU law.⁵⁸ The overarching goal was to strengthen the resilience of the EU banking sector by increasing the quantity and the quality of capital, introducing liquidity standards and implementing some options for macro-prudential instruments, such as the counter-cyclical capital buffer. S2 instead establishes a harmonised, risk-based regime where the quantity of required capital is closely tailored to the micro-prudential risks. It does not necessarily increase the quantity of capital, but will better match the capital required with the risks taken by insurers. Moreover, the overarching goal of S2 is policyholder protection, while financial stability is only a secondary objective. As such, it does not include specific macro-prudential tools.
139. The four potentially negative interactions of prudential regulation as mentioned above might be relevant when comparing S2 with CRDIV.
140. Inconsistencies in both regulatory regimes may provide **regulatory arbitrage** opportunity effects within financial conglomerates or cause un-level playing field issues between insurers

⁵⁷ Joint Committee of European Supervisory Authorities; Interactions between S2, CRR/ CRD IV and the proposed Recovery and Resolution Directive, draft version, September 2013.

⁵⁸ <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=OJ:L:2013:176:TOC>



and banks. Some differences exist, for example, in the capital treatment of holdings⁵⁹ and in the levels of capital charges for the same investments⁶⁰, and in the valuation approach for assets (market or book valuation).

141. One important element of the analysis is whether the same risks in both sectors are treated in the same way. It is important to keep in mind that the same activity done by an insurer or a bank does not necessarily pose the same risk.⁶¹ Assessment of the relative regimes should therefore ideally compare the same risks rather than the same activities, so when risks are disparate, different capital charges for the same activity are appropriate. Furthermore, moving an activity to where it would receive lower capital charges would not be regulatory arbitrage if moving it posed less risk.
142. The increase of bank capital standards after the financial crisis may result in replacing banks' traditional lending business by insurance companies.⁶²
143. The quantitative treatment of risks of both capital regimes is covered in Pillar 1 and both regimes show a similar risk hierarchy reflected in the capital charges (e.g. government bonds have lower charges/factors than corporate bonds and securitisations etc.). The investment portfolios of banks and insurance companies contain mostly the same asset classes.
144. Further comparison of the treatment of risks in both regime is difficult as there are fundamental differences between the two regimes: the risks captured (e.g. credit versus market and underwriting), calibration, treatment of liquidity risk (via capital requirements versus rules), the ability of liabilities to absorb losses, the valuation basis (market consistency versus book⁶³) and the treatment of diversification benefits. Moreover, S2 is a holistic framework covering valuation and capital rules applied across the entire balance sheet. By contrast, rules for banks have been developed in somewhat distinct components over time (for example, trading book capital versus banking book capital versus liquidity). A number of the apparent differences in capital charges/stress factors can be explained in part by these differences. An assessment of whether one of the macro-prudential risks is valid is therefore difficult.
145. Some studies have attempted to compare the regulatory capital requirements in both sectors, but only for Basel II/III requirements, not for CRD IV⁶⁴. Moreover, there are a number of differences between banking and insurance regimes that need to be adjusted for in order to

59 IMF, Belgium: Technical Note on Financial Conglomerate Supervision, May 2013.

60 For example, differences in the treatment of credit exposures to regional governments and local authorities. See letter from the Minister of Finance in Norway to Mr Barnier, 29/08/2014.

61 For example, an insurer providing a long-dated loan may match this with a similarly illiquid, long-dated liability, whereas a bank providing the same long-dated loan (i.e. the same lending activity) may fund itself with a liquid, short dated liability. Maturity/liquidity transformation risks are present in the second case, but not in the first. However, there may be other risks/costs associated with insurers undertaking direct lending if originating loans, such as lack of experience and expertise in new markets.

62 According to ECB statistics, the Tier 1 ratio of domestic credit institutions (CI) in the euro area increased substantially from 8.4% to 13.1% between 2008 and 2013. However, the share of loans to total assets only slightly increased from 57.8% to 58.8% (from EUR 16.3 trillion to EUR 19.1 trillion) in the same period. At the same time, the share of loans to total assets of euro area insurers seems to have remained relatively constant between 2008 and 2013 – the share increased only from 7.6% to 7.8%. Also, the share of loans of insurers to total loans of domestic credit institutions remained stable (2.2%).

63 We note that CRD IV builds on statutory accounts, which are based on IFRS in most cases. Book value will therefore usually (but not always) be fair value, which is market consistent.

64 Lass and Siegel (2014), Gründl and Niedrig (probably October 2014) are the most comprehensive ones.



make a like-for-like comparison (such as for diversification effects, coverage of different risks and the use of different valuation frameworks, differences in quality of capital etc.). A number of these studies do not make adjustments for all these differences and where they do, different assumptions are used. The studies are also typically based on versions of S2 capital charges that have since been amended. Bearing these caveats in mind, the typical finding of these studies is that S2 capital charges are higher than those for banks under the Basel III regime.

146. However, a new study has reached the opposite conclusion. Based on assumptions derived from a model provided by EIOPA in its long-term investment study, and taking into account the main elements of S2 (stress calibrations, the matching of assets and liabilities (i.e. interest-rate risk), diversification benefits, the loss absorbing capacity of technical provisions and deferred tax assets), the “all-in capital charge” for different asset classes and financial instruments has been calculated:

Table 1

Comparison of S2 and Basel III capital charges

Asset class - rating - duration	Solvency II stand-alone capital charge	Solvency II all-in capital charge	Basel III standard capital charge	Basel III internal capital charge
Corporate bond A 5 years	7%	4.25%	5.25%	4.46%
Corporate bond A 10 years	10.5%	3.86%	5.25%	4.46%
Corporate bond A 15 years	13%	3.00%	5.25%	4.46%
Government bond AA 10 years	0.0%	-2.10%	0%	1.95%
Residential mortgage loan A 15 years, 80% LTV	0%	-5.58%	3.68%	0.3%
Covered bond AAA 5 years	3.5%	2.55%	1.05%	
Type 1 securitisation A 3 years	22.20%	12.53%	5.25%	

Source: Thibeault, A.; Wambeke, M. (Vleric business school): Regulatory impact on banks' and insurers' investments, September 2014. Notes: The capital charges are the marginal charges. Negative charges may arise if diversification effects and effects of loss absorption capacity of technical provisions are higher than the standalone charge. The capital charge for securitisation displays EIOPA's proposal from December 2013, not the lower charges of the Delegated Acts from October 2014. The calculations assume a capital ratio of 10.5% for banks and a 100% SCR for insurers; Basel III capital charge calculations do not take into account the counter-cyclical buffer, nor the capital surcharge for SIFIs. Note also that S2 capital charges here capture both market and credit risks whereas Basel charges cover only credit risk. A closer like-for-like comparison (applying the MA for the S2 charges which, in effect, aims to capture the credit risk element of charges only) would reduce the S2 charges further when compared with the Basel charges shown.

147. These differences in capital charges, if correct, create incentives, especially for conglomerates, to shift assets from the banking entity to the insurance entity to exploit differences in regulatory charges. However, whether differences in requirements are “arbitrage” or not depends, in part, on the extent to which assets pose different risks when held in the two different regimes, given the differences between business models and the leverage between the two sectors. To some extent it may be argued that insurers can carry out certain lending and investment activities and pose less risk to the system – e.g. because they undertake less maturity/liquidity transformation. Some migration of such activities may be welcome in these cases. Such benefits would need to be weighed against the risks that might arise from investing in activities where the firm does not have sufficient expertise and experience.
148. Further factors that may lead to regulatory arbitrage include the different Pillar 1 coverage of risks in S2 and B3 (e.g. S2 covers interest-rate and concentration risks, but not liquidity risks, whereas the opposite is the case for B3) and different standards on capital quality (S2 allows



the holding of a larger share of Tier 2 and Tier 3 capital compared to B3, which results in lower capital costs for insurers than for banks).

149. Overall, the goal of regulatory consistency between the capital standards for banks and insurers seems not to have been fully achieved, which may lead to incentives for regulatory arbitrage, e.g. by financial conglomerates. In Europe, the Financial Conglomerates Directive may help to mitigate the potential group risks (conflicts of interest, the risks of contagion, management complexity, risk concentration) and the risks of double gearing (multiple use of capital), but it cannot solve the issue of regulatory arbitrage.
150. Besides these potential arbitrage opportunities for certain asset classes, other asset classes receive favourable regulatory treatment within both capital regimes. CRD IV and the S2 standard formula give preferential treatment to government bonds. This may lead to **amplifying incentives** for investing in those assets, triggering herding behaviour and increasing the linkages between sovereigns, banks and insurers⁶⁵.
151. Another example of amplifying incentives is the use of derivatives, cleared through a CCP. S2 incentivises hedging, for instance, by using derivatives. These derivatives are increasingly traded through CCPs. CRD IV introduces higher capital charges for un-hedged OTC derivatives, also moving derivatives trades to CCPs.
152. A further aspect where arbitrage may occur is in the application of macro-prudential tools in the banking sector: there may be cases where activity and risks targeted by the use of such tools in the banking sector could migrate to insurers. Such migration may occur directly – where an activity such as lending moves – or indirectly, where risks are transferred to insurers, e.g. via securitisation.
153. For such migration to occur in response to the application of macro-prudential tools in the banking sector, the rate of return on the activity or risk would need to increase (via banks' reductions in activity or attempts to transfer) sufficiently relative to the capital and other costs faced by insurers in taking such an activity on. Other costs may include various barriers. In determining whether arbitrage has occurred, as for migration of activity for static capital requirements, it is important to distinguish which types of migration are relevant for systemic risk concerns and in what way.
154. Migration of lending to insurers may be a problem if it frustrates attempts to reduce systemic risk in the banking sector. For example, if a counter-cyclical buffer were imposed in response to credit growth, or a sectoral capital requirement applied to increase capital charges on residential mortgage lending, this would, all things being equal, marginally increase the incentive to migrate activity. This could be a point of leakage which could, to a certain degree, undermine the application of tools to reduce systemic risk in the banking sector, and could also potentially increase the systemic risk posed by insurers, which might be compounded if the appropriate tools to deal with these risks in insurance were not available. On the other hand, if the basis for the use of macro-prudential tools is concerns about system-wide maturity/liquidity mismatch, or particular vulnerabilities in the banking sector, then migration to insurers may, in fact, be a desirable way to reduce systemic risks and maintain lending activities.

65 ESRB (2015), Report on sovereign risk.



155. Both sectoral capital standards may also contain **contradictive incentives**. One example is bank liquidity regulation that aimed for stable, long-term sources of funding versus S2's – considered by some to be favourable – treatment of short-dated bank bonds (relative to long-term bonds). Further research, however, concludes that corporate bonds, including bank bonds, will continue to remain attractive investment objects under S2.⁶⁶
156. Finally, there may be some elements of CRD IV and S2 which foster **interconnectedness** between both sectors. For example, the distinction between type 1 and type 2 securitisations in S2 leads to a lower capital requirement for type 1 securitisations. This lower requirement is intended to reflect the lower risk of type 1 securitisations, and the distinction is made in the context of international efforts to promote the development of robust securitisation markets. This will increase the interconnectedness between both sectors, as banks make assets available to insurers.

9.2. BRRD

157. In April 2014 the European Parliament adopted the Bank Recovery and Resolution Directive (BRRD)⁶⁷. The BRRD includes the bail-in tool which will enable resolution authorities to write down, or convert into equity, the claims of a broad range of creditors if the regulator deems the institution to be non-viable. The new bail-in tool will apply as of 1 January 2016 at the latest to all outstanding and newly issued debt. The bail-in rule therefore introduces the possibility for shareholders and unsecured and uninsured creditors to absorb losses in their order of seniority. The implicit bailout guarantee has been removed. The removal of these too-big-to-fail incentives in the banking sector is of key financial stability benefit to the system. It will remove a previous source of interconnectedness between banks and sovereigns which is also positive for insurers since they are big holders of sovereign debt.
158. As discussed in the note on the interconnectedness of the EU insurance sector, insurance companies are also among the biggest investors in bank bonds. According to the ECB datasets, insurers and pension funds in the euro area held more than EUR 500 billion in potentially bail-inable bank bonds in Q2 2013. Thus, the BRRD has several consequences for insurers.
- There are higher risks, higher returns and higher capital charges on bank bonds. All things being equal, the bail-in tool means a higher loss given default (LGD) for holders of bail-inable bonds, compared to a counterfactual situation in which there was a government bailout (though it means a lower LGD versus a counterfactual disorderly insolvency). Insurers can no longer expect government bailouts to protect them from losses. Without a lower probability of default (PD), a higher LGD would imply (all things being equal) a lower credit rating and also higher capital charges.
 - Insurers need to increase their efforts in monitoring banks. These efforts may come with higher costs, but market discipline will also be strengthened.

⁶⁶ Gorter and Bijlsma (2012), TITLE.

⁶⁷ Directive 2014/59/EU establishing a framework for the recovery and resolution of credit institutions and investment firms, 15 April 2014.



- Whilst bank debt may pose higher expected losses under bail-in (which would be reflected in its credit rating) and exposes insurers directly to more banking sector risk, it is important to note that removing too-big-to-fail will reduce insurers' indirect exposure to banks. This is because it will reduce governments' exposure to banks and therefore insurers' exposures to banks via substantial government holdings. Insurers will also benefit more generally from the removal of incentives for the mispricing of risk in the system that arises from too-big-to-fail.

9.3. EMIR

159. The European Markets Infrastructure Regulation (EMIR) on derivatives, central counterparties (CCPs) and trade repositories introduces new requirements for improving transparency and reducing the (systemic) risks associated with the derivatives market. It also establishes common organisational, conduct-of-business and prudential standards for CCPs and trade repositories. EMIR imposes requirements on all types and sizes of entities that enter into any form of derivative contract, including insurers (although some requirements apply only to firms over certain thresholds). EMIR came into force in August 2012 and its technical standards came into force in March 2013.
160. The new regulation will require insurers and their counterparties, that enter into any form of derivative contract, including interest rate, foreign exchange, equity, credit and commodity derivatives, to:
- report every derivative contract that they enter to a trade repository (TR);
 - implement new risk management standards, including operational processes and margining, for all bilateral over-the-counter (OTC) derivatives, i.e. trades that are not cleared by a CCP; and
 - clear, through a CCP, those OTC derivatives subject to a mandatory clearing obligation.
161. ESMA, in consultation with the ESRB, is responsible for the ongoing identification of derivatives that should be cleared through a CCP. Approximately half of all derivatives in the EU are already cleared on a voluntary basis.
162. EMIR affects insurers that use OTC derivatives, as they will have to centrally clear derivative transactions, subject to the clearing obligation, or to bilaterally collateralise those trades that are not centrally cleared. For cleared trades, insurers will need to post cash and/or high-quality securities for the initial margin and cash for the variation margin. The greatest impact is likely to be on:
- annuity writers that make use of interest rate swaps;
 - with-profits funds that use OTC derivatives to hedge guarantees and options; and
 - insurers that have defined benefit pension schemes that use OTC derivatives.
163. The proposals have two main implications for insurers.
164. First, there is an expected reduction in and shift of counterparty credit risk. Central clearing mitigates systemic risk by reducing the risk that defaults propagate from counterparty to counterparty. It also promotes financial stability by promoting transparency in counterparty credit risk in hereto opaque derivatives markets. As clearing obligations are extended to cover contracts with lower notional amounts outstanding, overall counterparty exposures decline monotonically. These features can directly benefit insurers.



165. Second, there is an increase in demand for liquidity and collateral. For cleared trades, initial margin will need to be posted in cash or eligible securities, while variation margin will need to be posted in cash. For non-cleared OTC transactions, parties will need to comply with risk mitigation requirements, including bilateral collateralisation. This increases the demand for high-quality collateral, which may be provided by insurers, for instance through securities lending. However, restrictions on the rehypothecation of collateral could limit any significant uptick in this activity. Also, a recent study by Duffie, Scheicher and Vuillemeys (2014) found that mandatory central clearing is shown to lower, not raise, system-wide collateral demand, provided there is no significant proliferation of CCPs. Overall, the provision of high-quality collateral offers benefits for insurers but also increases insurers' linkages with those sectors to which collateral is provided.
166. In conclusion, EMIR offers benefits to insurers as users of derivatives and, to some extent, as providers of high-quality collateral. Insurers' counterparty credit risk is reduced. Linkages with banks and other derivatives counterparties are replaced by linkages to relatively safe CCPs. However, the increased lending of securities, due to the demand for high-level collateral, increases linkages with other financial parties and thus potential contagion risk.

9.4. Accounting rules

167. Ideally, accounting rules allow market participants – shareholders, investors and consumers – to make well-informed decisions about a company by increasing the transparency and comparability of financial statements. In the EU, companies listed on a stock exchange have to apply, in their consolidated financial statements, IFRSs that have been adopted by the European Commission.^{68,69,70} Other companies apply accounting rules adopted by their national authorities. Some national accounting rules are based on the IFRS, for example (IE or UK,) but may include simplifications and national specificities.
168. Insurance undertakings hold large technical reserves on the liability side of their balance sheets, while the vast majority of the asset side of insurers' balance sheets is made up of financial instruments. Therefore, current developments in international accounting standards for insurance contracts (IFRS 4 phase two) and financial instruments (IFRS 9, to replace IAS 39) are of special importance to insurers. IFRS 9 was published in 2014 and is to be applied as of 1 January 2018 (earlier application is permitted) subject to endorsement by the European Commission. IFRS 4 phase 2 is not yet finalised – the IASB released another Exposure Draft in 2013⁷¹ In particular, the new standard on the accounting for insurance contracts is seen as a major step forward, since the current standard is very rudimentary and allows for the grandfathering of a number of national practices for insurance liabilities. In order to increase the transparency of insurance companies' financial statements, the combination

68 International Financial Reporting Standards (IFRS), issued by the International Accounting Standards Board (IASB), www.ifrs.org

69 In their assessment of new standards, the Commission is advised by the European Financial Reporting Advisory Group (EFRAG), www.efrag.org

70 In the US, accounting standards are issued by the Financial Accounting Standards Board (FASB), www.fasb.org. The standards are officially recognised as authoritative by the Securities and Exchange Commission (SEC), and form part of the US generally accepted accounting principles (US GAAP).

71 <http://www.ifrs.org/Alerts/ProjectUpdate/Pages/IASB-publishes-revised-proposals-for-the-accounting-for-Insurance-Contracts-June-2013.aspx>



of IFRS 9 and IFRS 4 needs to provide more meaningful information to the users of insurers' financial statements than is the case under today's accounting.

169. From a financial stability point of view, accounting rules matter because of the transparency for stakeholders that they ensure and the incentives for insurance companies that they imply. For instance, the accounting for insurance contracts is currently black box. This deters investors that cannot properly compare insurers among each other or compare insurers with any other industry, and has very probably led to the lower market capitalisation of insurance companies' shares compared with other financial companies. Another example is that banks may misinterpret the risk of exposure to insurance companies, which may lead to contagion effects if an insurer makes losses, or even fails. Increased transparency may, therefore, lead to better risk assessment and market discipline.
170. The proposal in the Exposure Draft Insurance Contracts (2013) gives firms scope for judgment in estimates that might result in divergence in practice. This is, for instance, the case regarding the discount rate, where undertakings may choose an approach (either "top-down" or "bottom-up"), potentially leading to different rates depending on this choice. However, it is important to note that the current situation is far less transparent, and results in much greater deviation in key valuation assumptions. The failure to finalise and endorse this standard, and the continuation of the current rules, therefore represents a greater threat to financial stability.
171. Accounting outcomes, regardless of the framework in place, have the potential to influence the incentives of firms in some way. It is, however, too soon to state with certainty what behavioural effects the new accounting rules will have.
172. In any case, public accounting is relevant to investors and may therefore influence management actions. The issue of multiple overlaying frameworks which insurers have to (legally or factually) comply with has not yet been investigated sufficiently, particularly since some of these are national and others supra-national. A few examples include (next to the public accounting described) S2, local tax regulation as well as any internal capital allocation models or management tools, such as "European Economic Value" or "Market-consistent Economic Value". There may be cases, for example, where such different frameworks deliver different, or even conflicting, incentives.

