Comments Template on the Consultation Paper on the methodology to derive the UFR and its implementation	**Deadline** **18 July 2016** **23:59 CET**
Name of Company:	Actuarial Association of Europe	
Disclosure of comments:	Please indicate if your comments should be treated as confidential:	Public

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The numbering of the paragraphs refers to on the Consultation Paper on the methodology to derive the UFR and its implementation.

Reference	**Comment**	
General Comment	We welcome the consultation paper by EIOPA on the methodology to derive the ultimate forward rate. Paragraph 16 of CP states "The UFR should therefore be based on long-term expectations of interest rates as required in Article 47 of the Delegated Regulation." Taking the result of a mathematical formula one-by-one as an "expectation" can hardly be adequate considering the impact. The predictive power of a mathematical formula is at least questionable.There should be an expert judgement in addition before a **long term expectation** for this purpose is fixed. Such a proceeding can also be observed in rating	

agencies where in addition to the result of a rating model an analyst adjustment is added.

"Methodology" should or perhaps must not be understood as identifying a mathematical formula. Wider interpretation should be considered. Result of the formula might be a basis for a decision but expert judgement should be required to define the UFR.

Before discussing details of the proposal we have the following general comments:

The primary goals, as required by Article 47 of the Delegated Regulation, are:
- Stability
- Reliability
- Transparency
- Objectivity
- Replicability
- Prudence.

Without deeper consideration of the proposed methodology the structure of the paper and the development of the proposal is transparent and can be assessed as reliable and perhaps also as objective.

As a degree of prudency cannot reliably be assessed for such long periods there will always be the need of an expert judgement. This will remain an issue that is independent from the methodology chosen.

Replicability: The paper references the requirement under Article 43 of the Delegated Regulation, where it states that insurers and reinsurers should be able to earn the rates on the risk free curve in practice. It would be useful if the paper further elaborated on how this requirement is being met under the current proposal. It is recognised that the lack of instruments of sufficient duration means this will be not be feasible, however the paper should acknowledge this and should also acknowledge that the proposed methodology does not necessarily achieve market consistency.

Stability: According to Article 47 "the UFR is stable and only changes as a result of changes in long-term expectations." One crucial point not discussed in the paper is the meaning of a long term expectation. Therefore we would welcome some thinking about the nature of a long term expectation and its role considering the whole context of Solvency framework. The whole exercise aims at defining a value that is used to model the (very) far future – after the last liquid point, and therefore in absence of reliable market information (no deep, liquid and transparent market after LLP). We also recommend to analyse the role and importance of this value as one parameter in a whole set of parameters needed to calculate the solvency capital requirement. Cash flows in very distant years are affected by the UFR. Other parameters are relevant in all years.

UFR, DLT and transition period are model parameters especially for the valuation of long term liabilities. Considering the impact on the solvency capital requirement (SCR) they are only one part of the whole set of parameters used for the valuation. Crucial assumptions prescribed in the Delegated Regulation to be used when applying the standard formula have to be reviewed in 2018 and 2021. At least the result of these reviews should be taken into account when changing the UFR.

One can ask whether the current capital requirement for interest rate risk should at the same time be brought in line with the new adjusted UFR methodology to ensure the consistency within the Solvency II standard model, if not, this seems to lead into inconsistency within the standard model. It is also questionable whether the VaR 99.5% calibration still holds should the interest rate shock be left unchanged.

In addition: The methodology to calculate the risk margin is specified in the Delegated Regulation (Article 37). The cost of capital rate is defined in Article 39 to be 6%. A methodology to derive this rate is not mentioned. It is understood to be based on an investigation performed in the context of the Swiss Solvency Test in Switzerland. According to Article 77 (5) of the Directive the regulator is required to review this parameter periodically.

Both the UFR and the Cost of Capital rate reflect long term expectations. **Changes in long term expectations might affect UFR as well as the calculation of risk margin.**

Despite all methodology of UFR derivation, predicting capital markets over a time span of well over 50 years will always lead to a best estimate driven by exogenous factors and presumptions. For this very reason, our efforts put into the evaluation of EIOPA's suggested methods focus on the stability of the UFR parameter. The change in UFR (before any limit) for the Euro currency is a material 50bps step reduction if the method were applied today. Sharp movements in the UFR are not practical for insurance undertakings when they hedge their portfolios and factor the parameters and methodologies into their risk management. Hence, we welcome the consideration of an annual limit and certainly recommend a phasing in of changes to the UFR.

We welcome the consideration of an annual limit and certainly recommend a phasing in of changes to the UFR, but it is preferable, from an actuarial perspective, to analyse different approaches in more depth before taking a decision in favour of one of the three options presented. It remains unclear how such changes would affect the capital market due to a procyclical behaviour of undertakings who want to restructure their asset protfolio. For the sake of stability and to avoid artificial changes we would recommend to consider these aspects. UFR should not rely on short term changes in the economic situation but represent changes to long-term expectations only.

Q1. (pg. 56)

The proposed methodology is based on the same calculation approach that was used to calculate the current UFRs, in particular UFR is proposed to be the sum of expected real rate and expected inflation. Do you agree with that approach?

While we agree that the principle of calculating the UFR using the sum of an expected real rate and the expected inflation rate is reasonable, we do have some concerns around how each of these elements is calculated under the proposed methodology.

The expected real rate is derived using the simple arithmetic mean of the annual real rates of 5 Eurozone countries, the UK and the US. In contrast, the future expected

	inflation rate is currency specific. There is therefore an inconsistency in how the two elements of UFR are derived. While it may not be practical to calculate expected real rates for all currencies, we consider it important that there is a justification, based on economic principles, for considering it appropriate to assume that real rates of return will converge for all economies. Definition of Real Rate requires a comparison between a short term value (even if annualised) and an annual value of inflation. This is at least questionable. Short term rate has been adopted to avoid term premium and because it can be taken from the data base. This is a value that is related to a short duration only. According to EIOPA this value is then annualised as it is compared to the inflation rate which is calculated covering a whole year. The short term rate can change several times in the course of year. That is a at least of a different quality.	
Q2. (pg. 56)	*According to the proposed methodology the expected real rate is calculated on the basis of past real rates since 1960 (widening window approach). Do you consider that to be an appropriate period for averaging the past real rates?* In general the use of averaged historic data to determine the expected real rate should maintain stability and avoid significant changes in the expected rate from year to year which is to be welcomed. We agree with the use of AMECO database as it is desirable to use a data source that is maintained by a public institution, whose calculation methodology is clearly defined and where the data is available to all market participants The choice of the commencement date of 1960 for the widening average is driven by the availability of data from the AMECO database. As it is desirable to use a long term time series the choice of 1960 appears reasonable. In particular, the period should be long enough to avoid short term increases / decreases in the real rate unduly influencing the result.	

We acknowledge the approach of calculating the expected real rate using a widening window of past real rates since 1960 of the seven nations specified in the consultation paper. This approach takes into account two important aspects from the actuarial point of view. Firstly, it ensures that isolated extreme amplitudes do not gain too much weight as they are not significant from a long term perspective. Secondly, the average will become increasingly stable over time as further data are included in the calculation of the expected real rate.

It should be noted that the question of the appropriateness of the widening window approach can only be considered in conjunction with whatever weighting methodology is applied to the periods within the window. We note the chart on page 20 of the consultation paper which seems to imply that the average calculated from the widening window seems to exhibit material variation over time using a simple average of the real rate component and even much higher varation using a geometric weighted average proposed by EIOPA. It can also be seen that the simple average gets even more stable the longer the time series extends and represents the most stable development compared to the other averages tested.

The length of the historical period should reflect the forecasting horizon. For a 60-yr forecast period for the UFR (LLP + convergence period), 1960 onwards seems plausible. In a sense, we only have one observation. For countries where the forecast period is shorter (or longer), it may seem that the historical period should be shorter (or longer). Sweden: 10+10; UK / US: 50+40. For Sweden, we should be happy to have three observations, and for the UK (just as for other countries), the pressure should be for longer series.

Q3. (pg. 56)	*The expected real rate of the proposed methodology is derived as a weighted average of past real rates. Which weights do you consider appropriate for that purpose?*
	This is a matter of (expert) judgement rather than objective theory. (see our remarks in

General Comments). There is no theoretically correct weighting approach.

We consider it more appropriate to take the arithmetic average of the historic real rates to derive the expected real rate than the weighted average proposed by EIOPA. As the UFR is the forward rate used to extrapolate the risk free yield curve, i.e. for validating very long term guarantees, recent data are not likely to have more influence on the far future than past data. In fact, given that there is no statistical evidence that can be used to prove that more recent data would be a better predictor of the long-term average, the arithmetic average would seem like a reasonable default approach. This is an expert judgement – there is no theoretically correct weighting approach.

Q4. (pg. 56)	*According to the proposed methodology, there are four buckets for the expected inflation rate (1%, 2%, 3% and 4%). Do you consider it appropriate to use inflation buckets and the choice of buckets adequate?*
	The use of inflation buckets allows for a higher degree of replication and might increase the robustness of calculation.
	We consider it appropriate to use the buckets with specified values for the expected inflation rate as suggested by EIOPA. The introduction of the fourth bucket at 4% is welcome as it increases the level of tailoring of a country's inflation level with the UFR assessment. The specified buckets cover the current data in a satisfactory manner. More buckets do not seem to be needed with respect to the data sources available.
Q5. (pg. 56)	*The proposed methodology includes a limit to the annual change of the UFR of 20 bps. Do you consider such a limit necessary and appropriate?*
	The answer to this question is related to the understanding of the nature of a methodology and to the definition of a long-term expectation as mentioned in the general comments above. Nevertheless a limit on the annual change would be appropriate and would provide greater predictability for the purposes of risk management and interest rate hedging.

	Based on the evidence presented in the paper overall we consider a limit on the annual change of UFR to be necessary and appropriate (see general comments above). It remains unclear (not discussed in the consultation paper) how capital markets would react on a possible procyclical behaviour of undertakings as a consequence of changing the UFR: To reduce the solvency capital requirement a change of asset allocation in line with an adaptation of the UFR would be necessary. This can put pressure on prices and availability of financial instruments and lead to distortion of markets. Before answering the question (limit of 20 bps) it would be helpful to analyse to what extent an annual change would affect the capital markets and whether other unintended side effects could incur. In addition to this: As mentioned in our general comments: One can ask whether the current capital requirement for interest rate risk should at the same time be brought in line with the new adjusted UFR methodology to ensure the consistency within the Solvency II standard model, If not, this seems to lead into inconsistency within the standard model. It is also questionable whether the VaR 99.5% calibration still holds should the interest rate shock be left unchanged.	
Q6. (pg. 56)	*According to the proposed methodology the expected real rate component is rounded to 5 bps. Do you consider such a rounding necessary and appropriate?* We have no major objections to the rounding approach. The UFR will be more stable and continuous over time if the expected real rate is rounded to 5 bps towards the expected real rate of the previous year. Therefore, the rounding is appropriate and acceptable from an actuarial perspective.	
Q7. (pg. 56)	*Do you consider the proposed implementation of the methodology appropriate?* Introduction of a new method during 2017 instead of year end creates volatility during the	

	reporting year. We suggest to move the introduction moment to YE 2017. Undertakings can then also explain to all stakeholders in first full SFCR and RSR over year 2017.	
Paragraph 1.		
Paragraph 2.		
Paragraph 3.		
Paragraph 4.	It might be helpful for commentary to be included in the paper on divergences in the derivative market relative to Libor and OIS discounting for some of the large investment banks.	
Paragraph 5.		
Paragraph 6.	There is a typo here, the term « risk-free interest rates » is repeated.	
Paragraph 7.		
Paragraph 8.		
Paragraph 9.		
Paragraph 10.		
Paragraph 11.	This is a particular challenge for the proposals, as no undertaking will be able to achieve this rate. This has consequences for matching and introduces additional balance sheet volatility.	
Paragraph 12.		
Paragraph 13.		
Paragraph 14.		
Paragraph 15.	The wording « where necessary » probably isn't appropriate here, it may imply that legal requirements can be deviated from. More appropriate wording would be « The review should align the methodology to the legal provisions, in particular where the previous UFR derivation was not aligned. »	
Paragraph 16.		
Paragraph 17.	Keeping UFR constant over several years does not contradict Delegated Regulation. It	

		might also be the the case that (medium-term) changes prove to be unnecessary in the hindsight. Use of the word drastic is alarming and should be amended. There is a typo in this paragraph, « keeping the UFRS constant in the foreseeable future » should read « keeping the UFRS constant for the foreseeable future » Typo : « may »	
Paragraph 18.			
Paragraph 19.			
Paragraph 20.			
Paragraph 21.		The paper would benefit from an economic justification of the approach to real interest rate + expected inflation rate approach. Additionally a justification for the removal of the convexity adjustment would be useful.	
Paragraph 22.		Methodology is acceptable if decision is taken in favor of this « mathematical » method. But mathematical methods are not suitable to predict future, it is questionable how far the past can be taken as an indicator for the future. It has to be kept in mind that calculating a geometric means using past data is just one method to cover the fact that we don't know anything about that far future	
Paragraph 23.		An explanation for the choice of the 7 chosen countries would be useful as well as some commentary regarding the use of an unweighted arithmetic mean.	
Paragraph 24.		Using short term rates might lead to methodological inconsistencies with definition of inflation rate – even if annualised	
Paragraph 25.		We appreciate that the data used to derive the expected real rate and the expected inflation rate are publicly available to enable companies to forecast the UFR development.	
Paragraph 26.			
Paragraph 27.		There appears to be a bias in how the expected inflation rate is calculated. In particular, the approach to bucketing the rates rounds rates: • In the 0%-1% corridor **up** to 1%	

	- in the 1-2% corridor **up** to 2% - In the 2%-3% corridor **down** to 2% - In the 3%-4% corridor **down** to 3% In effect, the proposed approach tries to draw rates to 2% and there is no justification for this.	
Paragraph 28.		
Paragraph 29.		
Paragraph 30.		
Paragraph 31.	Given the fundamental methodology change in terms of how the UFR is calculated, we support the idea that the impact of the new methodology should be phased in over time. We see this as a separate point to whether the annual change in the UFRS (using the new methodology) should be capped.	
Paragraph 32.		
Paragraph 33.		
Paragraph 34.		
Paragraph 35.		
Paragraph 36.		
Paragraph 37.		
Paragraph 38.		
Paragraph 39.		
Paragraph 40.		
Paragraph 41.		
Paragraph 42.		
Paragraph 43.		
Paragraph 44.		
Paragraph 45.		

Paragraph 46.	On advantages of historical vs forward rates the following can be said .
	The use of forward rates :
	  - stimulates interest-rate hedging. Although the UFR may appear to be linked to market averages, this link is (given current valuation approaches) not strong enough to actively enocurage hedging.
	  - makes the UFR predictable, rendering risk estimates meaningless.
	suggests a technical analysis approach to interest-rate forecasting. Until now, the literature / empirical practice is sceptical about the ability of this approach to outperform implied market foreacsts.	

Paragraph 47.	It would be useful to see the historical evidence of the 0.2% change.	
Paragraph 48.		
Paragraph 49.	Typo in the following sentence: "Figure 1 shows that the exponentially weighted average proved too much volatile."	
Paragraph 50.		
Paragraph 51.		
Paragraph 52.		
Paragraph 53.		
Paragraph 54.		
Paragraph 55.		
Paragraph 56.	Assigning a higher importance to data stemming from current markets is a valuation that is questionable considering the 60 years horizon.	
Paragraph 57.		
Paragraph 58.		
Paragraph 59.		
Paragraph 60.		
Paragraph 61.		
Paragraph 62.		
Paragraph 63.		

	Comments Template on the Consultation Paper on the methodology to derive the UFR and its implementation	Deadline 18 July 2016 23:59 CET
Paragraph 64.		
Paragraph 65.	It would be helpful to include a table with exact numbers, enabling insurers to check their calculations. One real rate independent from currency might be questionabe (Figure 4 shows significant differences)	
Paragraph 66.		
Paragraph 67.		
Paragraph 68.		
Paragraph 69.		
Paragraph 70.		
Paragraph 71.		
Paragraph 72.		
Paragraph 73.		
Paragraph 74.		
Paragraph 75.		
Paragraph 76.		
Paragraph 77.		
Paragraph 78.		
Paragraph 79.		
Paragraph 80.		
Paragraph 81.		
Paragraph 82.		
Paragraph 83.		
Paragraph 84.		
Paragraph 85.	The timing of interest-rates / inflation can be tightened up. Formally, expected inflation and interest rates need to be exactly aligned in terms of timing and forecast horizon. More detail / validation on this would be appreciated.	

Paragraph 86.		
Paragraph 87.		
Paragraph 88.		
Paragraph 89.		
Paragraph 90.		
Paragraph 91.		
Paragraph 92.		
Paragraph 93.		
Paragraph 94.		
Paragraph 95.		
Paragraph 96.		
Paragraph 97.		
Paragraph 98.		
Paragraph 99.	Ok. Even widening windows approach is based on a history of 56 years. UFR a value defined for situation expected in 60 years from now.	
Paragraph 100.		
Paragraph 101.		
Paragraph 102.		
Paragraph 103.	Evidence of the effectiveness of inflation targets would be beneficial to support this paragraph.	
Paragraph 104.	Is the definition of the ECB inflation target exactly aligned to the historical inflation figures used to calculate real rates? There is no systematic bias?	
Paragraph 105.		
Paragraph 106.	A justification for the appropriateness of an ARMA model using 10 years of monthly data for countries without an inflation target would be beneficial.	
Paragraph 107.		

	Comments Template on the Consultation Paper on the methodology to derive the UFR and its implementation	Deadline 18 July 2016 23:59 CET
Paragraph 108.		
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Paragraph 131.		
Paragraph 132.		

	Comments Template on the Consultation Paper on the methodology to derive the UFR and its implementation	Deadline 18 July 2016 23:59 CET
Paragraph 133.		
Paragraph 134.		
Paragraph 135.		
Paragraph 136.		
Paragraph 137.		
Paragraph 138.		
Paragraph 139.		
Paragraph 140.		
Paragraph 141.	A sensitivity analysis of the numbers presented in this example would be helpful. Right now, the 3.7% seems to be taking on a life of its own. We recommend to add the impact of different forecasting horizons as well as the impact of different assumptions regarding interest rates.	
Paragraph 142.		
Paragraph 143.		
Paragraph 144.		
Paragraph 145.	The impact analysis provided in the following paragraphs is based on some illustrative examples for certain contracts. For a change of the proposed magnitude, we would recommend that an aggregate impact analysis is performed, based on more recent aggregate data for the insurance sector collected from National Competent Authorities.	
Paragraph 146.		
Paragraph 147.		
Paragraph 148.		
Paragraph 149.		
Paragraph 150.		
Paragraph 151.		
Paragraph 152.		
Paragraph 153.		

	Comments Template on the Consultation Paper on the methodology to derive the UFR and its implementation	Deadline 18 July 2016 23:59 CET
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Paragraph 156.		
Paragraph 157.		
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Paragraph 159.		
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Paragraph 161.		
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Paragraph 177.		
Paragraph 178.		

	Comments Template on the Consultation Paper on the methodology to derive the UFR and its implementation	Deadline 18 July 2016 23:59 CET
Paragraph 179.		
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Paragraph 181.		
Paragraph 182.		
Paragraph 183.		
Paragraph 184.		
Paragraph 185.		
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Paragraph 202.		
Paragraph 203.		

	Comments Template on the Consultation Paper on the methodology to derive the UFR and its implementation	Deadline 18 July 2016 23:59 CET
Paragraph 204.		
Paragraph 205.		
Paragraph 206.		
Paragraph 207.		
Paragraph 208.		
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Paragraph 227.		
Paragraph 228.		

	Comments Template on the Consultation Paper on the methodology to derive the UFR and its implementation	Deadline 18 July 2016 23:59 CET
Paragraph 229.		
Paragraph 230.		
Paragraph 231.		