



EIOPA-CP-16/008

5 December 2016

**Discussion Paper**

**on**

**the review of specific items in the  
Solvency II Delegated Regulation**

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## Responding to this paper

EIOPA welcomes comments on the review of specific items in the Solvency II Delegated Regulation.

Comments are most helpful if they:

- respond to the question stated, where applicable;
- contain a clear rationale; and
- describe any alternatives EIOPA should consider.

Please send your comments to EIOPA in the provided Template for Comments, by email to [CP-16-008@eiopa.europa.eu](mailto:CP-16-008@eiopa.europa.eu), by 3<sup>rd</sup> March 2017.

Contributions not provided in the template for comments, or sent to a different email address, or after the deadline will not be processed.

### Publication of responses

Contributions received will be published on EIOPA's public website unless you request otherwise in the respective field in the template for comments. A standard confidentiality statement in an email message will not be treated as a request for non-disclosure.

Please note that EIOPA is subject to Regulation (EC) No 1049/2001 regarding public access to documents and EIOPA's rules on public access to documents<sup>1</sup>.

Contributions will be made available at the end of the public consultation period.

### Data protection

Please note that personal contact details (such as name of individuals, email addresses and phone numbers) will not be published. They will only be used to request clarifications if necessary on the information supplied.

EIOPA, as a European Authority, will process any personal data in line with Regulation (EC) No 45/2001 on the protection of the individuals with regards to the processing of personal data by the Community institutions and bodies and on the free movement of such data. More information on data protection can be found at <https://eiopa.europa.eu/> under the heading 'Legal notice'.

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<sup>1</sup> [Public Access to Documents](#)

## Reasons for publication

The European Commission has requested the European Insurance and Occupational Pensions Authority's ("EIOPA") advice on a review of specific items of Commission Delegated Regulation (EU) 2015/35 supplementing Directive 2009/138/EC (Solvency II) (hereinafter "Delegated Regulation").

EIOPA supports a sound process of post-evaluation of the new insurance supervisory regime. One of EIOPA's key objectives is to ensure a rigorous, evidence-based and transparent review of Solvency II.

As part of this process, EIOPA has launched a project dedicated to the review of the Delegated Regulation and in particular of the Solvency Capital Requirement ("SCR") standard formula. The purpose of this project is to answer the call for advice of the European Commission.

The main goals are:

- to ensure a proportionate and technically consistent supervisory regime for (re)insurance undertakings;
- to look for possible simplifications in the SCR standard formula and to ensure the proportionate application of the requirements.

EIOPA will suggest changes in methods, assumptions and standard parameters, where appropriate, as well as additional policy options. During this process, EIOPA will be engaging in a constructive dialogue with stakeholders on an on-going basis.

The present Discussion Paper intends to engage in a dialogue with stakeholders on all items in the scope of the review.

## Structure of this paper

The Discussion Paper follows the modular structure of the SCR standard formula. Sections 1 to 4 are dedicated to the overarching aspects of the SCR standard formula. Sections 5 and 6 seek stakeholders' input on the non-life underwriting risk module. Sections 7, 8 and 9 are dedicated to the non-life catastrophe risk and the health catastrophe risk sub-modules. Section 10 is about life underwriting risks. The following section 11 focuses on undertaking specific parameters. Then sections 12 and 13 are related to the counterparty default risk module. Sections 14 to 17 are dedicated to some aspects of the market risk module. Section 18 is about the loss-absorbing capacity of deferred taxes. Finally, section 19 is about the risk margin and sections 20 and 21 are dedicated to own funds.

## Next Steps

The responses provided in this discussion paper will help EIOPA in narrowing down its policy approach. Responses should be based on evidence and include an assessment of the materiality of any proposal. Responses are most welcome if they provide suggestions to simplify and to ensure the proportionate application of the requirements.

In light of the feedback received, EIOPA will develop consultation papers on its advice to the European Commission during 2017.

## **1. Simplified calculations**

For the purposes of Article 109 of the Solvency II Directive, the Delegated Regulation provides several simplified calculations for the SCR standard formula. These simplified calculations aim to reduce the burden of (re)insurance undertakings, where the latest can demonstrate that the approach is proportionate to the nature, scale and complexity of the risks.

The European Commission call for advice requests EIOPA to provide information on the use of the simplified calculations and, where relevant, on the reasons why they are not used. EIOPA would like to collect stakeholders' feedback on these reasons.

Furthermore, EIOPA is asked to suggest improvements to the current framework, either via criteria or via extending the scope of the simplified calculations. Stakeholders are invited to provide suggestions.

### **1.1. Proportionality assessment**

Article 88 of the Delegated Regulation provides that any (re)insurance undertaking that wishes to use one of the simplified calculations listed in the Delegated Regulation needs to carry out an assessment of the nature, scale and complexity of the risks and an evaluation of the error introduced by the simplified calculation.

#### **Questions to stakeholders**

Q1.1: Did you encounter any specific issue(s) when carrying out the evaluation of the error introduced in the results of the simplified calculation(s)? If yes, please explain the issue(s) and provide suggestions that would allow a feasible and realistic evaluation.

### **1.2. Non-life underwriting risk module (excl. catastrophe risk sub-module)**

The European Commission call for advice requests EIOPA to provide suggestions for simplifications on the standard formula, citing the non-life lapse risk sub-module as an example where no simplified calculation exists.

#### **Questions to stakeholders**

Q1.2: Please describe the main challenges faced when calculating the capital requirement for the non-life premium and reserve risk, as referred to in Article 115 of the Delegated Regulation.

Q1.3: Is the geographical diversification factor established in Article 116(2) of the Delegated Regulation material in the calculation of the capital requirement for the non-life premium and reserve risk?

Q1.4: Do you have any suggestions for a simplified calculation of the capital requirement non-life premium and reserve risk? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.5: Please describe the main challenges faced when calculating the capital requirement for the non-life lapse risk, as referred to in Article 118 of the Delegated Regulation.

Q1.6: Do you have any suggestions for a simplified calculation of the capital requirement for the non-life lapse risk? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

### **1.3. Non-life catastrophe risk sub-module**

Please refer to sections 7 and 8.

### **1.4. Life underwriting risk**

Article 136 of the Delegated Regulation provides the sub-modules that the life underwriting risk module consists of. Articles 91, 92, 93, 94, 95 and 96 of the Delegated Regulation provide simplified calculations for the mortality risk, the longevity risk, the disability-morbidity risk, the expense risk, the lapse risk and the life catastrophe risk sub-modules.

#### **Questions to stakeholders**

Q1.7: Please describe the main challenges faced when calculating the capital requirements for the life underwriting risk, as referred to in Article 136 of the Delegated Regulation.

Q1.8: Do you consider the simplified calculations provided in Articles 91, 92, 93, 94, 95 and 96 of the Delegated Regulation appropriate given the main challenges? If no, please provide suggestions and explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.9: Do you have any other suggestions for a simplified calculation of the sub-modules of the life underwriting risk module? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

### **1.5. Non-similar-to-life-techniques health underwriting risk sub-module**

Given the similarity in the nature of the non-life and the non-similar-to-life-techniques health underwriting risk sub-modules, it is important that the same conclusions that could be drawn in the scope of the former are mirrored in the latter, notwithstanding any specificity that can apply.

#### **Questions to stakeholders**

Q1.10: Please describe the main challenges faced when calculating the capital requirement for the NSLT premium and reserve risk, as referred to in Article 146 of the Delegated Regulation.

Q1.11: Is the geographical diversification factor established in Article 147(2) of the Delegated Regulation material in the calculation of the capital requirement for the NSLT premium and reserve risk?

Q1.12: Do you have any suggestions for a simplified calculation of the capital requirement NSLT premium and reserve risk? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.13: Please describe the main challenges faced when calculating the capital requirement for the NSLT lapse risk, as referred to in Article 150 of the Delegated Regulation.

Q1.14: Do you have any suggestions for a simplified calculation of the capital requirement for the NSLT lapse risk? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

## **1.6. Similar-to-life-techniques health underwriting risk sub-module**

Article 151 of the Delegated Regulation provides the sub-modules that the similar-to-life health underwriting risk module consists of. Articles 97, 98, 99, 100, 101 and 102 of the Delegated Regulation provide simplified calculations for the health mortality risk, the health longevity risk, the disability-morbidity risk, the expense risk, the lapse risk and the life catastrophe risk sub-modules.

### **Questions to stakeholders**

Q1.15: Please describe the main challenges faced when calculating the capital requirements for the SLT health underwriting risk, as referred to in Article 151 of the Delegated Regulation.

Q1.16: Do you consider the simplified calculations provided in Articles 97, 98, 99, 100, 101 and 102 of the Delegated Regulation appropriate given the main challenges? If no, please provide suggestions and explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.17: Do you have any other suggestions for a simplified calculation of the sub-modules of the SLT health underwriting risk sub-module? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

## **1.7. Health catastrophe risk sub-module**

Please refer to section 9.

## **1.8. Market risk module**

### **Simplifications for captive insurance and reinsurance undertakings**

Article 103, 105 and 106 of the Delegated Regulation provide simplifications for captive insurance and reinsurance undertakings to calculate the SCR of some specific market risk sub-modules (respectively on interest rate risk, spread risk on bonds and loans and market risk concentration). In order to apply those simplifications, some requirements on the insurance obligations and reinsurance obligations of the captive insurance and reinsurance undertakings - developed in Article 89 of the Delegated Regulation- must be met.

### **Questions to stakeholders**

Q1.18: Please describe the main challenges faced when evaluating if conditions of Article 89 for the use of market risk simplifications for captives are met.

Q1.19: Do you consider the simplified calculations provided in Articles 103, 105 and 106 of the Delegated Regulation appropriate given the specificities of captives? If no, please provide suggestions and explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.20: Do you have any suggestions for a simplified calculation of the market risk module for captives? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

### **Simplifications for non-captive insurance and reinsurance undertakings**

Article 104 of the Delegated Regulation provides simplified calculation for spread risk on bonds and loans when Article 88 of the Delegated Regulation is complied with.

### **Questions to stakeholders**

Q1.21: Please describe the main challenges faced when calculating the capital requirements for the spread risk for bonds and loans, as referred to in Article 176 of the Delegated Regulation.

Q1.22: Do you consider the simplified calculations provided in Article 104 of the Delegated Regulation appropriate given the main challenges? If no, please provide suggestions and explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.23: Do you have any other suggestions for a simplified calculation of the sub-modules of spread risk for bonds and loans? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

## **1.9. Counterparty default risk module**

Please refer to section 12.

## **1.10. Operational risk module**

Article 204 of the Delegated Regulation provides the calculations to be carried out to determine the capital requirement for the operational risk.

Q1.24: Please describe the main challenges faced when calculating the capital requirements for the operational risk, as referred to in Article 204 of the Delegated Regulation.

Q1.25: Do you have any suggestions for a simplified calculation of the operational risk module? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.



## **1.11 Other parts of the standard formula**

Q1.26: Do you have any other suggestions for a simplified calculation of the SCR standard formula? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

## 2. Reducing reliance to external credit ratings in the standard formula

In the recent years, there have been several initiatives to reduce reliance on external credit ratings. Various international initiatives have been launched: by the Financial Stability Board, the Basel Committee and also by the International Organization of Securities Commissions.

At European level, Article 5b of the CRA Regulation<sup>2</sup> states that the EBA, EIOPA and ESMA shall not refer to credit ratings in their guidelines, recommendations and draft technical standards where such references have the potential to trigger sole or mechanistic reliance on credit ratings. On 30 September 2015, the ESMA published a technical advice "on reducing sole and mechanistic reliance on external credit ratings"<sup>3</sup>, which provides, among others, a screening of available alternatives to credit ratings. On December 2015, the European Commission published a "study on the feasibility of alternatives to credit ratings"<sup>4</sup>. In the coming months, the Joint Committee of the EBA, ESMA and EIOPA will publish a report on "good supervisory practices for reducing mechanistic reliance on credit ratings". The different publications are initiatives to reduce reliance on external credit ratings in each part of regulations where such references have the potential to trigger sole or mechanistic reliance on credit ratings.

In this context, the European Commission has requested EIOPA to advice on possible developments in the Solvency II framework towards the use of alternative credit assessment in the standard formula<sup>5</sup>.

Article 13(40) of the Solvency II Directive defines "external credit assessment institution" or "ECAI" as "*a credit rating agency that is registered or certified in accordance with Regulation (EC) No 1060/2009 of the European Parliament and of the Council or a central bank issuing ratings which are exempt from the application of that Regulation*"<sup>6</sup>.

The spread risk sub-module, the market risk concentration sub-module and the counterparty default risk module do not refer directly to ECAI, but define the capital requirements as depending on a credit quality step. The European Commission has adopted Commission Implementing Regulation (EU) 2016/1800 laying down implementing technical standards with regard to the allocation of credit assessments of external credit assessment institutions to an objective scale of credit quality steps in accordance with the Solvency II Directive. It has entered into force on 31 October 2016.

With this discussion paper, EIOPA would like to collect stakeholders' views on alternatives that could be applied to the insurance sector for the standard formula SCR calculation.

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<sup>2</sup> Regulation (EU) No 462/2013 of the European Parliament and of the Council of 21 May 2013 amending Regulation (EC) No 1060/2009 on credit rating agencies

<sup>3</sup> [https://www.esma.europa.eu/sites/default/files/library/2015/11/esma-2015-1471\\_technical\\_advice\\_on\\_reducing\\_sole\\_and\\_mechanistic\\_reliance\\_on\\_external\\_credit\\_ratings.pdf](https://www.esma.europa.eu/sites/default/files/library/2015/11/esma-2015-1471_technical_advice_on_reducing_sole_and_mechanistic_reliance_on_external_credit_ratings.pdf)

<sup>4</sup> [http://ec.europa.eu/finance/rating-agencies/docs/151201-study\\_en.pdf](http://ec.europa.eu/finance/rating-agencies/docs/151201-study_en.pdf)

<sup>5</sup> Item 3.2.1 of the call for advice

<sup>6</sup> The list of registered ECAI is published by ESMA in accordance with Article 18(3) of the Credit Rating Agencies Regulation (<https://www.esma.europa.eu/supervision/credit-rating-agencies/risk>)

## **2.1. General requirements on the use of credit assessments (Article 4 of the Delegated Regulation)**

Article 4 of the Delegated Regulation regulates the use of credit assessments in Solvency II. In relation to the standard formula, requirements are defined to ensure consistency in the credit assessment; where two credit assessments are available, they aim to avoid the selection of the ECAI that leads to the lowest capital requirement; where more than two credit assessments are available, the purpose is to avoid the selection of the one that leads to the highest capital requirement. Moreover, for larger or more complex exposures, internal credit assessments are requested.

### **Questions to stakeholders**

Q2.1: Do you think Article 4 could be improved to reduce the reliance on external credit ratings in relation to the calculation of the SCR standard formula? If yes, please provide suggestions and pros and cons.

Q2.2: How might the mapping of credit quality steps (CQS) (as defined in the Commission Implementing Regulation laying down ITS on ECAI mapping) be improved to reduce reliance on external credit ratings?

Q2.3: In which other areas, apart from the SCR standard formula, should the reliance on external credit ratings be reduced? Please provide pros and cons of your suggestion.

## **2.2. Internal measures and ratings**

Internal measures and ratings are seen by many as a key measure to reduce market reliance on external credit ratings. The principle is to allow insurance undertakings to conduct their own credit assessments using quantitative and qualitative information, and apply it to the calculation of the capital requirements.

The Solvency II framework allows this kind of approach: undertakings can develop internal models for the purpose of the capital requirement calculations. These internal models need to be approved by the relevant NSA, in order to provide policy holders and beneficiaries with an equivalent level of protection.

However, internal credit assessment may be problematic, especially due to the limited access to the qualitative and quantitative data needed. Small and even medium sized undertakings may typically rely more heavily on external ratings as they may not have the technical ability and resources to create an entire internal rating model for credit risk estimation.

Developing an internal model is a long and costly process. Internal models need to be approved by NSAs, which takes time but ensure that the prudential objective of the regime is met.

### **Questions to stakeholders**

Q2.4: Do you have any proposal that would allow insurance undertakings to calculate their capital requirements, at least partly, on the basis of internal measures and ratings and still ensure that the level of protection of policy holders is equivalent to the one reached with the standard formula and internal models?

### **2.3. Market implied ratings and accountancy-based measures**

Market implied ratings can be derived for instance, through bond or equity pricing information or through Credit Default Swap spreads.

The market information is usually used as an input to a statistical model, which determines a relation between the observations and the credit risk. Market implied ratings may reflect actual external supply and demand for particular instruments. They frequently are relatively cheap to produce. However, they are also seen as a pro-cyclical alternative.

Accountancy-based measures refer to financial ratios which are based on financial statements (e.g. credit ratios, profitability and leverage ratios). Such information and expert judgment can be used to assess the credit risk. However, this methodology is difficult to apply to new entrants on the market as there is little historical data. Moreover, this assessment is mainly backward looking.

Another use of market implied ratings and/or accountancy-based measures could be to approximate the credit quality step of financial instruments for which an undertaking does not have one available. For instance, the credit quality step would equal that of bonds, loans and counterparties with similar accountancy-based measures.

#### **Questions to stakeholders**

Q2.5: Do you think a methodology based on market implied ratings could be used in the standard formula? If yes, please provide your suggestion. Please also provide a justification why such a methodology would meet the requirement of Article 101(3) of the Solvency II Directive that the Solvency Capital Requirement corresponds 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.

Q2.6: Do you think a methodology based on accountancy-based measures could be used in the standard formula? If yes, please provide your suggestion. Please also provide a justification why such a methodology would meet the requirements of Article 101(3) of the Solvency II Directive that the Solvency Capital Requirement corresponds 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.

Q2.7: On what conditions and under which restrictions may market implied ratings or accountancy-based measures be used to approximate the credit quality step of financial instruments?

### **2.4. Other alternatives**

Other alternatives are listed in the different publications of the Joint Committee or the European Commission. Such alternatives can be:

- The OECD country risk classification;
- Central credit registers;
- Reports of entities being assessed;
- Brokers and investment companies' research reports.

The application of these other alternatives is often limited to certain exposures.

## Questions to stakeholders

Q2.8: Do you have suggestions for alternative approaches that could be used in the standard formula? Please explain why such alternative approaches would meet the requirement of Article 101(3) of the Solvency II Directive that the Solvency Capital Requirement corresponds 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.

### 2.5. Proportionality approach

The different publications referred to at the outset of this section provide the main purposes for which external credit ratings are used by "market participants": for investment and risk management; for regulatory purposes; for contractual purposes and, for communications with investors.

The importance of external ratings for investment and risk management purpose may depend on several factors: the type of business, the size of the undertaking and the asset class.

For certain types of businesses, for a given size of undertakings and for some asset classes, questions regarding proportionality of the use of external ratings in relation to investment and risk management might arise.

## Questions to stakeholders

Q2.9: Is there a specific line of business and/or size of undertaking and/or asset class where you consider the use of external ratings for the purpose of investment and risk management not to be proportionate? Please explain your answer.

Q2.10: If the answer to the previous question is yes, do you think references to credit quality steps in those specific cases could be removed? What could be the alternatives? What would be the advantages and disadvantages?

### **3. Treatment of guarantees, exposures guaranteed by a third party and exposures to regional governments and local authorities (RGLA)**

The European Commission requests the advice of EIOPA in preparation of the review of the Delegated Regulation regarding the following issue:

*The differences between Delegated Regulation (EU) 2015/35 and Directive 2013/36/EU and Regulation (EU) No 575/2015 as regards exposures guaranteed by a third party and as regards exposures to regional governments and local authorities (under the empowerments in Article 111(1)(c), (e) and (f) of Directive 2009/138/EC).*

More specifically, EIOPA is asked to:

- Provide information on the current amounts of exposures guaranteed by a third party and of exposures to regional governments and local authorities (RGLA).
- Assess the differences between the banking framework and the Delegated Regulation, in the treatment of regional governments and local authorities and in the treatment of exposures guaranteed by a third party.
- For each of these differences, assess if they are justified by differences in the business model of the two sectors, by diverging elements in the determination of capital requirements, or on other grounds; and
- Investigate under which conditions the risk mitigating effect of guarantees issues by other guarantors can be recognised in the Solvency II framework.

Further to the European Commission call for advice, EIOPA decided to investigate more broadly the treatment of government guarantees in the SCR standard formula.

#### **3.1. Treatment of exposures guaranteed by a third party**

After reading this chapter the reader is asked to provide answers to the following questions:

##### **Questions to stakeholders**

Q3.1: Are the differences between the Delegated Regulation and the banking framework justified by differences in a) the business model of the two sectors, b) the determination of capital requirements, or c) other reasons. Please provide explanations for your answers.

Q3.2: On what conditions or under which circumstances should the recognition of guarantees under Solvency II be modified? Are there any missing elements?

In the calculation of the Basic Solvency Capital Requirement (BSCR) guarantees shall only be recognised where they are explicitly referred to in Delegated Regulation Chapter V on the calculation of the SCR, and where in addition to the qualitative criteria listed in Articles 209 and 210 of the Delegated Regulation all of the following criteria are met (Article 215 of the Delegated Regulation):

- *the credit protection provided by the guarantee is direct,*
- *the extent of the credit protection is clearly defined and incontrovertible,*
- *the guarantee does not contain any clause, the fulfilment of which is outside the direct control of the lender, that:*
  - *would allow the protection provider to cancel the protection unilaterally,*

- *would increase the effective cost of protection as a result of a deterioration in the credit quality of the protected exposure,*
- *could prevent the protection provider from being obliged to pay out in a timely manner in the event that the original obligor fails to make any payments due,*
- *could allow the maturity of the credit protection to be reduced by the protection provider,*
- *on the default, insolvency or bankruptcy or other credit event of the counterparty, the insurance undertaking has the right to pursue, in a timely manner, the guarantor for any monies due under the claim in respect of which the protection is provided and the payment by the guarantor shall not be subject to insurance undertaking first having to pursue the obligor;*
- *the guarantee is an explicitly documented obligation assumed by the guarantor,*
- *the guarantee fully covers all types of regular payments the obligor is expected to make in respect of the claim.*

For credit institutions and investment firms, requirements for guarantees are listed in the Credit risk mitigation part in Articles 213 and 215 of Regulation (EU) No 575/2013 for credit institutions and investment firms (Capital Requirements Regulation – “CRR”) under the Standardised Approach or the Foundation IRB Approach to credit risk. Article 215 of the Delegated Regulation copied most of the criteria listed in Article 215 of the CRR, except for the second option of Article 215(1c) of the CRR which reads as follows:

- *either of the following conditions is met:*
  - *the guarantee covers all types of payments the obligor is expected to make in respect of the claim;*
  - *where certain types of payment are excluded from the guarantee, the lending institution has adjusted the value of the guarantee to reflect the limited coverage.*

Adding the second option for this requirement for guarantees to the Solvency II framework would allow recognising the risk mitigating effect of partial guarantees. For example, if the guarantee only covers a part of the notional directly at default and no interest rate payments, the SCR standard formula calculation would result in a lower SCR than if no guarantee was issued to the extent of the coverage of the guarantee.

Another example would be a third party guaranteeing x% of the principal while the investor has to bear the first 100%-x% of losses.

The non-recognition of partial guarantees in the Solvency II framework means that no distinction is made whether the guarantee covers 99% or 60% or whether there is no guarantee at all (unless an external rating is available and influences the capital requirement).

In order to reflect these differences partial guarantees could be recognised. In this case it would have to be considered whether a “minimum guarantee level” should be required (e.g. the guarantee should cover at least y% of the notional)

The SCR standard formula sets out a specific treatment for guarantees issued by the following counterparties provided the relevant Delegated Regulation criteria are met:

- the European Central Bank,
- Member States' central government and central banks denominated and funded in the domestic currency of that central government and central bank,
- multilateral development banks referred to in Article 117(2) of CRR,
- international organisations referred to in Article 118 of CRR.

Exposures which are fully, unconditionally and irrevocably guaranteed by the institutions mentioned above, receive a risk factor of 0% in the spread risk and concentration risk sub-modules.

Type 1 exposures in the counterparty-default risk module guaranteed by regional governments and local authorities (RGLA) may be treated as exposures to central governments for the calculation of the probability of default (Article 199 of the Delegated Regulation) if the following conditions are met:

- the guarantee fully secures the exposure and complies with Articles 209 to 215; and
- the RGLA is listed in the implementing act adopted pursuant to point (a) of Article 109a(2) of the Solvency II Directive.

Member States' central government guarantees are recognised for type 1 exposures in the counterparty default risk module but not for type 2 exposures.

### Questions to stakeholders

Q3.3: Should the risk mitigating effect of a partial guarantee be recognised in the SCR standard formula calculations (for example by defining a "minimum guarantee level") assuming that the partial guarantee is unconditional, irrevocable and meets all the other relevant requirements set out above? What are the costs associated with "splitting" an exposure into a guaranteed and a non-guaranteed part for the purpose of the capital requirement calculation?

Q3.4: What are partial guarantees exposures that insurance undertakings are investing in or will invest in? How relevant are these exposures relative to their importance in the banking sector?

Q3.5: How would you take the effect of a partial guarantee into account in the spread risk sub-module which depends on the modified duration and the credit quality step?

Q3.6: Should the recognition of Member States' central governments guarantees be extended also for type 2 exposures? Please explain pros and cons.

Q3.7: Please explain if insurance undertakings would decrease or increase their exposures to guarantees if your proposals were taken into account.

### **3.2. Differences between the banking framework (CRR) and the Delegated Regulation concerning the treatment of exposures guaranteed by regional governments and local authorities**

The CRR defines a public sector entity as a non-commercial administrative body responsible to central governments, regional governments or local authorities, or to authorities that exercise the same responsibilities as regional governments and local authorities, or a non-commercial undertaking that is owned by or set up and sponsored by central governments, regional governments or local authorities, and that has explicit guarantee arrangements, and may include self-administered bodies governed by law that are under public supervision.

Moreover, according to Article 116(4) of the CRR: *In exceptional circumstances, exposures to public-sector entities may be treated as exposures to the central government, regional government or local authority in whose jurisdiction they are established where in the opinion of the competent authorities of this jurisdiction there is no difference in risk between such exposures because of the existence of an appropriate guarantee by the central government, regional government or local*



*authority*. This article states that the guarantee should be “appropriate”, and does not give any more precise criteria for what should be considered as guaranteed. It also gives the competent authorities some room for interpretation of what are the guaranteed entities in their jurisdiction. Concerning the Solvency II treatment of exposures guaranteed by a third party and regional governments and local authorities, a public sector entity asset class does not exist. In other words, in a situation where a competent authority would like to establish some lists of “guaranteed by the state” entities for both the insurance and the banking framework, the two lists would be different as 1/ the definition of “guarantees” are not the same (relies on strict criteria in Solvency II and leaves room for interpretation in CRR), and 2/ there is no notion of “public entities” in Solvency II.

A regional governments and local authorities (RGLA) asset class does exist under Solvency II (cf. more detailed description in the next section). In the counterparty default risk module exposures fully, unconditionally and irrevocably guaranteed by RGLA are treated as exposures to the central government. However, most of the debt guaranteed by RGLA is not covered in the counterparty default risk module but in the spread risk and concentration risk sub-modules. This leads to relatively high capital charges since these financial instruments are usually unrated. In the market risk module only debt issued by RGLA, i.e. direct exposures, is considered to be an exposure to the central government. Their guarantees are not taken into account. In some Member States insurance undertakings invest in financial instruments issued by public institutions (e.g. public banks) and backed by a guarantee by a RGLA.

### Questions to stakeholders

Q3.8: Should the guarantees issued by RGLA be treated similarly as guarantees issued by the central government of the jurisdiction in which they are established also in the market risk module? Please explain your answer.

Q3.9: How does the spread risk for exposures guaranteed by RGLAs differ from the spread risk for exposures guaranteed by the central governments? Please provide supporting evidence.

### 3.3. Treatment of exposures to regional governments and local authorities

According to Article 85 of the Delegated Regulation, direct exposures to the regional governments and local authorities (RGLA) listed in the Commission Implementing Regulation 2015/2011 should be treated as if they were exposures to the central government of the jurisdiction in which they are established. The RGLA listed in the Implementing Regulation meet the following conditions:

- there is no difference in risk between exposures to these and exposures to the central government, because of the specific revenue-raising power of the former; and
- specific institutional arrangements exist which reduce the risk of default.

Under the CRR, credit institutions and investment firms under the standardised approach for the credit risk calculations assign each credit risk exposure to an appropriate exposure class. Exposures to RGLA constitute a separate class.

According to Article 115 of the CRR, the RGLA exposures may be treated in three ways:

- treatment as institutions under Article 121 (paragraph 1 of Article 115);

- treatment as central governments under Article 114 (paragraph 2 of Article 115); and
- intermediate treatment (paragraph 5 of the Article 115):
  1. *Exposures to regional governments or local authorities shall be risk-weighted as exposures to institutions unless they are treated as exposures to central governments under paragraphs 2 or 4 or receive a risk weight as specified in paragraph 5. [...]*
  2. *Exposures to regional governments or local authorities shall be treated as exposures to the central government in whose jurisdiction they are established where there is no difference in risk between such exposures because of the specific revenue-raising powers of the former, and the existence of specific institutional arrangements the effect of which is to reduce their risk of default.*

*EBA shall maintain a publicly available database of all regional governments and local authorities within the Union which relevant competent authorities treat as exposures to their central governments.*

  3. *[...](churches and religious communities)*
  4. *[...] (equivalent third countries)*
  5. *Exposures to regional governments or local authorities of the Member States that are not referred to in paragraphs 2 to 4 and are denominated and funded in the domestic currency of that regional government and local authority shall be assigned a risk weight of 20 %.*

No similar treatment as set out in paragraph 5 of Article 115 (intermediate treatment) is foreseen in Solvency II. RGLA debt is either treated like central government debt with a lower capital requirement or as any other corporate bond.

According to Article 115(2) of the CRR the same conditions as in the Article 85 of the Delegated Regulation need to be fulfilled in order to treat RGLA exposures as exposures to central governments.

In the banking framework RGLA can be treated as exposures to central governments in which jurisdiction they are established if the national authority decides so.

EBA maintains a public database of all RGLA exposures to which relevant competent authorities treat as exposures to their central governments<sup>7</sup>. In the Solvency II framework, according to Article 109a(2a) of the Solvency II Directive the list of RGLAs treated as central governments is set out in implementing technical standards. EBA's database on RGLA is different from the list included in the implementing technical standard. The list of RGLA in the implementing technical standard includes RGLA in Belgium, France, Poland and Portugal that are not in EBA's database.

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<sup>7</sup> <http://www.eba.europa.eu/supervisory-convergence/supervisory-disclosure/rules-and-guidance>

## Questions to stakeholders

Q3.10: Are the differences between Solvency II and the banking regulation with regard to the treatment of exposures to RGLA justified, for example by differences in the business model of the two sectors or the determination of capital requirements?

Q3.11: Should Solvency II incorporate the categorisation set out in Article 115 of the Capital Requirements Regulation, i.e. applying risk weights to exposures to RGLA based on the three cases: a) no special treatment, b) treatment as central governments, c) intermediate treatment? If the answer is yes, please provide evidence that having three different treatments for exposures to RGLA is justified.

Q3.12: What would be the impact of aligning the treatment of exposures to RGLAs in Solvency II to the treatment in the banking regulation? Would insurance and reinsurance undertakings change their investment strategy regarding RGLAs?

## 4. Risk-mitigation techniques

The European Commission call for advice requests EIOPA to provide information on recent market developments regarding risk-mitigating-techniques ("RMT"), in particular embedded derivatives and longevity risk transfer. EIOPA will assess whether the framework for the recognition of RMT appropriately covers these new developments and, where necessary, suggest changes.

In order to identify relevant areas for further work stakeholders are asked to provide information on recent developments in the area of risk-mitigation techniques and possible issues with their treatment in the standard formula:

### Questions to stakeholders

Q4.1: What are the most recent developments in the area of risk-mitigation techniques (RMT), in particular in the area of embedded derivatives and longevity risk transfer?

Q4.2: For each RMT mentioned in the answer to the question above:

- o How do you define the RMT? Is there a legal definition?
- o How has the situation with respect to the RMT changed in the last years (in other words, what is "recent")?
- o What is the materiality of the RMT for your undertaking/for your country/in Europe (ideally measured based on notional and SII values absolute and relative to all assets)? How has the materiality changed over time?

For RMT which do not meet the conditions set out in Article 208 to 215 of the Delegated Regulation:

- o Why does the RMT not meet the conditions for the recognition of risk-mitigation techniques for the standard formula calculation (please provide the specific legal provisions)?
- o Why do you consider that the RMT should be recognised despite not meeting all the requirements? Why is the risk from not meeting certain requirements sufficiently low?
- o How would the requirements have to be altered to allow recognition of the RMT?
- o What is the effect from not recognising the RMT in absolute terms as well as relative to the overall SCR and the capital requirement for the relevant module or sub-module on the level of your individual undertaking/your country/Europe? When quantifying please follow to the extent possible the standard-formula methodology and explain in detail your methodology.

For RMT that meet the conditions set out in Article 208 to 215 of the Delegated Regulation, but for which you are of the view that the risk-mitigating effect is not adequately reflected in the capital requirement:

- o Why do you think that the risk-mitigating effect is not adequately reflected?
- o What is in your view the effect from this “non-adequate reflection” both in absolute and relative terms to the overall SCR and the capital requirement for the relevant module or sub-module on the level of your individual undertaking/your country/Europe? When quantifying please explain in detail the methodology.
- o What change(s) would you propose?

## 5. Volume measure for premium risk

The calculation of the capital requirement for premium and reserve risk of non-life insurance obligations is based in particular on a volume measure. This volume measure is defined in Article 116(3) of the Delegated Regulation as follows:

$$V_{(prem,s)} = \max(P_s; P_{(last,s)}) + FP_{(existing,s)} + FP_{(future,s)}$$

where:

- $P_s$  denotes an estimate of the premiums to be earned by the insurance or reinsurance undertaking in the segment  $s$  during the following 12 months;
- $P_{(last,s)}$  denotes the premiums earned by the insurance or reinsurance undertaking in the segment  $s$  during the last 12 months;
- $FP_{(existing,s)}$  denotes the expected present value of premiums to be earned by the insurance or reinsurance undertaking in the segment  $s$  after the following 12 months for existing contracts;
- $FP_{(future,s)}$  denotes the expected present value of premiums to be earned by the insurance and reinsurance undertaking in the segment  $s$  for contracts where the initial recognition date falls in the following 12 months but excluding the premiums to be earned during the 12 months after the initial recognition date.

The European Commission requests EIOPA to reassess the appropriateness of the definition of the volume measure for premium risk. This section presents issues identified concerning the definition set out in Article 116(3) of the Delegated Regulation.

One of the main goals of the review of the SCR standard formula is not to add undue complexity to the standard formula calculations, rather, where possible, to reduce its complexity. This is a goal that must be kept in mind when analysing the issues and trying to provide answers to the questions listed in this document.

### 5.1. Definition of $FP_{(future,s)}$

Article 101 of the Solvency II Directive states that the SCR shall cover the risks taken during the following 12 months, including new business expected to be written over the following 12 months. In the following paragraphs the definition of the volume measure at the end of year  $N$  is analyzed. When an undertaking becomes a party to a new contract in year  $N+1$  (this includes new contracts and contracts already existing at the end of year  $N$  that will be renewed in year  $N+1$ ), it may underprice the insurance obligations arising from the new contract, and is thus exposed to a premium risk for the full premium of the new insurance obligation of year  $N+1$ . From a risk perspective and in line with the SCR definition referred to above, the annual contracts that exist at the end of year  $N$  and will be renewed at some point in time in year  $N+1$  should thus be taken into account in the premium risk SCR calculation for more than one year of premium payments: the part of the premiums still to be earned at the end of year  $N$  for the existing contract, and the full annual premium for the contract renewed in year  $N+1$ .

The premium volume terms  $P_s$ ,  $FP_{(existing,s)}$  and  $FP_{(future,s)}$  take into account the full premium of new contracts and contracts renewed in year  $N+1$ :  $P_s$  and  $FP_{(existing,s)}$  for the part of the premium earned in year  $N+1$  (from the unearned part of the existing contract and from the new contracts automatically renewed from existing contracts);

$FP_{(future,s)}$  for the part of the premium earned in year  $N+2$  and afterwards (from the new contract). However due to the definition of  $FP_{(future,s)}$  in Article 116, for such contracts that will be renewed in year  $N+1$ , the term  $FP_{(future,s)}$  does not include the premium to be earned during the 12 months following the initial recognition date. This exclusion is helpful to avoid a double counting of some premium between  $P_s$  and  $FP_{(future,s)}$ , but goes beyond this objective by excluding more than the premium taken into account in  $P_s$ . A definition of  $FP_{(future,s)}$ , that avoids double counting of risks but still captures all the relevant risks would be: "excluding the premiums to be earned during the following 12 months" instead of "excluding the premiums to be earned during the 12 months after the initial recognition date."

Q5.1: Should the definition of  $FP_{(future,s)}$  that excludes "the premiums to be earned during the 12 months after the initial recognition date" be changed to only exclude "the premiums to be earned during the following 12 months"? Please explain why.

Q5.2: Do you have an alternative proposal for defining the premium risk volume measure? How does the alternative proposal effect the calibration of the risk factors for premium risk?

Q5.3: According to your assessment, would the change of the volume measure according to point 1 or, if applicable, according to point 2, have a material impact on the SCR? Can you quantify the impact?

## 5.2. Risk-sensitivity of the volume measure

The definition of the volume measure for premium risk is based on premiums earned in the past and expected to be earned in the future. Therefore there may be situations where an undertaking with lower and inadequate premiums will have a lower capital charge than an undertaking with higher and adequate premiums. A higher level of prudence in relation to premiums will usually lead to higher capital requirements.

This is an example that could justify revising the definition of the volume measure for premium risk in order to improve its risk-sensitivity. Any revision of the volume measure should also be based on the objective not to increase the complexity of the standard formula.

Q5.4: Should the definition of the volume measure for premium risk be reviewed in order to decrease its dependency on pricing strategies?

Q5.5: Have you noticed any other issues regarding the definition of volume measure for premium risk? If yes, please provide details and concrete suggestions for addressing the issues.

Q5.6: According to your assessment, would the change of the volume measure according to point 6 or, if applicable, according to point 7, have a material impact on the SCR? Can you quantify the impact?

## **6. Assessment of the appropriateness of standard parameters for non-life premium and reserve risks and for medical expense risk**

The European Commission is requesting EIOPA to assess if the standard parameters for the non-life premium and reserve risks and for medical expense risk are still appropriate.

In this context, EIOPA intends to first identify for which lines of business (“LoBs”) the standard parameters are not appropriate anymore and then recalibrate these standard parameters. The recalibration will probably be done according to the methodology used during the 2010-2011 calibration – see the report of the Joint Working Group<sup>8</sup>.

### **6.1. Identification of the non-life lines of business where a recalibration is needed**

EIOPA has selected LoBs where the standard parameters need to be recalibrated by analyzing the calibration done in 2010-2011. In the report of the Joint Working Group, data availability<sup>9</sup> and data limitations are discussed and for every single LoB the number of undertakings that provided data is reported.

EIOPA has selected the LoBs where data has been assessed as not representative enough for both premium and reserve risks, in view of the number of undertakings that currently are doing business in the same LoBs.

In particular, where the number of undertakings that submitted valid data is less than one hundred before adjustments due to the exclusion of catastrophe losses and where the data provided came from less than 20 different European countries, EIOPA has considered that a recalibration would be necessary. It should be noted that these criteria do not apply to non-proportionate reinsurance LoBs, due to the specific nature of the business and due to the limited number of undertakings that carry out this business.

This assessment resulted in the following list for both reserve and premium risks:

- credit and suretyship (LoB n°9),
- assistance (LoB n°11),
- legal expenses (LoB n°10),
- worker compensation (LoB n°3),
- medical expenses (LoB n°1), as requested by the European Commission in its call for advice.

Even though the legal expenses LoB data sample encompassed a bit more than one hundred undertakings, it was selected since the adjustment made, at the time, to exclude catastrophe losses resulted in the exclusion of half of the sample.

It is worth to notice that the Joint Working Group explicitly excluded credit and suretyship and assistance reserve risks from the recommendations because of the lack of observations<sup>10</sup>.

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<sup>8</sup> Calibration of the Premium and Reserve Risk Factors in the Standard Formula of Solvency II, Report of the Joint Working Group on Non-Life and Health NSLT Calibration, EIOPA, 12 December 2011:

[https://eiopa.europa.eu/Publications/Reports/EIOPA-11-163-A-Report\\_JWG\\_on\\_NL\\_and\\_Health\\_non-SLT\\_Calibration.pdf](https://eiopa.europa.eu/Publications/Reports/EIOPA-11-163-A-Report_JWG_on_NL_and_Health_non-SLT_Calibration.pdf)

<sup>9</sup> pp 9-11.

<sup>10</sup> ibid p.4



## **6.2. Process followed to collect data**

For these five LoBs, EIOPA is requesting data from the industry in order to be able to carry out a recalibration. The recalibration will only be carried out if the number of undertakings that will provide data is greater than the number of undertakings that provided data in 2010-2011. Moreover, the data should come from different European countries – at least the same number as in 2010-2011.

The data will be collected by NSAs from December 2016 to March 2017. NSAs will then provide EIOPA with data after performing a check. In particular, NSAs will also provide a qualitative assessment of the data, in order to assess the risk profile of the undertakings that submitted data.

Using this information, EIOPA will assess if a recalibration should be carried out.

### **Questions to stakeholders**

Q6.1: Do you have evidence that standard parameters of other lines of business should be recalibrated? If yes, please provide a comprehensive justification, supporting evidence including data and examples and a materiality assessment. Please note that only evidence and materiality assessment relevant at European level will be considered.

## **7. Natural catastrophe risks**

The non-life catastrophe risk sub-module is one of the most complex sub-modules in the SCR standard formula, mainly due to the high granularity of the technical specifications and calculations. The non-life catastrophe risk sub-module consists altogether of 13 sub-modules, 5 of which form the natural catastrophe risk sub-module. Three of the natural catastrophe sub-modules are further defined by means of two different scenarios.

Capital requirements for non-life catastrophe risk and natural catastrophe risk will be reported for the first time in the annual templates for 2016. At the moment no reporting data is available from which the significance of non-life catastrophe risk or natural catastrophe risk could be seen. However, based on the results from QIS5 (2010) non-life catastrophe risk is probably one of the major sub-modules in the SCR. In QIS5 it was the 5<sup>th</sup> largest of all risks (at the level of the highest level of sub-modules).

### **7.1. Simplifying natural catastrophe risk**

#### **Simplifying the design of the sub-module**

The European Commission requests EIOPA to assess if the complexity of the natural catastrophe risk sub-module is proportionate to the nature, scale and complexity of the risks, in particular for small and medium-sized undertakings. Where appropriate, EIOPA will provide suggestions for a simpler structure of the sub-module.

Capital requirements for natural catastrophe risks are basically formula-based with sums insured as volume measures and correlation techniques for aggregation. The calculation is based on a geographical division into regions and zones. In the Delegated Regulation there are 27 regions and more than 1 200 zones defined for Europe and 17 regions defined for the rest of the world.

Because of the high granularity of the calculation there is a need for a huge number of parameters. There are approximately 120 000 different parameters given in the Annexes to the Delegated Regulation for natural catastrophe risk sub-modules. These Annexes cover altogether 545 pages of a total of approximately 800 pages of the Delegated Regulation. Most of the pages are dedicated to correlations between the zones.

High granularity is a way to enhance risk sensitivity in the estimation of a risk. The requirement to perform a detailed calculation may also improve risk awareness in the undertaking. On the other hand, it can be burdensome for an undertaking to allocate sums insured according to the predefined zones, in particular if this split is not supported by its IT systems. This can especially be the case in small undertakings. In general, the large number of parameters also exposes the standard model to parameter errors.

Another source of complexity in natural catastrophe risk is linked to the application of outwards reinsurance. Undertakings should allow for the risk-mitigating effect of their specific reinsurance contracts and special purpose vehicles when they determine the change in basic own funds resulting from the corresponding scenario. Because of the granularity of the calculation it can be difficult to allocate reinsurance coverage to each of the sub-risks, scenarios and regions such that there is no double-counting of the risk-mitigating effect.

The significance of the different natural catastrophe risks varies from one undertaking to another. Most insurance undertakings will not be exposed to all 27 regions and 1200 zones. If a certain catastrophe risk is not material for an undertaking, it would

be possible to use simplified methods for the calculation of the capital requirement, provided the requirements of Article 88 of the Delegated Regulation are met.

One possible way to simplify calculations would be to allow the grouping of zones or regions. For example, an undertaking could calculate a capital requirement at the level of a region without using any further division into zones. The highest weight parameter of all zones in the region should be applied to the sum insured of the whole region. Such a simplification would be in line with the simplification given for counterparty default risk in Article 110 of the Delegated Regulation.

### **Questions to stakeholders**

Q7.1: Should the specifications for the capital requirement for natural catastrophe risk be simplified? How?

Q7.2: Should there be simplified calculations for the calculation of the capital requirement for natural catastrophe risk? Could the grouping of zones or regions serve as an alternative for simplifications? If yes, which approach to aggregation would you envision as more adequate: computing the SCR straightforward from region-level, or aggregate currently existing zones where the risk is deemed to be sufficiently similar? What other simplifications could be used?

### **Simplifying each natural catastrophe risk sub-module**

Q7.3: Please describe the main challenges faced when calculating the windstorm risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q7.4: Please describe the main challenges faced when calculating the earthquake risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q7.5: Please describe the main challenges faced when calculating the flood risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q7.6: Please describe the main challenges faced when calculating the hail risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q7.7: Please describe the main challenges faced when calculating the subsidence risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

## **7.2. Assessment of the appropriateness of the natural catastrophe risk sub-modules**

EIOPA is requested to assess the appropriateness of the methods, assumptions and parameters of the natural catastrophe risk sub-modules.

In order to provide this assessment, EIOPA is requesting information directly from the European and national insurance associations. In particular, EIOPA is looking for evidence that would suggest that the calibration is materially not appropriate.

Apart from this information request, specific aspects are discussed below.

### **Risk-sensitivity**

One of the aspects of the assessment of the sub-modules is the risk-sensitivity. It is a common view that there should be a balance between simplicity and risk-sensitivity. When one increases granularity without introducing additional structure and new concept variables, this may not necessarily increase complexity and keeps the level of simplicity intact. Capital charges should be responsive to the risk profile and granularity fosters the possibility to do so. Reducing granularity does not necessarily increase simplicity, but may reduce risk-sensitivity.

Q7.8: Do you have any suggestion to improve the risk-sensitivity of the natural catastrophe risk sub-modules? Which aspects of the current design of the sub-modules would significantly lose risk-sensitivity when overly simplified? Please also provide a cost-benefit analysis when answering.

### **Contractual limits**

The call for advice contains a specific request on the catastrophe risk and contractual limits.

In addition to the advice on a possible simpler structure, *"EIOPA is asked to assess the continued appropriateness of the methods and assumptions, and where required, the parameters, used when calculating the non-life catastrophe risk submodule, in particular in view of the approach on contractual limits as set out in recital 54 of Delegated Regulation (EU) 2015/35."*

As explained in the EIOPA document about "The underlying assumptions in the standard formula of the Solvency Capital Requirement calculation": *"the calibration of the natural catastrophe risk submodule is based on average conditions for any given country-peril combination."*

EIOPA is assessing whether the method to calculate catastrophe risk could be more clearly defined in order to capture the actual risk exposure of undertakings in a manner that accounts of contractual limits for the compensation of catastrophe events, as laid down in recital 54 of the Delegated Regulation. In parallel, EIOPA is assessing if the underlying parameters of the CAT calibration should be updated. In this discussion paper, EIOPA is (only) seeking evidence on average contractual limits for latter purpose.

### **Questions to stakeholders**

Q7.9: Do you have any evidence that suggests that average contractual limits per country and per peril have changed since 2010? If yes, what would be the impact of taking these new average contractual limits on the SCR of the natural catastrophe sub-modules?

## Windstorm clustering

The European windstorm model of the standard formula considers the occurrence of two events. The evolution of climate science now stresses the importance of the clustering effects i.e. the risk that when an event occurs, it is likely to trigger subsequent windstorms within the same year.

EIOPA wishes to assess whether it is appropriate to adjust the windstorm sub-module in order to take into account the risk that three events may occur during one year. This section aims at gathering relevant information of this topic from stakeholders.

The current capital requirement for windstorm risk is defined as the larger of the two capital requirements resulting from the following scenarios:

- Scenario A: one large event, at 1 in 200 level occurrence basis, plus a second smaller event;
- Scenario B: two moderate events.

In other words, the capital requirement for windstorm risk shall be equal to the greater loss in basic own funds of insurance and reinsurance undertakings that would result from the following sequence of events in the same region:

- Scenario A: an instantaneous loss of an amount that is equal to 100 % of the specified windstorm loss,  
an instantaneous loss of an amount that is equal to 20 % of the specified windstorm loss;
- Scenario B: an instantaneous loss of an amount that is equal to 80 % of the specified windstorm loss,  
an instantaneous loss of an amount that is equal to 40 % of the specified windstorm loss.

In order to assess if the calibration is appropriate, EIOPA is considering whether it is appropriate to take into account within the current legal framework a third windstorm event to reflect clustering risks. Indeed, recent climate events and developments in the modelling of such events may indicate that this effect is material.

## Questions to stakeholders

Q7.10: In the recent years, did insurance undertakings have to face such cases of windstorm clustering events? How often did it occur? What was the estimated cost of such a clustering of events?

Q7.11: Is this specific risk taken into account in insurance contracts and reinsurance treaties?

Q7.12: Would you consider the risk of windstorm clustering as material at European level?

Q7.13: If you confirmed the materiality of the issue, how would you suggest taking into account a third windstorm event? Please explain if your proposal increases the complexity of the calculations and provide a cost-benefit analysis.

## **8. Man-made catastrophe risk**

### **8.1. Simplifying man-made risk**

The European Commission requests EIOPA to assess if the complexity of the sub-module is proportionate to the nature, scale and complexity of the risks, in particular for small and medium-sized undertakings. Where appropriate, EIOPA will provide suggestions for a simpler structure of the sub-module.

For man-made catastrophe risk sub-modules granularity does not seem to be a major problem. On the other hand, the requirement to identify the largest risk concentration based on a circular geographical area can be problematic.

#### **Questions to stakeholders**

Q8.1: Please describe the main challenges faced when calculating the motor vehicle liability risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q8.2: Please describe the main challenges faced when calculating the marine risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q8.3: Please describe the main challenges faced when calculating the aviation risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q8.4: Please describe the main challenges faced when calculating the fire risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive. Please also refer to section 8.4 dedicated to fire risk.

Q8.5: Please describe the main challenges faced when calculating the liability risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q8.6: Please describe the main challenges faced when calculating the credit and suretyship risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

## 8.2. Assessment of the appropriateness of the man-made catastrophe risk sub-modules

EIOPA is requested to assess the appropriateness of the methods, assumptions and parameters of the man-made catastrophe risk sub-modules. For that purpose, EIOPA is looking for evidence that sub-modules may not be appropriately calibrated. EIOPA is also looking for information on the materiality of a potential more appropriate calibration.

### Questions to stakeholders

Q8.7: Do you have evidence that the SCR for a specific man-made catastrophe risk is not appropriately calibrated (please also refer to section 8.4 for fire risk)? If yes, please provide the following information, mentioning the particular risk to which the answer is referred:

What is the evidence that the risks are currently not well calibrated?

- Historical experience (if yes, please report the events)
- Internal model (if yes: source of expertise)
- Any other evidence (if yes: please specify)

What is the source of the incorrectness in your opinion (parameter, volume measure, scenario, etc.)?

Could you provide evidence of the materiality of the incorrect calibration? Ideally, this evidence should be based on a comparison with the current capital requirements for the same volume measures, and it should be backed by statistical analysis.

## 8.3. Risk sensitivity of marine, aviation and fire risk sub-modules

According to recital 49 of the Delegated Regulation the scenario-based calculations of the non-life catastrophe risk sub-modules should be based on the specification of catastrophe losses that are gross, without deduction of the amounts recoverable from reinsurance contracts and special purpose vehicles. Insurance undertakings should allow for the risk-mitigating effect of their specific reinsurance contracts and special purpose vehicles when they determine the change in basic own funds resulting from the scenario. In the man-made catastrophe risk sub-module, the capital requirements for marine risk, aviation risk and fire risk are based on the impact of a scenario that affects the maximum exposure in relation to a specific risk:

- marine risk: tanker with maximum sum insured and offshore platform with maximum sum insured;
- aviation risk: aircraft with maximum sum insured;
- fire risk: buildings within a radius of 200 meters with maximum sum insured.

In all three cases the maximum exposure is determined with regard to the sum insured gross of reinsurance. This may have unintended consequences. The capital requirement derived from the maximum sum insured gross of reinsurance might significantly underestimate the actual risk of the insurance or reinsurance undertaking because that exposure is better covered by reinsurance than other exposures. In the most extreme case the insurance undertakings might have a zero capital requirement for the risk because the highest sum insured was reinsured for 100%, while other exposures are not reinsured to the same degree.

### **EXAMPLE: Fire risk**

Let an insurance undertaking have the following risk exposures:

1. Exposure 1: Set of buildings with the sum insured equal to 10 million euro, no reinstatement premium, reinsurance arrangement covers 9.5 million XL 0.5 million euro.
2. Exposure 2: Set of buildings with the sum insured equal to 5 million euro, no reinstatement premium, proportional reinsurance arrangement covers 70% of the exposure.

The maximum sum insured (gross of reinsurance) is 10 million euro (Exposure 1) and the reinsurance cover for that exposure is equal to 9.5 million euro.

According to the current sub-module for fire risk (Article 132 of the Delegated Regulation) the insurance undertaking should calculate the capital requirement by choosing the largest sum insured (10 million euro) and deducting from this the covered amount (9.5 million euro). The result of the calculation is 0.5 million euro. This capital requirement might be insufficient because that insurance undertaking bears the risk of the uncovered part of Exposure 2 which amounts to 1.5 million euro. Consequently the capital requirement for fire risk (0.5 million euro) is smaller than the insurance undertaking's real exposure to fire risk (1.5 million euro).

In order to avoid this, the capital requirement for the marine risk, aviation risk and fire risk sub-modules could be based on a maximum exposure that is determined with regard to the sum insured net of reinsurance. In the example, exposure 2 would then be the maximum exposure and the capital requirement would be 1.5 million euro.

This approach would increase the risk sensitivity of the capital requirement, avoid the underestimation of risks and improve the reflection of actual risks without increasing the complexity of the calculation.

### **Questions to stakeholders**

Q8.8: Should the calculation of the capital requirement for marine, aviation and fire risks be modified to address the issue outlined above? Do you foresee any practical difficulties when the calculation is modified? What would be the impact of the modification on the size of the capital requirement?

## **8.4. Fire risk and volume measure**

The SCR standard formula includes a fire risk sub-module that captures the risk of catastrophic fire or explosion, including as a result of terrorist attacks. The sub-module is based on the scenario that the insurance or reinsurance undertaking incurs a loss equal to the sum insured of the buildings within a radius of 200 meters at the largest fire risk concentration of the undertaking (see Article 132 of the Delegated Regulation).

As part of the SCR review EIOPA is considering to revise the design and calibration of the fire risk sub-module. One concern raised by some stakeholders about the sub-module is that it may produce capital requirements that are above the calibration objective of Solvency II of the Value at Risk with a confidence level of 99.5% over a time horizon of one year.



In case the miscalibration of the sub-module can be substantiated, EIOPA has identified several ways to amend the scenario underlying the sub-module calculation:

- Changing the impact radius of 200 meters referred to in Article 132(2)(b) of the Delegated Regulation;
- Modifying the loss from 100% of the sum insured to a lower percentage of sum insured;
- Modifying the loss by using probable or possible maximum loss (PML) instead of sum insured in the loss definition<sup>11</sup>.

A change of the impact radius would allow adjusting the territorial impact of the catastrophic event. The introduction of a factor to the sum insured would correspond to a reduction of the degree of damage caused by the catastrophic event within the impact radius.

In order to make the catastrophe scenario more realistic and potentially more risk sensitive, the degree of damage could be differentiated by impact radius, for example by assuming a damage of x% within a radius of 100 meters, beyond that a lower degree of damage of y% within a radius of 200 meters, and further beyond that an even lower degree of damage of z% within a radius of 400 meters. On the other hand, the increased complexity of the scenario may make it more difficult for undertakings to calculate the capital requirement.

An alternative to the introduction of a factor to the sum insured is to use PML instead of sum insured in the loss definition. The use of PML would increase the risk-sensitivity of the sub-module because PML estimates can reflect the risk characteristics of the insured buildings. On the other hand, the subjectivity that PML estimates may introduce in the SCR calculation are a concern. There seems to be no common clear definition of PML and judgement may be usually applied when making the PML estimates. This may result in PML estimates that are not consistent across undertakings and jurisdiction and may not provide a level playing field for fire insurance. There are also concerns that PML estimates will be difficult to verify in the supervisory review process. Furthermore, PML estimates may not always be reliable and actual losses can exceed them.

Possible ways to mitigate these concerns are amendments of the PML estimates that ensure that they do not get too low. For example, instead of sum insured the following function of the PML could be used in the scenario definition:

$$PML + f \cdot (Sum\ insured - PML)$$

where  $f$  is a factor smaller 1. The second summand ensures that PML estimates that are very low are adjusted upwards.

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<sup>11</sup> Similar concepts like expected maximum loss (EML) or maximum foreseeable loss (MFL) could also be considered.

## Questions to stakeholders

Q8.9: Does the fire risk sub-module of the standard formula produce capital requirements in line with the calibration objectives of Solvency II? Please provide evidence for your assessment.

Q8.10: If not, how should the loss scenario of the sub-module be changed to ensure consistency with the calibration objectives:

- Changing the impact radius of 200 meters referred to in Article 132(2)(b) of the Delegated Regulation?
- Modifying the loss from 100% of the sum insured to a lower percentage of sum insured?
- Modifying the loss by using probable or possible maximum loss (PML) instead of sum insured in the loss definition?
- Any other way?

Q8.11: In case PMLs should be used instead of sums insured in the loss scenario,

- How should PML be defined?
- Is there evidence on the reliability of PML estimates?
- Does the definition ensure an objective and consistent determination of PMLs across undertakings and jurisdictions?
- How can supervisors assess the appropriateness of the PMLs estimates?

Q8.12: Does the calculation of the fire risk sub-module need to be simplified? Please specify the parts of the calculations that are too complex or burdensome and explain why. Please suggest concrete changes to simplify the calculation.

## **9. Health catastrophe risk**

Further to its work on the non-life catastrophe risk sub-module, EIOPA would like to assess as well the complexity of the health catastrophe risk in relation to the nature, scale and complexity of the risks, in particular for small and medium-sized undertakings.

Specific questions are dedicated to the appropriateness of the mass accident risk in relation to the risk of terror events.

### **9.1. Mass accident risk sub-module**

#### **Mass accident and terror risks**

The mass accident catastrophe sub-module aims at capturing the risk of having many people in one location at the same time, who would suffer mass accidental deaths, disabilities and injuries with a high impact on the cost of medical treatment sought.

As recent events in Europe stress the crude reality of terror events, EIOPA would like to assess the calibration of the mass accident catastrophe in order to determine whether terror risk is appropriately taken into account.

#### **Questions to stakeholders**

Q9.1: Would a change in the standard formula be justified with respect to the materiality of the terror risk?

Q9.2: The scenario chosen to calibrate the mass accident risk was based on a footprint for a 10-ton truck bomb, the largest bomb modelled, causing fatalities and serious injuries within the largest arena in a given country. Does this calibration properly capture terror risks? If no, please provide suggestions and indicate if these suggestions would simplify or increase the complexity of the calculations.

#### **Simplifying mass accident sub-module**

#### **Questions to stakeholders**

Q9.3: Please describe the main challenges faced when calculating the mass accident risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

## **9.2. Accident concentration risk sub-module**

The accident concentration catastrophe sub-module aims at capturing the risk of having concentrated exposures due to densely populated locations, causing concentrations of accidental deaths, disabilities and injuries.

### **Simplifying accident concentration risk sub-module**

#### **Questions to stakeholders**

Q9.4: Please describe the main challenges faced when calculating the accident concentration risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

## **9.3. Pandemic risk sub-module**

The pandemic catastrophe sub-module aims at capturing the risk of having a large number of non-lethal disability and income protection claims and where victims are unlikely to recover as a result of a pandemic.

### **Simplifying pandemic sub-module**

#### **Questions to stakeholders**

Q9.5: Please describe the main challenges faced when calculating the pandemic risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

## 10. Calibration of the mortality and longevity risk

The current calibrations of the mortality and longevity sub-modules is given in Articles 137 and 138 of the Delegated Regulation and correspond to the loss in basic own funds that would result from an instantaneous permanent increase (resp. decrease) of 15% (resp. 20%). These calibrations are also used for the health mortality and health longevity sub-modules.

The assumptions underlying the life underwriting risk module are reported in the "Underlying assumptions in the standard formula for the Solvency Capital requirement" paper: [https://eiopa.europa.eu/Publications/Standards/EIOPA-14-322\\_Underlying\\_Assumptions.pdf](https://eiopa.europa.eu/Publications/Standards/EIOPA-14-322_Underlying_Assumptions.pdf)

The relevant assumptions have been summarised in annex A.

The European Commission is requesting EIOPA to assess the appropriateness of the calibration of the mortality and longevity risks and to assess if more granular approaches for the longevity risk would be appropriate in view of their risk-sensitivity and complexity.

In order to assess the appropriateness of the calibrations, EIOPA intends to carry out a recalibration exercise.

### 10.1. Assessing standardised methods mortality/longevity Risk sub-modules

In a recent study from Netspar<sup>12</sup> two methods to determine the SCR for longevity risk as described by the Solvency II Directive are compared: the SII standard approach and an internal model based on the stochastic Lee-Carter (LC) mortality model. The LC-model is used to estimate and forecast future mortality for Dutch gender-specific data. Forecasts from this model are used to simulate portfolio participants' lifetimes to determine the SCR with the 99.5% VaR. The standard approach uses a one-off shock for the best estimate one-year mortality rates as a simplification for the 99.5% Value-at-Risk of the internal model, both in excess of the best estimate value of the liabilities for sample pension portfolios.

The approach followed in the Netspar study is similar to the one followed by Towers Perrin in their UNESPA study. However the approach taken by Netspar is more consistent as a single stochastic mortality model is used for estimating the base mortality rates and projecting the future mortality rates. Furthermore the nature of the model ensures mortality rates cannot become negative or greater than one.

In this context the recent work<sup>13</sup> by the Mortality Research Committee (MRC) of the Dutch Royal Actuarial Association should be mentioned too. The MRC developed a fully transparent and replicable stochastic method for generating cohort mortality tables. The model proposed has been selected from a broad class of mortality models using selection criteria like biological characteristics, statistical characteristics and transparency. The model selected by MRC is a stochastic model which, in addition to the population of the Netherlands, also takes into account the populations of a number of other European countries. The data used is taken from the Human Mortality Database and Eurostat together with most recent observations by Statistic Netherlands (CBS).

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<sup>12</sup> Wu - Longevity Risk in SII: Standard Formula and Internal Model Compared – March 2015  
<http://arno.uvt.nl/show.cgi?fid=140128>

<sup>13</sup> [http://www.ag-ai.nl/view.php?action=view&Pagina\\_Id=625](http://www.ag-ai.nl/view.php?action=view&Pagina_Id=625)

The period life expectancy is based on (observed) mortality rates within a period of one calendar year. By combining such mortality rates to calculate the life expectancy, one arrives at the period life expectancy. As a single life can only take one specific age in a single calendar year it is more logical to combine mortality rates in consecutive (future) calendar years to arrive at the cohort life expectancy. Estimating up-to-date cohort life expectancies requires estimates of current mortality rates as well as future developments of these rates, i.e. level and trend. Therefore a suitable model is needed which appropriately captures these mortality rate characteristics.

The model selected by MRC is a (relatively) simple and transparent model. It has a limited number of parameters and can be explained easily. The model can be reconstructed precisely using the specifications given. The stochastic model applied by MRC is a multi-population mortality model, as proposed by Lee and Li<sup>14</sup>. It is a two-stage approach, whereby the combined European trend is first estimated using the Lee-Carter model with a random-walk-with-drift specification. The Lee-Carter mortality model is then used again to reflect the deviation of the Netherlands from the combined trend using a first-order autoregressive process without intercept specification. The time-series models are estimated taking into account the correlation between the changes in mortality probabilities in the Netherlands and the rest of Europe. Originally mortality rates were estimated separately for males and females, ignoring any possible correlation between sexes. In the most recent update and publication<sup>15</sup> both male and female mortality are estimated simultaneously, taking account of their possible correlation.

Combining data from different but comparable countries gives rise to a more robust model with more stable trends and more limited sensitivity to the calibration period used.

The combined European data set used by MRC consists of more than 100 million deaths at a total exposure of over 11 billion man-years. As a result of this, parameter uncertainty is to be expected low and has therefore been neglected in their report when demonstrating stochastic applications of the model.

## 10.2. Selection of a model

A model that may be used to carry out a recalibration exercise following the approach from the Netspar study is the Lee Carter model using as much (unisex) data of Member States being available. **One should note that at this stage, EIOPA did not make a decision on the model. The following description intends to be the basis of the discussion with stakeholders. Depending on their feedback and further research, EIOPA may choose another model and another approach.**

Grouping distinctive mortality risk characteristics (i.e. gender, geographic location, income, sum assured, etc.) into one single group might come at a cost of over/under-estimating the level, trend and volatility. Furthermore it could increase the uncertainty about the real number of deaths for a specific portfolio given the mortality rates used.

The Lee-Carter model<sup>16</sup> is a method for long-run forecasts of the level and age pattern of mortality, based on a combination of statistical time series methods and a simple approach to dealing with the age distribution of mortality. The Lee-Carter model does not directly specify mortality rates, but does specify instead the underlying force of

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<sup>14</sup> N. Li and R Lee. Coherent Mortality Forecasts for a Group of Populations: An Extension of the Lee-Carter Method. *Demography* 42(3), pp. 575-594.

<sup>15</sup> [http://www.ag-ai.nl/view.php?action=view&Pagina\\_Id=731](http://www.ag-ai.nl/view.php?action=view&Pagina_Id=731)

<sup>16</sup> Lee, Ronald D., and Carter, Lawrence. 1992. "Modelling and Forecasting the Time Series of U.S. Mortality", *Journal of the American Statistical Association* 87, no. 419 (September): 659-71

mortality (or hazard rate) for age  $x$  at time  $t$ , denoted by  $\mu_x(t)$ . The relation between the mortality rate and the force of mortality is given by:

$$q_x(t) = 1 - e^{-\int_0^1 \mu_{x+s}(t+s) ds}$$

Where  $q_x(t)$  is the 1-year death rate, i.e. the probability that someone alive at January 1st of year  $t$  and who was born on January 1st of year  $t-x$ , has died before January 1st of year  $t+1$ .

Assuming the force of mortality is constant throughout the year, i.e.

$$\mu_{x+s}(t+s) = \mu_x(t) \quad \text{for } 0 \leq s < 1$$

We arrive at:

$$q_x(t) = 1 - e^{-\mu_x(t)}$$

Now the Lee-Carter model for the force of mortality is given by:

$$\ln(\mu_x(t)) = A_x + B_x K_t$$

Where:

$$K_t = K_{t-1} + \theta + \varepsilon_t \quad \text{with } \varepsilon_t \sim N(0, \sigma_\varepsilon)$$

The model describes the log of a time series of an age-specific force of mortality as the sum of an age-specific component  $A_x$  that is independent of time, another component that is the product of a time-varying parameter  $K_t$  reflecting the general level of mortality, and an age-specific component  $B_x$  that represents the sensitivity to the general level of mortality.

When estimating the model it is assumed that the observed numbers of deaths  $D_{x,t}$  - given the exposures  $E_{x,t}$ <sup>17</sup> - follow a Poisson distribution with mean  $\mathbb{E}[D_{x,t}|E_{x,t}] = \mu_x(t)E_{x,t}$ . By maximizing the combined Poisson likelihood function for all observed number of deaths over all ages the parameters  $A_x, B_x$  and  $K_t$  are being estimated. Based on the estimated  $K_t$  the parameters  $\theta$  and  $\sigma_\varepsilon$  can be estimated.

By construction of the Lee-Carter model it holds that  $0 \leq q_x(t) < 1$ . Furthermore, the construction of the model guarantees that annual changes in mortality rates in a single year for all ages behave similar as they are driven by a single source of randomness, i.e. the uncertainty in the trend parameter  $K_t$ . In addition to that, it can be shown that  $B_x \theta$  from the Lee-Carter model approximately equals  $\theta_x$  from the Towers Perrin model and  $B_x \sigma_\varepsilon$  from the Lee-Carter model approximately equals  $\sigma_x$  from the Towers Perrin model. Although both models look related the Lee-Carter model is the theoretical sounder model as it uses a consistent framework for both the best estimate base mortality table and the future improvements to it. However the model is mathematically more challenging to estimate than the Towers Perrin model.

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<sup>17</sup> The exposure is the man-year equivalent of the number of observed lives in a population during the year of observation, taking into account the in- and outflow of lives.

Nevertheless one may see it as today's standard model being widely used by researchers and practitioners with all kind of extensions and modifications like for instance the multi-population extension by Lee-Li as used by the MRC.

It should be noted that the model does neither take into account uncertainty with respect to parameters nor with regard to the model. The future deviations from the best estimate may be larger or smaller because mortality trends may occur which cannot be predicted at present. These include for instance the effects on future mortality of changes in behavioural factors, socio-economic developments and developments in ethics. Which unknown viruses and bacteria may still have an effect on mortality? How will the resistance of antibiotics develop and what medical developments can be expected? All these factors may result in a situation where the future distribution of mortality around the best estimate may differ from the distribution on the basis of historic data calculated in accordance with the model.

### **Questions to stakeholders**

Q10.1: Do you have remarks on the Lee Carter model or could you suggest another more appropriate model?

Q10.2: How would you take account of parameter uncertainty and model risk with respect to mortality-longevity risks?

Q10.3: Should account be taken of possible future deviations from the estimated mortality trend and how (i.e. expert opinions)? If yes, could you please provide a suggestion?

### **10.3. Data selection**

As stated in the previous section, EIOPA intends to carry out a recalibration exercise in order to assess the appropriateness of the mortality and longevity risks calibrations. For that purpose, EIOPA would like to use as much (unisex) data of member states as available.

General population mortality data for a wide range of countries is publically available via:

- Human Mortality Database
- EUROSTAT database

This data refers to observed mortality and exposures for entire populations of countries. It is well known that observed mortality for insured populations deviates from this due to adverse selection by policy holders (longevity risk) and/or medical examination (mortality risk).

Combining data from different countries might come at a cost of over/under-estimating the level, trend and volatility. For instance, estimating the Lee Carter model on European wide data will result in a best estimate uniform European level of mortality and trend which might deviate from current base (cohort) mortality tables used by undertakings. EIOPA intends to assess these basis risks further.

Article 29 of the Delegated Regulation states that the calculation of the best estimate of liabilities shall take into account expected future developments that will have a material impact on the cash in- and out-flows required to settle the insurance and reinsurance obligations over the lifetime thereof. For that purpose future developments shall include demographic, legal, medical, technological, social,



environmental and economic developments including inflation as referred to in Article 78(2) of the Solvency II Directive.

## Questions to stakeholders

Q10.4: Which other data could be used? Is the data you are suggesting to use publicly available?

Q10.5: To what extent and how could account be taken of:

- Differences between general mortality and insured mortality?
- Portfolio specific risk characteristics with respect to level, trend and volatility?

## 10.4. Mortality risk, life expectancy and SCR

Solvency II capital requirements are based on a Net Asset Value (NAV) basis: the SCR correspond to the Value at Risk of the basic own funds subject to a confidence level of 99.5% over a one-year period.

Although it is possible to derive the 99.5th percentile of the distribution of future mortality rates when using a stochastic mortality model, these 99.5th percentile mortality rate levels are in general not suited to calculate the 99.5th percentile of the distribution of the respective liabilities. This is due to the fact that liabilities are in general non-linear transformations of mortality rates.

Furthermore, for practical reasons the current calibration of the mortality/longevity capital requirements is defined in terms of a uniform instantaneous shock to the underlying mortality rates, where the level of the shock is such that the resulting required capital is approximately equal to the amount by which the 99.5th percentile of the underlying distribution of liabilities exceeds the best estimate of those liabilities.

The use of homogeneous risk groups secure to a certain extent that the distributions of the liabilities underlying the group behave similarly. Alternatively different homogeneous risk groups have in general different distributions of liabilities, leading to different uniform instantaneous shocks when approximating the amount by which the 99.5th percentile of the underlying distribution of liabilities exceeds the best estimate of those liabilities.

### Understanding the uniform SII shocks in terms of life expectancy

Given a series of (projected) mortality rates  $q_x(t)$ ,  $q_{x+1}(t+1)$ ,  $q_{x+2}(t+2)$ ,...etc. the expected future cohort life time at age x defined as:

$$e_x(t) = \frac{1}{2} + \sum_{k=0}^{\infty} \prod_{s=0}^k (1 - q_{x+s}(t+s))$$

Note that:

$$\begin{aligned} \prod_{s=0}^k (1 - q_{x+s}(t+s)) &= (1 - q_x(t))(1 - q_{x+1}(t+1)) \cdot \dots \cdot (1 - q_{x+k}(t+k)) \\ &= p_x(t)p_{x+1}(t+1) \cdot \dots \cdot p_{x+k}(t+k) = {}_k p_x(t) \end{aligned}$$

Or the k-year survival probability for a life aged x at time t.

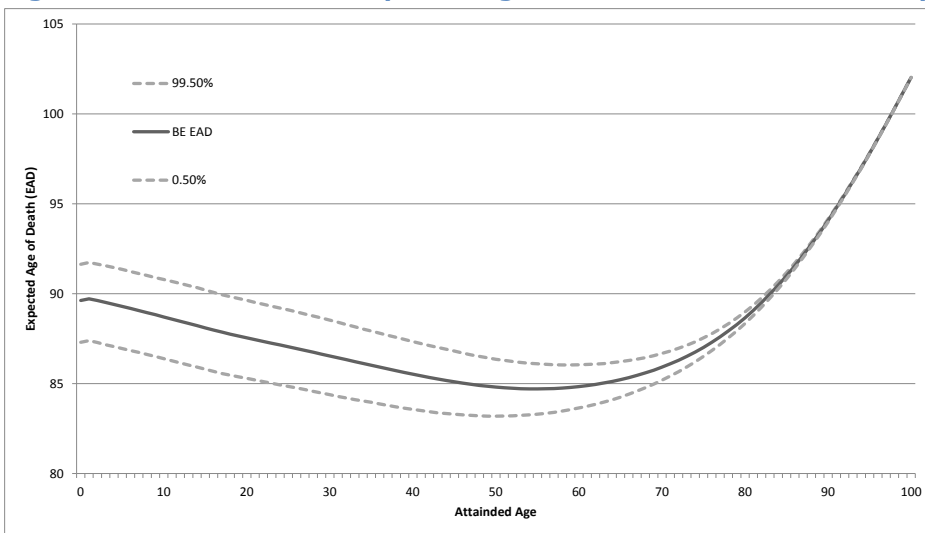
Substituting this into the expression for  $e_x(t)$  we arrive at:

$$e_x(t) = \frac{1}{2} + \sum_{k=0}^{\infty} k p_x(t)$$

The expected future period life time at age x is based on a similar formula, however uses a series of observed mortality rates in year t, i.e.  $q_x(t), q_{x+1}(t), q_{x+2}(t), \dots$ , and hence does not take into account future mortality rate improvements.

Using the Lee-Carter model it is straightforward to simulate a distribution of  $e_x(t)$  for all x. Adding the attained age x to the expected future lifetime at age x we arrive at the expected age at death which is shown in Figure 1.

**Figure 1 – Distribution of expected age of death: best estimate and percentiles**



The downward sloping shape of the curve in Figure 1 is a result of younger persons benefiting more from future mortality improvements than older persons. The upward sloping shape to the right is a result from having attained this higher age already, i.e. the expected age of death is conditional on the attained age.

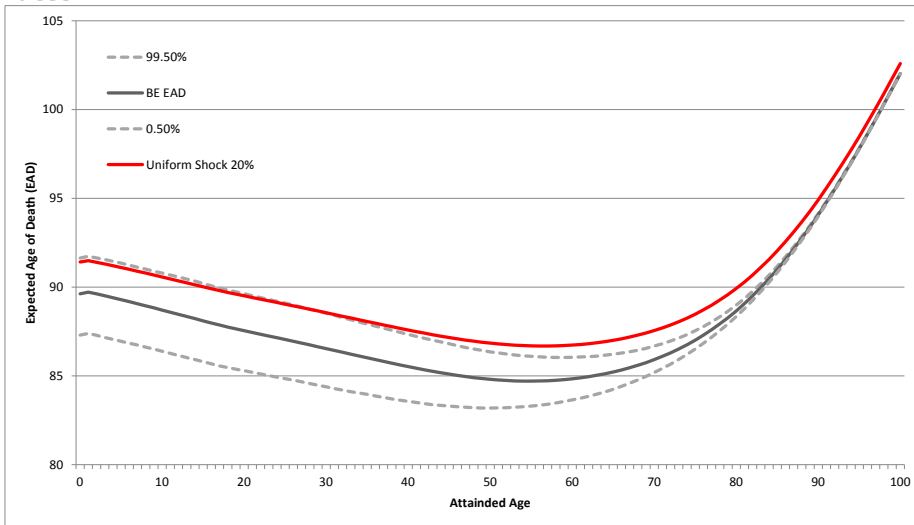
The best estimate of the expected age of death (BE EAD), i.e. the most likely outcome, is based on the Lee-Carter model where all error-terms of the trend parameter are set equal to their mean being zero.

Given the definition of the expected future cohort lifetime at age x it is straightforward to show the effect of an instantaneous decrease of 20% in mortality rates, i.e.

$$e_x^{shocked}(t) = \frac{1}{2} + \sum_{k=0}^{\infty} \prod_{s=0}^k (1 - 0.8 \times q_{x+s}(t+s))$$

The effect on the best estimate expected age of death is represented in Figure 2 by the red line:

**Figure 2 – Expected age of death for an instantaneous decrease of 20% in mortality rates**

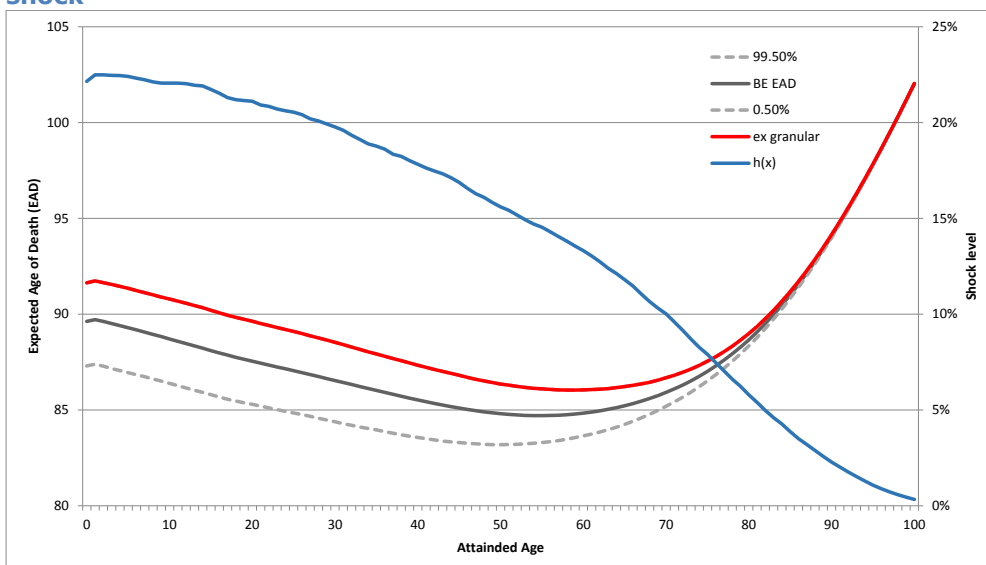


Such a more granular approach can be found in defining a more granular shock level, for instance an instantaneous uniform shock that is depended on the attained age only, i.e.

$$e_x^{granular}(t) = \frac{1}{2} + \sum_{k=0}^{\infty} \prod_{s=0}^k (1 - (1 - h(x)) \times q_{x+s}(t + s))$$

Where  $h(x)$  is chosen such that  $e_x^{granular}(t) = e_x^{99,5\%}(t)$ .

**Figure 3 - Expected age of death including an attained age depended shock**



From Figure 3 it follows that  $h(x) < 20\%$  for  $x > 28$ . From a life expectancy risk perspective only one could argue that a uniform shock of 20% given an average of 60 years does not match the 99.5% certainty equivalent.

However the SCR is not defined in terms of life expectancy, but rather in terms of loss of own funds, i.e. loss of net asset value. Moreover, several of the considerations described above have not been included in the model (see questions 2, 3 or 5 for instance). Therefore EIOPA is considering using a similar approach defined in terms of loss of net asset value which requires definitions of appropriate (portfolios of) liabilities.

### **Questions to stakeholders**

Q10.6: Do you think that a more granular approach for longevity and mortality risks is appropriate? If yes, please explain what would be the costs and benefits, in particular in terms of risk sensitivity and complexity.

Q10.7: Do you have any comments on, or suggestions to, the approach described above to calculate an alternative more granular shock to mortality rates being equivalent to financial stress consistent with the SCR definition?

Q10.8: Do you have any suggestions on the composition of appropriate (portfolios) of liabilities? For instance, which level of granularity would be necessary: model point approach (per LoB) versus full portfolio approach?

Q10.9: Do you have any suggestions on how to take account of the interest rate sensitivity inherent in the calculation of the loss of own funds?

Q10.10: Do you have any other suggestions on how to relate the 1-year value-at-risk measure of the SCR standard formula to changes to mortality rates? Currently these changes are defined as instantaneous and uniform shocks, would you have other suggestions?

## **11. USP and GSP on underwriting risks**

### **11.1. USP on underwriting risks**

Article 104, paragraph 7, of the Solvency II Directive, on the design of the Basic Solvency Capital Requirement, introduces the concept of underwriting specific parameters (USP). It is stated that subject to approval by the supervisory authorities, insurance and reinsurance undertakings may, within the design of the standard formula, replace a subset of its parameters by parameters specific to the undertaking concerned when calculating the life, non-life and health underwriting risk modules.

Such parameters shall be calibrated on the basis of the internal data of the undertaking concerned, or of data which is directly relevant to the operations of that undertaking using standardised methods.

The Delegated Regulation (Articles 218 to 220) specifies the subset of standard parameters that may be replaced by USP, the criteria regarding the data used to calculate USP and the standardised methods to use to calculate the USP. In Annex XVII, the Delegated Regulation sets the method-specific data requirements and method specifications for USP.

#### **Questions to stakeholders**

Q11.1: Do you have any suggestions on the introduction of USP in the mortality and longevity risk modules that would be consistent with the approach described in section 10 of this document?

Q11.2: Did you identify other standard parameters that could be replaced by parameters specific to the undertaking concerned when calculating the life, non-life and health underwriting risk modules?

Q11.3: For these parameters, which criteria regarding the data and which standardised methods would you recommend to calculate the USP?

Q11.4: Do you have any suggestion for improving the data criteria as defined in Article 219 and/or in Annex XVII of the Delegated Regulation? Please explain whether your proposal simplifies or not the framework and the consequences in terms of quality of USP.

### **11.2. Alternative methods for non-proportional reinsurance**

According to Article 117(3) of the Delegated Regulation, the net premium risk factor is determined by the product of a non-proportional reinsurance factor times the corresponding gross premium risk factor as set out in Annex II. The non-proportional reinsurance factor is a correction factor reducing the premium risk factor that was calibrated based on gross data for the risk-mitigating effect of a non-proportional reinsurance. The non-proportional reinsurance factor can be used as a further USP subject to the approval of the supervisor in the non-life premium risk sub-module.

The non-proportional ("NP") factor USP method is described in Annex XVII F of the Delegated Regulation. The stated formula only holds for excess of loss reinsurance contract. This formula can be derived within the well-known framework of a collective risk model, where the non-proportional reinsurance factor is defined as

- the portion of the variance of the total claims size<sup>18</sup> with the excess of loss reinsurance contract;
- divided by the variance of the total claims size without the excess of loss reinsurance contract.

Moreover the derived formula for the NP factor only holds for a Poisson distributed number of claims.

The European Commission requested EIOPA to investigate which alternative methods for the NP factor USP could be adopted.

### Questions to stakeholders

Q11.5: Do you have any suggestion how the current non-proportional reinsurance factor USP method could be amended or replaced by a different method?

Q11.6: In particular, do you have any idea how the NP factor USP method could be extended to take other types of reinsurance contracts into account (e.g. stop loss reinsurance or finite reinsurance)?

### 11.3. Methods for GSP

Group specific parameters are applied to those entities that compute the group SCR under method 1 or under the combination of method 1 and method 2. Article 338 of the Delegated Regulation and guideline 11 of EIOPA Guidelines on USP (EIOPA-BoS-14/178) provide the scope of the group using group-specific parameters.

Applying method 1 leads to consolidated data (Article 335), which is used to calculate the group SCR (Article 336) by applying stresses to the consolidated balance sheet, in the same manner as it is done at solo level.

At solo level, standard parameters of the solo SCR can be replaced by undertaking specific parameters (Articles 218 to 220). These parameters are calculated according to undertaking specific data.

At group level, standard parameters of the group consolidated SCR can also be replaced by group specific parameters (Article 338). Those parameters are calculated on group specific data of the undertakings that are in the covered by method 1: same perimeter as for consolidated data. The standardised methods used to calculate the group-specific parameters are the same methods as set out for undertaking specific parameter (Article 338).

Data used to calculate group-specific parameters shall satisfy the same criteria as for undertaking specific parameters as set out in Article 104(7) of the Solvency II Directive and Article 219 of the Delegated Regulation (Article 338). According to guideline 12 of EIOPA Guidelines on USP (EIOPA-BoS-14/178), the group should be able to demonstrate to the group supervisor that the nature of the group business and its risk profile are similar enough to those of the individual undertakings providing the data to ensure consistency between the statistical assumptions underlying the data used at the individual entity level and at group level.

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<sup>18</sup> where the total claims size is defined as usually  $S = \sum_{i=1}^N X_i$  with N being the random number of claims and  $X_i$  the random claims severity of claim i.

## Questions to stakeholders

Q11.7: Did you identify specific issues related to the application of GSP, other than the one identified for USP?

Q11.8: Which solution would you recommend to the specific GSP issues you identified? Do you have suggestions for alternative methods to calculate GSP?

Q11.9: Do you have any suggestion for additional specific parameters that would apply to groups only, and not to solo (re)insurance undertakings?

## **12. Simplifying the counterparty default risk module**

Many stakeholders perceive the counterparty default risk module as complex and are of the view that the nature, scale and complexity of the risk does not justify such a complex calculation method. This suggests the potential for simplifying parts of or the entire structure of the module where the risk is not significant relative to the total risk.

The scope of the review also includes clarifications on areas of the counterparty default risk module that are difficult to understand while suggestions to include other risks in the module are not covered.

### **12.1. Possible ambiguities in the application of the counterparty default module**

The counterparty default risk module covers among other exposures derivatives, reinsurance recoverables and mortgage loans. A number of questions whether certain exposures are included have been addressed to EIOPA.

More generally, EIOPA is aware that a number of stakeholders perceive the module as being unclear or lacking intuition and that they see the need for clarifications.

Respecting the existing framework EIOPA would like to use the opportunity of the review to address where possible these questions and provide clarification.

#### **Questions to stakeholders**

Q12.1: Are there any cases where you find it unclear if an exposure should be treated in the counterparty default module or not? Please explain providing the legal provisions that you deem ambiguous.

Q12.2: In case you consider any steps in the calculation in the counterparty default risk module as being unclear, please explain and provide a suggestion how clarity could be improved.

Q12.3: Are there any other aspects of the module in question that are unclear? Please explain.

### **12.2. Simplifying the module**

EIOPA is looking for ideas on how the counterparty default risk module could be simplified. The main difficulty in the calculation of the counterparty default risk seems to arise from the Loss Given Default (LGD) calculation for the risk-mitigating effect, particularly the risk-mitigating effect of reinsurance exposures. Accordingly, one could seek for simplifications and proper approximations for the risk-mitigating effect calculation.

Suggestions for simplifications of the module should be accompanied by an assessment of how the risk-sensitivity of the standard formula calculation is affected by the simplification.



## Questions to stakeholders

Q12.4: What part of the counterparty default risk module, if any, do you see as complex? Please provide an assessment of each identified part; what is costly or time consuming in the calculation, structure etc.

Q12.5: What are possible simplifications of the counterparty default risk module (structure of the model, calculations etc.)? Please provide for each suggestion a thorough description and explanation.

Q12.6: Please explain for each simplification how it saves time/costs and how it affects the risk-sensitivity of the calculation.

Q12.7: Are there certain conditions under which the use of the simplification should be allowed?

## **13. Exposures to qualifying central counterparties and derivatives**

The European Commission has asked EIOPA to develop an approach for the treatment of exposures to qualifying central counterparties in the counterparty default risk module. In accordance with Article 111(fa) of the Solvency II Directive, this treatment should be consistent with the treatment of such exposures for credit and financial institutions. In addition, EIOPA is asked to analyse how the Solvency II framework could be updated to reflect the reduced counterparty risk.

In order to inform its work EIOPA would like to understand if insurers have exposures to central counterparties (CCPs) or clearing members other than those resulting from derivatives transactions.

In addition, EIOPA would like to understand if there are any insurers using the standard formula that are clearing members. If this should be the case EIOPA is interested in stakeholders' views whether – provided specific provisions were deemed appropriate to cover this case – the treatment in the standard formula should be based on the cases and conditions set out in Article 304 and 306 of the Capital Requirement Regulation (CRR).

Insurers will probably more often use a CCP as client of a clearing member than being clearing members themselves. One useful piece of information in this context is the relevance of transactions that fall into the different categories set out in Article 305 CRR for standard formula insurers.

As the Solvency II Directive requires consistency with the banking regulation one possible option would be to differentiate the standard formula treatment based on the cases set out in Article 305 CRR. EIOPA is interested in stakeholders' view on this idea. Another aspect is how consistency could be achieved in terms of the level of capital requirements.

For derivatives subject to the margining requirements set out in Article 11(3) EMIR, EIOPA would be interested to know any reason why stakeholders consider that the current standard formula treatment does not adequately reflect the risks.

Finally, EIOPA would like to know whether there are any other arrangements related to derivatives it should consider.

### **Questions to stakeholders**

#### **General**

Q13.1: Do insurance or reinsurance undertakings have other exposures to central counterparties or clearing members than those resulting from derivatives transactions? If so:

- What are these other exposures?
- What are the volumes?
- Is there any reason to assume that the risks of these exposures are not properly reflected in the standard formula?

## Cleared derivatives

Q13.2: Are there any insurance or reinsurance undertakings that use the standard formula for calculating their SCR that are clearing members of a qualifying central counterparty? Please provide the names if possible. Would you expect many standard formula insurers to become clearing members in the future? If so, why?

Q13.3: In case you think that there should be a specific treatment of the exposures resulting from being a clearing member of a qualifying CCP for insurers in the standard formula: should the standard formula treatment be differentiated based on the cases and conditions set out in Article 304 and 306 CRR? If not: Why and what would be a better alternative?

Q13.4: Where an insurer is using a qualifying CCP as a client of a clearing member:

- What is the relevance of the different cases set out in Article 305 CRR (transaction volume for (standard formula) insurers in terms of notional/market value)?
- Should the capital requirement be differentiated based on the cases and conditions set out in Article 305 CRR? If not:
  - Why?
  - What should be changed?
  - How could the consistency with the banking rules as required in Article 111(fa) Solvency II be achieved when different cases and conditions were used?
  - Provided the cases and conditions of Article 305 CRR were used: How could the required consistency with the banking rules set out in Article 111 (fa) Solvency II be achieved in terms of the level of the capital requirement for the different cases?

## Non-cleared derivatives

Q13.5: Does the treatment of derivatives of derivatives subject to the margining requirements set out in Article 11(3) EMIR in the counterparty default risk module properly reflect the risk? If not:

- Why?
- What should be changed (detailed suggestion)? Please elaborate on how your suggestion is in line with the fact that the scenario-based calculations are based on the impact of **instantaneous** stresses.

## Other

Q13.6: Are there any other clearing arrangements or other arrangements related to derivatives transactions that EIOPA should consider? If so: Why (what are the volumes) and how?

## 14. Assumptions of the market concentration risk sub-module

EIOPA is asked to report on assumptions currently made by insurance and reinsurance undertakings when calculating the capital requirement for market risk and their impact.

Based in part on the questions that were raised by stakeholders on the market risk concentration risk sub-module EIOPA has tried to identify areas where the assumptions may differ. Insurers are invited to provide information on the assumptions they use in these areas.

In some areas (e.g. the scope of the sub-module) EIOPA would expect that there are no differences in the calculation of the capital requirement for market risk concentration between insurers. Stakeholders are invited to indicate whether they have a different view.

### Questions to stakeholders

#### Scope of the market risk concentration sub-module (MRC SM)

Q14.1: EIOPA considers that the scope of the market risk concentration risk sub-module covers all assets held by an insurance or reinsurance undertaking except those listed in Article 184(2) of the Delegated Regulation. Do you see any ambiguities regarding the scope?

#### Interpretation of Article 186

Q14.2: What assumptions are made by insurance and reinsurance undertakings relating to the application of Article 186(2) to (5) of the Delegated Regulation? In particular:

- assumptions with respect to the applicability of these paragraphs to single name exposures that consists not exclusively of exposures to one single insurance undertaking, credit institution or financial institution (e.g. insurance group)? If it is assumed that they can be applied, what assumptions are used to calculate the risk factor  $g_i$ ?
- assumptions when deciding whether a credit assessment by a nominated ECAI is not available (no issuer rating by the nominated ECAI, none of the exposures is rated by a nominated ECAI, something else)? Please cover where relevant the different cases mentioned in a.

Q14.3: What is the volume of assets/exposures falling within Article 186(2) to (5) of the Delegated Regulation (based on Solvency II valuations) in your undertaking/country/in the EU?

Q14.4: Article 199(4) to (7) of the Delegated Regulation use the same terminology as Article 186(2) to (5) of the Delegated Regulation. Are there any differences in the assumptions that insurance and reinsurance undertakings make regarding the points mentioned in Q14.2 between the market risk concentration sub-module and the counterparty default risk module?

Q14.5: What is the volume of assets/exposures falling within Article 199(4) to (7) of the Delegated Regulation (based on Solvency II valuations) in your undertaking/country/in the EU?

## The term "Single Name Exposure"

Q14.6: What assumptions are made by insurance and reinsurance undertakings with respect to the types of groups of exposures other than corporate groups and single immovable property? What characterizes these types? What would be the effect on the capital requirement for market risk concentration if they were not treated as single name exposure in your undertaking/country/in the EU?

Q14.7: What assumptions are made by insurance and reinsurance undertakings regarding the question whether exposures to separate counterparties that are owned by the same public entity should be considered as a single name exposure? What considerations form the basis for the decision? What would be the effect on the capital requirement for market risk concentration in your undertaking/country/in the EU if they would always/never be treated as single name exposure?

Q14.8: What assumptions are made by insurance and reinsurance undertakings regarding funds for which the look-through approach is not possible (in particular regarding allocation to single name exposures)?

## Definition of exposure at default

Q14.9: The Solvency II framework does not provide a legal definition of the term "exposure" referred to in Article 182(2) of the Delegated Regulation. EIOPA considers that for an asset in the scope of the market risk concentration risk sub-module the value of the exposure should normally equal the value of the asset as determined in accordance with Article 75 of the Solvency II Directive. Are there any assets where in your view a different approach is justified and why?

## Treatment of risk-mitigation techniques

EIOPA considers that the effect of risk-mitigation techniques that meet the requirements set out in Article 208 to 215 of the Delegated Regulation ("qualifying RMT") can be taken into account in determination of the capital requirement for market risk concentration.

Q14.10: How do insurance and reinsurance undertakings take into account the effect of qualifying RMT in the calculation of the capital requirement for market risk concentration? In particular:

- How are the values of the exposures as referred to in Article 182(1) of the Delegated Regulation adjusted (for example if an insurer holds both stocks in a company and put options on the same stock)?
- How is the effect of collateral taken into account?

Q14.11: In case this was in line with the requirements set out in Article 132 Solvency II insurers could use derivatives to gain exposures to market risk (e.g. long future or long call position on individual stocks). How would insurance and reinsurance undertakings treat this case in the market risk concentration sub-module?

Q14.12: Are risk-mitigation techniques (e.g. derivatives) included in the determination of the calculation base as referred to in Article 184(1) of the Delegated Regulation? If so, how?

## **15. Currency risk at group level**

EIOPA is requested to provide information on currencies chosen by insurance groups to hold their own funds and investigate if the approach taken to group currency risk adequately covers the risk to which the group is exposed, and suggest modifications where appropriate.

### **15.1. Currency risk in the current Solvency II framework**

#### **Current treatment of currency risk**

The capital requirement for currency risk is determined as the sum of the capital requirements for currency risk for each foreign currency. For each foreign currency, the capital requirement for currency risk is determined by the loss in basic own funds arising from a stress of 25% to the value of foreign currency against local currency. Where the consolidated group SCR is calculated on the basis of the standard formula, the local currency is the currency used for the preparation of the consolidated accounts.

#### **Currency risk in context of groups**

In the case of groups, currency risk can be considered to arise broadly from two sources. First, assets may be denominated in a different currency than the currency of the liabilities. Second, the currency used for the preparation of the consolidated accounts can be different from the currency of the solo undertakings, hereafter referred to as "FX translation risk". This is a consequence of the total balance sheet approach, where stress is applied to all the assets and liabilities for different risks.

### **15.2. Currency risk and fungibility of own funds**

The currency risk at the group level is a special class of risk in the sense that the reporting currency is a key input in determining the capital requirements.

The allowance for FX translation risk in the standard formula seems broadly reasonable, contrary to the assertion that this is not a real risk, in the sense that it affects the solvency ratio. For example, consider a group headquartered in the UK with subsidiaries in Europe. The consolidated accounts are prepared using sterling as the reporting currency but the group has liabilities denominated in both euro and sterling. Undertakings' solvency ratio can be significantly affected by the exchange rate of GBP and EUR if they have many own funds denominated in these currencies.

The fungibility of own funds and diversification issues are particularly relevant to understand currency risk at the group level. These are considered below:

(i) The changes in FX rates affect the consolidated balance sheet and therefore it is a source of potential risks. It is difficult to conclude from the definition of market risk in Article 13 (31) of the Solvency II Directive that FX translation risk is not within its scope.

(ii) In order to recognise group risk diversification it is fundamental that own funds are able to offset adverse outcomes in one business with favourable

outcomes in another. This follows directly from the definition of 'diversification effects' in Article 13(37) of the Directive.

In order to perfectly offset the outcomes, there is a need to have a common currency; hence ignoring FX translation would create the risk of overestimating the diversification benefit.

If a group wants to diversify the risks between country A and country B then it needs to make sure that at the point at which country B would need the own funds from country A, those own funds have not depreciated in country B's currency. Otherwise the own funds in country A will be worth less (in country B's currency) than is necessary to effectively offset that loss. Therefore ignoring FX translation would overstate the diversification benefit.

(iii) Full capital fungibility can only be justified if capital is held in respect of the FX translation risk. If the argument is that the own funds backing local capital requirements can never be moved and are therefore immune from the FX translation risk, then this should be accompanied by a restriction in the availability of own funds as they cannot be transferred to other parts of the group when needed.

## Questions to stakeholders

Q15.1: Do you consider the currency risk arising at the level of the group due to the currency used to prepare the consolidated accounts being different from the reporting currencies of the solo undertakings ('FX translation risk') to be a real risk?

Q15.2: If answer to Q15.1 is no, should there be restrictions on the availability of the own funds at the level of the group?

Q15.3: Do you consider own funds across the group to be fungible? Please explain why this would be the case in a situation of stress on a given currency.

Q15.4: Do you consider the treatment of the currency risk at the level of the group to be appropriate under the standard formula? If not, what elements would you propose to change? Please explain how your suggestion meets the requirements of Article 101 of the Solvency II Directive.

## **16. Look-through approach: simplifications and investment related vehicles**

### **16.1. The method, assumptions and standard parameters to be used when calculating the market risk for related undertakings**

EIOPA was requested to provide information on related undertakings used by insurance and reinsurance undertakings as an investment vehicle and to assess under what conditions it may be appropriate to extend the look-through approach to such undertakings. In this sub-section, EIOPA is seeking stakeholders' feedback on this specific item.

Article 84(1) of the Delegated Regulation requires insurance and reinsurance undertakings to calculate the Solvency Capital Requirement on the basis of each of the underlying assets of collective investment undertakings and other investments packaged as funds (look-through approach). It also establishes (Article 84(2)) that the look through approach shall apply to indirect exposures to market risk (other than collective investment undertakings and investments packaged as funds), counterparty default risk and underwriting risk.

Furthermore, in accordance with Article 84(4) of the Delegated Regulation, the look-through approach shall not apply to investments in related undertakings (within the meaning of Article 212(1)(b) and (2) of the Solvency II Directive).

### **16.2. Identification of related undertakings used as investment vehicles**

The call for advice requires a specific focus on those related undertaking which may represent "investment vehicles" for holding assets or may have been established with the predominant purpose of holding assets on behalf of the parent/participating entity. This creates an important identification issue as "investment related undertakings" are not defined in the Delegated Regulation.

EIOPA identified some important elements which could be considered as part of a proper definition of "investment related undertakings":

- the level of financial leverage (to be understood as the debt to equity ratio of the related undertaking);
- the nature of liabilities reported in Balance Sheet; and,
- the existence of a specific investment mandate.

#### **Questions to stakeholders**

Q16.1: What criteria and elements could be used for the proper identification of related undertakings which are used by insurance and reinsurance undertakings as an investment vehicle?

Q16.2: Do you agree that the elements identified by EIOPA are relevant? How could such elements be integrated in an appropriate definition?



### **16.3. Application of the look-through approach**

For the purpose of assessing under what conditions it may be appropriate to extend the look-through approach to investment related undertakings, EIOPA would like to collect stakeholders' view on the estimated costs and benefits, as well as an indication of the estimated impact on the SCR calculation.

#### **Questions to stakeholders**

Q16.3: What are the costs and benefits that might be associated to extending the application of the look-through approach to investment related undertakings?

Q16.4: How may the extended application of the look-through approach to investment related undertakings impact the SCR calculation?

Q16.5: Under which conditions do you consider that it would be appropriate to apply/allow the look-through approach to investment related undertakings?

### **16.4. Simplification for the look-through approach**

EIOPA was asked to review the simplification provided for the application of the look-through approach (Article 84(3) of the Delegated Regulation).

When the look-through cannot be applied to collective investment undertakings or investments packaged as funds, Solvency II allows undertakings to calculate the SCR on the basis of the target underlying asset allocation of the collective investment undertaking or fund, subject to certain conditions. In addition, the application of the simplified approach is limited to 20% of the value of the assets of the undertaking.

The call for advice focuses on those investments which are backing unit-linked and index-linked products. It is worth noting that this specific item of the call for Advice does not cover the reporting requirements (and any simplification related to reporting).

#### **Questions to stakeholders**

Q16.6: Do you consider the 20% threshold established by Article 84(3) appropriate?

Q16.7: Does the threshold allow the application of the simplified approach for investments which are backing unit-linked and index-linked products in an appropriate manner?

Q16.8: Do you have specific proposals to further simplify the look-through approach for investments which are backing unit-linked and index-linked products?

Q16.9: Do you identify specific exposures for which the cost of the application of the look-through approach would be excessively burdensome, compared to its added value in terms of accuracy of risk sensitiveness?

## 17. Interest rate risk sub-module

This section of the Discussion Paper is EIOPA's own initiative: for supervisory reason, EIOPA is assessing the appropriateness of the interest rate risk calibration. Indeed, as explained below, the interest rates have dropped significantly in the recent years, reaching negative levels. EIOPA wishes to assess whether the risk is still adequately captured.

The subsections below aim at identifying the issues with the current approach, the data to be used for a recalculation and the changes in the calibration methodology that would be needed in order to take account of the new interest rate environment.

### 17.1. Issues identified with the current relative approach

The capital requirement for interest rate risk is calculated as the maximum of the losses resulting from an upward and downward shift in the risk-free rates. The shifts are calculated as a percentage of the current rate. There is a minimum upward shift of 1 % but no minimum downward shift. Negative rates are not stressed downwards.

Mathematically the interest rate up curve is obtained by

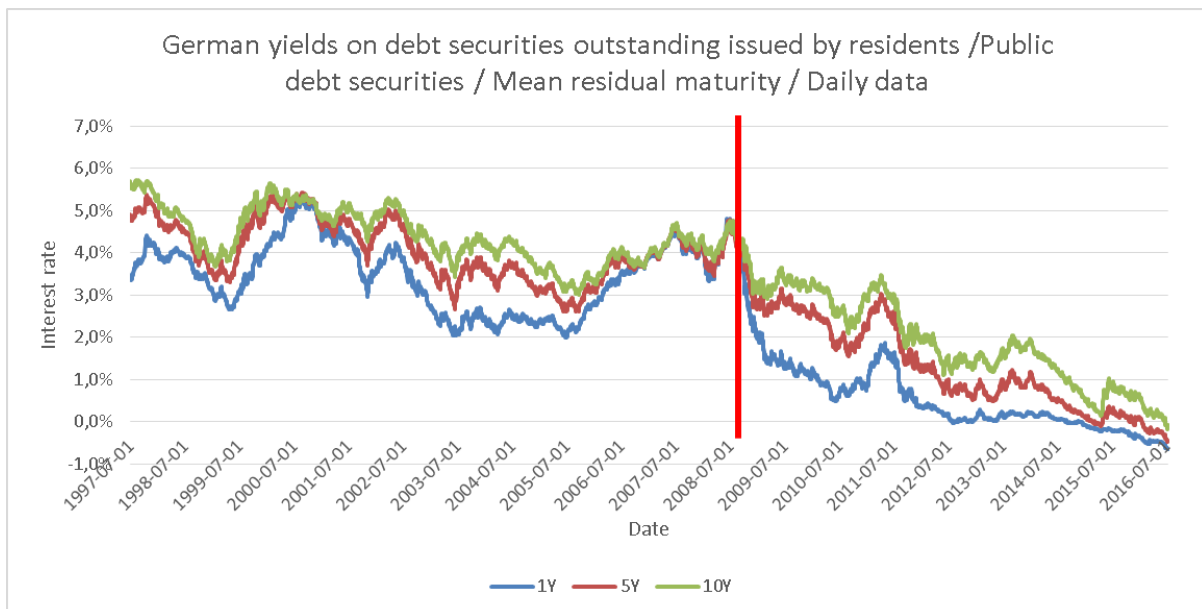
$$r_t^{up} = \max\{r_t (1 + s^{up}), r_t + 1\%\}$$

and the interest rate down curve by

$$r_t^{down} = \min\{r_t(1 - s^{down}), r_t\}$$

The calibration of the interest rate risk sub-module was performed in 2009. Since then the interest rates in Europe have dropped significantly (in some cases below zero).

The following graph shows the evolution of the German bond yields for maturities 1 year, 5 years and 10 years. Data after the red vertical separation line were not considered in the calibration (post 2009).

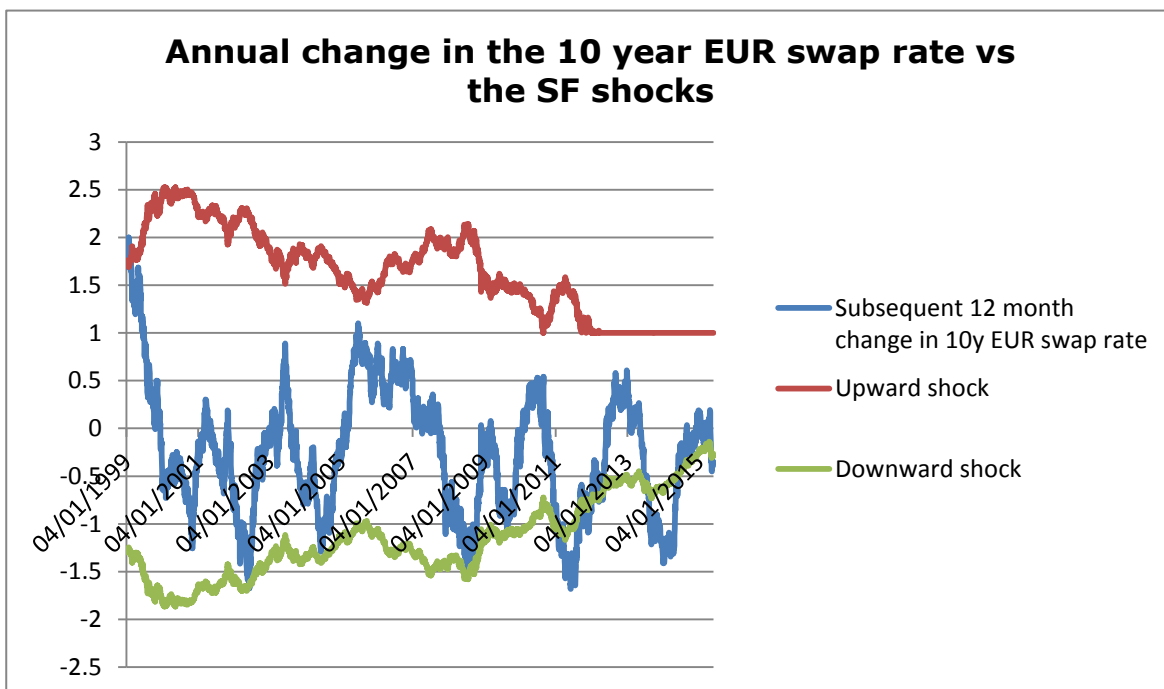


For different countries and maturities interest rates have been negative for more than a year with a downward trend.

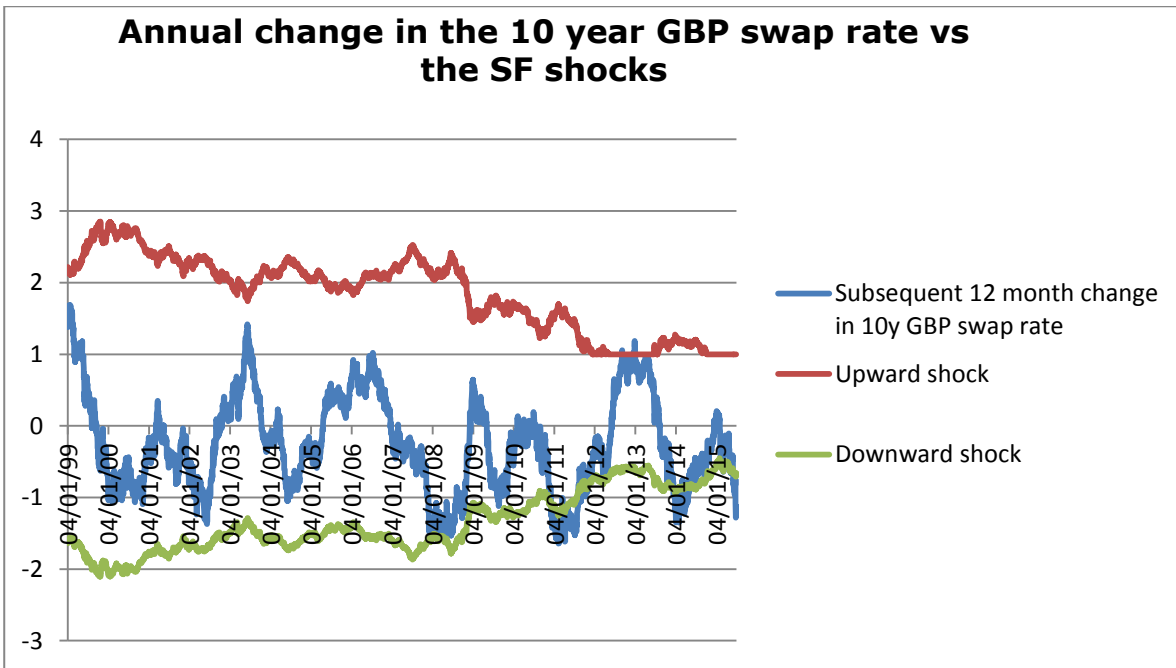
The main drawback of the current approach is that due to the relative calculation of the standard formula shocks, the absolute shocks become smaller with decreasing interest rates and are zero for negative interest rates. Accordingly the current relative shocks may not represent the real 1 in 200 year interest rate event.

The following back-testing exercise could give a good indication for a potential underestimation: The simple approach followed is to compare for each day in a given period the standard formula up- and downward- shocks with the subsequent change in interest rates over the next 12 months. If the calibration of the SCR for interest risk was still appropriate, there should not be too many cases in which the actual change exceeds the standard formula shock.

The following graphs show the comparison for the 10-year EUR swap rate in the period between 1999 and the middle of 2015. It can be seen that the standard formula downward shock underestimated the subsequent drop in rates over the following 12 months for longer periods in 2011 and again in 2014 to 2015.



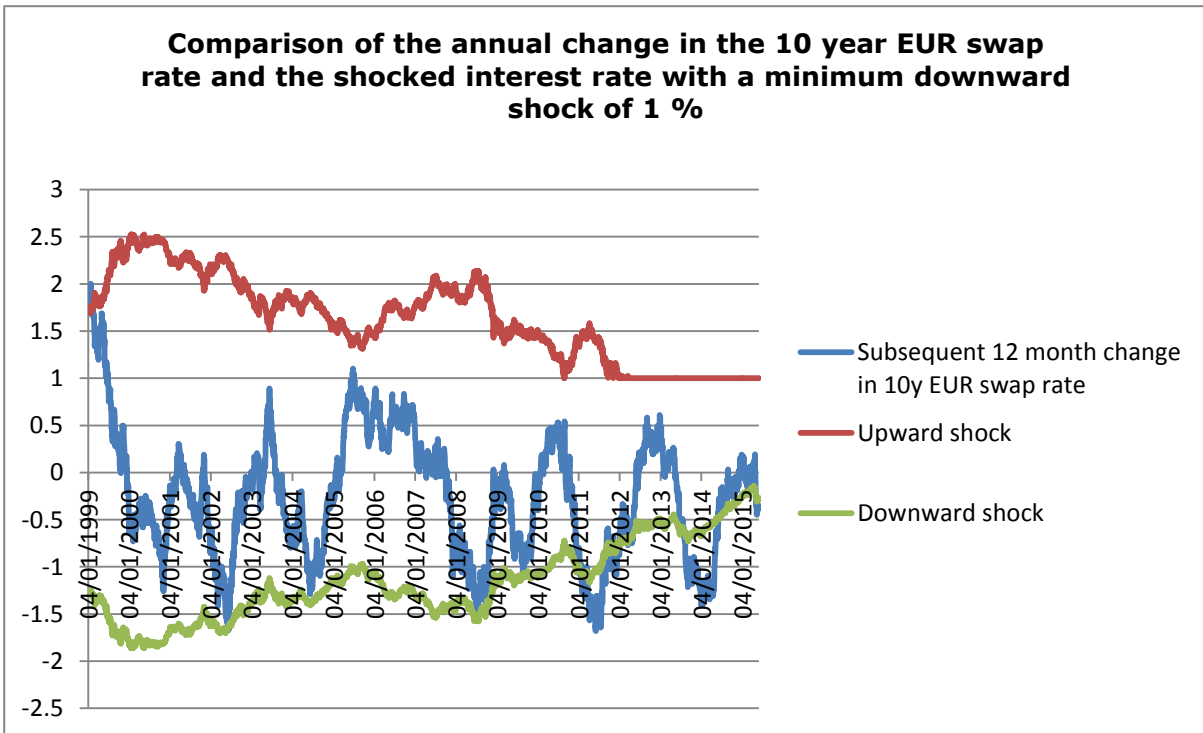
The analysis for the 10-year GBP swap rate shows similar results:

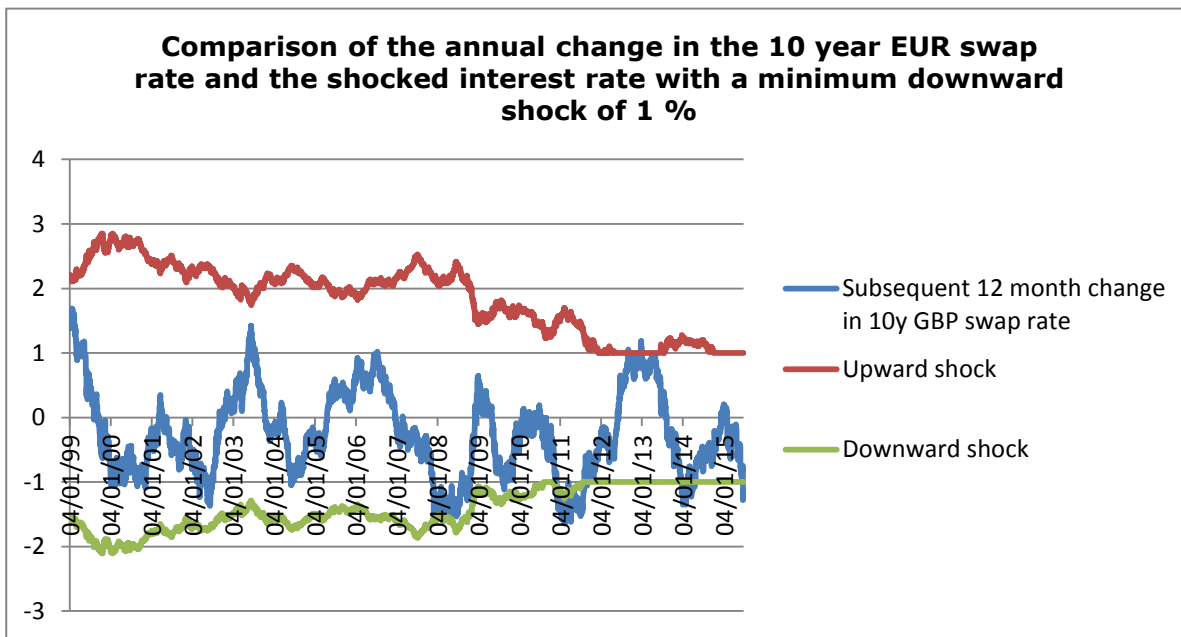


According to Article 167(2) of the Delegated Regulation, for negative basic risk-free interest rates the decrease shall be nil. As shown above, the negative term structure of interest rates may fall further.

EIOPA concludes therefore that the current 1 to 200 years shock calibration is not appropriate anymore, as it underestimates significantly the risk.

Before starting a new calibration it is worth exploring whether a minimum 1% downward shock, as it was suggested by CEIOPS in 2009, would have performed significantly better in the back-testing described in the previous section. The results are shown below for the EUR and GBP 10-year swap rates:



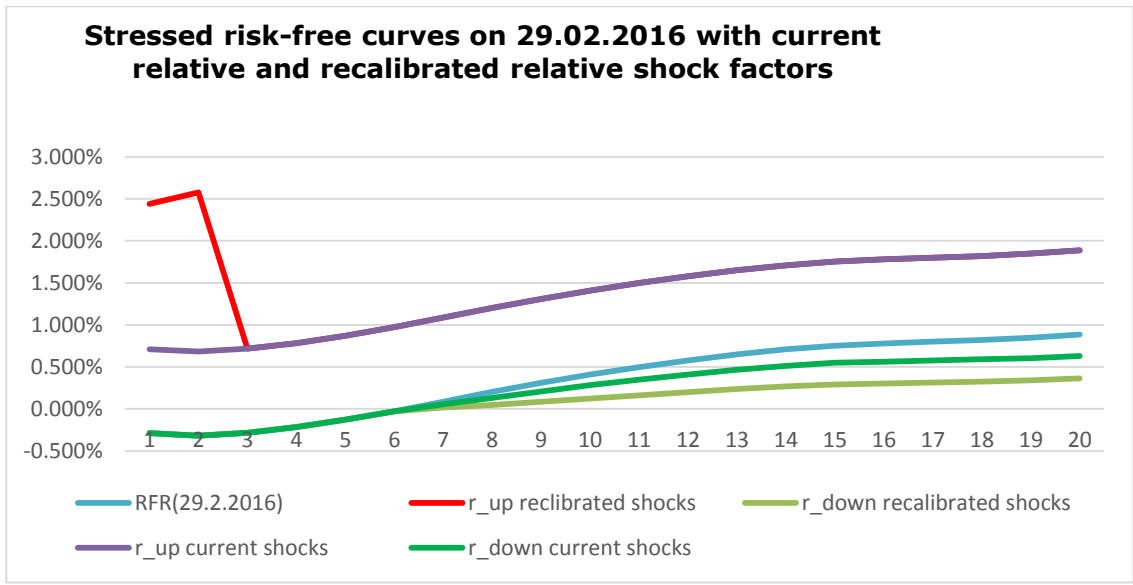


The graphs show that the minimum downward shock would have also resulted in breaches of the calibrated shock. A different, "larger", minimum downward shock may have prevented these breaches; the minimum downward shock would have needed to be around 1.5 percent.

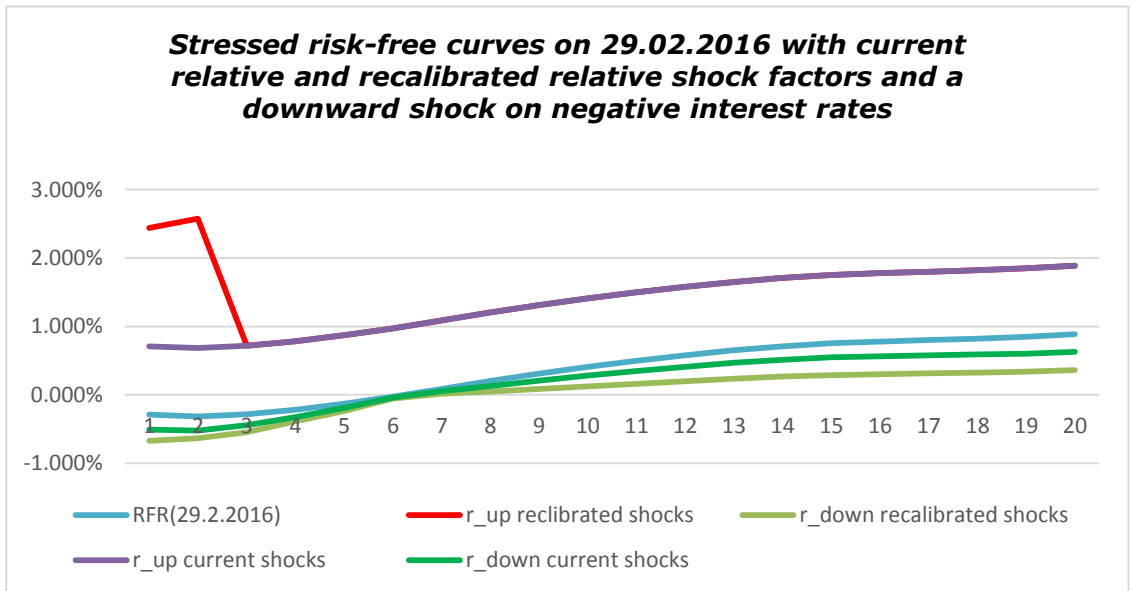
Another problem that occurs with negative interest rates where a relative approach is followed is that one would need to redefine the definition of an (annual) percentage rate change and that a unique definition of a percentage rate change in such case does not exist. Moreover the concept of annual relative changes is not economically sensible in the context of negative interest rates.

Finally one could also explore how the shocked risk-free curves would look like if the relative shock factors calibrated in 2009 were recalibrated with the available data from 2009 until 2016 with the same calibration methodology based on the principal component analysis described in section 3.

The first graph shows that the recalibrated interest rate up curve would exhibit some erratic movements at the short end of the term structure. These erratic movements are explained by the so called elimination problem in the denominator: low or moderate absolute changes in the risk-free rates can lead to substantial relative interest changes, therefore resulting in extreme 99.5 % quantile values and thus extreme relative stress factors. Moreover, in the down scenario the curve with the recalibrated relative shock factors would only slightly deviate from the stressed curve with the current stress factors and also the unstressed risk-free curve. This gives some further indication that even a recalibration of the relative factors would not accurately estimate the 1 in 200 year downward event and would consequently still result in a potential underestimation of the interest rate risk.



Allowing for a downward shock for negative interest rates<sup>19</sup> would not change the situation in the downward scenario significantly as can be seen in the following figure:



In summary, the main issues identified are:

- The relative stress factor approach hinges on a relative percentage rate change definition, which is no longer unique if interest rates are negative.
- The current approach underestimates the interest rate risk in a low yield environment, particularly in the downward scenario.
- This underestimation remains even
  - if a minimum downward shock of 1 % is introduced and
  - if negative interest rates are stressed with the current approach and
  - if the relative stress factors are recalibrated using more recent data.

<sup>19</sup> That is  $r_t^{down}$  is computed as  $r_t^{down} = r_t(1 - s^{down})$ .

Therefore EIOPA concludes that the current design of the interest rate risk sub-module needs to be amended to properly reflect the risks.

## Questions to stakeholders

Q17.1: Do you think that the relative shock on interest rates is inappropriate to measure the one-year 99.5% Value at Risk in a low yield environment? Please explain if you think that the current relative approach underestimates the interest rate risk.

Q17.2: Under what conditions and circumstances could the issue be resolved by setting a minimum downward shock? How should this minimum be calibrated?

Q17.3: Do you have any comment on the main issues identified? What are in your view the main interest rate risks that insurance undertakings are facing?

## 17.2. Data issues: which data should be used for the calibration? Which data should be shocked?

CEIOPS used the following four data sets in its calibration:

- EUR government bond daily zero coupon term structures from August 1997 to May 2009
- GBP government bond daily zero coupon term structures for a period ranging from 1979 until 2009
- Daily EUR/GBP libor/swap rates from 1997 to 2009.

Beside these data sources a historical data set of EIOPA risk-free-rate curves ranging from January 1999 until 2016 could be used for the calibration of the shock factors. Either only values up to the last liquid point could be taken into account, or also values in the extrapolated part could be included in the analysis. The use of this new available data set is appealing from a data consistency perspective since one could directly calibrate shock factors on a data set to which the shock factors would apply. Accordingly, the interest rate risk measurement would then be consistent with the curve that is applied to the valuation of the technical provisions. If the data consist of EIOPA risk-free-rate curves that include the extrapolation after the last liquid point, the calibrated shocks would take account of this extrapolation to the level of the UFR. As a consequence applying the existing relative calibration for the interest rate shocks on this particular data set may result in lower shocks for the longer maturities.

Another essential data question is whether the shocks should be derived based on output data, i.e. the EIOPA risk-free curve or whether first a shock should be derived from the input data that is used to derive the risk-free rate and then the final shock is derived using the risk-free-rate methodology. Specifically, the question is if the shocked curve should be derived by shocking the smooth yield curve (as used in the current calibration:

$$RFR_t^{up,down} = s^{up,down} f(y_t, UFR, LLP, \alpha, CP) \quad (*)$$

or by shocking the input data instead and applying the smoothing mechanism to the shocked input data:

$$RFR_t^{up,down} = f(s^{up,down} y_t, (s^{up,down}) UFR, LLP, \alpha, CP), \quad (**)$$

where

- $f$  denotes the Smith-Wilson function
- $y$  the vector of the corresponding market swap data (government bond data)

- UFR, LLP,  $\alpha$  and CP are the corresponding parameters used to derive the smooth yield curve as the ultimate forward rate, the last liquid point, the conversion point and the conversion speed.

The current approach (\*) has the drawback that the shocked yield curve is not smooth anymore, but shows kinks. In particular, the implied shocked forward curve has discontinuities at the node points. The suggested approach (\*\*) would overcome this drawback. Moreover the latter approach mimics that EIOPA produces on a regular basis new smooth risk-free curves (which would reflect the new situation after a shock 1 in 200 year interest rate change). However, this approach might also have the drawback that the credit risk adjustment would need to be recomputed in the stress scenarios.

The suggested approach (\*\*) would not solve the possible discontinuities in the shocked curves for the valuation of the assets after the interest rate shock as the difference between the term structure before and after applying the interest rate shock to the risk free rate term structure, including the extrapolation, would also be applied to the interest rate curves used for the valuation of the assets; the same shock (in basis points) is applied to both technical provisions and assets and other liabilities.

It is worthwhile to emphasize that the calibration methodology for the random shock factors can be analogously applied to the input data used for the production of the EIOPA risk-free curve.

### **Questions to stakeholders**

Q17.4: Why or why not should EIOPA use different data sets than the ones used for the current calibration rather than only updating the existing data to include the recent years?

Q17.5: Do you think that the available historical data set of daily EIOPA risk-free rate curves is suitable to perform the calibration of the interest rate stress factors? If so, would you consider the data to include rates up to the last liquid point or to include the extrapolated part as well? Please explain.

Q17.6: Do you consider any other data set suitable for the calibration of the interest rate stress factors? Please explain.

Q17.7: Do you think it is reasonable from a statistical and economical point of view to shock the input data (e.g. swap data or zero coupon government bond data) used to derive the smooth risk-free curve instead of shocking the derived risk-free curve? If yes, should the shock factors be also calibrated on the input data? (Please explain)

Q17.8: Do you have any further comments on the data issues?



### 17.3. CEIOPS calibration methodology for the shock factors

The following calibration methodology was applied by CEIOPS in 2009 for each of the data sets considered at that time:

- Annual percentage rate changes<sup>20</sup> are computed for each maturity  $m$  by applying the one year rolling window assumption, i.e.

$$\frac{\Delta r_t}{r_{t-\omega}} = \frac{r_t}{r_{t-\omega}} - 1$$

for each maturity  $m$  and where  $\omega=260$  for 260 business days.

- Standardized principal component scores are derived. The interpretation of this step is that the principal component analysis is performed on a standardized data set, that is, instead of considering the covariance matrix of the annual percentage rate changes the PCA is performed on the corresponding correlation matrix.
- The annual percentage rate changes derived in step 1 are regressed for each maturity  $m$  on the first four standardized principal scores  $T_i$  (these are the projected values in the transformed principal component space and not the Eigenvectors!) to derive the so called beta sensitivity with using OLS regression to obtain the beta values.
- This regression model is then fitted with the derived betas

$$\frac{\widehat{\Delta r}_t}{r_{t-\omega}} = \sum_{i=1}^4 \widehat{\beta}_i T_i,$$

This produces an empirical distribution of the annual percentage rate changes for each maturity.

- The empirical 99.5 % and 0.5 % quantiles from the distribution yields the required up and down stress factors.

It is worthwhile to emphasize that the shock factors need not necessarily be derived from the principal component analysis. The methodology described in this section is to use the principal component scores and to derive a mixed (weighted) empirical distribution from which the shock factors are deducted. However the shock factors could also be computed directly from the empirical distribution or any other suitable parametric distribution for the random shock factors.

The use of the PCA is appealing since it allows an interpretation of the first four components driving the interest rate term structure as being level, slope, curvature and twist. However, the use of the PCA with only a few principal components also implies that the full signal in the corresponding data matrix is reduced to a modified data matrix of lower rank. As a consequence, some relevant information might be missing in this reduced matrix.

Moreover it is worthwhile to discuss if the annual data window assumption ( $\omega=260$ ) used in the calibration is appropriate or whether the data window should be reduced. If a shorter than annual data window<sup>21</sup> is used it should be noted that the obtained VaR needs to be adjusted in order to get the annual one year VaR. A standard adjustment in practice is the so-called square root of time rule: If  $\text{VaR}(1-\alpha, \omega)$  denotes the  $\omega$  day VaR then the annual VaR can be approximated as<sup>22</sup>

<sup>20</sup> Note that this calibration methodology can consistently be applied to different mathematical approaches, e.g the ones discussed in the next section. One just needs to adjust the observable variable in step 1 (additive differences, differences of interest intensities etc.)

<sup>21</sup> In the IAIS calibration a weekly data window is used.

<sup>22</sup> The approximation is only exact if the underlying distribution of the observable variable is normal.

$$VaR(1 - \alpha, \omega = 260) = VaR(1 - \alpha, \omega) * \sqrt{\frac{260}{\omega}}$$

From a theoretical perspective a lower than annual data window has the advantage that the 99.5 % (0.5 %) VaR can be derived from more data points. The main disadvantage is that the approximation of the annual VaR, e.g. by the above mentioned square root of time rule might result in an underestimation of the VaR.

### Questions to stakeholders

Q17.9: Given that the shock factors could be derived from different methods (parametric and non-parametric), do you think principal components analysis is useful to derive the shock factors? (Please explain)

Q17.10: On which time window should the corresponding calibration of the shock factors be based (annually, quarterly, monthly, weekly or daily)?

## 17.4. Alternative mathematical approaches to derive the stressed risk-free curves

In this section alternative approaches for the methodology to be applied to shock the EIOPA risk-free curves are discussed. They try to overcome the main problems identified with the current relative approach: They do not depend on an ambiguous (not unique) return definition if interest rates are negative. Their calibration also does not suffer from the elimination problem in the denominator. Most importantly the methodologies discussed are not as prone to result in an underestimation of interest rate risk in a low yield environment as is the case for the relative approach.

### Additive stress

An additive stress could have the following affine form

$$r_t^{up,down} = ar_t + b$$

where  $a$  and  $b$  depend on the scenario and the corresponding maturity  $m$ . These shock factors can be calibrated from a distribution of (weighted) additive changes of interest rates  $\Delta r_t = r_t - ar_{t-\omega}$  (e.g. the empirical distribution implied by applying the principal component methodology, the standard empirical distribution or any other suitable parametric distribution for the additive changes of interest rates)<sup>23</sup>. Note that for the second parameter in the affine linear model, e.g.  $a$ , a further condition must be applied in order to fully calibrate the shock parameters.

### Questions to stakeholders

Q17.11: Do you think the additive approach is a mathematically and economically reasonable approach to derive the shocked risk-free curves? Please explain.

Q17.12: Do you have any suggestion to improve this approach?

<sup>23</sup> In the purely additive approach  $a = 1$ ,  $b$  and thus the entire shock is calibrated from the distribution of  $\Delta r_t = r_t - r_{t-\omega}$ .

## Interest intensity approach

In the interest intensity approach a continuous time interest intensity  $\rho$  can be considered as the natural logarithm of this interest factor:

$$\rho = \ln(1 + r)$$

The shock for the interest intensity for maturity  $m$  is denoted  $\rho$  and the intensity shock  $s$ .

- shocked intensity<sup>24</sup>  $\rho + s$
- implied shocked factor  $\exp(\rho + s) = (1 + r)e^s$
- implied shocked rate  $(1 + r)e^s - 1$  (\*)

For small  $s$  the implied shocked rate can be approximated by a standard Taylor approximation as follows:

$$\begin{aligned}(1 + r)e^s - 1 &= (1 + r)\left(1 + s + \frac{1}{2}s^2 + \frac{1}{6}s^3 + \dots\right) - 1 \\ &\approx r + rs + s = r(1 + s) + s \\ &\approx r + s\end{aligned}$$

The latter approximation indicates that for intensities close to 0 the additive stress and the stress based on the interest rate intensity should yield similar results.

The shock intensity  $s$  for maturity  $m$  can be derived from a distribution of  $s = \ln(1 + r_t) - \ln(1 + r_{t-\omega})$ .

## Questions to stakeholders

Q17.13: Do you think the interest intensity-based approach is a mathematically and economically reasonable approach to derive the shocked risk-free curves? Please explain.

Q17.14: Do you have any suggestion to improve this approach?

## Combination of relative and absolute calibration of interest rate shocks

It seems that interest rate changes can be better modelled relative to the interest rate level for high interest rates, while absolute changes, independent of the level of interest rates, work better when interest rates are low. This could be reflected in the method used to calibrate the interest rate shocks or by setting or calibrating minimum interest rate up and down shocks.

## Questions to stakeholders

Q17.15: Would it be worthwhile to consider a calibration approach that uses absolute (relative) changes in a low (high) interest rate environment? What about setting or calibrating a minimum interest rate change (see also Q17.2)? What should be taken into account when pursuing these approaches?

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<sup>24</sup> As in the additive approach one could also introduce a scaling parameter, that is the shocked intensity would then be  $\rho + cs$ .

## **Other statistical and mathematical approaches**

### **Questions to stakeholders**

Q17.16: Can you propose any other mathematically and economically suitable approaches (e.g. a relative shock on the unit zero-coupon bond prices)?

## **18. Loss Absorbing Capacity of Deferred Taxes (LAC DT)**

The European Commission has asked EIOPA to report on the different methods currently applied to the Loss Absorbing Capacity of Deferred Taxes (LAC DT) for undertakings applying the standard formula to calculate their SCR.

The complexity of LAC DT and the high level of judgment may result in diverging practices, for both undertakings and supervisors. EIOPA also considers LAC DT to be a complex and subjective, but also material, aspect of the SCR that requires an in depth assessment in light of the SCR review by 2018. As such, the aim of such an assessment of the LAC DT is twofold:

- To address the European Commission's call for advice regarding LAC DT to report on the different methods applied and their impact as the complexity may have resulted in diverging practices in different member states. Different practices are not necessarily wrong if they represent different tax regimes. For this EIOPA has sent a questionnaire to all NSAs with questions to identify their practices with respect to the different features of the calculation of LAC DT.
- To investigate whether there is a need to put forward proposals to the European Commission for developing a more detailed and standardized legislative framework. The utilisation test of Deferred Tax Assets (DTA) after the shock loss in the calculation of LAC DT is typically based on undertakings own projections of future profits, so using "subjective" assumptions and expert judgement. EIOPA might investigate additional measures to prescribe with more details the calculation methods and the assumptions to be used for these projections in the calculation of LAC DT.

Throughout this section several features of the calculation of LAC DT, which mainly relate to the utilisation test of deferred taxes after the instantaneous loss of Article 207 of the Delegated Regulation, are presented. Their inclusion in this section, as well as the way these features are presented, does not necessarily mean that they are actually required, in that way, for the LAC DT calculation in Solvency II. Vice versa, it also holds that some questions may imply that some features of LAC DT are not required, while they are actually being required by the current regulation. Furthermore, the features and the way they are presented do also not necessarily reflect EIOPA's stance regarding the current regulation on LAC DT.

When answering the different questions you are invited to state if, for a specific feature, a regulatory change or additional guidance by EIOPA would be, in your opinion, necessary.

## **18.1. DTL and DTA calculation on the Solvency II balance sheet**

The economics of deferred taxes is that assets and liabilities of the undertaking's fiscal balance sheet may exhibit a value which is different from the one associated for the Solvency II balance sheet. Hence assets and liabilities of the Solvency II balance sheet might create tax "advantages" or "disadvantages". Typically, the deferred tax per single item is recognized as the tax rate times the difference in the valuation on the Solvency II balance sheet and the fiscal balance sheet.

Tax disadvantages per balance sheet item, Deferred Tax Liabilities (DTL), are fully recognised, whereas tax advantages, Deferred Tax Assets (DTA), can only be recognised up to the amount that future taxable profits are available for utilisation. A tax advantage, DTA, may also occur if the undertaking has fiscal losses from previous years that it can carry-forward.

In jurisdictions where the tax regime has a book-value approach deferred taxes stemming from temporary differences may run over the full horizon of the insurance product. This may result in situations where fiscal profits and losses are realized at different point in times.

### **Questions to stakeholders**

Q18.1: Do you recognize specific aspects with regard to the calculation of DTA and DTL on the Solvency II balance sheet that raise an issue in the calculation of LAC DT?

## **18.2. Projection of future profits for the utilisation test of Deferred Tax Assets after the shock loss**

Article 207(2) of the Delegated Regulation prescribes in the case where the shock loss would result in the increase in Deferred Tax Assets (DTA), insurance and reinsurance undertakings shall not utilise this increase for the purposes of the adjustment unless they are able to demonstrate that future profits will be available in accordance with Article 15(3), taking into account the magnitude of this loss and its impact on the undertaking's current and future financial situation. The following subsections deal with specific considerations regarding different features of this utilisation test.

### **Returns on assets and liabilities**

The projections of likely future taxable profits arising from returns on the balance sheet items may be an important component of likely future taxable profits. Given the potentially material role of the projected returns for the demonstration of likely future taxable profits, and the subjectivity involved in doing this, harmonization of the projected rate of return used in the calculation of LAC DT may be beneficial. Using the returns on the, shocked, interest rate term structure would be more or less in line with the risk-neutral valuation of a contingent claim (although the contingent claim approach would require simulation of multiple scenarios). Prescribing the returns used for assets and liabilities removes the subjectivity involved in this aspect.

Another point of interest regarding deferred taxes is the uncertainty involved in the returns used in the projections. For example, IAS12 prescribes that for the valuation of DTA's the uncertainty is taken into account. A possible way of incorporating the uncertainty is to ask for the valuation in a pessimistic and in an optimistic scenario

versus the base scenario chosen and then average over these outcomes. Given that the higher the returns used in the base scenario the larger the risks involved this could be a function of the return over the, shocked, risk free rates.

The utilisation test of DTA requires to provide credible evidence on the likelihood of sufficient future taxable profits. In different tax regimes economic, Solvency II, profits and losses may differ in size and timing from fiscal profits and losses.

### **Questions to stakeholders**

Q18.2: How could the assumptions on the returns on assets and liabilities be more harmonized and less subjective?

Q18.3: How could the uncertainty in the assets returns be taken into account in the calculation of LAC DT?

Q18.4: Under what conditions and circumstances is a projection of both economic (Solvency II) and fiscal profits and losses required in the calculation of LAC DT? Under what conditions and circumstances would either only economic or only fiscal losses suffice in the calculation of LAC DT and in that case which one of them?

### **New business**

A similar issue as the former issue on the returns are the assumptions of new business after the shock loss; LAC DT might be fully recognised under optimistic assumptions, while it may become zero if no new business were assumed.

Projections of new business as a source of likely future taxable profits are complex to assess for both undertakings and supervisors, in particular when this is being performed in the hypothetical situation after the shock loss. In such an uncertain and severely stressed scenario any assumption regarding new business involves a considerable amount of uncertainty.

### **Questions to stakeholders**

Q18.5: What are your considerations to take account of new business in the calculation of LAC DT, given the uncertainty involved after the shock loss?

Q18.6: Which elements, in your opinion, should be considered for the projection of new business?

### **Time horizon**

The longer the time horizon used for the projections of future taxable profits after the shock loss, the more LAC DT could possibly be recognised.

The uncertainty with projections of future taxable profits increases with the extension of the time horizon, limiting the time horizon for the projections in the calculation of LAC DT would be a way to reflect the increasing uncertainty over the time horizon. Although temporary differences between valuations on the Solvency II and fiscal balance sheet may run over a long period in some tax regimes, the uncertainty of the likely utilisation also increases.

## Questions to stakeholders

Q18.7: What are your considerations regarding the increasing uncertainty with the longer time horizons used in the projection in the calculations of LAC DT?

Q18.8: What are your considerations regarding limiting the time horizon for the projections of future taxable profits? Would such a limitation be different for different features, like, for example, new business or returns on assets and liabilities?

### 18.3. Setting LAC DT to the amount of net DTL on the balance sheet

Simplifying and reducing the subjectivity involved in the calculation of LAC DT would be possible by setting LAC DT to the amount of net DTL on the base case balance sheet, since this part of the demonstrated utilisation of LAC DT typically involves no complex and subjective projections. However, setting LAC DT to the amount equal to the net DTL may be larger than the change in the deferred taxes in the calculation of LAC DT or the notional LAC DT. Next to that, account needs to be taken of the fact that after a shock loss the utilisation of deferred tax assets may change as well. Setting LAC DT equal to the net DTL does not necessarily reflect those issues.

## Questions to stakeholders

Q18.9: Under what conditions and circumstances would setting LAC DT to the amount of net DTL be an appropriate simplification, and a sensible reduction in subjectivity of the calculation?

Q18.10: If LAC DT is set to the amount of net DTL, what other issues should be considered?

### 18.4. Financial situation after the shock loss

Article 207(1) of the Delegated Regulation prescribes to recalculate deferred taxes after the instantaneous loss of an amount that is equal to the sum of the Basic SCR, operational risk and the loss absorbing capacity of technical provisions.

Furthermore Article 207 (2) requires that the re-evaluation of deferred taxes is done according to Article 15 of the DR and may require a full recalculation of the balance sheet after the shock loss.

Hence in general the LAC DT depends on the financial situation of the undertaking after this loss.

The recalculation of the full balance sheet after the shock loss may be burdensome and complex for undertakings and be difficult to review for supervisors. For this reason EIOPA Guidelines indicates that in some specific circumstances undertakings may estimate the change in deferred taxes after the shock loss (the increase in deferred tax assets or the decrease in the deferred tax liabilities) multiplying an average tax rate directly to the instantaneous loss, so avoiding the re-calculation of the stressed balance sheet.



## Questions to stakeholders

Q18.11: Under what conditions or circumstances would you consider it necessary to explicitly calculate the full Solvency II balance sheet immediately after the shock loss?

## Need for compliance with the MCR and SCR

In the calculation of LAC DT the undertaking applies a shock as prescribed in Article 207(1) of the Delegated Regulation to its balance sheet. Such a shock might cause the SCR and/or MCR to be breached. This section discusses the potential role the Solvency II requirements to meet the MCR and SCR might have within the LAC DT calculation.

When demonstrating the likely utilisation of deferred tax assets after the shock loss in the calculation of LAC DT, the utilisation of deferred tax assets typically runs into the future (except when utilised only by reclaim of taxes already paid). This utilisation may depend on the undertaking being able to meet the MCR and SCR after the shock loss as Article 207(2) prescribes that the calculation of LAC DT takes account of the impact of the shock loss on the current and future financial situation of the undertaking.

## Questions to stakeholders

Q18.12: What role, if any, and under what conditions or circumstances should the compliance with the MCR and SCR play in the calculation of LAC DT?

## Restoring compliance with the MCR and SCR using recapitalisation

One of the measures available to restore compliance with the MCR and SCR is to raise new Solvency II compliant own funds, either basic or ancillary own funds. The financial situation of the undertaking depends on the tiering. Possibilities for recapitalisation are issuing new instruments or calling ancillary own fund items to improve the quality of own funds and increase the amount of eligible own funds after the shock loss.

Solvency II requires undertakings to hold sufficient own funds to withstand a severe stress that would unfold instantaneously by means of the SCR. If the utilisation of LAC DT depends on recapitalisation via new instruments, then undertakings would be able to lower the amount of capital they currently have to hold in exchange of a future possibility of recapitalisation. Another possibility to restore the compliance with the MCR and SCR would be to call ancillary own fund items and increase the amount of eligible own funds; as such the undertaking is able to increase its tier 1 and tier 2 capital. Question is if the ancillary own funds should have been approved to be allowed as source of recapitalisation in the calculation of LAC DT. If recapitalisation used in the calculation of LAC DT is essential and would not meet the requirements of ancillary own funds an undertaking would lower its SCR and thereby its amount of eligible own funds over its SCR, while this would not have been possible if the recapitalisation was submitted for approval as ancillary own funds.

Assessing whether sufficiently credible evidence of likely recapitalisation has been demonstrated is complex, for both supervisors and undertakings. Given that the

requirements for ancillary own funds are relatively well established, these requirements could be applied to the recapitalisation measure in the calculation of LAC DT. This may be helpful guidance for both undertakings and supervisors in the assessment of the recapitalisation. Since shock losses will typically result in a loss of tier 1 capital, the eligibility limits of Article 82 of the Delegated Regulations may restrict the eligibility of new tier 2 capital. However calling tier 2 ancillary own fund items would result in an increase in the amount of tier 1 capital and as such may credibly restore compliance with the MCR and SCR.

### Questions to stakeholders

Q18.13: What role, if any, should recapitalisation and/or calling ancillary own funds, including their requirements, play for verifying the compliance with the MCR and SCR in the calculation of LAC DT?

## 18.5. Suggestions for other aspects of LAC DT that require additional regulation or guidance by EIOPA

### Questions to stakeholders

Q18.14: Please provide comments and suggestions on features of LAC DT that would require additional regulation or guidance by EIOPA or could be simplified.

Q18.15: What would be a balanced approach between simplifications, additional restrictions and relaxations in the calculation of LAC DT?

Q18.16: Do you consider LAC DT's procyclicality as an issue? If yes, do you propose any changes to the calculation of LAC DT that would make it less procyclical?<sup>25</sup>

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<sup>25</sup> LAC DT has a loss amplifying impact on the ratio of eligible own funds over the solvency capital requirements. When the amount of eligible own funds decreases for some reason, the financial situation after a shock loss also deteriorates. A worsened financial situation after a shock loss will typically result in a lower LAC DT and as a consequence a higher solvency capital requirement. As such, this increase in the capital requirements when the amount of eligible own funds decreases amplifies the deterioration in the ratio of own funds over the capital requirements because of this decrease in own funds.

## 19. Risk margin

According to Article 77(5) of the Solvency II Directive the risk margin of technical provisions should be calculated by determining the cost of providing an amount of eligible own funds equal to the SCR necessary to support the insurance and reinsurance obligations over the lifetime thereof. The rate used in the determination of the cost of providing that amount of eligible own funds (Cost-of-Capital rate) should be the same for all insurance and reinsurance undertakings and should be reviewed periodically. The Cost-of-Capital rate should be equal to the additional rate, above the relevant risk-free interest rate, that an insurance or reinsurance undertaking would incur holding an amount of eligible own funds equal to the SCR necessary to support insurance and reinsurance obligations over the lifetime of those obligations.

The calculation of the risk margin is further specified in Articles 37 to 39 of the Delegated Regulation. According to Article 39 of the Delegated Regulation the Cost-of-Capital rate is 6%.

In the Call for Advice on the review of specific items in the Delegated Regulation, the Commission asks EIOPA to assess whether the methods and assumptions applied in the calculation of the risk margin continue to be appropriate, in view of a changed market environment.

EIOPA also has been asked to review in particular the appropriateness of the Cost-of-Capital rate under the current market environment. The Cost-of-Capital rate of 6% is based on CEIOPS's technical advice on the calculation of the risk margin of October 2009.<sup>26</sup> CEIOPS advised that the Cost-of-Capital rate should be a long-term average rate, reflecting both periods of stability and periods of stress.<sup>27</sup>

One concern that relates to a Cost-of-Capital rate that reflects current market conditions is the procyclical effect it may have. Such a Cost-of-Capital rate would be low when the credit risk perception of the market is low (like in 2005 and 2006) but would significantly increase when the credit spreads widen (like in the banking crisis 2007/2008). As a consequence the technical provisions of all EU insurance and reinsurance undertakings would increase and their own funds deteriorate when credit spread widen, in addition to the losses the undertakings already incur from their bond investments. This may have an impact on the credit standing of the undertakings and on their investment behaviour and may amplify the spread widening. On the other hand, the use of a Cost-of-Capital rate that reflects current market conditions may increase the market-consistency of the technical provisions.

That is why CEIOPS recommended not adjusting the cost-of capital rate to follow market cycles but based the determination of the rate on a long-term average instead.

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<sup>26</sup> <https://eiopa.europa.eu/CEIOPS-Archive/Documents/Advices/CEIOPS-L2-Final-Advice-on-TP-Risk-Margin.pdf>

<sup>27</sup> See paragraph 3.138 of the advice.

## Questions to stakeholders

Q19.1: Do you have any evidence that the methods and assumptions for the risk margin calculation set out in Articles 37 to 39 of the Delegated Regulation are not appropriate anymore, in view of a changed market environment? Please describe the changes in the market environment you are referring to. If yes, what are the modifications that you suggest? What would be the impact of the modifications on the risk margin?

Q19.2: Should the Cost-of-Capital rate be a long-term average rate, reflecting both periods of stability and periods of stress, or should it reflect current market conditions? If you think the cost-of-capital rate should move in-line with the current market conditions, which market instrument should the rate move in-line with? Do you have any evidence of the cost of capital for insurers moving in-line with your chosen market instrument?

Q19.3: Have you observed material change in the impact in your balance sheet due to the risk margin since the introduction of Solvency II? If so, what is the main cause of the impact and what lines of business are affected by it? How has the impacted your business practice? What amendments should EIOPA consider and why?

Q19.4: Do you have any other comments or observation EIOPA should consider?

## 20. Comparison of own funds in insurance and banking sectors

EIOPA has been asked by the European Commission to assess differences in the classification of those eligible own funds items which are comparable between the Banking sector Capital Requirement Regulation 575/2013 EU ("CRR") and the Solvency II Delegated Regulation.

Certain types of own funds items are common to both the insurance and banking frameworks (e.g. certain debt instruments). Those instruments are:

- Subordinated debt instruments eligible as "Restricted Tier 1"<sup>28</sup> (rT1) own funds in the insurance regime and additional tier 1 ("AT1") in the banking regime; and
- Subordinated debt instruments eligible as tier 2 own funds under both regimes.

However, some of the requirements regarding certain contractual features are different in the two frameworks.

The comparison carried out in this section focusses on features determining the classification of debt instruments in Tier 1 or Tier 2. Since there is no Tier 3 classification in the banking regulation, EIOPA has not carried out a comparison between the Solvency II features of Tier 3 capital instruments and the CRR features of eligible own funds.

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<sup>28</sup> Article 82(3) of the Delegated Regulations states that no more than 20% of total eligible Tier 1 own funds shall be made up from certain basic own-fund items including paid-in subordinated liabilities. Collectively these items that are subject to the 20% limit are referred to in this paper as "Restricted Tier 1 instruments". The amount of own funds represented by these instruments is referred to as "Restricted Tier 1".

## 20.1. Comparison across tiers

The table below compares the main features applicable to the own funds items identified as common to the two frameworks in order to determine whether they may be considered:

- as restricted Tier 1 own funds in the insurance sector and additional tier 1 own funds in the banking sector;
- as Tier 2 own funds in either sector.

EIOPA did not conduct an in depth analysis of the banking Delegated Regulation (EU) 241/2014 on own funds, and mainly focused on the comparison between the Solvency II Delegated Regulation and the CRR provisions.

	<b>Solvency II Delegated Regulation</b>	<b>CRR</b>	<b>Main Differences</b>
<b>Restricted Tier 1 instruments</b>			
<b>Subordination</b>	<ul style="list-style-type: none"> <li>• Rank below Tier 2 and Tier 3 (Art. 71 – 1.a.ii)</li> </ul>	<ul style="list-style-type: none"> <li>• Rank below Tier 2 (Art. 52-1.d)</li> </ul>	
<b>Insolvency</b>	<ul style="list-style-type: none"> <li>• No features which may cause or accelerate the process of insolvency (Art. 71 – 1.b)</li> </ul>	<ul style="list-style-type: none"> <li>• No contribution to a determination that the liabilities of an institution exceed its assets, where such a determination constitutes a test of insolvency under applicable national law (Art. 52 – 1.m)</li> </ul>	
<b>Maturity</b>	<ul style="list-style-type: none"> <li>• Undated (Art. 71 – 1.f.ii)</li> </ul>	<ul style="list-style-type: none"> <li>• Perpetual (Art. 52 – 1.g)</li> </ul>	
<b>Encumbrance</b>	<ul style="list-style-type: none"> <li>• Own-fund item free from encumbrances (Art. 71 – 1.e)</li> </ul>	<ul style="list-style-type: none"> <li>• the instruments are not purchased by any of the following: <ul style="list-style-type: none"> <li>• (i) the institution or its subsidiaries</li> <li>• (ii) an undertaking in which the institution has a participation in the form of ownership, direct or</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The concept of encumbrances is not explicitly mentioned in CRR</li> </ul>

		by way of control, of 20 % or more of the voting rights or capital of that undertaking	
<b>First call date</b>	<ul style="list-style-type: none"> <li>• Redemption/repayment at the sole discretion of the issuer</li> </ul>	<ul style="list-style-type: none"> <li>• The option to call may be exercised at the sole discretion of the issuer;</li> </ul>	
	<ul style="list-style-type: none"> <li>• Optional call between 5 and 10 years after the date of issuance, subject to the SCR being exceeded by an appropriate margin taking into account the solvency position of the undertaking including the undertaking's medium-term capital management plan (Art. 71 - 1.g)</li> <li>• Suspension of repayment/redemption in case of breach of the SCR (after the operation) (Art. 71 - 1. j ) unless (Art. 71 - 1.k) : <ul style="list-style-type: none"> <li>○ It is waived by the supervisory authority</li> <li>○ The item is exchanged/converted into an own-fund item of the same quality</li> <li>○ The MCR is compiled with after the operation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Optional call not before 5 years after the date of issuance (Art. 52 - 1.i)</li> </ul>	<ul style="list-style-type: none"> <li>• Redemption/repurchase between 5 and 10 years. 10 years subject to a stricter requirement under Solvency II.</li> </ul>

	<ul style="list-style-type: none"> <li>Any optional redemption or repurchase is subject to prior supervisory approval (Art. 71 – 1.h)</li> </ul>	<ul style="list-style-type: none"> <li>Any optional redemption/repurchase requires the prior permission of the competent authority (Art. 77)</li> </ul>	
<b>Early redemption</b>	<ul style="list-style-type: none"> <li>Possible before 5 years, provided that the redemption is funded out of the proceeds of the issuance of an own-fund item of at least the same quality, and subject to prior supervisory approval (Art. 71 – 2)</li> </ul>	<ul style="list-style-type: none"> <li>Reduction of own funds may only be permitted if one of the following conditions is met (Art. 78 – 1): <ul style="list-style-type: none"> <li>The own-fund item is replaced by another instrument of equal or higher quality at terms that are sustainable for the income capacity of the institution</li> <li>The institution is able to demonstrate to the satisfaction of the competent authority that after the action, the own funds would exceed the capital requirement and the combined buffer by a sufficient margin</li> </ul> </li> <li>Possible before 5 years, but only for Tax or Regulatory Events and subject to supervisory approval (Art. 78 – 4), as well as for market making purposes (Art. 29 of Commission Delegated Regulation (EU) 241/2014)</li> </ul>	<ul style="list-style-type: none"> <li>The Solvency II Delegated Regulation does not allow for redemptions before 5 years, unless a new own-fund item is issued. CRR allows for early redemption in case of tax or regulatory events.</li> <li>In Solvency II, there is a broader concept allowing any redemption provided that the own-fund item is replaced by another one of at least the same quality, and that the operation is subject to prior supervisory approval</li> </ul>
<b>Incentives to redeem</b>	<ul style="list-style-type: none"> <li>No incentive to redeem permitted (Art. 71 – 1.i)</li> </ul>	<ul style="list-style-type: none"> <li>No incentive to redeem permitted (Art. 52 – 1.g)</li> </ul>	



<b>Coupon payment cancellation</b>	<ul style="list-style-type: none"> <li>• Full discretion over distribution (Art. 71 – 1.n) – non cumulative</li> </ul>	<ul style="list-style-type: none"> <li>• Full discretion over distribution (Art. 52 – 1.l.iii) – non cumulative</li> </ul>	
	<ul style="list-style-type: none"> <li>• No dividend pusher allowed for mandatory cancellations of coupon payments</li> </ul>	<ul style="list-style-type: none"> <li>• No dividend pusher allowed for mandatory cancellations of coupon payments</li> </ul>	
	<ul style="list-style-type: none"> <li>• Payment cancellation in case of breach of SCR (before or after the operation) (Art. 71 – 1.l.ii) unless (Art. 71.1 – m): <ul style="list-style-type: none"> <li>○ It is waived by the supervisory authority</li> <li>○ The distribution does not further weaken the solvency position of the insurance or reinsurance undertaking</li> <li>○ The MCR is complied with after the operation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Institutions failing to meet or exceed their combined buffer requirement are prohibited from distributing more than the Maximum Distributable amount (MDA) (141)</li> <li>• No specific waiver</li> </ul>	<ul style="list-style-type: none"> <li>• CRR does not provide for waivers as in Solvency II Delegated Regulation</li> </ul>
<b>Loss absorption</b>	<ul style="list-style-type: none"> <li>• Availability to absorb losses at least when the SCR is breached (Art. 71 – 1.d)</li> <li>• PLAM feature triggered at least in case of a significant SCR breach (Art. 71 – 1.e and 71.8)</li> </ul>	<ul style="list-style-type: none"> <li>• Write-down or conversion upon breach of a minimum 5.125% CET1 trigger level pari passu instruments with a similar loss absorbency mechanism (Art. 52 – 1.n and 54)</li> </ul>	<ul style="list-style-type: none"> <li>• In the Solvency II Delegated Regulation there is a 3 month cure period for SCR breach, before the PLAM is triggered unless MCR breached. (No equivalent in CRR)</li> </ul>

			<ul style="list-style-type: none"> <li>Insurance write- down based on significant SCR breach (a significant SCR breach includes a breach of MCR) and banking on CET1 breach. This difference in triggers – SCR, MCR and CET1 - leads to different results</li> </ul>
<b>Write-up mechanisms</b>	<ul style="list-style-type: none"> <li>Not prohibited, but should not hinder recapitalisation (Art. 71 – 1.d)</li> </ul>	<ul style="list-style-type: none"> <li>Proportional share of profits within CET 1</li> <li>Write up permitted subject to a consolidated profit and the Maximum Distributable Amount</li> </ul>	

<b>Tier 2</b>			
<b>Feature</b>	<b>Solvency II Delegated Regulation</b>	<b>CRR</b>	<b>Main differences</b>
<b>Subordination</b>	<ul style="list-style-type: none"> <li>Rank after the claims of all policy holders and beneficiaries and non-subordinated liabilities (Art. 73 – 1.a)</li> </ul>	<ul style="list-style-type: none"> <li>Wholly subordinated to claims of all non-subordinated creditors (Art. 63 – d)</li> </ul>	
<b>Insolvency</b>	<ul style="list-style-type: none"> <li>No features which may cause or accelerate the process of insolvency (Art. 73 – 1.b)</li> </ul>	<ul style="list-style-type: none"> <li>No provision explicitly/implicitly stating that the item may be repurchased/redeemed/repaid other than in the insolvency or liquidation of the institution (Art. 63 – k)</li> </ul>	
<b>Maturity</b>	<ul style="list-style-type: none"> <li>Undated or original maturity of at least 10 years (Art. 73 – 1.c)</li> </ul>	<ul style="list-style-type: none"> <li>Original maturity of at least 5 years (Art. 73 – 1.g)</li> </ul>	<ul style="list-style-type: none"> <li>Longer duration in Solvency II</li> </ul>
<b>Encumbrance</b>	<ul style="list-style-type: none"> <li>Own-fund item free from encumbrances (Art. 73 – 1.i)</li> </ul>	<ul style="list-style-type: none"> <li>the instruments are not purchased by any of the following: <ul style="list-style-type: none"> <li>(i) the institution or its subsidiaries</li> <li>(ii) an undertaking in which the institution has a participation in the form of ownership, direct or by way of control, of 20 % or more of the voting rights or capital of</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>The concept of encumbrances is not explicitly mentioned in CRR</li> </ul>

		that undertaking (Art. 63 – b)	
<b>First date call</b>	<ul style="list-style-type: none"> <li>• Redemption/repayment at the sole discretion of the issuer (Art. 73 – 1.c)</li> <li>• Optional repayment/ redemption not before 5 years from the date of issuance (Art. 73 – 1.c)</li> <li>• Suspension of payment/redemption in case of breach of the SCR (after the operation) (Art. 73 – 1. f ) unless (Art. 73 – 1.j) : <ul style="list-style-type: none"> <li>○ It is waived by the supervisory authority</li> <li>○ The item is exchanged/converted into an own-fund item of the same quality</li> <li>○ The MCR is compiled with after the operation</li> </ul> </li> <li>• Any redemption or repurchase is subject to prior supervisory approval, even at contractual maturity (Art. 73 – 1.d)</li> </ul>	<ul style="list-style-type: none"> <li>• The option to call may be exercised at the sole discretion of the issuer (Art. 63 – i)</li> <li>• Optional call permitted not before 5 years after the date of issuance (Art. 63 – j)</li> <li>• Any early redemption/repurchase requires the prior permission of the competent authority (Art. 77). No approval at contractual maturity</li> </ul>	<ul style="list-style-type: none"> <li>• Redemption/ repurchase</li> <li>• before 5 years subject to a stricter requirement under Solvency II.</li> <li>• CRR does not require prior supervisory approval for the repurchase/ redemption of instruments at contractual maturity.</li> </ul>

<p><b>Early redemption</b></p>	<ul style="list-style-type: none"> <li>• Possible before 5 years, provided that the redemption is funded out of the proceeds of the issuance of an own-fund item of at least the same quality, and subject to prior supervisory approval (Art. 73 – 2)</li> <li>• There are no restrictions on the types of Event calls that may be envisaged (tax, regulatory, accounting, etc.), provided that the conditions in the first bullet point are met</li> </ul>	<ul style="list-style-type: none"> <li>• Possible before 5 years, but only for Tax or Regulatory Events and subject to supervisory approval (Art. 78 – 4), as well as for market making purposes (Art. 29 of Commission Delegated Regulation (EU) 241/2014)</li> <li>• Reduction of own funds may only be permitted if one of the following conditions is met (Art. 78 – 1): <ul style="list-style-type: none"> <li>○ The own-fund item is replaced by another instrument of equal or higher quality at terms that are sustainable for the income capacity of the institution</li> <li>○ The institution is able to demonstrate to the satisfaction of the competent authority that after the action, the own funds would exceed the capital requirement and the combined buffer by a sufficient margin</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Solvency II does not allow for redemptions before 5 years, unless a new own-fund item is issued. CRR allows for early redemption under certain conditions in the case of tax or regulatory events.</li> <li>• In Solvency II, broader concept allowing any redemption provided that the item is replaced by another one of at least the same quality, and that the operation is subject to prior supervisory approval</li> </ul>
<p><b>Incentives to redeem</b></p>	<ul style="list-style-type: none"> <li>• Limited incentives to redeem provided they do not occur before 10 years from the date of issuance (Art. 73 – 1.e)</li> </ul>	<ul style="list-style-type: none"> <li>• No incentive to redeem permitted (Art. 63 – h)</li> </ul>	

<b>Coupon payment deferral</b>	<ul style="list-style-type: none"> <li>• Cumulative distributions</li> <li>• Payment cancellation in case of breach of SCR (before or after the operation) (Art. 73- 1.g) unless (Art. 71.1-h): <ul style="list-style-type: none"> <li>○ It is waived by the supervisory authority</li> <li>○ The distribution does not further weaken the solvency position of the insurance or reinsurance undertaking</li> <li>○ The MCR is complied with after the operation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• No deferral of coupons required</li> </ul>	<ul style="list-style-type: none"> <li>• CRR does not require a deferral of coupons in case of non-compliance with capital requirements</li> </ul>
<b>Loss absorption</b>	<ul style="list-style-type: none"> <li>• No mechanism</li> </ul>	<ul style="list-style-type: none"> <li>• Write-down or conversion at the point of non-viability, decided by the Resolution Authority (Art. 59 of the BRRD Directive)</li> </ul>	<ul style="list-style-type: none"> <li>• There is no comparable write-down or conversion mechanism applicable for the insurance sector in the absence of a European insurance resolution framework</li> </ul>

## Questions to stakeholders

Q20.1: Do you have any comments on the analysis of differences presented above?

Q20.2: Besides the specific issues discussed in Section 20.3, which of the differences do you think is material and/or not justified by the differences in the business models between the banking and insurance sectors?

Q20.3: For the differences identified in the question above, what changes in regulation would you suggest? Please explain why consistency would be desirable and why changing the Solvency II Delegated Regulation would continue to ensure a high quality of own funds.

## 20.2. Specific issues identified by EIOPA

As part of the comparison described above, EIOPA has identified two specific issues where differences may have a material impact.

### Principal loss absorbency mechanism

A Principal Loss Absorbency Mechanism ("PLAM") is an instrument which provides equity-like loss-absorbing qualities, after a pre-determined trigger (defined in the terms and conditions of the particular instrument) is reached. This loss-absorbency is achieved by the instrument either converting to equity, or by a write-down of the principal amount.

Based on the analysis conducted, the PLAM is considered to be the main difference between the Solvency II Delegated Regulation and the CRR regarding the features determining the classification of debt instruments in Tier 1. The differences in the way the PLAM works under the two regimes is further analysed below.

### 1. Under the CRR

According to Article 52(n) of the CRR, in order for a capital instrument to qualify as an Additional Tier 1 instrument, when a trigger event is reached, "the principal amount of the instruments [must] be written down on a permanent or temporary basis, or the instrument [must] be converted to [a] Common Equity Tier 1 instrument".

The trigger event is defined in Article 54(1)(a) of CRR as a situation when the Common Equity Tier 1 capital ratio of the institution falls below a certain threshold. By default, this threshold is 5.125 %, but the financial undertaking may decide to define a higher threshold in the terms and conditions of the capital instrument.

In accordance with Article 54(4) of CRR the aggregate amount of Additional Tier 1 instruments that is required to be written down or converted upon the occurrence of a trigger event shall be no less than the lower of: the amount required to restore fully the Common Equity Tier 1 ratio of the institution to 5,125 %; and, the full principal amount of the instrument.

The banking PLAM improves the quality of capital, by converting Additional Tier 1 capital into Common Equity Tier 1 capital. This leads to an increase in the capital ratio based on which the PLAM was triggered. As a result, in general, a partial write-down or conversion is sufficient to cure the trigger event.

## 2. Under the Solvency II Delegated Regulation

According to Article 71(1)(e) of Delegated Regulation, in order to be classified into Tier 1, a subordinated debt instrument must include in its terms and conditions a PLAM with a trigger to write down or convert at significant non-compliance with the SCR<sup>29</sup>. However, the instrument may have other higher triggers as well (in accordance with Article 71(8) of the DR).

Write-down or conversion of an instrument with a PLAM converts restricted tier 1 own funds (through a decrease in the outstanding principal amount of the restricted tier 1 own-fund item) into unrestricted tier 1 own funds (through an increase in the reconciliation reserve). As such, it improves the quality of own funds, by converting restricted Tier 1 own funds into unrestricted Tier 1 own funds.

Article 71(5) of the Delegation Regulation specifies that the following should be reduced when the trigger point is reached: the claim of the holder of the instrument in the event of winding-up proceedings; the amount to be paid upon repayment or redemption; the distributions payable. The extent of the reduction is not further prescribed. In most cases, the PLAM (either write-down or conversion) will not increase the quantum of own funds<sup>30</sup>. This means that, unlike under CRR, in most cases after the conversion or write-down, irrespective of the amount of the reduction<sup>31</sup>, the significant non-compliance with the SCR would still remain.

### Questions to stakeholders

Q20.4: Do you have any comments on the analysis of the way the PLAM applies in the two regulations?

Q20.5: Do you think that the differences between the PLAM in the two regulations, in particular the fact that under Solvency II it will not usually solve the breach to the SCR, are material and/or not justified by the differences in the business models between the banking and insurance sectors?

Q20.6: If you consider the differences to not be justified, what changes in the regulation regarding the PLAM would you suggest? Please explain why consistency would be desirable and why changing the Solvency II Delegated Regulation would continue to ensure a high quality of own funds.

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<sup>29</sup> According to Article 71(8), a significant non-compliance corresponds to any of the following situations :

- The amount of own-fund items eligible to cover the SCR is equal to or less than 75 % of the SCR
- The amount of own-fund items eligible to cover the MCR is equal to or less than the MCR
- Compliance with the SCR is not re-established within a period of 3 months of the date when non-compliance with the SCR was first observed.

<sup>30</sup> The PLAM would increase the quantum of eligible own funds and potentially solve the SCR breach where the problem is that the undertaking has exceeded the limits for eligible own funds for both restricted Tier 1 and Tier 2.

<sup>31</sup> This is the reduction described in the previous sentence e.g. to the claim of the holder of the instrument in the event of winding-up proceedings.



## **Differences in treatment between the two sectors on changes to applicable tax rules**

According to Article 78 of the CRR, competent authorities may permit institutions to redeem Additional Tier 1 or Tier 2 instruments before five years of the date of issue in a number specific cases and where a number of conditions are satisfied.

This includes Tax events, where there is a material change in the applicable tax treatment of those instruments, which could not have been reasonably foreseen, and subject to approval by the competent authority. It also includes Regulatory Events (as defined in Article 78(4) as well as for market making purposes (Article 29 of Commission Delegated Regulation (EU) 241/2014).

In these cases the reduction of own funds may only be permitted if one of the following conditions is met (Article 78(1)):

- The own-fund item is replaced by another instrument of equal or higher quality at terms that are sustainable for the income capacity of the institution;
- The institution is able to demonstrate to the satisfaction of the competent authority that after the action, the own funds would exceed the capital requirement and the combined buffer by a sufficient margin.

For the insurance sector, the Delegated Regulation does not address the issue of Tax (or Regulatory) Events. The general rule is that redemption prior to five years of the issue date is not permitted. However, where the redemption is made out of the proceeds of a new issuance of the same or higher quality this can be permitted. In the case of restricted Tier 1 this would be another restricted Tier 1 instrument or equity capital. As with all redemptions, this action is subject to prior supervisory approval. Consequently, there are no restrictions on the types of Event calls that may be envisaged (tax, regulatory, accounting, etc.), provided that the conditions described are met.

## **Questions to stakeholders**

Q20.7: Do you have any comment on the comparison of the insurance and banking regulations with regard to changes to applicable tax rules?

Q20.8: Do you think that the differences between treatment of a change in applicable tax rules in the two regulations is material and/or not justified by the differences in the business models between the banking and insurance sectors?

Q20.9: If you consider the differences not to be justified, what changes in the regulation regarding the treatment of changes to applicable tax rules would you suggest? Please explain why consistency would be desirable and why changing the Solvency II Delegated Regulation would continue to ensure a high quality of own funds.

## **21. Capital instruments only eligible as tier 1 up to 20% of total tier 1**

Article 82(3) of the Delegated Regulation states that no more than 20% of total eligible Tier 1 own funds shall be made up from the following basic own-fund items listed in Article 69 of the Delegated Regulation:

- paid-in subordinated mutual member accounts;
- paid-in preference shares (and the related share premium account);
- paid-in subordinated liabilities valued in accordance with Article 75 of the Solvency II Directive are referred to in this section as Restricted Tier 1 ("rT1"); and
- items included in Tier 1 basic own funds under the transitional arrangements set out in Article 308b(9) of the SII Directive).

Collectively the first three types of own funds together with instruments transitioned into Tier 1 by Article 308(b)(9) of the Solvency II Directive are referred to in this paper as "Restricted Tier 1 instruments". The amount of own funds represented by these instruments is referred to as "Restricted Tier 1".

The European Commission has asked EIOPA to give advice on whether the drafting of the Tier 1 features determining classification listed within Article 71 of the Delegated Regulation, by virtue of the fact that they allow for the inclusion of Restricted Tier 1 instruments, was predicated upon the existence of the 20% limit referred to in the first paragraph of this section. If so, the Commission asks whether Article 71 of the Delegated Regulations should be amended if that limit were removed.

### **21.1. Immediate effect if the 20% Restricted Tier 1 limit is removed**

It seems only a small number of instruments have been issued with the intention of being Solvency II compliant Restricted Tier 1. Therefore the immediate effect of removing the 20% limit on such instruments would be immaterial at the European market level. However, over time undertakings with lower levels of equity (i.e. more highly geared undertakings) might be incentivised to issue rt1 rather than equity if the limit is removed, so that the impact would increase over time.

A significant number of own fund instruments were transitioned into Restricted Tier 1, and that in some cases the 20% limit has been reached. Thus the limit has resulted in some potential Restricted Tier 1 transitional instruments being relegated to Tier 2.

This being the case, the immediate effect of removing the 20% limit would be to allow those relegated instruments to be recognised as Tier 1.

In accordance with Article 308b(9)(c) of the Solvency II Directive requires that own fund items could only be transitioned if they did not already comply with Solvency II requirements. By definition therefore, capital currently transitioned into Restricted Tier 1 is therefore of lower quality than either equity or Solvency II compliant Restricted Tier 1.

So, the immediate effect of removing the 20% limit would be to allow a greater amount of lower quality capital instruments to be recognised in some undertakings, increasing their eligible Tier 1 but lowering its quality. This effect would potentially last for up to ten years, when the transitional provisions end.

## Questions to stakeholders

Q21.1: If the 20% limit for restricted Tier 1 instruments were removed, do you think that a restriction should be retained on the use of lower quality transitional own funds (i.e. pre-solvency II capital) as Tier 1 own funds? If so, how would you suggest achieving this, bearing in mind that the use of quantitative limits may not be the preferred approach, and that the scope of the advice is limited to requirements in the Delegated Regulation?

For insurance and reinsurance undertakings within the scope of the Solvency II Directive only:

Q21.2: If the 20% limit were removed, would your undertaking or group be able to recognise as Tier 1 own funds any transitioned pre-Solvency II capital currently above the 20% limit, and thus which are currently only recognised as Tier 2 own funds?

Q21.3: Would this have any effect on your total own funds coverage ratio? If so please describe the effect.

### **21.2. Longer term effects effect if the 20% Restricted Tier 1 limit is removed – incentive to lower the quality of Tier 1 own funds**

Tier 1 own funds are required to "substantially possess" the characteristics set out in Article 93(a) of the Solvency II Directive which mandates that "the item is available, or can be called up on demand, to fully absorb losses on a going-concern basis, as well as in the case of winding-up (permanently available)".

This embodies two separate questions:

- are Restricted Tier 1 instruments available to fully absorb losses?
- are Restricted Tier 1 instruments permanently available?

In both regards Restricted Tier 1 instruments demonstrably do not fully possess those features because they:

- cannot absorb losses above the trigger point, except to the extent that fully flexible distribution (i.e. coupons) are not paid; and
- are permitted to have call or redemption dates (albeit that any redemption is subject to supervisory approval)

As such Restricted Tier 1 is of a lower quality than equity, which always absorbs losses and is permanent.

In view of this of this lower quality, CEIOPS' Advice for Level 2 Implementing Measures on Solvency II: Own funds - Articles 97 and 99- classification and eligibility gave the following advice to the European Commission in 2009:

***"3.189. CEIOPS acknowledges that there is a role for high quality hybrids in Tier 1, provided that in stressed situations, they can convert or write down to provide higher quality capital in the form of equity. Any inclusion of high quality hybrids should be restricted i.e. they should account for no more than 20% of Tier 1."***

If the 20% limit on Restricted Tier 1 is removed, undertakings intending to increase their Tier 1 own funds would be incentivised to issue Restricted Tier 1 instruments rather than equity capital, such that they represented more than 20% of total Tier 1 own funds. This would result in a lowering of Tier 1 capital quality.

### **Question to stakeholders**

Q21.4: If the 20% limit is removed, how could the features in Article 71 of the Delegated Regulation be amended to ensure that the quality of Tier 1 own funds is maintained?

Q21.5: Would you prefer the quality of Tier 1 capital to be maintained by retaining the 20% limit or strengthening the Tier 1 features? Please explain your answer.

Q21.6: If the 20% limit is removed, and if the mandatory trigger set out in Article 71(1)(e) of the Delegated Regulation were raised to a level materially above that of substantial breach of the SCR (in order to improve the quality of own funds that it applied to):

a) would there be a market for such instruments?

b) would it be cost effective to issue such instruments?

Q21.7: If the 20% limit is removed, and if the first call (redemption or repurchase) date as set out in Article 71(1)(g) of the Delegated Regulation were set further from issuance date (in order to improve the quality of own funds that it applies to):

a) would there be a market for such instruments?

b) would it be cost effective to issue such instruments?

## **Annex A: Assumptions underlying the life underwriting risk modules**

### **General underlying assumptions for the life underwriting risk module**

- The calibration of the life underwriting risk parameters captures changes in the level and trend of the parameter. It is assumed that the volatility risk component is implicitly covered by the level, trend and catastrophe risk components. This is considered to be acceptable, since volatility risk is thought to be considerably lower than the trend risk.
- The dependence of benefit payments on inflation is not material.
- The insurance portfolios is well-diversified with respect to: age, gender, smoker status, socio- economic class, level of life insurance cover, type of insurance cover, degree of underwriting applied at inception of the cover and geographical location.
- Therefore, one example of deviations from the assumptions underlying the standard formula calculation would be an insurance portfolio with a higher than average level of concentration in on or more risk factors (e.g. death protections are sold to a high number of impaired lives, for instance due to poor underwriting or adverse selection). Also a niche player is likely to have a materially different risk exposure than the one reflected in the calibration of the standard formula.
- Underwriting risk can affect undertakings liabilities as well as its assets. The scope of the life underwriting risk module is therefore not confined to the liabilities. Undertakings can have indirect underwriting exposures, like exposure to catastrophe bonds and longevity bonds.
- It is important to point out that the calibration of the life underwriting risk stress factors are considered to be in line with the 99,5% VaR and a one-year time horizon.
- For mortality, longevity, disability-morbidity, expenses and revision risk, the calibration regarded of great importance a study by Watson Wyatt. The study analysed the 99.5% assumptions over a 12 month time horizon that undertakings were proposing to make for their Individual Capital Assessments (ICAS) submissions in the UK.

### **Mortality risk sub-module specific underlying assumptions**

- The stress factor for mortality risk reflects the uncertainty in mortality parameters as a result of mis-estimation and/or changes in the level, trend and volatility of mortality rates and captures the risk that more policyholders than anticipated die during the policy term.
- The underlying assumptions for the mortality risk sub-module can be summarised as follows:
  - The undertaking has established a system to restrict adverse selection;
  - The probability distribution for mortality is skewed, with a current trend towards improving mortality;
  - For the simplified calculation of the capital requirement for mortality risk it is assumed that there is no material decrease in the respective sum of capital at risk in the next  $n$  years, where  $n$  is the modified duration (in years) of payments payable on death included in the best estimate projection. It is furthermore assumed, that the average mortality rate of the insured persons (weighted by sum insured) will not increase materially over the next  $n$  years.
- The mortality risk sub-module is applicable for (re)insurance obligations contingent on mortality risk i.e. where the amount currently payable on death exceeds the technical provisions held and, as a result, an increase in mortality rates leads to an

increase in these sums at risk. The risk is normally captured by increasing the mortality rates either by a fixed amount or by a proportion of the base mortality rates.

- A simplified calculation for mortality risk is available for undertakings, where it is proportionate to the nature, scale and complexity of the risks faced and where the standard calculation would lead to an undue burden for the undertaking. The underlying assumption for the simplified calculation of the capital requirement for mortality risk is that there is no material decrease in the respective sum of capital at risk in the next  $n$  years, where  $n$  is the modified duration (in years) of payments payable on death included in the best estimate projection. It is furthermore assumed that the average mortality rate of the insured persons (weighted by sum insured) will not increase materially over the next  $n$  years.

### Longevity risk sub-module specific underlying assumptions

- The stress factor for longevity risk is intended to reflect the uncertainty in mortality parameters as a result of mis-estimation and/or changes in the level, trend and volatility of mortality rates and captures the risk of policyholders living longer than anticipated.
- The underlying assumptions for the longevity risk sub-module can be summarised as follows:
  - The annual mortality improvements follow a normal distribution;
  - For the simplified calculation of the capital requirement for longevity risk it is assumed that the average age of policyholders within the portfolio is 60 years or more;
  - It is furthermore assumed that the average mortality rate of the respective insured persons does not increase by more than 10% each year.
- The capital charge for longevity risk is applicable for (re)insurance obligations contingent on longevity risk i.e. where there is no death benefit or the amount currently payable on death is less than the technical provisions held and, as a result, a decrease in mortality rates is likely to lead to an increase in the technical provisions.
- A Watson Wyatt study indicated a single uniform permanent decrease in mortality rates between 5% and 35%, with an average decrease around 18%. Feedback from internal model undertakings indicated that the median stress for the decrease in mortality rates used was 25%.
- In an alternative study by Towers Perrin ("UNESPA Longevity Risk Investigation") a calibration exercise was performed, where the mortality data for nine countries was analysed; both historic data and stochastically projected future mortality improvements of the mortality rates were considered. From the historical data the mean and the standard deviation of annual unisex mortality improvements were assessed separately for each age group for the years 1992-2006. In their approach the annual improvement of mortality rates is modelled by:

$$q_{x+1}(t+1) = q_x(t) \cdot (1 - f_x)$$

- Where:

$$f_x = \theta_x + \sigma_x \epsilon \quad \text{with } \epsilon \sim N(0,1)$$

- $f_x$  is called the annual improvement factor.  $\theta_x$  is the historical average of annual improvement factors for age  $x$ , where  $\sigma_x$  is the standard deviation of the historical annual improvement factors for age  $x$ .
- This setup implies for instance that:

$$q_{x+1}(t+1) = q_x(t) \cdot (1 - f_x)$$

- And:

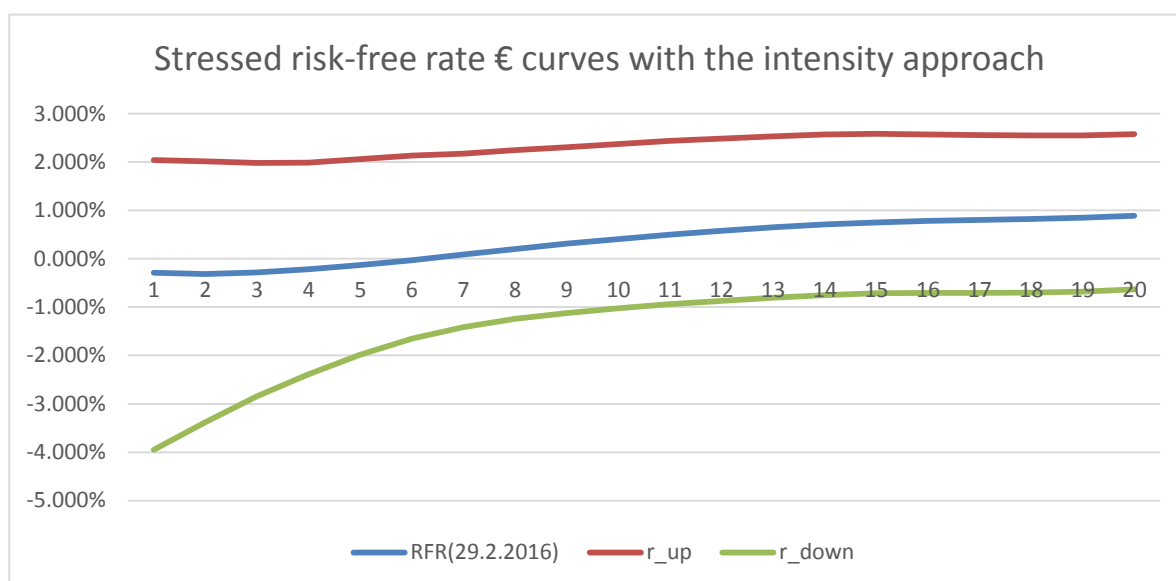
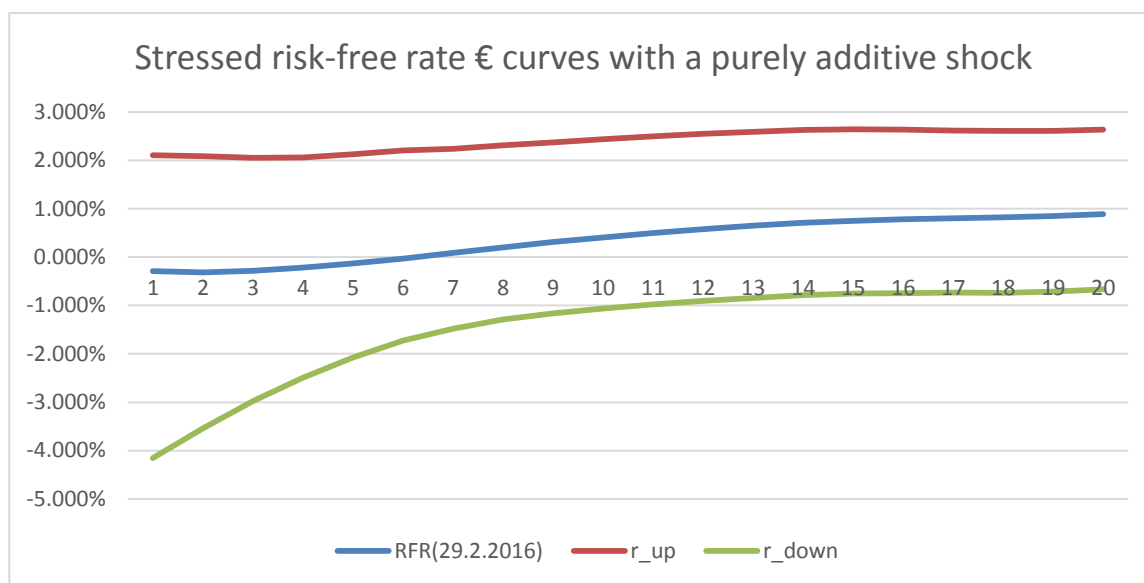
$$q_{x+2}(t + 1) = q_{x+1}(t) \cdot (1 - f_{x+1})$$

- Where both  $f_x$  and  $f_{x+1}$  follow their own normal distributions. It is not clear from the report if  $f_x$  and  $f_{x+1}$  in the above setup are driven by one single source of randomness or that both have their own source of randomness. In this last case the annual changes in the mortality rates for two subsequent ages are independent, which is less intuitive. Furthermore it is possible (although highly unlikely) that annual improvements become greater than one, leading to negative mortality rates.
- The calibration exercise analysed the 99.5% percentile of the distribution of liabilities for some specific product types and configurations (i.e. different combinations of age and contract term) in excess of the best estimate level of the liabilities to assess the SCR. The distribution of liabilities was based on projected mortality rates by applying the respective annual improvement factor to a base mortality table. Although the selection of an appropriate base mortality table is directly related to the level risk, no specific selection criteria have been defined.

## Annex B: Some computational results on the alternative approaches

In this section we provide the stressed curves based on the two alternative approaches, the additive stress<sup>32</sup> and the interest intensity-based approach based on the stress on the derived RFR curve. The corresponding stress factors are derived from a EUR EIOPA risk-free rate (RFR) data set ranging from 04.01.1999 until 29.02.2016 and with the CEIOPS principal component methodology described in section 3.

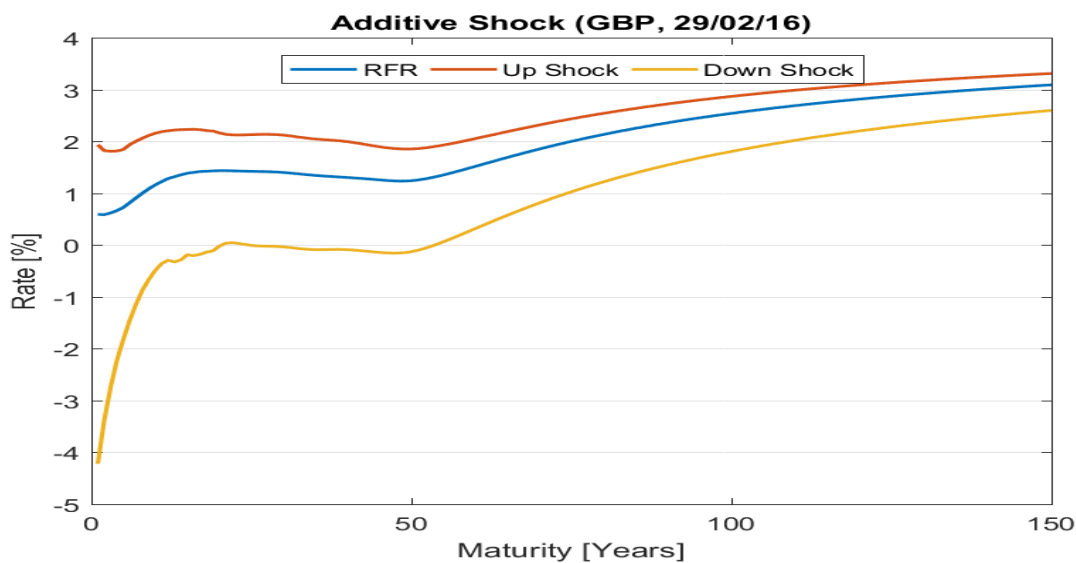
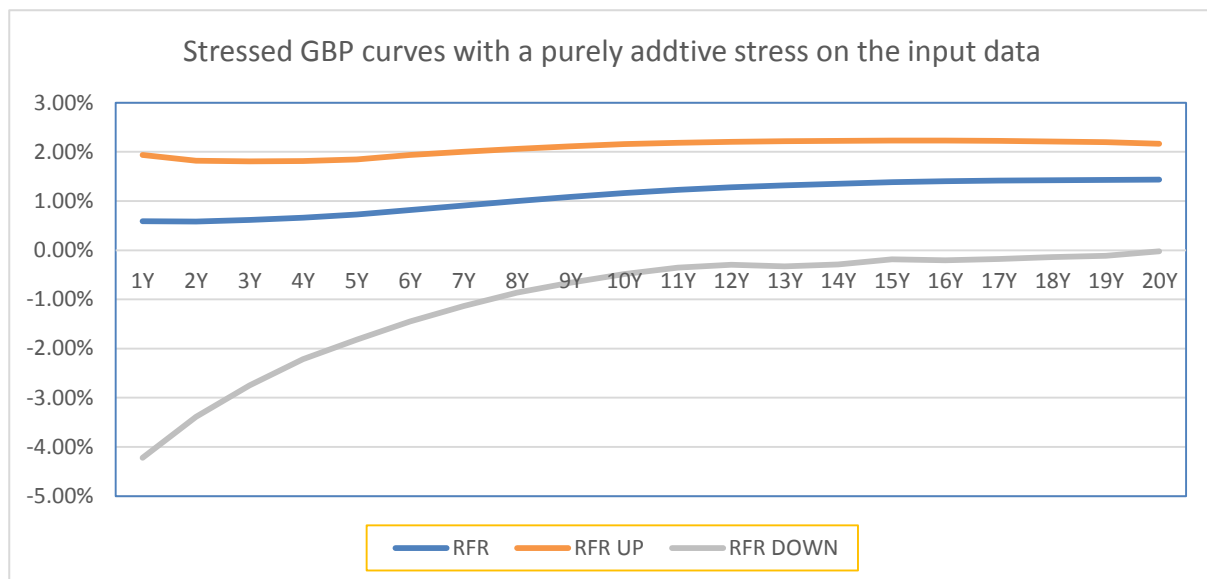
It is very important to emphasize that the calibrations below are just included for illustration purposes and they do not have the objective to pre-empt any kind of preference for any approach.



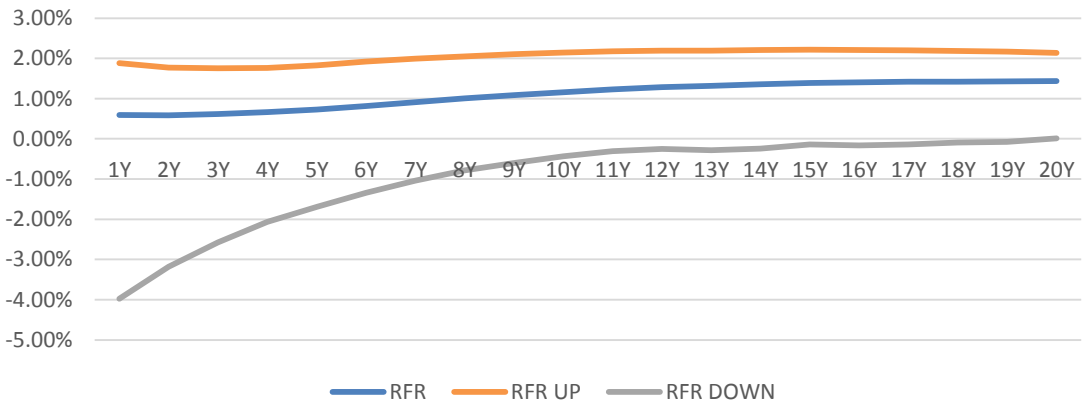
<sup>32</sup> The computations are performed on the purely additive approach, i.e.  $\alpha = 1$ .



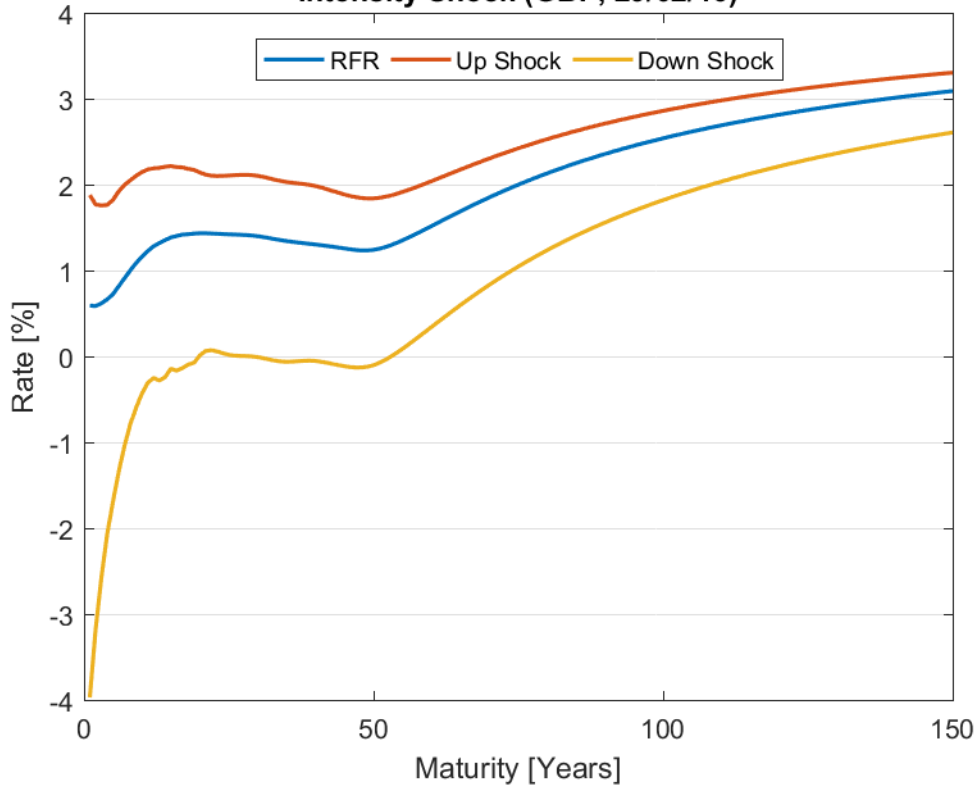
Moreover the two approaches are also used to calibrate the shock factors when the input data (swap market data) is shocked instead and the RFR curve is derived from the shocked data. The calibrations below were performed on a GBP swap market data set ranging from 13.11.2003 until 29.02.2016. The latter date is considered as the valuation date. Moreover the recomputation of the credit risk adjustment was neglected in this calibration exercise.



Stressed GBP curves with an intensity-based stress on the input data



Intensity Shock (GBP, 29/02/16)



## Annex C: Questions of the discussion paper

### 1. Simplified calculations

Q1.1: Did you encounter any specific issue(s) when carrying out the evaluation of the error introduced in the results of the simplified calculation(s)? If yes, please explain the issue(s) and provide suggestions that would allow a feasible and realistic evaluation.

Q1.2: Please describe the main challenges faced when calculating the capital requirement for the non-life premium and reserve risk, as referred to in Article 115 of the Delegated Regulation.

Q1.3: Is the geographical diversification factor established in Article 116(2) of the Delegated Regulation material in the calculation of the capital requirement for the non-life premium and reserve risk?

Q1.4: Do you have any suggestions for a simplified calculation of the capital requirement non-life premium and reserve risk? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.5: Please describe the main challenges faced when calculating the capital requirement for the non-life lapse risk, as referred to in Article 118 of the Delegated Regulation.

Q1.6: Do you have any suggestions for a simplified calculation of the capital requirement for the non-life lapse risk? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.7: Please describe the main challenges faced when calculating the capital requirements for the life underwriting risk, as referred to in Article 136 of the Delegated Regulation.

Q1.8: Do you consider the simplified calculations provided in Articles 91, 92, 93, 94, 95 and 96 of the Delegated Regulation appropriate given the main challenges? If no, please provide suggestions and explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.9: Do you have any other suggestions for a simplified calculation of the sub-modules of the life underwriting risk module? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.10: Please describe the main challenges faced when calculating the capital requirement for the NSLT premium and reserve risk, as referred to in Article 146 of the Delegated Regulation.

Q1.11: Is the geographical diversification factor established in Article 147(2) of the Delegated Regulation material in the calculation of the capital requirement for the NSLT premium and reserve risk?

Q1.12: Do you have any suggestions for a simplified calculation of the capital requirement NSLT premium and reserve risk? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.13: Please describe the main challenges faced when calculating the capital requirement for the NSLT lapse risk, as referred to in Article 150 of the Delegated Regulation.

Q1.14: Do you have any suggestions for a simplified calculation of the capital requirement for the NSLT lapse risk? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.15: Please describe the main challenges faced when calculating the capital requirements for the SLT health underwriting risk, as referred to in Article 151 of the Delegated Regulation.

Q1.16: Do you consider the simplified calculations provided in Articles 97, 98, 99, 100, 101 and 102 of the Delegated Regulation appropriate given the main challenges? If no, please provide suggestions and explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.17: Do you have any other suggestions for a simplified calculation of the sub-modules of the SLT health underwriting risk sub-module? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.18: Please describe the main challenges faced when evaluating if conditions of Article 89 for the use of market risk simplifications for captives are met.

Q1.19: Do you consider the simplified calculations provided in Articles 103, 105 and 106 of the Delegated Regulation appropriate given the specificities of captives? If no, please provide suggestions and explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.20: Do you have any suggestions for a simplified calculation of the market risk module for captives? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.21: Please describe the main challenges faced when calculating the capital requirements for the spread risk for bonds and loans, as referred to in Article 176 of the Delegated Regulation.

Q1.22: Do you consider the simplified calculations provided in Article 104 of the Delegated Regulation appropriate given the main challenges? If no, please provide suggestions and explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.23: Do you have any other suggestions for a simplified calculation of the sub-modules of spread risk for bonds and loans? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.24: Please describe the main challenges faced when calculating the capital requirements for the operational risk, as referred to in Article 204 of the Delegated Regulation.

Q1.25: Do you have any suggestions for a simplified calculation of the operational risk module? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

Q1.26: Do you have any other suggestions for a simplified calculation of the SCR standard formula? If yes, please explain why the proposals meet the requirements of Article 109 of the Solvency II Directive.

## **2. Reducing reliance to external credit ratings in the standard formula**

Q2.1: Do you think Article 4 could be improved to reduce the reliance on external credit ratings in relation to the calculation of the SCR standard formula? If yes, please provide suggestions and pros and cons.

Q2.2: How might the mapping of credit quality steps (CQS) (as defined in the Commission Implementing Regulation laying down ITS on ECAI mapping) be improved to reduce reliance on external credit ratings?

Q2.3: In which other areas, apart from the SCR standard formula, should the reliance on external credit ratings be reduced? Please provide pros and cons of your suggestion.

Q2.4: Do you have any proposal that would allow insurance undertakings to calculate their capital requirements, at least partly, on the basis of internal measures and ratings and still ensure that the level of protection of policy holders is equivalent to the one reached with the standard formula and internal models?

Q2.5: Do you think a methodology based on market implied ratings could be used in the standard formula? If yes, please provide your suggestion. Please also provide a justification why such a methodology would meet the requirement of Article 101(3) of the Solvency II Directive that the Solvency Capital Requirement corresponds 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.

Q2.6: Do you think a methodology based on accountancy-based measures could be used in the standard formula? If yes, please provide your suggestion. Please also provide a justification why such a methodology would meet the requirements of Article 101(3) of the Solvency II Directive that the Solvency Capital Requirement corresponds 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.

Q2.7: On what conditions and under which restrictions may market implied ratings or accountancy-based measures be used to approximate the credit quality step of financial instruments?

Q2.8: Do you have suggestions for alternative approaches that could be used in the standard formula? Please explain why such alternative approaches would meet the requirement of Article 101(3) of the Solvency II Directive that the Solvency Capital Requirement corresponds 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.

Q2.9: Is there a specific line of business and/or size of undertaking and/or asset class where you consider the use of external ratings for the purpose of investment and risk management not to be proportionate? Please explain your answer.

Q2.10: If the answer to the previous question is yes, do you think references to credit quality steps in those specific cases could be removed? What could be the alternatives? What would be the advantages and disadvantages?

### **3. Treatment of guarantees, exposures guaranteed by a third party and exposures to regional governments and local authorities (RGLA)**

Q3.1: Are the differences between the Delegated Regulation and the banking framework justified by differences in a) the business model of the two sectors, b) the determination of capital requirements, or c) other reasons. Please provide explanations for your answers.

Q3.2: On what conditions or under which circumstances should the recognition of guarantees under Solvency II be modified? Are there any missing elements?

Q3.3: Should the risk mitigating effect of a partial guarantee be recognised in the SCR standard formula calculations (for example by defining a "minimum guarantee level") assuming that the partial guarantee is unconditional, irrevocable and meets all the other relevant requirements set out above? What are the costs associated with "splitting" an exposure into a guaranteed and a non-guaranteed part for the purpose of the capital requirement calculation?

Q3.4: What are partial guarantees exposures that insurance undertakings are investing in or will invest in? How relevant are these exposures relative to their importance in the banking sector?

Q3.5: How would you take the effect of a partial guarantee into account in the spread risk sub-module which depends on the modified duration and the credit quality step?

Q3.6: Should the recognition of Member States' central governments guarantees be extended also for type 2 exposures? Please explain pros and cons.

Q3.7: Please explain if insurance undertakings would decrease or increase their exposures to guarantees if your proposals were taken into account.

Q3.8: Should the guarantees issued by RGLA be treated similarly as guarantees issued by the central government of the jurisdiction in which they are established also in the market risk module? Please explain your answer.

Q3.9: How does the spread risk for exposures guaranteed by RGLAs differ from the spread risk for exposures guaranteed by the central governments? Please provide supporting evidence.

Q3.10: Are the differences between Solvency II and the banking regulation with regard to the treatment of exposures to RGLA justified, for example by differences in the business model of the two sectors or the determination of capital requirements?

Q3.11: Should Solvency II incorporate the categorisation set out in Article 115 of the Capital Requirements Regulation, i.e. applying risk weights to exposures to RGLA based on the three cases: a) no special treatment, b) treatment as central governments, c) intermediate treatment? If the answer is yes, please provide evidence that having three different treatments for exposures to RGLA is justified.

Q3.12: What would be the impact of aligning the treatment of exposures to RGLAs in Solvency II to the treatment in the banking regulation? Would insurance and reinsurance undertakings change their investment strategy

regarding RGLAs?

#### 4. Risk-mitigation techniques

Q4.1: What are the most recent developments in the area of risk-mitigation techniques (RMT), in particular in the area of embedded derivatives and longevity risk transfer?

Q4.2: For each RMT mentioned in the answer to the question above:

- o How do you define the RMT? Is there a legal definition?
- o How has the situation with respect to the RMT changed in the last years (in other words, what is "recent")?
- o What is the materiality of the RMT for your undertaking/for your country/in Europe (ideally measured based on notional and SII values absolute and relative to all assets)? How has the materiality changed over time?

For RMT which do not meet the conditions set out in Article 208 to 215 of the Delegated Regulation:

- o Why does the RMT not meet the conditions for the recognition of risk-mitigation techniques for the standard formula calculation (please provide the specific legal provisions)?
- o Why do you consider that the RMT should be recognised despite not meeting all the requirements? Why is the risk from not meeting certain requirements sufficiently low?
- o How would the requirements have to be altered to allow recognition of the RMT?
- o What is the effect from not recognising the RMT in absolute terms as well as relative to the overall SCR and the capital requirement for the relevant module or sub-module on the level of your individual undertaking/your country/Europe? When quantifying please follow to the extent possible the standard-formula methodology and explain in detail your methodology.

For RMT that meet the conditions set out in Article 208 to 215 of the Delegated Regulation, but for which you are of the view that the risk-mitigating effect is not adequately reflected in the capital requirement:

- o Why do you think that the risk-mitigating effect is not adequately reflected?
- o What is in your view the effect from this "non-adequate reflection" both in absolute and relative terms to the overall SCR and the capital requirement for the relevant module or sub-module on the level of your individual undertaking/your country/Europe? When quantifying please

explain in detail the methodology.

- o What change(s) would you propose?

## **5. Volume measure for premium risk**

Q5.1: Should the definition of  $FP_{(future,s)}$  that excludes “the premiums to be earned during the 12 months after the initial recognition date” be changed to only exclude “the premiums to be earned during the following 12 months”? Please explain why.

Q5.2: Do you have an alternative proposal for defining the premium risk volume measure? How does the alternative proposal effect the calibration of the risk factors for premium risk?

Q5.3: According to your assessment, would the change of the volume measure according to point 1 or, if applicable, according to point 2, have a material impact on the SCR? Can you quantify the impact?

Q5.4: Should the definition of the volume measure for premium risk be reviewed in order to decrease its dependency on pricing strategies?

Q5.5: Have you noticed any other issues regarding the definition of volume measure for premium risk? If yes, please provide details and concrete suggestions for addressing the issues.

Q5.6: According to your assessment, would the change of the volume measure according to point 6 or, if applicable, according to point 7, have a material impact on the SCR? Can you quantify the impact?

## **6. Assessment of the appropriateness of standard parameters for non-life premium and reserve risks and for medical expense risk**

Q6.1: Do you have evidence that standard parameters of other lines of business should be recalibrated? If yes, please provide a comprehensive justification, supporting evidence including data and examples and a materiality assessment. Please note that only evidence and materiality assessment relevant at European level will be considered.

## **7. Natural catastrophe risks**

Q7.1: Should the specifications for the capital requirement for natural catastrophe risk be simplified? How?

Q7.2: Should there be simplified calculations for the calculation of the capital requirement for natural catastrophe risk? Could the grouping of zones or regions serve as an alternative for simplifications? If yes, which approach to



aggregation would you envision as more adequate: computing the SCR straightforward from region-level, or aggregate currently existing zones where the risk is deemed to be sufficiently similar? What other simplifications could be used?

Q7.3: Please describe the main challenges faced when calculating the windstorm risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q7.4: Please describe the main challenges faced when calculating the earthquake risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q7.5: Please describe the main challenges faced when calculating the flood risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q7.6: Please describe the main challenges faced when calculating the hail risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q7.7: Please describe the main challenges faced when calculating the subsidence risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q7.8: Do you have any suggestion to improve the risk-sensitivity of the natural catastrophe risk sub-modules? Which aspects of the current design of the sub-modules would significantly lose risk-sensitivity when overly simplified? Please also provide a cost-benefit analysis when answering.

Q7.9: Do you have any evidence that suggests that average contractual limits per country and per peril have changed since 2010? If yes, what would be the impact of taking these new average contractual limits on the SCR of the natural catastrophe sub-modules?

Q7.10: In the recent years, did insurance undertakings have to face such cases of windstorm clustering events? How often did it occur? What was the estimated cost of such a clustering of events?

Q7.11: Is this specific risk taken into account in insurance contracts and reinsurance treaties?

Q7.12: Would you consider the risk of windstorm clustering as material at European level?

Q7.13: If you confirmed the materiality of the issue, how would you suggest taking into account a third windstorm event? Please explain if your proposal increases the complexity of the calculations and provide a cost-benefit analysis.

## 8. Man-made catastrophe risk

Q8.1: Please describe the main challenges faced when calculating the motor vehicle liability risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q8.2: Please describe the main challenges faced when calculating the marine risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q8.3: Please describe the main challenges faced when calculating the aviation risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q8.4: Please describe the main challenges faced when calculating the fire risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive. Please also refer to section 8.4 dedicated to fire risk.

Q8.5: Please describe the main challenges faced when calculating the liability risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q8.6: Please describe the main challenges faced when calculating the credit and suretyship risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q8.7: Do you have evidence that the SCR for a specific man-made catastrophe risk is not appropriately calibrated (please also refer to section 8.4 for fire risk)? If yes, please provide the following information, mentioning the particular risk to which the answer is referred:

What is the evidence that the risks are currently not well calibrated?

- Historical experience (if yes, please report the events)
- Internal model (if yes: source of expertise)
- Any other evidence (if yes: please specify)

What is the source of the incorrectness in your opinion (parameter, volume measure, scenario, etc.)?

Could you provide evidence of the materiality of the incorrect calibration? Ideally, this evidence should be based on a comparison with the current capital requirements for the same volume measures, and it should be backed by statistical analysis.

Q8.8: Should the calculation of the capital requirement for marine, aviation and fire risks be modified to address the issue outlined above? Do you foresee any practical difficulties when the calculation is modified? What would be the impact of the modification on the size of the capital requirement?

Q8.9: Does the fire risk sub-module of the standard formula produce capital requirements in line with the calibration objectives of Solvency II? Please provide evidence for your assessment.

Q8.10: If not, how should the loss scenario of the sub-module be changed to ensure consistency with the calibration objectives:

- Changing the impact radius of 200 meters referred to in Article 132(2)(b) of the Delegated Regulation?
- Modifying the loss from 100% of the sum insured to a lower percentage of sum insured?
- Modifying the loss by using probable or possible maximum loss (PML) instead of sum insured in the loss definition?
- Any other way?

Q8.11: In case PMLs should be used instead of sums insured in the loss scenario,

- How should PML be defined?
- Is there evidence on the reliability of PML estimates?
- Does the definition ensure an objective and consistent determination of PMLs across undertakings and jurisdictions?
- How can supervisors assess the appropriateness of the PMLs estimates?

Q8.12: Does the calculation of the fire risk sub-module need to be simplified? Please specify the parts of the calculations that are too complex or burdensome and explain why. Please suggest concrete changes to simplify the calculation.

## **9. Health catastrophe risk**

Q9.1: Would a change in the standard formula be justified with respect to the materiality of the terror risk?

Q9.2: The scenario chosen to calibrate the mass accident risk was based on a footprint for a 10-ton truck bomb, the largest bomb modelled, causing fatalities and serious injuries within the largest arena in a given country. Does this calibration properly capture terror risks? If no, please provide suggestions and indicate if these suggestions would simplify or increase the complexity of the calculations.

Q9.3: Please describe the main challenges faced when calculating the mass accident risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q9.4: Please describe the main challenges faced when calculating the accident concentration risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

Q9.5: Please describe the main challenges faced when calculating the

pandemic risk sub-module. Do you have any suggestion to simplify the sub-module? If yes, please explain why the suggestion meets the requirement of Article 101(3) of the Solvency II Directive.

## **10. Calibration of the mortality and longevity risk**

Q10.1: Do you have remarks on the Lee Carter model or could you suggest another more appropriate model?

Q10.2: How would you take account of parameter uncertainty and model risk with respect to mortality-longevity risks?

Q10.3: Should account be taken of possible future deviations from the estimated mortality trend and how (i.e. expert opinions)? If yes, could you please provide a suggestion?

Q10.4: Which other data could be used? Is the data you are suggesting to use publicly available?

Q10.5: To what extent and how could account be taken of:

- Differences between general mortality and insured mortality?
- Portfolio specific risk characteristics with respect to level, trend and volatility?

Q10.6: Do you think that a more granular approach for longevity and mortality risks is appropriate? If yes, please explain what would be the costs and benefits, in particular in terms of risk sensitivity and complexity.

Q10.7: Do you have any comments on, or suggestions to, the approach described above to calculate an alternative more granular shock to mortality rates being equivalent to financial stress consistent with the SCR definition?

Q10.8: Do you have any suggestions on the composition of appropriate (portfolios) of liabilities? For instance, which level of granularity would be necessary: model point approach (per LoB) versus full portfolio approach?

Q10.9: Do you have any suggestions on how to take account of the interest rate sensitivity inherent in the calculation of the loss of own funds?

Q10.10: Do you have any other suggestions on how to relate the 1-year value-at-risk measure of the SCR standard formula to changes to mortality rates? Currently these changes are defined as instantaneous and uniform shocks, would you have other suggestions?

## **11. USP and GSP on underwriting risks**

Q11.1: Do you have any suggestions on the introduction of USP in the mortality and longevity risk modules that would be consistent with the approach described in section 10 of this document?

Q11.2: Did you identify other standard parameters that could be replaced by parameters specific to the undertaking concerned when calculating the life,

non-life and health underwriting risk modules?

Q11.3: For these parameters, which criteria regarding the data and which standardised methods would you recommend to calculate the USP?

Q11.4: Do you have any suggestion for improving the data criteria as defined in Article 219 and/or in Annex XVII of the Delegated Regulation? Please explain whether your proposal simplifies or not the framework and the consequences in terms of quality of USP.

Q11.5: Do you have any suggestion how the current non-proportional reinsurance factor USP method could be amended or replaced by a different method?

Q11.6: In particular, do you have any idea how the NP factor USP method could be extended to take other types of reinsurance contracts into account (e.g. stop loss reinsurance or finite reinsurance)?

Q11.7: Did you identify specific issues related to the application of GSP, other than the one identified for USP?

Q11.8: Which solution would you recommend to the specific GSP issues you identified? Do you have suggestions for alternative methods to calculate GSP?

Q11.9: Do you have any suggestion for additional specific parameters that would apply to groups only, and not to solo (re)insurance undertakings?

## **12. Simplifying the counterparty default risk module**

Q12.1: Are there any cases where you find it unclear if an exposure should be treated in the counterparty default module or not? Please explain providing the legal provisions that you deem ambiguous.

Q12.2: In case you consider any steps in the calculation in the counterparty default risk module as being unclear, please explain and provide a suggestion how clarity could be improved.

Q12.3: Are there any other aspects of the module in question that are unclear? Please explain.

Q12.4: What part of the counterparty default risk module, if any, do you see as complex? Please provide an assessment of each identified part; what is costly or time consuming in the calculation, structure etc.

Q12.5: What are possible simplifications of the counterparty default risk module (structure of the model, calculations etc.)? Please provide for each suggestion a thorough description and explanation.

Q12.6: Please explain for each simplification how it saves time/costs and how it affects the risk-sensitivity of the calculation.

Q12.7: Are there certain conditions under which the use of the simplification should be allowed?

## 13. Exposures to qualifying central counterparties and derivatives

### General

Q13.1: Do insurance or reinsurance undertakings have other exposures to central counterparties or clearing members than those resulting from derivatives transactions? If so:

- What are these other exposures?
- What are the volumes?
- Is there any reason to assume that the risks of these exposures are not properly reflected in the standard formula?

### Cleared derivatives

Q13.2: Are there any insurance or reinsurance undertakings that use the standard formula for calculating their SCR that are clearing members of a qualifying central counterparty? Please provide the names if possible. Would you expect many standard formula insurers to become clearing members in the future? If so, why?

Q13.3: In case you think that there should be a specific treatment of the exposures resulting from being a clearing member of a qualifying CCP for insurers in the standard formula: should the standard formula treatment be differentiated based on the cases and conditions set out in Article 304 and 306 CRR? If not: Why and what would be a better alternative?

Q13.4: Where an insurer is using a qualifying CCP as a client of a clearing member:

- What is the relevance of the different cases set out in Article 305 CRR (transaction volume for (standard formula) insurers in terms of notional/market value)?
- Should the capital requirement be differentiated based on the cases and conditions set out in Article 305 CRR? If not:
  - - Why?
  - - What should be changed?
  - - How could the consistency with the banking rules as required in Article 111(fa) Solvency II be achieved when different cases and conditions were used?
    - - Provided the cases and conditions of Article 305 CRR were used: How could the required consistency with the banking rules set out in Article 111 (fa) Solvency II be achieved in terms of the level of the capital requirement for the different cases?

### Non-cleared derivatives

Q13.5: Does the treatment of derivatives of derivatives subject to the margining requirements set out in Article 11(3) EMIR in the counterparty default risk module properly reflect the risk? If not:

- Why?
- What should be changed (detailed suggestion)? Please elaborate on how your suggestion is in line with the fact that the scenario-based calculations are based on the impact of **instantaneous** stresses.

Other

Q13.6: Are there any other clearing arrangements or other arrangements related to derivatives transactions that EIOPA should consider? If so: Why (what are the volumes) and how?

## 14. Assumptions of the market concentration risk submodule

Scope of the market risk concentration sub-module (MRC SM)

Q14.1: EIOPA considers that the scope of the market risk concentration risk sub-module covers all assets held by an insurance or reinsurance undertaking except those listed in Article 184(2) of the Delegated Regulation. Do you see any ambiguities regarding the scope?

Interpretation of Article 186

Q14.2: What assumptions are made by insurance and reinsurance undertakings relating to the application of Article 186(2) to (5) of the Delegated Regulation? In particular:

- assumptions with respect to the applicability of these paragraphs to single name exposures that consists not exclusively of exposures to one single insurance undertaking, credit institution or financial institution (e.g. insurance group)? If it is assumed that they can be applied, what assumptions are used to calculate the risk factor  $gi$ ?
- assumptions when deciding whether a credit assessment by a nominated ECAI is not available (no issuer rating by the nominated ECAI, none of the exposures is rated by a nominated ECAI, something else)? Please cover where relevant the different cases mentioned in a.

Q14.3: What is the volume of assets/exposures falling within Article 186(2) to (5) of the Delegated Regulation (based on Solvency II valuations) in your undertaking/country/in the EU?

Q14.4: Article 199(4) to (7) of the Delegated Regulation use the same terminology as Article 186(2) to (5) of the Delegated Regulation. Are there any differences in the assumptions that insurance and reinsurance undertakings make regarding the points mentioned in Q14.2 between the market risk concentration sub-module and the counterparty default risk module?

Q14.5: What is the volume of assets/exposures falling within Article 199(4) to (7) of the Delegated Regulation (based on Solvency II valuations) in your undertaking/country/in the EU?

## The term "Single Name Exposure"

Q14.6: What assumptions are made by insurance and reinsurance undertakings with respect to the types of groups of exposures other than corporate groups and single immovable property? What characterizes these types? What would be the effect on the capital requirement for market risk concentration if they were not treated as single name exposure in your undertaking/country/in the EU?

Q14.7: What assumptions are made by insurance and reinsurance undertakings regarding the question whether exposures to separate counterparties that are owned by the same public entity should be considered as a single name exposure? What considerations form the basis for the decision? What would be the effect on the capital requirement for market risk concentration in your undertaking/country/in the EU if they would always/never be treated as single name exposure?

Q14.8: What assumptions are made by insurance and reinsurance undertakings regarding funds for which the look-through approach is not possible (in particular regarding allocation to single name exposures)?

## Definition of exposure at default

Q14.9: The Solvency II framework does not provide a legal definition of the term "exposure" referred to in Article 182(2) of the Delegated Regulation. EIOPA considers that for an asset in the scope of the market risk concentration risk sub-module the value of the exposure should normally equal the value of the asset as determined in accordance with Article 75 of the Solvency II Directive. Are there any assets where in your view a different approach is justified and why?

## Treatment of risk-mitigation techniques

Q14.10: How do insurance and reinsurance undertakings take into account the effect of qualifying RMT in the calculation of the capital requirement for market risk concentration? In particular:

- How are the values of the exposures as referred to in Article 182(1) of the Delegated Regulation adjusted (for example if an insurer holds both stocks in a company and put options on the same stock)?
- How is the effect of collateral taken into account?

Q14.11: In case this was in line with the requirements set out in Article 132 Solvency II insurers could use derivatives to gain exposures to market risk (e.g. long future or long call position on individual stocks). How would insurance and reinsurance undertakings treat this case in the market risk concentration sub-module?

Q14.12: Are risk-mitigation techniques (e.g. derivatives) included in the determination of the calculation base as referred to in Article 184(1) of the Delegated Regulation? If so, how?



## **15. Currency risk at group level**

Q15.1: Do you consider the currency risk arising at the level of the group due to the currency used to prepare the consolidated accounts being different from the reporting currencies of the solo undertakings ('FX translation risk') to be a real risk?

Q15.2: If answer to Q15.1 is no, should there be restrictions on the availability of the own funds at the level of the group?

Q15.3: Do you consider own funds across the group to be fungible? Please explain why this would be the case in a situation of stress on a given currency.

Q15.4: Do you consider the treatment of the currency risk at the level of the group to be appropriate under the standard formula? If not, what elements would you propose to change? Please explain how your suggestion meets the requirements of Article 101 of the Solvency II Directive.

## **16. Look-through approach: simplifications and investment related vehicles**

Q16.1: What criteria and elements could be used for the proper identification of related undertakings which are used by insurance and reinsurance undertakings as an investment vehicle?

Q16.2: Do you agree that the elements identified by EIOPA are relevant? How could such elements be integrated in an appropriate definition?

Q16.3: What are the costs and benefits that might be associated to extending the application of the look-through approach to investment related undertakings?

Q16.4: How may the extended application of the look-through approach to investment related undertakings impact the SCR calculation?

Q16.5: Under which conditions do you consider that it would be appropriate to apply/allow the look-through approach to investment related undertakings?

Q16.6: Do you consider the 20% threshold established by Article 84(3) appropriate?

Q16.7: Does the threshold allow the application of the simplified approach for investments which are backing unit-linked and index-linked products in an appropriate manner?

Q16.8: Do you have specific proposals to further simplify the look-through approach for investments which are backing unit-linked and index-linked products?

Q16.9: Do you identify specific exposures for which the cost of the application of the look-through approach would be excessively burdensome, compared to its added value in terms of accuracy of risk sensitiveness?

## 17. Interest rate risk submodule

Q17.1: Do you think that the relative shock on interest rates is inappropriate to measure the one-year 99.5% Value at Risk in a low yield environment? Please explain if you think that the current relative approach underestimates the interest rate risk.

Q17.2: Under what conditions and circumstances could the issue be resolved by setting a minimum downward shock? How should this minimum be calibrated?

Q17.3: Do you have any comment on the main issues identified? What are in your view the main interest rate risks that insurance undertakings are facing?

Q17.4: Why or why not should EIOPA use different data sets than the ones used for the current calibration rather than only updating the existing data to include the recent years?

Q17.5: Do you think that the available historical data set of daily EIOPA risk-free rate curves is suitable to perform the calibration of the interest rate stress factors? If so, would you consider the data to include rates up to the last liquid point or to include the extrapolated part as well? Please explain.

Q17.6: Do you consider any other data set suitable for the calibration of the interest rate stress factors? Please explain.

Q17.7: Do you think it is reasonable from a statistical and economical point of view to shock the input data (e.g. swap data or zero coupon government bond data) used to derive the smooth risk-free curve instead of shocking the derived risk-free curve? If yes, should the shock factors be also calibrated on the input data? (Please explain)

Q17.8: Do you have any further comments on the data issues?

Q17.9: Given that the shock factors could be derived from different methods (parametric and non-parametric), do you think principal components analysis is useful to derive the shock factors? (Please explain)

Q17.10: On which time window should the corresponding calibration of the shock factors be based (annually, quarterly, monthly, weekly or daily)?

Q17.11: Do you think the additive approach is a mathematically and economically reasonable approach to derive the shocked risk-free curves? Please explain.

Q17.12: Do you have any suggestion to improve this approach?

Q17.13: Do you think the interest intensity-based approach is a mathematically and economically reasonable approach to derive the shocked risk-free curves? Please explain.

Q17.14: Do you have any suggestion to improve this approach?

Q17.15: Would it be worthwhile to consider a calibration approach that uses absolute (relative) changes in a low (high) interest rate environment? What about setting or calibrating a minimum interest rate change (see also Q17.2)? What should be taken into account when pursuing these approaches?

Q17.16: Can you propose any other mathematically and economically suitable approaches (e.g. a relative shock on the unit zero-coupon bond prices)?

## **18. Loss Absorbing Capacity of Deferred Taxes (LAC DT)**

Q18.1: Do you recognize specific aspects with regard to the calculation of DTA and DTL on the Solvency II balance sheet that raise an issue in the calculation of LAC DT?

Q18.2: How could the assumptions on the returns on assets and liabilities be more harmonized and less subjective?

Q18.3: How could the uncertainty in the assets returns be taken into account in the calculation of LAC DT?

Q18.4: Under what conditions and circumstances is a projection of both economic (Solvency II) and fiscal profits and losses required in the calculation of LAC DT? Under what conditions and circumstances would either only economic or only fiscal losses suffice in the calculation of LAC DT and in that case which one of them?

Q18.5: What are your considerations to take account of new business in the calculation of LAC DT, given the uncertainty involved after the shock loss?

Q18.6: Which elements, in your opinion, should be considered for the projection of new business?

Q18.7: What are your considerations regarding the increasing uncertainty with the longer time horizons used in the projection in the calculations of LAC DT?

Q18.8: What are your considerations regarding limiting the time horizon for the projections of future taxable profits? Would such a limitation be different for different features, like, for example, new business or returns on assets and liabilities?

Q18.9: Under what conditions and circumstances would setting LAC DT to the amount of net DTL be an appropriate simplification, and a sensible reduction in subjectivity of the calculation?

Q18.10: If LAC DT is set to the amount of net DTL, what other issues should be considered?

Q18.11: Under what conditions or circumstances would you consider it necessary to explicitly calculate the full Solvency II balance sheet immediately after the shock loss?

Q18.12: What role, if any, and under what conditions or circumstances should the compliance with the MCR and SCR play in the calculation of LAC DT?

Q18.13: What role, if any, should recapitalisation and/or calling ancillary own funds, including their requirements, play for verifying the compliance with the MCR and SCR in the calculation of LAC DT?

Q18.14: Please provide comments and suggestions on features of LAC DT

that would require additional regulation or guidance by EIOPA or could be simplified.

Q18.15: What would be a balanced approach between simplifications, additional restrictions and relaxations in the calculation of LAC DT?

Q18.16: Do you consider LAC DT's procyclicality as an issue? If yes, do you propose any changes to the calculation of LAC DT that would make it less procyclical?

## **19. Risk margin**

Q19.1: Do you have any evidence that the methods and assumptions for the risk margin calculation set out in Articles 37 to 39 of the Delegated Regulation are not appropriate anymore, in view of a changed market environment? Please describe the changes in the market environment you are referring to. If yes, what are the modifications that you suggest? What would be the impact of the modifications on the risk margin?

Q19.2: Should the Cost-of-Capital rate be a long-term average rate, reflecting both periods of stability and periods of stress, or should it reflect current market conditions? If you think the cost-of-capital rate should move in-line with the current market conditions, which market instrument should the rate move in-line with? Do you have any evidence of the cost of capital for insurers moving in-line with your chosen market instrument?

Q19.3: Have you observed material change in the impact in your balance sheet due to the risk margin since the introduction of Solvency II? If so, what is the main cause of the impact and what lines of business are affected by it? How has the impacted your business practice? What amendments should EIOPA consider and why?

Q19.4: Do you have any other comments or observation EIOPA should consider?

## **20. Comparison of own funds in insurance and banking sectors**

Q20.1: Do you have any comments on the analysis of differences presented above?

Q20.2: Besides the specific issues discussed in Section 20.3, which of the differences do you think is material and/or not justified by the differences in the business models between the banking and insurance sectors?

Q20.3: For the differences identified in the question above, what changes in regulation would you suggest? Please explain why consistency would be desirable and why changing the Solvency II Delegated Regulation would continue to ensure a high quality of own funds.

Q20.4: Do you have any comments on the analysis of the way the PLAM applies in the two regulations?

Q20.5: Do you think that the differences between the PLAM in the two regulations, in particular the fact that under Solvency II it will not usually solve the breach to the SCR, are material and/or not justified by the differences in the business models between the banking and insurance sectors?

Q20.6: If you consider the differences to not be justified, what changes in the regulation regarding the PLAM would you suggest? Please explain why consistency would be desirable and why changing the Solvency II Delegated Regulation would continue to ensure a high quality of own funds.

Q20.7: Do you have any comment on the comparison of the insurance and banking regulations with regard to changes to applicable tax rules?

Q20.8: Do you think that the differences between treatment of a change in applicable tax rules in the two regulations is material and/or not justified by the differences in the business models between the banking and insurance sectors?

Q20.9: If you consider the differences not to be justified, what changes in the regulation regarding the treatment of changes to applicable tax rules would you suggest? Please explain why consistency would be desirable and why changing the Solvency II Delegated Regulation would continue to ensure a high quality of own funds.

## **21. Capital instruments only eligible as tier 1 up to 20% of total tier 1**

Q21.1: If the 20% limit for restricted Tier 1 instruments were removed, do you think that a restriction should be retained on the use of lower quality transitional own funds (i.e. pre-solvency II capital) as Tier 1 own funds? If so, how would you suggest achieving this, bearing in mind that the use of quantitative limits may not be the preferred approach, and that the scope of the advice is limited to requirements in the Delegated Regulation?

For insurance and reinsurance undertakings within the scope of the Solvency II Directive only:

Q21.2: If the 20% limit were removed, would your undertaking or group be able to recognise as Tier 1 own funds any transitioned pre-Solvency II capital currently above the 20% limit, and thus which are currently only recognised as Tier 2 own funds?

Q21.3: Would this have any effect on your total own funds coverage ratio? If so please describe the effect.

Q21.4: If the 20% limit is removed, how could the features in Article 71 of the Delegated Regulation be amended to ensure that the quality of Tier 1 own funds is maintained?

Q21.5: Would you prefer the quality of Tier 1 capital to be maintained by retaining the 20% limit or strengthening the Tier 1 features? Please explain your answer.

Q21.6: If the 20% limit is removed, and if the mandatory trigger set out in Article 71(1)(e) of the Delegated Regulation were raised to a level materially above that of substantial breach of the SCR (in order to improve the quality

of own funds that it applied to):

a) would there be a market for such instruments?

b) would it be cost effective to issue such instruments?

Q21.7: If the 20% limit is removed, and if the first call (redemption or repurchase) date as set out in Article 71(1)(g) of the Delegated Regulation were set further from issuance date (in order to improve the quality of own funds that it applies to):

a) would there be a market for such instruments?

b) would it be cost effective to issue such instruments?