	Comments Template on Discussion Paper on the review of specific items in the Solvency II Delegated Regulation	Deadline 3 March 2017 23:59 CET
Name of Company:	Koninklijk Actuarieel Genootschap	
Disclosure of comments:	Please indicate if your comments should be treated as confidential:	Public
	Please follow the following instructions for filling in the template: ⇨ Do **not** change the numbering in the column "reference"; if you change numbering, your comment cannot be processed by our IT tool ⇨ Leave the last column empty. ⇨ Please fill in your comment in the relevant row. If you have no comment on a paragraph or a cell, keep the row empty. ⇨ Our IT tool does not allow processing of comments which do not refer to the specific numbers below. **Please send the completed template, in Word Format, to CP-16-008@eiopa.europa.eu** **Our IT tool does not allow processing of any other formats.** The numbering of the questions refers to the discussion paper on the review of specific items in the Solvency II Delegated Regulation.	
Reference	**Comment**	
General Comment	This response is prepared by a group of individual members of the Dutch Royal Actuarial association (Koninklijk Actuarieel Genootschap) and presents their view(s) on the different topics. The content of this response does not necessarily represent the view of all these individual members nor can it be seen as a formal point of view of the Dutch Royal Actuarial Association.	
Q1.1		
Q1.2	Main challenge is the volume measure for premium risk requiring the consideration of multi year contracts. This can be a burdensome exercise for oftentimes very litte volume.	
Q1.3	To our view diversification for companies underwriting business in differents countries in Europe	

	is not really taken into account.	
Q1.4		
Q1.5	Requirement to assess lapse risk on a policy by policy basis. For P&C this is not useful nor very logical. It is not possible to determine exactly which policies are profitable and which are not. This can better be done on homogenious risk groups. Releasing the requirement to calculate lapse risk at policy level is certainly desirable for factors to which insurers are not allowed to differentiate such as gender. This is also relevant for Life or Income insurance with Unisex tariffs. The requirement to determine lapse risk including the difference at individual policy level might be a trigger not to assess the risk to this level of detail to avoid discussions when determining the risk. This is not a good trigger.	
Q1.6	Do the calculations by homogenious risk group. The assessment by HRG for BE provisions requires already an assessment of homogenity. If there is a clear difference in view on profitability that can be quantified, one might use different HRGs for this also. As such one could consider the HRG as the lowest level to which clear insight in expected profitability can be measured. This could therefore also form the basis to calculate Lapse risk.	
Q1.7		
Q1.8		
Q1.9		
Q1.10	For health (medical expense) insurance the volume measures are creating difficulties. Specially in a system where risk equalization takes place. This both holds for Premium risk and Reserve risk. A definition by country (by health system) might be more appropriate.	
Q1.11		
Q1.12	Volume measure specified at country level. Risk factors calibrated at country level taking into account specifics of the system in that country. This also allows alignment of the volume measure with the risk factor and will also facilitate the (better and more appropriate) use of USPs.	

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Q1.13	Similar issues to those for P&C insurance. (Question Q1.5)	
Q1.14	Similar to Q1.6	
Q1.15	The calculation of the capital requirements for the SLT health underwriting risk, as referred to in Article 151 is technically straightforward. However, the calibration of the parameters in the various submodules, especially the health disability-morbidity risk sub-module submodule is not clear and therefore difficult to explain. Further the definitions of disability and recovery (as need to be determined for the BE calculations) might not be logically aligned with the predescribed shocks (since the calibration is not clear). This could lead to differences between countries/entities that us different systems for valuation of BE. One could consider two separate sub-modules for disability and morbidity risk respectively, instead of using one sub-module in which both risks are combined.	
Q1.16	Article 100: simplification disability-morbidity risk: definitions of inputs for the formula are not very clear. This allows for discussion. It further does not cover the issue mentioned in Q1.15	
Q1.17		
Q1.18		
Q1.19		
Q1.20		
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Q1.22		
Q1.23		
Q1.24		
Q1.25		
Q1.26	Under Article 109, firms should have clear options to simplify their calculations where this is justified by the nature, scale and complexity of the risks they face, and as part of the proportionality principle. However, in practice, the implementation of this imposes a significant documentation burden on firms, adding to the governance and compliance costs arising out of Solvency II.	

	Comments Template on Discussion Paper on the review of specific items in the Solvency II Delegated Regulation	Deadline 3 March 2017 23:59 CET
Q2.1		
Q2.2		
Q2.3		
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Q2.5		
Q2.6		
Q2.7		
Q2.8		
Q2.9		
Q2.10		
Q3.1		
Q3.2		
Q3.3		
Q3.4		
Q3.5		
Q3.6		
Q3.7		
Q3.8	The Nationale Hypotheek Garantie (NHG), i.e. the national mortgage guarantee, should also be recognized as if it were guaranteed by the central government, similar to the treatment under banking regulation.	
Q3.9		
Q3.10		
Q3.11		
Q3.12		
Q4.1	Longevity swaps and longevity risk transfer / reinsurance are particularly relevant as risk mitigation techniques. The volume of such transactions has grown recently, although much of the	

	market is heading out of the EU, as Solvency II capital charges are perceived as penal. EIOPA should not write any further hurdles into the regulations that might accelerate this process. Treatment of these risk in SII framework is seen complex.	
Q4.2	-	
Q5.1	We understand the logic of the current fomula in the delegated acts as it includes, on top of the 1 year of expected earned premiums (full calender year), also an additional charge (FP current and FP future) for portfolios with multi year contracts. We also understand the argument to possibly implement the suggested new definition for the premium volumes. However, if the formula is changed in this way, the parameter (sigma) for the premium risk should be calibrated differently with a much lower parameter for the period after 12 months, to assure alignment with the basic principle of SII of the 1 year time horizon and to avoid negative side effects. We explain below. Changing the formula as suggested would increase not only the volume measure for multi year contracts but also for one year contracts. This has negative side effects. For example this would lead to an up and down movement of the volume measure (and thus also movements of premium risk) from one quarter to the other for one year insurance contracts that are renewed at one point during the year, e.g. 1st of January. In that case according to the definition gives the following volume measure for a contract with annual premium 100 (which are recognized prior the 1st of January): • Q4: Volume measure = 100 • Q1: V = 175 (it includes contracts that are renewed the 1st of January the year after) • Q2: V = 150 • Q3: V= 125 This is not a desirable situation and not the situation in the current definition. For one year contracts the current definition has exacte a 1 year volume for the premium risk. We understand that it might be argued that the requirement to include new business as specified in	

	article 101 might not be completely included. We agree that one could change this by changing the formula as suggested but with the current parameters this would not be in line with the basic principle of SII to cover risks over a 1 year time horizon. The period would become more than one year. See also Q5.2.	
Q5.2	As also described in Q5.1., to our view the volume measure as being the earned premium over a one year period (next 12 months) is a reasonable measure for typical P&C products. However, the additional components FP future and FP existing as well as the suggested change in FP future could be argued to be generally inconsistent with the basic principles of Solvency II, being the risk on a one year time horizon at the 99.5% VAR. P&C risks are typically driven by uncertain events that can happen every day of the insured period and generally independent from each other. This means that if you have an extreme incident (or a number of them due to e.g. bad wheather), this is not an indicator that this extreme situation also will happen in the following year, even though the contracts might still be the same because of multiple year contracts. The only thing that could change is that after a bad year assumptions change on the expected losses in the next year of these multi year contracts and possible new contracts. Theoretically this expected change in BE at year end (after a 99.5% event) should be included in the premium risk, (not the full 99.5% for the following year). There is no reason upfront to hold capital for more than the 1 year period. It would unnecessary increase the capital from a capital of a 1 year time horizon to a capital of 'longer period' horizon. This is not in line with the basic principles of Solvency II, which requires to hold capital for a 1 year time horizon. If the factors of FP future and FP existing stay in the formula and the definition is changed to the new definition for FP future, we would suggest to have a separate (much lower) parameter for this part. E.g. 5 to 10% (an estimate on the effects of the COR on the BE valuation at the end of the 12 months period due to the extreme event).	
Q5.3	Yes, this would have a material impact. **Changing the definition of FP future (Q5.1)**: This would increase the Premium risk by around 50% for portofolios with 1 year contracts that are renewed during the year. It differs roughly between	

	0% and 75% for portfolios that renew at 1 point during the year. **Having a different parameter for the FP future and FP existing (Q5.2)**: If one would have a more limited effect depending on the calibration of the parameter. For one year policies written during the year it would an increase of the parameter value multiplied by 50% of full year earned premium.	
Q5.4	Yes, one might consider to adjust this. An idea would be to set the estimate of the volume measure not on the expected premiums to be earned but on the expected premium to be earned corrected to the 100% COR level. This can be done since for the BE premium provision an estimate on the COR for the existing business needs to be done anyway.	
Q5.5	See remarks and suggestions Q5.1 to Q5.3.	
Q5.6	I think this refers to Q5.4 and Q5.5. The impact directly relates to how much the COR for a specific line of business is below or above the 100%. So if an insurer has a COR measured of 102% and he needs to uplift his volume measure by a factor 1.02 to meet the 100% COR, this will likewise increase the premium risk by around 2%.	
Q6.1	We don't have evidence that on European level parameters are not correctly calibrated. We see however that the Europe wide calibrations might not be very good applicable for the Netherlands specific. One might considere country specific parameters. • Medical expenses for the Dutch market is not calibrated correctly. The studies of the Dutch market from all health insurers have shown this. An HRES is applied. • Another line of business is miscellaneous. This LoB is realively high where it depends very much by country what is included in these lines. • Liability LoB is also a typical line with very different covers in different countries. E.g. in the Netherlands there is an obligatory Liability cover for all individuals. The risk is however very low. The same holds for commercial liability since maximum amounts covered are limited and there is not a very aggressive claim culture.	
Q7.1		
Q7.2		
Q7.3	For those lobs where objects are insured not tight to a specific location (Marine and Motor) the appropriateness of the approach could be discussed.	

Q7.4		
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Q7.11		
Q7.12		
Q7.13		
Q8.1	Complexity is limited since one only needs the number of insured vehicles. However, one could dispute the reasonableness of this calculation. Probably more logical is to define a simple frequency severity model based on historical parameters of the insurance portfolio. One could also provide market information and make a weight in line with USPs to take into account the number of years experience the insurer has. EIOPA could provide benchmarks per country on frequency and severity distributions if company data is missing such that results can be weighthed. These could be calibrated with a (partly) predecribed frequency and severity approach. The advantage of this method is that also the reinsurance programs can be included much better and not only one event but also a multiple number of 'smaller extreme events' are considered.	
Q8.2	If one has no oil tankers or oil/gas platforms insured the calculation is straightforward since it does not fit the scenario and would result in zero capital. This makes the methodology disputable. A frequency and severity approach as described under Q8.1 could be introduced.	
Q8.3		
Q8.4	Current issue is that it does not at all consider more 'smaller large losses'. Further if one has a reinsurance cover on the largest risk or risks, just the one below might net of reinsurance have	

	the largest risk. We can therefore agree on the later suggestion (Q8.8).	
Q8.5	The method is not at all sensitive for the risk. It are just percentages of the premium volume. The approach to include the effects of reinsurance is disputable. The defined n does not have a rational. It would be more logical to move to a frequency and severity approach. We further think there is no clear split between the premium risk and cat risk for liability. This is also the case for other cat risks such as for Fire. To our view the standard formula does not take this into account sufficiently.	
Q8.6		
Q8.7		
Q8.8		
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Q8.10		
Q8.11		
Q8.12	The method it self does not necesarrily be simplified. In the implementation it might be needed to give some more room to interpret. As actually assessing ALL combinations of buildings in a radius of 200m might even with current technologies be a challenge up to now.	
Q9.1	The scenario needs a material amount of interpretation and expert judgements.	
Q9.2		
Q9.3		
Q9.4	The scenario needs a material amount of interpretation and expert judgements.	
Q9.5		
Q10.1	The Lee Carter model could be an appropriate model as it is transparent, robust, and is able to take into account parameter uncertainty in the stress factor. Further the Lee-Carter model generates confidence intervals which increase in time. As opposed by the current instantaneous shock of the Standard Formula, this is more in line with the true nature of longevity/ mortality risk. It has however a number of limitations that should be considered: • Consistency between projected mortality trends in the risk model and the best estimate	

model, e.g. in case best estimate assumptions are not based on a Lee-Carter model.

- Absence of cohort effects
- The Lee-Carter model is suitable for projection population mortality rates. However, the uncertainty in portfolio mortality rates should also be accounted for. In principle, this could be done by applying Lee-Carter directly on portfolio data, but in practice the amount of portfolio data might not be sufficient.

In general these limitation may make the Lee-Carter model less suitable for use in regions with strongly expressed cohort effects.

Considering alternative models, it is useful to take a more broad view on longevity risk in general. Longevity risk is typically long-term, i.e. the risk is of an adverse trend which unfolds over a long period of time. However, the SCR definition as used in the Solvency II guidelines indicates that is it useful to know how much expectations of future mortality rates might change over a single year.

The long-term nature of longevity risk has thus no natural fit to “1-out-200 over one year" approach. Therefore, the bulk of the currently available Trend Uncertainty approaches can be split into main categories:

- Risk Models based on a multi-year (or run-off) approach,
- Risk models based on a one-year risk horizon.

A one-year risk model assesses the potential consequences of an annual Best Estimate assumption update. During a one-year period, additional information from new mortality observations becomes available (resulting in recalibration of the model parameters) as well new insights in the underlying generating process (possibly resulting in model changes).

The Solvency II guidelines dictate the basic principle that the SCR amount for any risk type should reflect the Own Funds impact of a manifesting (one-year) shock. From this perspective, it feels

	natural to model the risk in terms of a one-year assumption update. This requires a dataset containing a sufficient volume of population mortality projections as used in the past by the risk taker. The Netspar study as well as the MRC approach (used references in the discussion paper) are both based on a so called multi-year approach. A multi-year approach is based on the principle that the consequences of all manifesting risk that can emerge during the run-off, should be modelled. In practice, the longer risk horizons are combined with a multi-year confidence level lower than 99.5%. Within the multi-year approach, the SCR for longevity risk should be able to absorb the potential impact of structural changes in mortality improvements. Lee-Carter type of models are not able to generate various trend regimes (i.e. account for trend breaches). Furthermore, the short term volatility should not dictate the long term uncertainty. As each mathematical model has its own specific view on the future trend uncertainty, model risk cannot be disregarded. There will be many models that are consistent with the used data. So, in the end, the specific choice of model will be subjective. Back testing seems to be crucial then in order to substantiate the calibration. As part of the validation of predictive models, the back testing compares the predicted (i.e. modelled) losses with the actually experienced losses in the past. In general, the value at risk (our SCR) should be reconsidered if the observed losses (generated by mortality assumption updates) are not in line with the risk modelling. Both approaches suffer from their own limitations. Unfortunately, there is no direct link between the two approaches; deriving a one-year longevity stress from a multi-year calculation is tricky. All in all, a stochastic model based on the multi-year approach should be preferred to provide an initial assessment of the required level of the SCR.	
Q10.2	There are two dimensions for parameter uncertainty and model risk. The first dimension relates to the concept that parameters are not eternal constants, but typically vary over time. This is implicit in the historical period over which a trend is fitted / the weighting	

	scheme used in the estimation. If there were no parameter uncertainty, one would use the longest historical period, with equal weights for all observations. In practice, using a fixed rolling window, of, say, 40 years, is a pragmatic way to handle a slow moving longevity trend. The most straight forward wat to obtain information on the amount of parameter uncertainty and/or model risk is to analyze what happened when re-estimating BE's annually using a rolling, say, 40-yr window, i.e. back testing. Richard Plat has performed such an analysis [« One-year Value-at-Risk for longevity and mortality », Insurance: Mathematics and Economics 49 (2011) 462–470)] and he arrived at longevity risks that are similar to the current SF. The second dimension relates to volatile parameter estimates, arising from a limited number of observations with error terms. Bootstrapping can help quantify this risk. E.g. by sampling model parameters from an assumed normal distribution. The normal distribution could be based on the standard errors of the parameters of the Lee-Carter time series. Please refer to a master thesis by David Plomp which provides an algorithm [http://repository.tudelft.nl/islandora/object/uuid:967a648a-29df-47d9-a02c-ac5c2d0a2416?collection=research]	
Q10.3	Following our earlier response to Q10.1, the stress parameters should be judged for their biological reasonableness by evaluating the impact of several scenario's (e.g. cure for cancer, growing obesity). These scenarios should not be the input on which to calibrate the stress parameters, but rather be a tool to validate the used model. Otherwise one would use expert judgment to model the possible deviation from an expert judgement based best estimate mortality trend.	
Q10.4	Generally, portfolio data should be used when modeling mortality or longevity risk. This means policy data should be used, which are not publicly available and might differ a lot between companies. When using a multi-year model, HMD and EuroStat provide useful information.	
Q10.5	Differences between general and insured mortality should be taken into account as the insured	

	subpopulation might have very different mortality characteristics. Differences could be taken accounted for by separately modeling portfolio mortality and experience factors (being the proportion between insured and population mortality). The insured mortality (which is the one that really matters, after all) can then be obtained by multiplying population mortality with experience factors. Portfolio risk characteristics with respect to level, trend and volatility could be based on the process and parameter uncertainty in the stochastic model that is used to forecast experience factors.	
Q10.6	Yes, from an actuarial point of view this would be more appropriate as different products can have different mortality characteristics. Benefits: • This would enable a better allocating of capital to product groups. This could be particularly important for SCR projections in the Risk Margin (as they require projecting risks over an ever older population). To the extent that there is a 'wall of death', longevity improvements at older ages faces limitations. • It improves consistency between assessing risks for mortality products and assessing risks for longevity products. Currently different shocks are applied for these to the same age group, while it is unlikely that longer-term mortality trends are different for people buying different products. The main reason for different shocks is that there may be a 'twist' in the mortality profile. Younger mortality rates may increase, where older mortality rates may decrease. The current -0.25% correlation between mortality and longevity products is driven implicitly by a presumed age-distribution. Arguably, this correlation should be -100% for the same age. Costs • The costs would be a more complex model as stress factors have to be determined on a	

	portfolio level. This could partly be solved by distinguishing between a generic population mortality module and an undertaking specific portfolio mortality module. • Further additional complexity and model risk is introduced by the need for specifying the aggregation structure of the capitals of different product groups.	
Q10.7	In general the increase in granularity with respect to age would lead to a more realistic shock. The current stress for high ages is too high as these ages will not benefit significantly from any mortality improvement. However one needs to take care to not directly considering the Lee-Carter levels of multi-year uncertainty as a one-year risk measure, as this would not lead to a risk measure as prescribed SII.	
Q10.8	For longevity risk, a model point approach could be adequate. The model points should then represent a model portfolio that represents for instance, in a condensed data format, insurance liabilities per age, gender and product type of the specific insurance portfolio. In that case, the model portfolio adequately reflects the longevity dynamics of that total insurance book.	
Q10.9	An idea might be to have an adjustment on the SCR to account for this. This adjustment might be positive (higher SCR) in case a company is sensitive to interest down and vice versa. The size of this adjustment should depend on the level of the correlation between interest risk and mortality risk. However the actual specification of such a mechanism is very tedious.	
Q10.10	As uncertainty accumulates over time, a shock that grows with future years better represents the nature of longevity/ mortality risk: drivers of changes in mortality rates are expected to slowly manifest themselves. One way to do that is to explicitly shock a mortality trend parameter. However, we think the current capital requirement for longevity risk is already high, and does not	

	need additional strengthening.	
Q11.1		
Q11.2	USPs for non life catastrophe risks. Current catastrophe risk scenarios do not always fit.	
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Q14.11		
Q14.12		
Q15.1	Yes. Basically two non-comparable items are compared. You cannot pay EUR liabilities with USD assets without someone doing a currency transaction. Existence of countries with two legal forms of currency is not known.	
Q15.2	N.A.	
Q15.3	I presume this question is to be interpreted purely in a currency sensce. Can currency risk cause lack of fungibility? Yes, capital Controls can be imposed if a currency is at risk. To the extent that this risk arises from lots of profitable companies that want to take out their money, there could be a risk. Just as in Greece, if Italy follows up on recent suggestions to get out of the Euro, non-Italian groups may run into difficulties when getting Euro's out of Italy. In the case of Italy, however, people take out their money not because the banks are so profitable, but because they are perceived to be risky, and need cash inflows. This limits the problem.	
Q15.4	Yes, appropriate.	
Q16.1		
Q16.2		
Q16.3		

Q16.4		
Q16.5		
Q16.6		
Q16.7		
Q16.8		
Q16.9		
Q17.1	A relative risk approach is meaningless in a negative interest-rate environment : - You cannot capture the risk of interest-rates becoming negative. - You cannot capture the risk of interest-rates becoming more negative. By extension, it is meaningless in a very low interest-rate environment, where the possibility of negative interest rates is realistic. We are of the opinion that the capital requirement for interest rate risk have to be adjusted. If the UFR cannot change in a year, the interest rate fluctuations in the tables in Articles 166 and 167 of the Delegated Acts for obligations with longer maturities are not in line with this approach. This inconsistency could easily be repaired by adjusting the interest rate fluctuations in the tables as follows: · With regard to fluctuations in the technical provision: For maturities up to 20 years (last liquid point) the interest rate fluctuation should be in accordance with the current Articles 166 and 167, For maturities longer than 20 years the interest rate fluctuation should be in accordance with the UFR methodology within Solvency II, whereby after a shock the UFR is equal to the fixed UFR. · With regard to fluctuations in investments: For all maturities the interest rate fluctuation should be in accordance with the current Articles 166 and 167 on the basis of the risk-free market interest rate, without application of the UFR methodology. If the adjustment of the capital requirement for interest rate risk is not brought in line with the	

	UFR methodology, this lead to inconsistency within the standard model. In particular for insurers with significant long-term liabilities this result in unreasonably high capital requirements.	
Q17.2	Setting a minimum downward shock would alleviate the problem, in the same way as a minimum upward shock. You reduce the 'small number' problem. Until recently, the IMF has indicated maximum negative interest rates in a range of -0,75% - -2% (https://blog-imfdirect.imf.org/2016/04/10/the-broader-view-the-positive-effects-of-negative-nominal-interest-rates/). The AAE has recently indicated that interest rates could become much more negative (Negative Interest Rates and Their Technical Consequences; 16 December 2016). Arguably, however, that would require a significant change in perception of money. Based on thee IMF estimates, it seems reasonable to maintain a 1% minimum downward shock on short rates for now (ignoring significant changes in perception). Yes, recent history suggests that shocks can be larger. This could be 'argued away' by noting that the market needs to adjust to these extreme interest rates (or by looking at longer time series .. see Q17.4). The fact that we are now discussing the 'meaning of money' suggests that we are in historically uncharted waters. No need to pretend otherwise. There is an intuitive appeal in maintaining the same absolute upward and downward shock, as long as the max (up, down') framework is used. The point is that they need to be equally credible, also when risks are 'scaled' down / viewed from a difference confidence angle. Is such a 1%-point change also realistic for longer maturities? Historically, short rates were more volatile than long rates (if you consider absolute %-points change). This may suggest that minimum rate changes at the longer end could be smaller. But this may not be wise.The lower historical absolute volatility of long rates presumably arose because long rates were market driven, and based on a mean-reversion picture of short rates (and a risk premium). In the current QE environment, central banks directly impact long rates as well. This creates an additional source of volatility for long rates. To the extent that long rates are unlikely to move beyond the lowest	

	short rates, this creates additional downside risk for long rates.	
Q17.3	The main interest-rate issues are as follows : 1. The impact of interest-rate risk on total risk depends on the correlation matrix. This correlation matrix 'flips' with the sign of the interest-rate exposure. To the extent that interest-rate risks are closely hedged (and rehedged), this flip creates volatility in hedging behaviour, stimulates a bias in hedging and creates volatility in calculated risks. This is a challenge to communicate and manage. It would be very helpful if a stable correlation matrix could be used if there is (plausible) evidence of regular rebalancing of interest-rate risk. 2. The SF does not capture the interest-rate risk of the Risk Margin (through SCR projections and/or discount rate), even though it does affect OF. 3. The SF focuses on the impact of interest-rates on OF, whereas the impact on the SCR / SII ratio is at least as important. 4. Artifical elements (UFR, VA, CRA) in the liability valuation are applied to the valuation of unit-linked liabilities. This distorts analysis of interest-rate risks. 5. The Smith-Wilson extrapolation procedure used implies extreme interest-rate sensitivity around the LLP. Cardano proposed a smoother extrapolation mechanism that doesn't suffer from these problems (« *Dangerous design flaws in the Ultimate Forward Rate: The impact on risk, stakeholders and hedging costs*" Theo Kocken, Bart Oldenkamp and Joeri Potters; *Working paper,13 July 2012).* 6. Valuation models (of liabilities and/or swaptions) that include interest-rate volatility will specify some kind of dependency of absolute *and/or* relative interest-rate volatility on interest rates. Different approaches lead to different interest-rate risks, likely creating inconsistencies risk within and/or across insurance companies. It may be useful to explicitly specify that in the calculations either absolute or relative interest-rate volatility is to remain constant. 7. In an interest rate stress the UFR should not be stressed. If the 1-in-200-year scenario would now materialize in the next year, the change in OF differs from the calculated interest rate stress because the UFR will again be applied to the risk free rate. This makes	

	it even more difficult to hedge interest rate risk.	
Q17.4	In terms of time series, to estimate a 1/200 year event, it seems worthwhile to consider as series that is longer than 20 or so years. Haldane presents a graph with 5000 years of interest rates (http://www.bankofengland.co.uk/publications/Documents/speeches/2015/speech828.pdf). For the Netherlands, series of 200 years are available (https://www.cbs.nl/NR/rdonlyres/7934A2DE-B87C-4CDF-8BC7-D34F02225620/0/200jaarstattijdreeksen.pdf). This should give additional comfort regarding the calibration of annual absolute %-changes in interest rates. To the extent that we now operate in the ‚far tail' of interest-rate levels, we probably need to be modest in our claim to accuracy. As for cross-section, given the low interest-rate environment, it makes sense to use a calibration that weighs in Japanese / Swiss interest-rate developments. There no longer seems a reason to have completely different interest rate risks for each market.	
Q17.5	We interpret the ** approach (inputs) as follows : - 'Political ingredients' (CRA, UFR, MA and VA) remain unchanged as interest rate inputs change. - Taken literatally, the ** approach could be interpreted as the use of liquid par swap rates as input. We are happy with the current approach to consider 'swap spot rates' as 'input'. We agree with the ** approach, focusing on the input side, for the following reasons : - Interest-rate risks on the input side can be managed directly. - External parties are interested in exposure to the input side. - If the output curves (e.g. the extrapolation) are shocked, it is not clear what this should imply for the inputs. Should only the input be shocked (leaving the 'political framework' unchanged)? Or should the 'political framework' also be shocked ? Vice versa, If the inputs are shocked, the consequences for the output follows quite naturally from the input/output logic. There is no natural reason / or way to change the 'political framework'. Indeed, the current change in the UFR level in the SF is hard to interpret / manage. - The difference between input / output is a political ingredient, that cannot be managed. If the	

	input is smooth, and the output not, it should be resolved politically. See also the Cardano paper quoted in Q17.3.	
Q17.6	How about including implied swaption volatilities as input ?	
Q17.7	See Q 17.5.	
Q17.8	No.	
Q17.9	Principal components primarily serves to smooth the outcome of the shocks. This can also achieved by smoothed methods.	
Q17.10	The use of annual data most closely links in to the stated objective. The use of shorter data will require the validation of an independence assumption.	
Q17.11	An affine form seems to fit in well with a 'normal distribution' of interest-rates at low interest levels, and a 'lognormal distribution at higher interest rates. Putting a minimum shock serves pretty much the same purpose. Perhaps quantifying the affine norm could facilitate calibration.	
Q17.12	An affine curve has a 'angle' that could be hard to calibrate (even though it is not that critical). A smoother curve would seem nicer, but without much additional justification.	
Q17.13	The lack of an explicit time dimension in the intensity approach ('what is '1') makes it hard to interpret.	
Q17.14	No.	
Q17.15	My understanding is that there are not enough data points to make much of an effort in specifying a minimum shock level. Just stick to 1% minimum shock.	
Q17.16	No.	
Q18.1	The treatment in the DTA of the Risk Margin. The run-off of the Risk Margin is not part of the fiscal result, so the DTA can not be defended by fiscal results.If relegation of tier 3 cuts off the DTA position the full DTA position should still be defended in the LAC DT. A cut-off of the used DTA in the LAC DT calculation makes the framework more in line. Methodologically, it seems inconsistent to allow freedom / impose requirements for LAC DT and not have the same freedom / requirements for DTA :	

	• One suggestion is to limit the sum (DTA + LAC DT) to 15% without additional requirements on future profits. • It seems unbalanced to limit DTA (arbitrarily) to 15%, whereas much more effort is spent on regulating LAC DT. LAC DT is only needed in a stress scenario. It seems more useful / realistic to get additional input on future profitability in the central scenario when allowing DTA to exceed 15%. In Directive 2009/138/EC, tier 3 limit was set much wider than 15%: "the eligible amount of Tier 3 items is less than one third of the total amount of eligible own funds". DTA and LAC DT only make sense if there are future fiscal profits. In allowing for LAC DT, future fiscal profits can be justified from the existence of new business. It seems inconsistent to allow DTA (albeit capped at 15%) and LAC DT, but not at all to allow goodwill (capturing future new business opportunities). The limit of net DTA to 15% of SCR creates an issue. There is an inconsistency in that (1) net DTA above that level does not count towards OF, but (2) net DTA above that level limits the room for LAC DT. This excess net DTA in the basis situation should (in the stress scenario) have a benefit that at least equals that of LAC DT. DTA is calculated at the fiscal entity level. This may differ from the legal entity that is required for LAC DT. It seems more consistent / realistic to calculate both at the fiscal entity level.	
Q18.2	If returns must be defined in a fiscal sense, some suggestions are : - assuming a standard (buy-and-hold / rebalancing policy) for assets / liabilities. - abstract from external in- or outflow of cash (e.g. to and from the holding). [Assuming no new business (no renewals), but this is not necessarily an assumption on 'return on assets / liabilities'.] An alternative would be to use economic returns. The following two approaches should give the same result :	

	• Assume risk-neutral returns in line with the forwarde risk-free curve and discount using that same risk-free rate. • Include a risk premium, and discount using a risky discount rate. • Any other assumption will be inconsistent with market valuation of the asset / liability. For the assets, this should be self-explanatory. For the liabilities, the risk premium is captured in the Risk Margin. Applying the above principle to liabilities therefore means either of the following : • Project BE using the liability discount rate (presumed risk-free). • Include the freefall of the Risk Margin, and discount with a risky liability curve. Which should boil down to the same.	
Q18.3	When economic returns can be used, see Q18.2 For other types of projections, the uncertainty can be taken into account by taking into account the impact from the shock on the future profits, knock-on effects. Besides that a sensitivity analyses should be made on these knock-on effects.	
Q18.4	To quantify LAC DT, fiscal profits need to be projected (explicitly or implicitly). For very long-term business, with stable fiscal profits and little new business, this may be sufficient. For short-term business, much more reliant on new business, fiscal projections will (implicitly or explicitly) require projecting 'real' economic returns.	
Q18.5	Such projections seem to involve self-reference to the regulatory outcome. If the regulatory outcome is positive, new business can continue and approval will be justified. If the regulatory outcome is negative, new business will not continue, and negativity will be justified. Seems as if we need a way to remove this forward-looking element to get a closed form solution for this 'rational expectations equilibrium'. A few suggestions to get more realistic projections :	

	• Allow new business to the average level of a set period, say, three to five years. • Given increased competitiveness and markets, it seems unreasonable to presume continued profitability of new business beyond, say, five years. Forward-looking dividend discount model scan be looked at for reference. Also, most business plans do not go beyond 5 years. • The development of the local market as a whole. Perhaps the local regulator can say something about this. • A review of projections by the second line of defense (actuarial). • Maintaining a record of forecasting accuracy seems useful. PS It may be useful to clarify that new business is defined in a SII sense, also including renewals.	
Q18.6	See Q. 18.5	
Q18.7	See Q. 18.2 (for returns on assets / liabilities) and Q. 18.5 (for new business). There should be made a distinction between the robustness of the projection source. The run-off cash flows of the existing business, which is also the basis for the best estimate liability gives good long term projections	
Q18.8	A limitation is a last step to consider. If a limit is to be used, the new business assumptions for life is more logical than assets returns, as these calculations include more the companies view instead of the market view See Q 18.2 for assets / liabilities. It is inconsistent not to equate market value to discounted cash-flows arising from the assets / liability. As for new business, see Q. 18.6 (five years).	
Q18.9	Presumably, the idea is that net DTA should (just as Goodwill) not count towards own funds. This is a very conservative assumption, inconsistent with the current 15% DTA allowance. Ignoring the earn capacity of the company doesn't align with the fiscal treatment An alternative would be to cap (net DTA + LAC DT) to 15% of SCR.	
Q18.10	If Goodwill is not counted towards OF, this reduces average solvency of the industry. The calibration of SII parameters could be affected. The same thing applies if DTA is (implicitly) no longer allowed to count towards OF.	

Q18.11	If future profitability is affected by the balance sheet composition. In the approach suggested under Q18.2, no need to recalculate the balance sheet seems indicated.	
Q18.12	The current set-up is very unrealistic. In real life there are no 'T=0' shocks. Losses accrue over time. Neither the insurer nor the regulator wait with management actions until SII ratio is, say, 40%. As a result, the exercise abounds in assumptions that are impossible to validate. Conceptually, it also seems inconsistent to rely so much on management actions in a first pillar calculation. If you allow management actions (increased funding and/or reduced risk) in this first pillar, why measure risks in the first place ? Why not simply focus on how risks are managed once they occur ? If you can always manage risks down, there is no need to measure them. It seems more appropriate to allow LAC DT conditional on sufficient clarity in the second pillar, which is more about risk management. ORSA scenario's, and corresponding management action, should cover the whole spectrum of SCR risks. 'Living will' ('illness will'), clarifying the recovery plan when SII ratio falls below SCR (but stays above MCR), could achieve a similar objective. Indeed, one may expect the motivation of risk appetites / target SII ratio's to be linked to the timeliness / complexity / likeliness / realism of management actions to recover.	
Q18.13	See Q. 18.12	
Q18.14	The DA are overall not very clear on the calculation of the LACDT. As a consequency in some countries (strict) additional guidance is given from the local regulator, whereas other countries do not have this additional guidance and accept a simple 25% approach. The quesion is whether this helps to create a level playing field. On the whole the requirements need to be set more clear and far simpeler. Also, It seems useful to clarify whether or not a 'dynamic VA' can be implicitly assumed (after a credit spread shock).	
Q18.15	It may be useful to establish a 'health indicator' for companies (e.g. by looking at 3-yr average of Free Cash Flow). Health in companies is captured by Free Cash Flow.	

	Such a 'health indicator' would be expected to be a major ingredient in company target SII ratio's.	
Q18.16	The idea behind IFRS / DTA is to smooth cyclicality. This aspect of LAC DT should be cherished. Procyclicality could be an issue if the last three years Free Cash Flow (as suggested above) were cyclical. The length of time over which losses can be written off may also create cyclicality.	
Q19.1	The methods and assumptions are not appropriate now, as they were then. The proposed third step in the proposed calibration (to obtain risk margins consistent with observable prices in the marketplace, 3.100 / 3.139) was basically ignored (see articles 3.118 – 3.120). The relevant market is better described in MCEV CoC (see e.g. Willis Towers Watson, Juli 2016 "Insights – 2015 Life Supplementary Reporting"). This gives rise to a CoC of about 4.5%. A lower CoC also makes a lot of sense, since insurance risks are much more diversifiable than market risk (beta of 0 could be argued). Terken, J.J., 2012, "Determining the Cost of Equity for an Insurance Company". Thesis Executive Master of Business Valuation. This lower rate is also consistent with 3% CoC that currently apply to hedging programs of major insurance risks like longevity and mass lapse. **Relation with interest rates** Interest rates were higher when the quantitative impact of the Risk Margin methodology and parameterisation was assessed. The specification of the risk margin is inappropriate, in particular for long-term life insurance business. A partial relationship between the risk margin and the risk free rate could mitigate this impact."Risk margin risk" might companies to transfer this business to non-EU via longevity transactions. The use of the risk free rate as discount rate in the CoC formula for the Risk Margin has led to excessive and excessively volatile risk margins. Moreover, the use of risk free discount rates is a major contributor to procyclicality of the Risk Margin, as it leads to higher Risk Margins when	

	interest rates are low. Furthermore, the Risk Margin which should serve as a buffer against risk, has now become a major source of risk in itself. This brings additional hedging costs for firms. Also, hedging against the volatility of the risk margin may, whilst neutralizing the change in value of the Risk Margin, increase a firm's overall SCR as the change in Risk Margin in the shock scenario for the SCR may not be taken into account in the Standard Formula. Finally, the use of risk free discount rates allows the Risk Margin to become larger than the SCR at any point in time over the run-off period of the liabilities. This is clearly at odds with the requirement from the Solvency II Directive that the Risk Margin should reflect the cost of holding an amount of SCR necessary to support the insurance and reinsurance obligations over the lifetime thereof. We conclude that not the suitability of the Cost- of-Capital rate, but the use of risk free discount rate in the underlying formula requires attention most urgently.	
Q19.2	The question is not quite clear on nature of the presumed cyclicality. Yes, the Risk Margin is highly sensitive to interest rates. But this is not the result of the CoC, but of underlying components / discount rate in the Risk Margin. This question could also be based on the assumption that the CoC could resemble a long-term credit risk premium. We do not think that is correct. The Delegated Regulation was based on an equity risk premium). Yes, rating is mentioned in the derivation, but that is only used to decide on the amount of equity (SCR) that the equity risk premium applies to. Rating is not used to decide on the equity risk premium applied to that amount of equity. To the extent that there is far less discussion on cyclicality of the equity risk premium, this question does not seem relevant.	

	In theory, a case could be made that the equity risk premium of Life Insurance companies is related to the credit risk premium, given the size of credits in their portfolios. But we have not seen literature that supports this approach.	
Q19.3	Interest rates have had a major impact on the Risk Margin (through the discount rates, and through the SCR). We used to hedge only the Best Estimate, but quickly recognised the need to make an explicit decision on whether or not to hedge the interest-rate risk of the Risk margin. This effect was most marked in the longer-term Life / Pensions business. We see no reason for EIOPA to change this interest-rate sensitivity of the Risk Margin. It is 'logical' / 'intuitive' that the EUR-risk in liabilities move up and down with the (interest-rate driven) level of liabilities. More fundamental is whether or not this should change the definition of interest-rate risk (as an indicator of the volatility of OF), but that is a different question.	
Q19.4	1. In the definition of the Risk Margin, different risks at different times are considered to be independent. Some risks, notably mass lapse risk, cannot be considered to be independent. Clients can only leave once. If they have left in year one, they cannot leave in year two as well. It makes no sense to provide capital for 40% of clients leaving each and every year. The maximum risk one could possibly need to provide capital for is 2.5 years of 40% of clients leaving. 2. Largest issue of the calculation of the risk margin is the simplification of not taking the risk margin into account in the calculation of the SCR. This simplification ought to be reconsidered. 3. In the "mass lapse scenarios" (but also in the definition of capital for other risks) the effect of the release of the risk margin for simplification purposes. This simplicifation can have a very large effect for business with liabilities with long durations (whole life/funeral) and therefore	

also on the risk margin of these businesses.

4. one could solve 3. by changing the DA is such a way that this is possible and the SCR and risk margin can be derived in a few steps. Convergence will possibly take place quite quickly.

5. a negative effect for longevity products in the very large sensitivity for interest. This is probably an issues which needs to be addressed in the interest risk module.

6. the current calculation method causes an unrealistically high risk margin for funeral businesses, caused only taking policies with a surrender value higher than the BEL. Due to assymmetry (negative BEL vs positive BEL) in the portfolio it can be observed that despite the BEL not decreasing, the SCR and risk margin increase substantially

7. Risk margin valuation on run-off basis. The calculations of the risk margin take place on a run-off basis while the idea behind Solvency II is a going concern. A typical Dutch non-life insurer that write a combination of P&C (motor/fire) and Income (long term disability) business will get less and less diversified which has an undiserable increasing effect of the risk margin.

Insurers with long-term business

We note that the shocks in the standard are based on a probability of 1 in 200 for an average European insurer. Applying a chance of 1 in 200 for a life insurer with mainly long-term business should result in a lower mass lapse shock. It seems that the prescribed mass lapse is based in particular on life insurers with short-term business. The Netherlands has opted for a more market-wide 20% in accordance with the "consultation amending risk margin for funeral insurers under SII basic" ("consultatie wijzigingsbesluit risicomarge voor uitvaartverzekeraars onder SII-basic"). Therefore only for insurers with long-term business one could opt for a lower mass lapse shock eg. 20%.

Because of the long maturities for insurance liabilities of insurers with long-term business the risk margin for these insureres can be a very large compared to the best estimate. For the specific

	situation of an life insurer with mainly long-term business, this method leads to a disproportionate risk margin. Within the consultation for the Dutch "consultation amending risk margin for funeral insurers under SII basic" applies not 6%, but only 4% of the cost of capital. A lower percentage results in lower risk margin. The adjustment of this rate is easy to calculate, and provides a counterbalance to high SCR and that the risk margin should be considered.	
Q20.1		
Q20.2		
Q20.3		
Q20.4		
Q20.5		
Q20.6		
Q20.7		
Q20.8		
Q20.9		
Q21.1		
Q21.2		
Q21.3		
Q21.4		
Q21.5		
Q21.6		
Q21.7		