

## CEA paper on Segmentation

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Contact person:	ECOFIN Department	E-mail:	<a href="mailto:ecofin@cea.eu">ecofin@cea.eu</a>
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### 1. Introduction

- 1.1 CEIOPS is currently developing its advice on various implementing measures. As part of this and as per their letter dated 8 August 2008 they have asked for the CEA's input in respect of segmentation and certain aspects of the market value risk margin calculation. CEIOPS is seeking similar advice from the Groupe Consultatif.
- 1.2 The CEA appreciates CEIOPS consultation policy and cooperative approach and welcomes CEIOPS request for input into the development of this aspect of the implementing measures as it believes that utilising the industry's practical experience at an early stage in the process will result in more appropriate and effective implementing measures.
- 1.3 In this paper we explain that:
  - Segmentation and market value risk margin methodology are separate subjects
  - The position on the cost of capital methodology is as stated in our paper dated 30 May 2008
  - The CEA is still considering / sceptical about the merits of allocating the market value risk margin (calculated at the company level) across the different lines of business
  - The segmentation used for different purposes should potentially vary depending upon what is best for that purpose, e.g. companies should not necessarily be required to use the same segmentation for the purposes of determining best estimate liabilities, standard approach SCR calculations and statutory reporting
  - Companies are best placed to decide what segmentation is most appropriate for determining best estimate liabilities
  - Further sub-division of the risk segments used in QIS4 to derive the SCR using the standard approach should be possible where this is needed to obtain accurate results and in particular to properly capture diversification between lines of business
  - For statutory reporting purposes, the diversity of products sold in different EU member states means that it is difficult to have a common and concise number of statutory reporting technical liability classes that enable all lines of business in all member states to be classified to single reporting segment
  - However, the CEA strongly supports harmonisation under Solvency II and is therefore working with its members to assess the feasibility of having high level harmonised statutory reporting segmentation

- 1.4 As our work develops, further input may be provided for the development of implementing measures on some of the views presented in this paper.
- 1.5 Answers to CEIOPS' specific questions are contained in the appendix.
- 1.6 The views expressed in this document represent CEA's views at this stage of the project. As our work develops, these views may evolve. Also these views need to be considered in the context of the CEA's other publications, which can be found on the CEA's website: [www.cea.eu](http://www.cea.eu).

## 2. Segmentation and market value risk margin methodology

### Framework Directive requirements

- 2.1 We start by considering what is required under the Framework Directive Proposal (recast dated 26 February 2008). Articles 74 to 85 cover the valuation of assets and liabilities.
- 2.2 Article 74(1) (b) provides an overall requirement that “liabilities shall be valued at the amount for which they could be transferred, or settled between knowledgeable willing parties in an arm’s length transaction”.
- 2.3 Article 76 contains a number of conditions relating to the calculation of the technical provisions, which are summarised below:
- 76 (1), technical provisions are to be derived as the sum of a best estimate and a market value risk margin
  - 76 (2), the best estimate is to be the discounted value of the probability weighted average of future cashflows based on current and credible information and realistic assumptions and be performed using adequate actuarial methods and statistical techniques
  - 76 (3), the market value risk margin is to be that required for the technical provisions to be equivalent to the amount that would be expected to be needed by a third party to take over the and meet the insurance and reinsurance obligations
  - 76 (4), the best estimate and market value risk margin are to be calculated separately, except where the associated cashflows can be replicated using financial instruments for which a market value is directly observable
  - 76 (5), where the market value risk margin is being calculated separately the cost of capital approach should be used
- 2.4 Article 79 states that “Insurance and reinsurance undertakings shall segment their insurance and reinsurance obligations into homogeneous risk groups, and as a minimum by lines of business, when calculating their technical provisions.”

### What the Framework Directive principles mean in practice

- 2.5 The CEA’s view is that the principles in the Framework Directive Proposal require the following:
- Technical provisions should be consistent with the market cost to the insurance undertaking of transferring or settling the liabilities
  - The cost of capital approach should be used to obtain proxy for market prices where they do not exist
  - Homogeneous risk groups should be used to achieve more accurate best estimate liability figures by avoiding the statistical distortions that can arise when combining dissimilar (heterogeneous) data sets

### The market value risk margin is a measure of uncertainty / variance

- 2.6 As per the Framework Directive, where suitable market prices on which to base the technical provisions do not exist the market value risk margin is the additional amount required on top of the best estimate liability to obtain a reasonable proxy for market prices. As defined in the joint CEA and Groupe Consultatif Solvency II Glossary the best estimate liability is the current expected or mean value of future cash flows arising from the insurer’s liabilities. However, there is uncertainty over the value of the actual amounts that will ultimately be paid. They could be more or less than this value. The market value risk margin is a measure of this uncertainty, i.e. variance around the expected value. It reflects the compensation that purchasers / investors typically require for accepting such uncertainty.

### Aggregate market value risk margin values cannot be obtained by simply summing individual values

- 2.7 When deriving aggregate values it is important to appreciate that best estimate liabilities and risk margins have different mathematical characteristics. Aggregate best estimate liabilities can generally be obtained by simply summing individual best estimate liability values because they are expected values, although as we discuss in 2.18

later it is not necessarily the case that profit sharing expected values (i.e. best estimate liabilities) values can be calculated in isolation. In contrast, aggregate market value risk margins cannot be obtained by simply summing individual market value risk margins. This is because it is a measure of variance and as such allowance has to be made for the interactions between the different variables, i.e. diversification effects. The most pragmatic and natural way of doing this is to calculate the market value risk margin at the company level.

- 2.8 The CEA therefore disagrees with CEIOPS' requirement to calculate individual market value risk margins and then sum them because this will result in figures which are inconsistent with the overarching principle of Article 74(1) b, i.e. the market cost to the insurance undertaking of transferring or settling its liabilities. CEIOPS seem to have reached their conclusion as a consequence of Article 79. However, the CEA believes that such an interpretation is inconsistent with the principle behind Article 79, which the CEA interprets as requiring companies to adopt sound statistical practice by avoiding statistical distortions such as those that might be introduced by using heterogeneous groupings to determine best estimate assumptions and associated best estimate liability values. As explained in 2.7 above, the market value risk margin is a measure of variance and as such needs to be calculated at the company level in order to appropriately reflect the diversification effects and obtain an accurate result. The CEA is still considering / sceptical about merits of allocating a market value risk margin calculated across different lines of business.
- 2.9 CEIOPS also argue that market value risk margins should be calculated excluding diversification effects in order to:
- Provide an additional margin to protect against possible shortfalls should individual lines of business be transferred leaving insufficient assets to cover the technical provisions for the remaining business
  - Ensure direct comparability between different -the same line of business between different insurers
- 2.10 The CEA believes that seeking to incorporate additional margins in the technical provisions is inconsistent with the Framework Directive and Article 76 in particular. Solvency II does not confuse prudence and capital requirements by incorporating implicit margins in the technical provisions liabilities. Instead, there are clear and distinct roles for technical provisions and capital requirements, with the latter being an explicit and objective assessment of the capital being needed to protect policyholders against unexpected adverse experience. This contrasts to the current Solvency I regime where implicit margins distort the comparison between undertakings and in particular between their technical provisions.
- 2.11 Requiring direct comparability between the technical provisions of lines of business in different companies is also beyond the scope of the Framework Directive. It is also not meaningful in practice because of differences between such things as product design, underwriting standards, distribution channels and the legal frameworks in the different jurisdictions undertakings operate.
- 2.12 Accordingly the CEA sees risk margin methodology and segmentation as two separate issues and as such addresses them separately in this paper.

### **Market value risk margin attributes**

- 2.13 The CEA's cost of capital methodology paper dated 30 May 2008 set out the CEA's position on market value risk margins. It identified the following key attributes that should be required of any approach used to derive market value market value risk margins:
- Unnecessary complexity is unwarranted and should be avoided as there is not a "right answer" – a reliable market from which to determine a correct price does not exist
  - Diversification effects should be fully allowed for, with a sensible proxy for this being the current entity specific diversification effects
  - Where market data is either unavailable or it doesn't adequately reflect the characteristics of the insurer's portfolio of risks, entity specific assumptions should be used
  - The cost of capital rate should be set so as to produce a reasonable estimate of the current market price for risk
  - The market value risk margin should not include any allowance for profit over and above the expected cost of capital for non-hedgeable risks

## Segmentation objectives

- 2.14 The rest of this paper is now devoted to the subject of segmentation. We start by considering what the objectives should be for segmentation, which the CEA believes to be:

More accurate figures	Alignment with how a company manages its business
Different segmentations for different purposes	Proportionate statutory reporting, i.e. cost effective and pragmatic

## Best estimate liability segmentation

- 2.15 The primary purpose of segmentation is to achieve accurate results, one of the four key objectives listed in 2.14. As the approaches to the best estimate calculation approaches for life and non-life business are typically different we consider them separately, starting with life business.
- 2.16 Best estimate liabilities for life business are typically calculated by performing policy by policy (or model point by model point) calculations that project future individual cash flows arising from lapses, deaths, sickness, etc, which are then discounted. Having appropriate best estimate assumptions are therefore a key determinant of having accurate best estimate liabilities for life business.
- 2.17 Best estimate assumptions will be set by analysing and interpreting historic experience. For this purpose it is important that homogeneous data sets are used to avoid introducing distortions that might arise from combining dissimilar business. However, care is needed to avoid this resulting in groupings which have insufficient data from which to derive statistically significant results.
- 2.18 Determining profit sharing best estimate liabilities has the added complexity that they may be affected by management rules that depend upon the overall solvency position of the company. For example, a company may have management rules such that bonus rates on one line of business can be reduced to recoup guarantee costs on another line of business and / or the overall solvency position of the company. In such circumstances this means that the best estimate liability for particular line of profit sharing business cannot be calculated in isolation from those for the rest of the business.
- 2.19 The key to achieving more accurate results for life business is to allow companies to segment their business in the manner needed to derive appropriate best estimate assumptions and also to reflect management actions. In practice this means allowing companies to determine the segmentation used for this purpose, which will reflect how they manage their business while also requiring the use of statistically significant homogeneous groupings.
- 2.20 Non-life best estimate liabilities are usually calculated using aggregate figures and development patterns. Companies will want to use statistically significant homogeneous groupings to determine the cumulative development patterns needed to derive best estimate liabilities. Again companies have the best understanding of their business and how best to segment it. They should not be forced to use inappropriate segmentation that results in inappropriate liability values. Given the importance of insurance risk for non-life business this is especially important.

## SCR segmentation

- 2.21 Segmentation is also important when calculating economic capital amounts such as the SCR. In line with the objectives in 2.14, the segmentation used should be that needed to obtain accurate results and should depend on its purpose. In particular it is important that diversification effects are properly captured and in this regard we would not want for non-life business underwriting risk tends to be unique to the type of business, e.g. only aviation policies are exposed to aviation risk and only marine policies are exposed to marine risk.
- 2.22 In many instances the risk segmentation proposed for the SCR standard approach in QIS4 is appropriate. However, certain non-life lines of business (see TS.XIII.B.6) are combined even though they have very different risk characteristics resulting in potentially important diversification effects not being captured. Some examples are shown in the table below.

QIS4 segmentation	Homogeneous risk segments
Marine, aviation and transport	Marine Aviation Transport
Fire and other damage to property	Property catastrophe Property non-catastrophe Energy
Third-party liability	Financial professional liability Non-financial professional liability General liability
Surety and credit insurance	Surety Credit insurance

- 2.23 The CEA recommends that the existing QIS4 segmentation should be capable of further segmentation where this is needed to obtain accurate results and in particular capture diversification effects. For example, companies should be able to calculate separate underwriting risk capital amounts for marine, aviation and transport, which are then aggregated using a correlation (i.e. just for these three risks) in order to get an aggregate MAT figure that is then aggregated with other underwriting risk capital amounts as is currently required under QIS4. Such an approach would allow potentially important diversification effects to be captured, but at the same time not increase the calculation burden on companies without such business.
- 2.24 The CEA also recommends that there is more than one miscellaneous category in order to capture diversification effects associated with business such as burial insurance.
- 2.25 It should be noted that the above comments only relate to the segmentation used for the standard approach. Companies using an internal model where companies should be allowed to choose the segmentation most appropriate for their business.

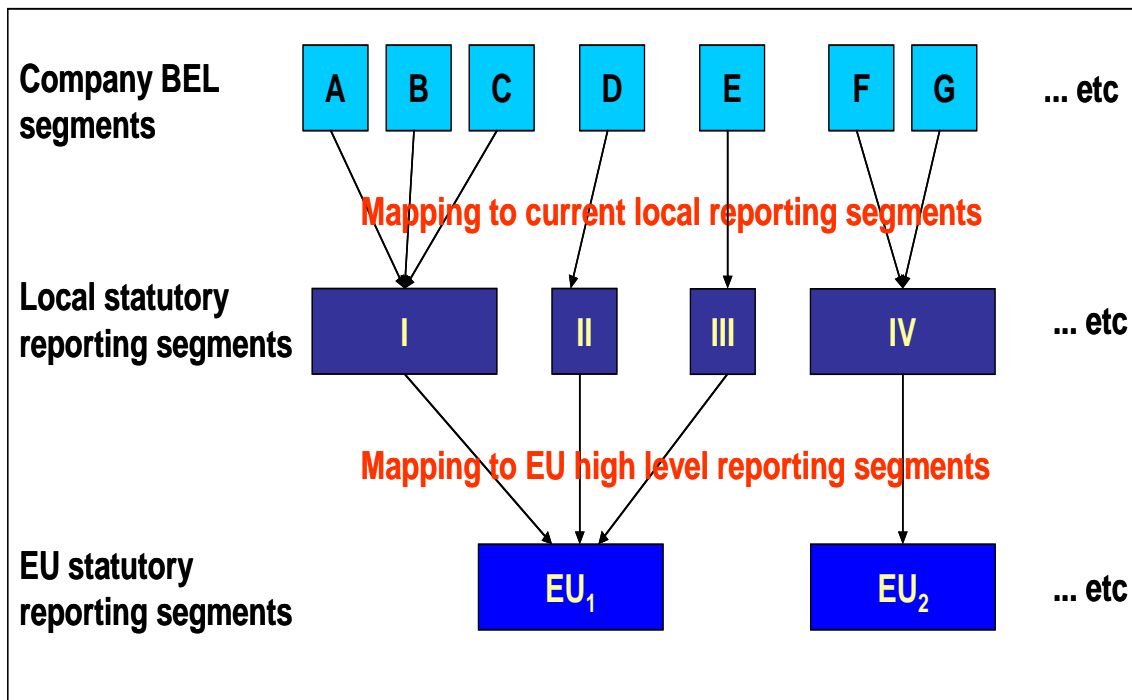
#### **Statutory reporting segmentation**

- 2.26 The CEA believes that the segmentation used for statutory purposes should achieve the following:
- Aiding the various stakeholders' understanding of a company's business
  - Avoiding unnecessarily costs
- 2.27 In general the CEA supports a harmonised approach to Solvency II. However, when considering statutory reporting segmentation it should be recognised that at the present time there is such a wide variety of products sold across the EU that it is not meaningful to adopt an overly granular approach for the purpose cross border comparisons. In this instance the benefits of extensive harmonisation are currently limited while the associated costs have the potential to be high.
- 2.28 The Lamfalussy process used for the development of Solvency II allows the regime to adapt and evolve in the future as economic conditions change and new risks and products emerge. As European markets get more integrated, it may be sensible to reconsider a more granular segmentation which would allow for a more meaningful cross border comparison in the future.
- 2.29 The CEA is currently consulting with its members on statutory reporting segmentation and in particular the merits of only harmonising statutory reporting segmentation at a high level with Member States being able to adopt different lower level statutory reporting depending upon the needs and practices of their market.

#### **Mapping different segmentation approaches**

- 2.30 In this paper we advocate using the segmentation approach that best suits the purpose to which it is being put to. For this to work it is important that companies are able to link the different segmentation approaches. Figure 1 demonstrates how this might work for mapping best estimate liability segmentation to statutory reporting segmentation. A similar approach would apply for mapping best estimate liability segments to SCR risk segments.

Figure 1 – How best estimate liability segments could be mapped to statutory reporting segmentation



## Appendix A

### Answers to CEIOPS' specific questions

CEIOPS asked the CEA a specific set of questions, combining the issues of segmentation and the market value risk margin. As explained in 2.12 the CEA believes that these are two completely separate sets of issues, which is reflected in our answers below.

A.1 Question 1: "How should the homogeneous risk groups for the calculation of best estimates be formed?"

A.2 Our answer:

- For the purposes of calculating best estimate liabilities companies should have the freedom to determine the most appropriate segmentation for their business with supervisors reviewing the appropriateness of this (see 2.14 to 2.20)

A.3 Question 2: "What assumptions shall be made in relation to the assets and other liabilities of the party taking on the business, in particular with regards to investments and deferred taxes? How should these assets and other liabilities which are transferred along with the technical provisions be attributed to the different lines of business?"

A.4 Our answer:

- For the reasons given in Section 2 the market value risk margin needs to be calculated at the aggregate company level in order to obtain the correct answer
- As such there is no need to try to artificially split assets and liabilities that only have meaning at a company level

A.5 Question 3: "With regard to the calculation of the market value risk margin for non-life business, the segmentation has been aligned with the insurance categories defined in Article 63 of the Council Directive on the Annual Accounts and Consolidated Accounts of Insurance Undertakings (91/674/EEC) with some further refinements for Accident and health and Non-proportional reinsurance. We would like to hear your view on this categorisation of non-life contracts, and in particular, do you find it consistent with the transfer of portfolio concept?"

A.6 Our answer:

- For the reasons given in Section 2 the market value risk margin needs to be calculated at the aggregate company level in order to obtain the correct answer
- The segmentation used to determine best estimate liabilities should have no impact on the market value risk margin

A.7 Question 4: "With regard to life insurance business, for the purpose of QIS4, participants were asked to form their own view of an appropriate definition of "lines of business" provided that this was consistent with a split that could be transferred to a third party (TS.II.D.3). Based on your experience, what would CEA propose as a split of life insurance business based on the concept of transferability of the portfolio to a third party? Alternatively, what does CEA think should be further principles which insurers could use to derive a consistent split in their business for this purpose?"

A.8 Our answer:

- In order to derive the most accurate figures companies should use the segmentation best suited to the purpose they are using it for
- For the purposes of determine best estimate liabilities companies should be free to use the segmentation that results in the most accurate answers
- The segmentation used to determine best estimate liabilities should have no impact on the market value risk margin
- As explained in 2.7, in order to derive an appropriate aggregate market value risk margin allowance has to be made for diversification effects with the most pragmatic and natural way of doing this being to calculate the market value risk margin at the company level

A.9 Question 5: “We are aware of many non-life products which cross two or more accounting classes. Furthermore, there may be life products which cross two or more categories suggested, depending on the segmentation proposed (see question 3). We would welcome CEA’s view on the appropriate treatment of such products.”

A.10 Our answer:

- The CEA believes that the approach used to segment the business should be that best suited to the purpose to which it is being put
- It is generally unhelpful to artificially split products into two or more components. Doing so can result in arbitrary results and excessive costs
- For the reasons given in Section 2 the market value risk margin needs to be calculated at the aggregate company level in order to obtain the correct answer
- The segmentation used to determine best estimate liabilities should have no impact on the market value risk margin

A.11 Question 6: “Many types of risk mitigation such as financial derivatives and reinsurance contracts are held to manage the risks in two or more types of contracts. Similarly, profit sharing mechanism may cover two or more lines of business. We would welcome CEA’s view on the appropriate treatment of these mechanisms and instruments.”

A.12 The answer varies depending upon whether or not it is profit sharing business:

#### *Profit sharing business*

- The technical provisions for profit sharing business and in particular the value of guarantees and options are affected by the volatility of future investment returns, which in turn are affected by the assumed asset mix and risk mitigation
- This may necessitate a notional asset allocation in order to appropriately allow for this. In this regard financial derivatives and reinsurance assets are no different to any other assets
- Any such allocation would need to be consistent with the profit sharing mechanism. This along with appropriate allowance for any possible management actions may in practice mean that the technical provisions for particular line of profit sharing business cannot be calculated in isolation from the technical provisions for the rest of the business, e.g. where a management action is dependent on the overall solvency position of the company
- For the reasons given in Section 2 the market value risk margin needs to be calculated at the aggregate company level in order to obtain the correct answer and as such it does not matter if risk mitigation is held in respect of more than one line of business

#### *Other business*

- As there is no optionality inherent in this type business the assumed asset backing does not affect the best estimate liability (all assets on a market-consistent basis are implicitly assumed to earn the same average future return). Also, the best estimate liability is required to be calculated gross of reinsurance. As such any risk mitigation should not affect the best estimate liabilities
- Risk mitigation will affect the market value risk margin. However, for the reasons given in Section 2 the market value risk margin needs to be calculated at the aggregate company level in order to obtain the correct answer. As such, it does not matter if risk mitigation is held in respect of more than one line of business

## Appendix B

### CEA latest publications

[Joint CEA-PEIF-CFO Forum-CRO Forum Letter on Current Solvency II Directive Negotiations](#)

Date : 2008-11-13

[CEA Response to CEIOPS' Own Risk and Solvency Assessment](#)

Date : 2008-09-18

[CEA Comments on CRD Potential Changes](#)

Date : 2008-06-14

[Position paper: cost of capital methodology](#)

Date : 2008-06-03

[CEA response on the principle of proportionality in the Solvency II framework directive proposal](#)

Date : 2008-04-28

[CEA response on aspects of the Solvency II Framework Directive Proposal related to Insurance Groups](#)

Date : 2008-04-28

[CEA Position paper on the own funds eligibility criteria](#)

Date : 2008-04-25

[CEA position on Solvency II and pension funds](#)

Date : 2008-04-08

[CEA Guidance on QIS4 Simplification of the Market Interest Rate Risk Sub Module \(Mktint interest rate risk\)](#)

Date : 2008-02-20

[CEA Response to EU Commission's Draft Call for Advice on QIS4](#)

Date : 2008-02-20

[Simplifications for calculating risk margins using the cost-of-capital approach](#)

Date : 2008-02-20

[Instruments Working Paper on Marketability](#)

Date : 2008-02-20

[QIS 4 TS Comments Consolidation](#)

Date : 2008-02-20

[Joint CEA-CRO Forum letter to European Commissioner McCreevy on the Methodology of the Calculation of the MCR](#)

Date : 2008-01-30

### About the CEA

CEA is the European insurance and reinsurance federation. Through its 33 member bodies, the national insurance associations, CEA represents all types of insurance and reinsurance undertakings, e.g. pan-European companies, monoliners, mutuals and SMEs. CEA represents undertakings that account for approximately 94% of total European premium income. Insurance makes a major contribution to Europe's economic growth and development. European insurers generate premium income of €1 110bn, employ over one million people and invest more than €7 200bn in the economy.