
EIOPA-BOS-17/122
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# Final Report on Consultation Paper No. 16/003 on the methodology to derive the ultimate forward rate and its implementation

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# 1. Introduction

## Background

1. On 20 April 2016, EIOPA launched a public consultation a proposal for the methodology to derive the ultimate forward rate (UFR) and its implementation. The public consultation was part of EIOPA's work on the UFR methodology that started in May 2015. That work included a workshop with stakeholders in July 2015 based on an issue paper on the UFR methodology.

2. Article 77a of Directive 2009/138/EC (Solvency II Directive) [1] requires that the risk-free interest rates used in the valuation of insurance liabilities shall be extrapolated towards a UFR for maturities where the markets are no longer deep, liquid and transparent. The UFR that EIOPA currently applies in the calculation of the risk-free interest rates is for most currencies 4.2%.[2] Article 47 of the Commission Delegated Regulation (EU) No 2015/35 (Delegated Regulation on Solvency II)[3] requires that the UFR is derived on the basis of a clearly specified methodology.

3. According to Article 77e(1) of the Solvency II Directive, EIOPA is required to derive and publish risk-free interest rates at least on a quarterly basis. In order to ensure uniform conditions for the valuation of insurance and reinsurance liabilities, the European Commission can make the risk-free interest rates binding by setting it out in implementing acts in accordance with Article 77e(2). The implementing acts shall make use of the technical information published by EIOPA.

## Content

4. This final report includes a summary of the main comments received by stakeholders and EIOPA's resolution of these comments in section 2, the final methodology to derive the UFR and how it will be implemented in section 3, the results of an information request to undertakings on the UFR in section 4 and a resolution table with all stakeholder comments in the Annex.

[1] Directive 2009/138/EC of the European Parliament and of the Council of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II) (OJ L 335, 17.12.2009, p. 1)
[2] The general UFR is set to 4.2%, with a lower value of 3.2% for the Swiss franc and the yen and a higher value of 5.2% for a number of currencies of economies with high interest rates (Brazil, India, Mexico, Turkey and South Africa)
[3] Commission Delegated Regulation (EU) No 2015/35 of 10 October 2014 supplementing Directive 2009/138/EC of the European Parliament and of the Council on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II) (OJ L 12, 17.01.2015, p. 1)

## Next steps

5. EIOPA will apply the methodology for the calculation of the risk-free interest rates as of 1 January 2018, in accordance with the implementation approach specified in section 3.

## Acknowledgment

6. EIOPA would like to thank the Insurance and Reinsurance Stakeholder Group (IRSG) and all the participants to the public consultation for their comments on the proposal. The responses received have provided important guidance to EIOPA in preparing the final methodology.

## IRSG opinion

7. The IRSG opinion as well as the particular comments can be found on the EIOPA website.[4]

[4] https://eiopa.europa.eu/Pages/Consultations/EIOPA-CP-16-003-Consultation-Paper-on-the-methodology-to-derive-the-UFR-and-its-implementation-.aspx

# 2. Feedback statement

## 2.1 Overview of stakeholder feedback and changes to the stakeholder proposal

8. EIOPA received comments on the consultation paper from the following16 stakeholders:

    - the Insurance and Reinsurance Stakeholder Group (IRSG),
    - six industry associations and insurance undertakings: Insurance Europe, CFO Forum/CRO Forum, AMICE, German Insurance Association (GDV), Storebrand ASA, Allianz Group,
    - five actuarial associations: AAE, German Association of Actuaries (DAV), French Institute of Actuaries (IdA), Swedish Society of Actuaries (SSA), UK Institute and Faculty of Actuaries,
    - two consultants: Global Warning, Actuaris,
    - two academics: Christian Gollier, Michel Vellekoop.

First application of the methodology

9. Stakeholders suggest not changing the UFR until the end of the review of the SCR standard formula in 2018 or the end of the LTG review in 2021. The main reasons for these suggestions are the stability objective for the UFR and the observation that the current UFR levels were used in the impact assessment for the Omnibus II negotiations. There are also concerns that inconsistencies would occur or Solvency II would become too prudent when the UFR is changed before other reviews. Some stakeholders suggest that further impact analysis is undertaken before the methodology is applied.

Frequency of UFR recalculation

10. Stakeholders advise against an annual recalculation of the UFR and favour less frequent recalculation, for example every 5 or 10 years. Changes resulting from those recalculations should be phased in over time. The main reason for these suggestions is the legally required stability of the UFR. Some stakeholders advise against a mechanical determination of the UFR and suggest the involvement of expert judgement.

Methodology of UFR calculation

11. Stakeholders welcome the development of a transparent and predictable methodology. The essential elements of the methodology are supported by most stakeholders, in particular:

- to calculate the UFR as a sum of expected real interest rate and expected inflation rate,
- to derive the expected real rate as a long-term average of past real rates,
- to derive the expected inflation rates from central bank inflation targets,
- to use buckets for the expected inflation rates.

12. The main suggestions of stakeholders on the technical details of the methodology are:

    - to limit annual UFR changes to 10 bps in order to increase the stability of the UFR (consultation proposal: 20 bps),
    - to include Denmark in the set of countries to derive the expected real rate (consultation proposal: BE, FR, IT, NL, UK, US),
    - to aggregate real rates of different countries with geographical weights in order to improve the accuracy of the calculation (consultation proposal: simple average),
    - not to apply weights when averaging real rates over time (consultation proposal: slightly more weight for recent and slightly less weight for older real rates),
    - to use only 1 year real rates in the calculation of the expected real rate in line with the objective of determining a 1-year forward rate or to scale up real rates of shorter term (consultation proposal: for some countries annualised 3 or 6 month real rates are used).

Changes to the consultation proposal

13. As a result of the consultation EIOPA makes the following changes to the consultation proposal:

    - The limit to annual changes of the UFR is lowered from 20 to 15 basis points, so that the UFR will change more gradually.
    - In order to significantly reduce the frequency of UFR changes, the UFR will only be changed when the difference between the calculated UFR and the currently applicable UFR exceeds 15 basis points.
    - The average for calculating the real rate component of the UFR will be a simple average instead of a weighted average that puts more weight on recent observations. Also this change will make the UFR move more gradually.
    - The first application of the UFR methodology is set to the beginning of 2018 instead of mid-2017 in order to provide insurance and reinsurance undertakings more time for their preparations.
    - The start of the time series for the derivation of the expected real rate is put to 1961 instead of 1960. This change allows the use of consistent data for the derivation.

## 2.2 First application of the UFR methodology

### Introduction

14. According to the proposal of the consultation paper the UFR methodology would be applied for the first time in 2017. Any changes to the UFRs would be announced by March 2017 and applied for the calculation of the risk-free interest rate of end-June 2017.

### Stakeholder feedback

15. Stakeholders suggest not changing the UFR before the end of the review of the solvency capital requirement (SCR) standard formula in 2018 or the end of the long-term guarantees measures (LTG) review in 2021. The main reasons for the suggestions to delay are as follows:

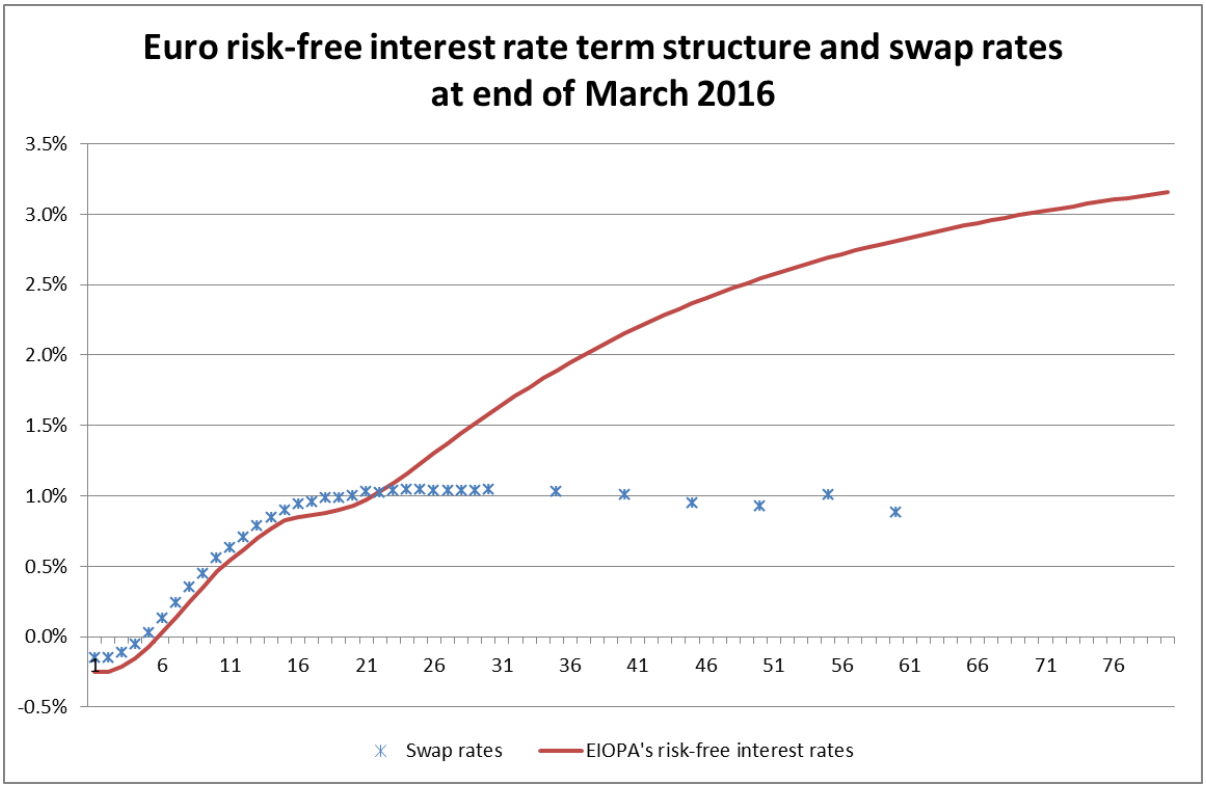
    - The stability objective for the UFR. The UFR is defined under Solvency II as a long-term stable parameter specifically in order to ensure stability and avoid the Solvency II framework creating artificial volatility in the valuation of long-term liabilities. According to stakeholders it is not appropriate to consider changing it only 1 year after the start of Solvency II.
    - The Omnibus II negotiations were based on the long-term guarantees assessment that used a UFR of 4.2%. According to some stakeholders the long-term guarantee measures set by the European legislator would have been designed differently with a diverging UFR level.
    - There are dependencies with other areas of Solvency II that need to be considered before the UFR is changed (SCR standard formula, risk margin, LTG package). According to stakeholders the impact of any change of the UFR on the upward and downward interest rate shocks, as defined in the Article 166 and 167 of the Delegated Regulation on Solvency II may also need to be recalibrated based on the new UFR values as they were calibrated based on discount curves calculated with a 4.2% UFR.
    - Lowering the UFR in times of low interest rates may accentuate pressure on long-term obligations which insurers would therefore be discouraged to underwrite. According to some stakeholders such a decision may be at odds at a time when the European Union is promoting long-term investment in the real economy, such as in equities or infrastructure.
    - Lowering the UFR may also push insurers towards sub-optimal investment strategies, in particular incentivise insurers to invest in long-term assets that currently have low returns. This may have procyclical effects. Insurers may also derisk their assets in reaction to the loss of own funds caused by the reduction of the UFR.
    - Given the key role of the UFR as an anchor for solvency liability calculations and the potential for significant impact of any change, further impact analysis should be undertaken before the methodology is

applied. According to stakeholders the analysis should include the impact on the overall level of prudence of the Solvency II framework to avoid creating unintended and unnecessary burden, potential pro-cyclical effects and other unintended consequences for customers or the wider economy, in particular capacity for insurers to invest in long-term projects and distribute long-term savings retirement products, back testing to ensure the objectives of producing a stable long-term rate, and avoiding additional volatility in liability calculations have been achieved.

- Solvency II is sufficiently prudent with the current UFR because discount rates are lower than insurers' asset returns and because of additional buffers of Solvency II. According to these stakeholders the Solvency II calculation of liabilities is already very conservative and low-interest rates tends to exaggerate this even more. Solvency II also includes high levels of additional protection through solvency capital including specific protection to ensure companies would still be able to pay claims under a much lower interest rate scenario (where the UFR would be about 3%). Furthermore, governance and reporting requirements embedded with Solvency II ensures company boards are or will take action where needed and provide National Supervisors with the information to monitor this, identify specific problems and, if necessary, intervene early.
- Insurers and supervisors are already adjusting to the low interest rate environment. According to stakeholders, companies have been taking action — in some cases, for many years — to adapt their products, investment mix, hedges and capital levels.

**Resolution**

16. The proposed methodology to calculate the UFR, whose essential elements are accepted by most stakeholders, shows that the currently used UFRs are too high for most currencies. This results in technical provisions for long-term guarantees being currently too low and insures' own funds being overstated. This distortion may have a negative impact on policyholder protection. This should be considered when deciding on the timing of the first application of the UFR methodology. The following figure shows the risk-free interest rates for the euro at 31 March 2016 and the euro swap rates for that point in time. The figure illustrates that the extrapolated risk-free interest rates (maturities above 20 years) are significantly higher than the market information about the level of interest rates. For example at the maturity of 50 years the risk-free interest rates is at 2.5% while the swap rates are at about 1%.



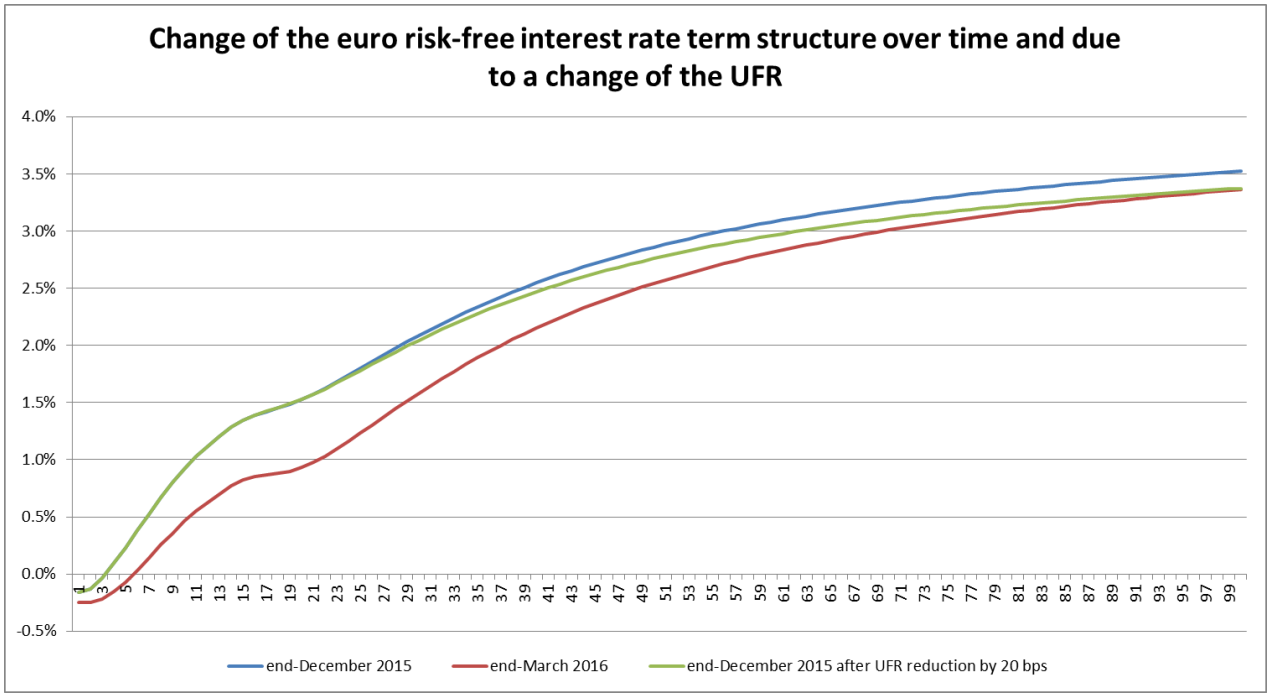

Stability objective for the UFR

17. The UFR is not a constant. According to Article 47 of the Delegated Regulation on Solvency II the UFR can change when long-term expectations change. According to the proposed methodology the long-term expectation on real rates has fallen by 35 basis points since 2010. This change of expectations is in line with the fact that interest rates have drastically fallen to unprecedented levels since 2010. At the beginning of 2010 the 10-year German Bund was above 3% and now it is close to 0%. Negative interest rates are common now. Economists are discussing "low for long" scenarios and a period of secular stagnation.

18. According to the proposed methodology the UFR will change only slowly in order to comply with the stability requirement. EIOPA has carried out further analysis on the impact of UFR changes on the financial position of insurance and reinsurance undertakings. The outcome of the analysis confirms that the proposed methodology is changing the UFR in line with the stability objective. A change of the UFR by 20 bps, being more than the maximum annual change according to the methodology of 15 bps, would on average change the SCR ratio of insurance and reinsurance undertakings only minimally from 203% to 201%.

19. It should also be noted that the proposed maximum annual change of the UFR is small compared to the possible change of risk-free interest rates due to market fluctuations. The following figure depicts the euro risk-free

interest rate at the end of December 2015 and a quarter later at the end of March 2016. The risk-free interest rates decreased during that quarter. In addition the figure also shows the risk-free interest rates for end of December 2015 but calculated with a UFR of 4.0% instead of 4.2%. The figure shows that the change of the markets during the first quarter has a significantly stronger impact on the risk-free interest rates than a change of the UFR by 20 bps. This is also true for the extrapolated risk-free interest rates. Only for very long maturities close to 100 years the impact of a UFR change is comparable to the impact of the market changes.




20. Keeping the UFR constant now would in the mid-term not increase the stability of the UFR because the changes to the UFR avoided now would need to be made in the future. In particular, if the interest rates stay at the current level, the suggestion to delay until 2021 would result in larger number of maximal consecutive annual changes of the UFR after 2021 to catch up with interest rate developments.

<u>The Omnibus II negotiations were based on the long-term guarantees assessment that used a UFR of 4.2%</u>

21. The outcome of the Omnibus II negotiations is Directive 2014/51/EU. That directive does not state that the UFR should be at the current level or should be a constant. On the contrary, the Delegated Regulation on Solvency II explicitly states that the UFR can change when long-term expectations change.

22. Even with a constant UFR, the risk-free interest rates have significantly changed since the Omnibus II negotiations. The risk-free interest rates for liquid maturities are much lower and the spreads that the volatility and the matching adjustments are based upon are much narrower.

23. The legal framework requires that there is a clearly specified methodology to derive the UFR. EIOPA's work on the UFR methodology aims at fulfilling this requirement.

Dependencies with other areas of Solvency II

24. If the SCR review includes a recalibration of interest rate risk then this activity needs to be based on a UFR methodology. The reason is that the interest rate risk has to reflect in particular the volatility of extrapolated risk-free interest rates, which depends also on how the UFR changes. It is therefore necessary that the UFR methodology is decided before the recalibration of interest rate risk is done. Apart from that, making the UFR changeable is more consistent with the current interest rate risk sub-module than keeping it constant.

25. The LTG review is about the legal provisions of the Solvency II Directive and its implementing acts that relate to the LTG measures. The development of a UFR methodology is an application of those laws, but not itself part of the legal framework. Article 77f of the Solvency II Directive that sets out the LTG review does not envisage that parts of the LTG measures should not be applied until the end of the review.

Consequences for insurance products with long-term guarantees

26. A reduction of the UFR will increase the amount of technical provisions that insurers have to set up for insurance product with long-term guarantees, in particular for new business. This could make it less attractive for insurers to offer these products. On the other hand, the increased technical provisions would more appropriately reflect the value of the guarantees included in the products and ensure that they can be fulfilled in the future. In particular insurers will be discouraged from offering guarantees at unsustainably high interest rate levels. This will improve the protection of policyholders.

27. Apart from that, it is unclear whether a delay of the first application of the UFR methodology would significantly change any impact of the methodology on insurance products because insurers would likely anticipate the future application of the methodology in their current behaviour.

Consequences for insurers' investments

28. EIOPA has carried out further analysis on the impact of UFR changes on the financial position of insurance and reinsurance undertakings. A change of the UFR by 20 bps, being more than the maximum annual change according to the methodology of 15 bps, would on average change the SCR ratio of insurance and reinsurance undertakings from 203% to 201%. On the basis of such a minimal change no impact on the investment behaviour of insurers can be expected.

29. Apart from that, where insurers would be affected by a loss in own funds caused by the lowering of the UFR, they may try to compensate that by derisking their asset portfolio and increasingly investing in assets of higher quality. It is however questionable whether that would be a negative impact. Where an insurer does not have sufficient capital to cover their SCR, derisking of assets is one of the measures envisaged in the Solvency II Directive. If the change of the UFR would incentivise long-term investments, it would ensure a better asset-liability matching. Furthermore, to incentivise long-term investments is in line with the economic objectives of the European Union.

30. Apart from all that, it is unclear whether a delay of the first application of the UFR methodology would significantly change any impact of the methodology on insurers' investments because insurers would likely anticipate the future application of the methodology in their current behaviour.

Macroprudential aspects of changing the UFR

31. The European Systemic Risk Board (ESRB) analysed the choice of the UFR from a macrodrudential perspective in a note that was submitted to EIOPA in December 2016. The ESRB identified four main requirements for risk-free interest rates from a macroprudential perspective, notably (i) realistic estimates of liability values, (ii) consistent application of the risk-free interest rates, (iii) adequate risk management incentives and (iv) the prevention of procyclicality. The ESRB concludes that the first three requirements are better achieved when the risk-free interest rate is based on market data. The fourth requirement may conflict with market valuation of insurers' balance sheets, but evidence is mixed and is considered to be outweighed by the benefits from the first three requirements.

32. According to the ESRB the gap between the risk-free interest rates and the current swap rates that is caused by the application of a high UFR may have negative consequences. The difference between long-term risk-free interest rates and swap rates, even though unavoidable given the design of

the UFR as laid-down in legislation, should be reduced. This difference may hide sector-wide losses, which could materialise in the near future. It could also hamper market discipline and exacerbate model risk. Last but not least, it may also incentivise the sale of insurance products with too high guarantees, induce insurers to pay-out dividend rather than build-up reserves and lead to suboptimal hedging strategies.

33. The ESRB believes that EIOPA's proposal would change the level of the UFR in the right direction but too slowly, in case a "low for long" scenario prevailed over the next decade.

Further impact assessment needed

34. See next section on the additional impact assessment.

Solvency II is sufficiently prudent with the current UFR

35. This argument may be based on a misunderstanding about the functionality of Solvency II. The purpose of the risk margin and the SCR is not to compensate known deficiencies of the best estimate. The purpose of the risk margin is to ensure the transfer or safe run-off of insurance obligations. The SCR has to be met so that the insurer can absorb unexpected losses. Both objectives can only be achieved if the best estimate is calculated appropriately, in particular based on an appropriate UFR.

Insurers and supervisors are already adjusting to the low interest rate environment

36. An inappropriate ultimate forward rate distorts the prudential balance sheet and hence the solvency assessment of insurers. This is an impediment to proper risk management of insurers and supervision by the NSAs. In particular, a UFR too high may incentivise insurers to provide unsustainable high guarantees for long-term products. Supervisors are not informed about the objective solvency position of their insurers and the distorted prudential balance sheet may not provide a basis to take the necessary supervisory actions.

Conclusion

37. In order to provide insurance and reinsurance undertakings more time for their preparations, the first application of the UFR methodology is set to the beginning of 2018 instead of mid-2017. An application of the UFR

methodology later than the beginning of 2018 does not appear to be necessary in terms of impact and not advisable from a prudential perspective.

## 2.3 Additional impact assessment

### Introduction

38. The consultation paper sets out 10 policy issues on the UFR methodology and analyses options for these issues and their impact.

39. In addition, the paper includes analysis on the impact of UFR changes on:

- the risk-free interest rate term structure,
- technical provisions for model contracts,
- life insurer's technical provisions and own funds on the basis of 2014 stress test data.

### Stakeholder feedback

40. Some stakeholders suggest that further impact analysis should be undertaken before deciding on the UFR methodology. The assessment should include in particular an assessment of the following:

- The impact on overall level of prudence of the Solvency II framework to avoid creating unintended and unnecessary burden.
- Potential pro-cyclical effects and other unintended consequences for customers or the wider economy, in particular capacity for insurers to invest in long-term projects and distribute long-term savings retirement products.
- Back testing to ensure the objectives of producing a stable long-term rate, and avoiding additional volatility in liability calculations have been achieved.

### Resolution

41. In line with standards for good policy-making the proposal for the UFR methodology was accompanied by an impact assessment. The additional impact assessment requested by stakeholders appears disproportionate for the following reasons:

- The request to analyse the overall prudence of Solvency II would require a general assessment of the valuation, the determination of eligible own funds and the SCR calculation under Solvency II. The relevance of such

a comprehensive assessment for the determination of the UFR is unclear. It would be uncommon to revise the whole solvency system because of a change of one technical parameter.

- The UFR methodology is not a piece of law. It is the application of a legal provision of the Delegated Regulation on Solvency II that was itself accompanied by an impact assessment. Application of the law does usually not go along with an impact assessment. Apart from that, the political decision that the UFR can change is reflected in that regulation. It may appear inappropriate for EIOPA to analyse whether that decision was well founded.
- The UFR is only one of several elements that influence the risk-free interest rates. EIOPA does not perform an impact assessment before changing other elements of the risk-free interest rates, for example the non-extrapolated rates, although their impact on technical provisions can be more significant than a UFR change.

42. The consultation paper includes already a back testing of the methodology for the past decades.

43. The analysis of the impact on insurers' technical provisions and own funds included in the consultation paper is based on data of the 2014 insurance stress test. Owing to the limitations of this database, the scope of the analysis was limited. The data did for example not allow taking into account the mitigating impact of future discretionary benefits and of deferred taxes or the impact on the risk margin of technical provisions or the SCR.

44. EIOPA has carried out further analysis on the impact of UFR changes on the financial position of insurance and reinsurance undertakings. The outcome of the analysis confirms that the proposed methodology is changing the UFR in line with the stability objective. A change of the UFR by 20 bps, being more than the maximum annual change according to the methodology of 15 bps, would on average change the SCR ratio of insurance and reinsurance undertakings only minimally from 203% to 201%.

45. The European Systemic Risk Board (ESRB) analysed the choice of the UFR from a macrodrudential perspective in a note that was submitted to EIOPA in December 2016. The ESRB identified four main requirements for risk-free interest rates from a macroprudential perspective, notably (i) realistic estimates of liability values, (ii) consistent application of the risk-free interest rates, (iii) adequate risk management incentives and (iv) the prevention of procyclicality. The ESRB concludes that the first three requirements are better achieved when the risk-free interest rate is based on market data. The fourth requirement may conflict with market valuation of insurers' balance sheets, but evidence is mixed and is considered to be outweighed by the benefits from the first three requirements.

46. According to the ESRB the gap between the risk-free interest rates and the current swap rates that is caused by the application of a high UFR may have negative consequences. The difference between long-term risk-free interest rates and swap rates, even though unavoidable given the design of the UFR as laid-down in legislation, should be reduced. This difference may hide sector-wide losses, which could materialise in the near future. It could also hamper market discipline and exacerbate model risk. Last but not least, it may also incentivise the sale of insurance products with too high guarantees, induce insurers to pay-out dividend rather than build-up reserves and lead to suboptimal hedging strategies.

47. The ESRB believes that EIOPA's proposal would change the level of the UFR in the right direction but too slowly, in case a "low for long" scenario prevailed over the next decade.

## 2.4 Frequency of UFR recalculation

### Introduction

48. According to the proposed UFR methodology, the UFR would be recalculated every year. In case that the recalculated UFR deviates at least 5 basis points from the implemented UFR, that UFR would be changed.

### Stakeholder feedback

49. Stakeholders advise against an annual recalculation of the UFR and favour less frequent recalculation, for example every 5 or 10 years. Changes resulting from those recalculations should be phased in over time. The main reason for these suggestions is the legally required stability of the UFR. In particular, an annual change of the UFR is considered to contradict the stability objective and to create artificial volatility.

### Resolution

50. According to the proposed methodology the UFR will change only slowly to comply with the stability requirement. The alternative is to keep the UFR constant over a period of time and afterwards to change it strongly to catch up with developments. That approach would not contribute to the stability of the UFR.

51. The main argument of stakeholders against an annual recalculation is that it may result in annual changes of the UFR thereby contradicting the stability objective of the UFR. However, the proposed lower frequencies for the UFR review combined with the phasing-in of changes would eventually not prevent annual changes of the UFR. Because of the lower frequency the need for change identified at the reviews would be higher and needed to be phased in over several years. Therefore the UFR would likely change annually after the reviews also according to the proposal of stakeholders.

52. A lower frequency would delay necessary changes of the UFR and adjustments to the UFR. This can have a negative impact on policyholder protection and provide wrong risk management incentives to insurers. The delay of necessary changes might undermine the credibility of the current UFR and of the current level of technical provisions when a change of the UFR can be anticipated.

53. The annual recalculation of the UFR ensures that the UFR will be adapted in a timely manner when interest rates are rising again.

54. Despite the annual recalculation the stability objective for the UFR is met because of the annual change of the UFR is limited to 15 bps, see section 2.5. EIOPA has carried out further analysis on the impact of UFR changes on the financial position of insurance and reinsurance undertakings. A change of the UFR by 20 bps would on average change the SCR ratio of insurance and reinsurance undertakings only minimally from 203% to 201%.

55. In order to significantly reduce the frequency of UFR changes, the UFR will only be changed when the difference between the calculated UFR and the currently applicable UFR exceeds 15 basis points. Backtesting this approach shows that the UFR would have changed four times since 2000. According to the earlier consultation proposal the UFR would have changed 12 times.

## 2.5 Limit to annual changes of the UFR

### Introduction

56. According to the consultation proposal the annual change of the UFR is limited to 20 basis points. A limit shall ensure the stability of the UFR, in particular when the inflation component changes after a drastic correction of the inflation target of the central bank.

57. The limit will also apply when the UFR methodology is introduced and will in this way ensure a phase-in to the new level of the UFR.

**Stakeholder feedback**

58. Stakeholders agree on a limit to the annual change of the UFR. Some stakeholders suggest however that a lower limit of 10 basis points should be applied. One industry association reported a general consensus of support for the 20 basis point limit, but some of their members had suggested that a reduced limit of 10 basis points would be more appropriate. Another stakeholder suggests a limit of 5 or 10 basis points.

59. Stakeholders did not provide any particular reason where they suggest a lower limit, but it is deemed obvious that they aim at increasing the stability of the UFR.

**Resolution**

60. EIOPA has carried out further analysis on the impact of UFR changes on the financial position of insurance and reinsurance undertakings. The outcome of the analysis confirms that the proposed methodology is changing the UFR in line with the stability objective. A change of the UFR by 20 bps, being more than the maximum annual change according to the methodology of 15 bps, would on average change the SCR ratio of insurance and reinsurance undertakings only minimally from 203% to 201%.

61. The main impact of a lower limit would be that in case of a strong change of the UFR it takes longer to reach the new level. A lower limit would indeed allow insurers more time to adjust to changes, facilitating a smoother phasing-in of the new UFR level. On the other hand the UFR applied would differ for a longer time from the calculated appropriate level.

62. In particular, a lower limitation of the annual UFR change would slow down the initial adaptation of the UFR from currently 4.2% to the level determined with the UFR methodology. With a limit of 10 bps instead of 20 bps the adaptation would take 8 instead of 4 years. (Calculation based on the assumption of an unchanged level of real interest rates.)

63. The European Systemic Risk Board (ESRB) analysed the choice of the UFR from a macrodrudential perspective in a note that was submitted to EIOPA in December 2016. The ESRB believes that EIOPA's proposal would change the level of the UFR in the right direction but too slowly, in case a "low for long" scenario prevailed over the next decade.

64. On the other hand, the UFR methodology needs to strike a balance between the stability of the UFR over time and reflecting changes in long term expectations. The limit to annual changes of the UFR is therefore lowered from 20 to 15 basis points, so that the UFR will change more gradually. The

change means in particular that a reduction of the UFR from 4.2% to 3.65% would be phased in during four years instead of three years.

## 2.6 Expected real rate – average over time

### Introduction

65. According to the consultation proposal, the UFR is the sum of an expected real rate and an expected inflation rate. The expected real rate is determined as a single real rate for all currencies that averages the historical real rates of a set of countries. The averaging period has a fixed start date (1960) and a moving end data being the latest year with available date (widening window approach).

66. The consultation proposal further specifies that the average should give less weight to the oldest data and this is achieved by a weighting technique attaching a weight to each year (the older the data, the lower the weight).

### Stakeholder feedback

67. Some stakeholders favour a simple arithmetic average over a weighted average. These stakeholders say that there is no evidence that recent data are more predictive of future rates than older data. Furthermore, they point out that the average real rate would be more stable over time without the weighting technique. One respondent considers the use of a weighted average more appropriate. One respondent considers that the use of a weighted average is not a concern. One respondent considers that using a rolling-window approach (instead of a widening window) would better serve the purpose of giving more weights to recent data than a weighted average.

### Resolution

68. Financial markets are subject to long-term changes (for example the deregulation in the 1980s) and therefore more recent data may be more relevant than past data for predicting the future. The existence of long-term changes is the reason why data from World War II and the subsequent economic recovery in the 1950s are not used in the average. They relate to an outdated political and economic state of the world.

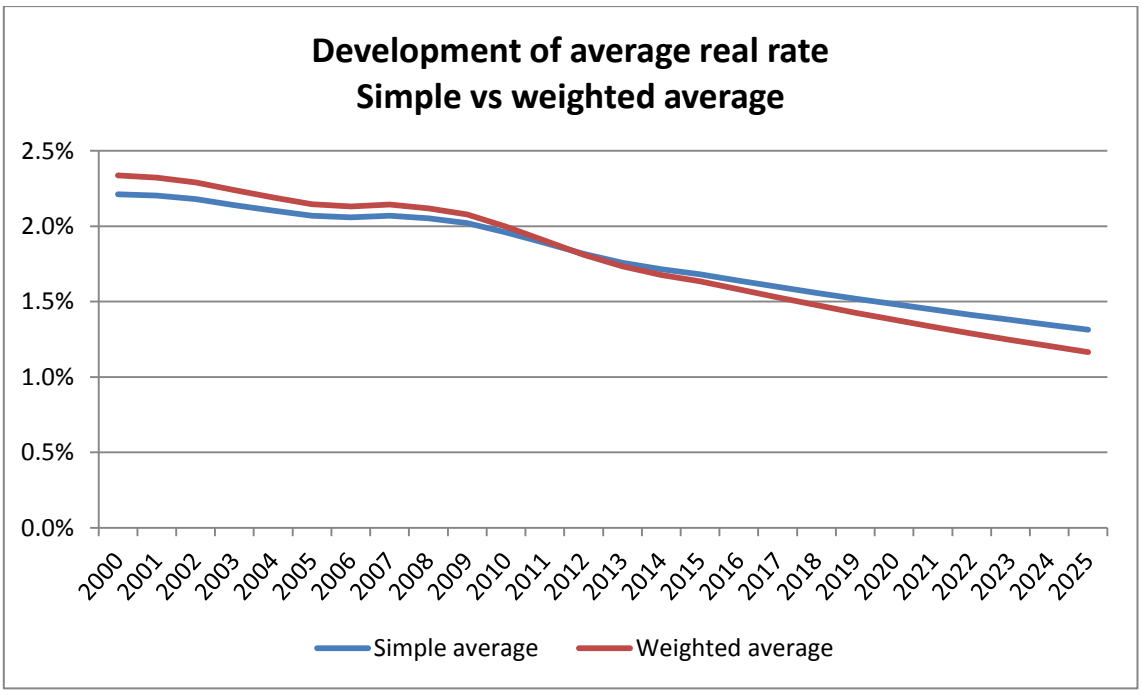
69. The use of a weighted average is a classical approach to analyse time series in order to smooth temporary fluctuations and emphasize long-term trends. Given that the average is based on historical data, a weighted average may

be better suited than a simple arithmetic average to derive a forward-looking view about expectations of real rate, as required by the Delegated Regulation on Solvency II.

70. The choice of the averaging technique should be assessed in combination with the time span retained to perform the average. The consultation proposal suggests a widening window approach instead of a rolling window approach and most stakeholders support this choice. With a rolling window, a weighting technique may not be justified as the set of observations is updated yearly and new observations always have the same influence on the average. But with a widening window, the set of data expands every year and the influence of new observations on the average will decrease as time passes.

71. On the other hand, the weighting of the average will make the UFR more reactive to changes in the recent past. The UFR methodology needs to strike a balance between the stability of the UFR over time and reflecting changes in long term expectations. In order to make the UFR move more gradually, the average for calculating the real rate component of the UFR should be a simple average instead of a weighted average that puts more weight on recent observations.

72. The following figure illustrates the impact of using a simple instead of a weighted average would have had in the recent past and may have in the near future on the average real rate. The calculation is based on the assumption that the 2016 level of real rates stays constant in the following years.



## 2.7 Expected real rate – aggregation over countries

### Introduction

73. The expected real rate of the consultation proposal is the single real rate aggregated from the historical rates since 1960 of 7 countries: Belgium, France, Germany, Italy, the Netherlands, the United Kingdom and the United States.

### Stakeholder feedback

74. Some stakeholders suggest including Denmark's historical real rates in the set of countries because real rate data for Denmark are available from 1967 onwards. Some stakeholders suggest the use of geographical weights for the aggregation of countries' real rates in order to improve the representativeness of the single real rate.

### Resolution

75. For the 7 countries whose data are used to derive the expected real rate, data are available from 1960 onwards. Including additional countries with shorter data history would imply the aggregation of inconsistent time series.

76. Apart from that, the inclusion of Denmark (data available from 1967) in the aggregation would suggest to also include Portugal (data available from 1966) and Austria (data available from 1967). Going forward, data are available for Finland and Japan from 1970, for Ireland from 1976 and so forth. The cut-off point appears to be arbitrary. This arbitrariness can only be avoided by restricting the set of countries to the 7 countries with the maximum data history or by including in the average all the countries for which data are available in principle (for 33 countries data are available, all EEA countries plus the US, Switzerland and Japan).

77. If the aggregate is based on a larger number of countries it is not appropriate anymore to use a simple average for aggregating the countries' real rates because their economic relevance differs too much. This would significantly increase the complexity of the calculation of the expected real rate. In particular, the predictability and replicability of the expected real rate would be impaired. The calculation would need to be based on additional parameters like the GDP and European insurers' portfolio of investments.

78. In addition, the use of geographical weights to improve the representativeness of the single real rate can be questioned for the following reasons:

- From a practical perspective, the claimed improvement in terms of representativeness comes at the cost of lower reliability of the calculations. The reason is that sufficient data on the investment portfolios of European insurers are available only since 2013. This means that weights are missing for the vast majority of the historical dates and that strong assumptions need to be made to overcome that data shortage, for example that the currency mix in insurers' investments from 1960 to 2012 is comparable to the currency mix in 2013.

- According to the Delegated Regulation on Solvency II the methodology to derive the UFR should allow undertakings to perform scenario calculations. The more parameters enter the calculation, the more difficult is the modelling of the methodology and the less predictable is the UFR. Weighting countries not only involves for each historical date the currency mix of the average European insurer's investment portfolio but also scaling factors for the real rates of the members of the euro area.[5] Those scaling factors can be approximated by GDP, as tested in the consultation paper, but there are concerns about the appropriateness of this approach. On the other hand, for predicting the UFR the weights of past years would be known and only the weights for the future years need to be predicted.

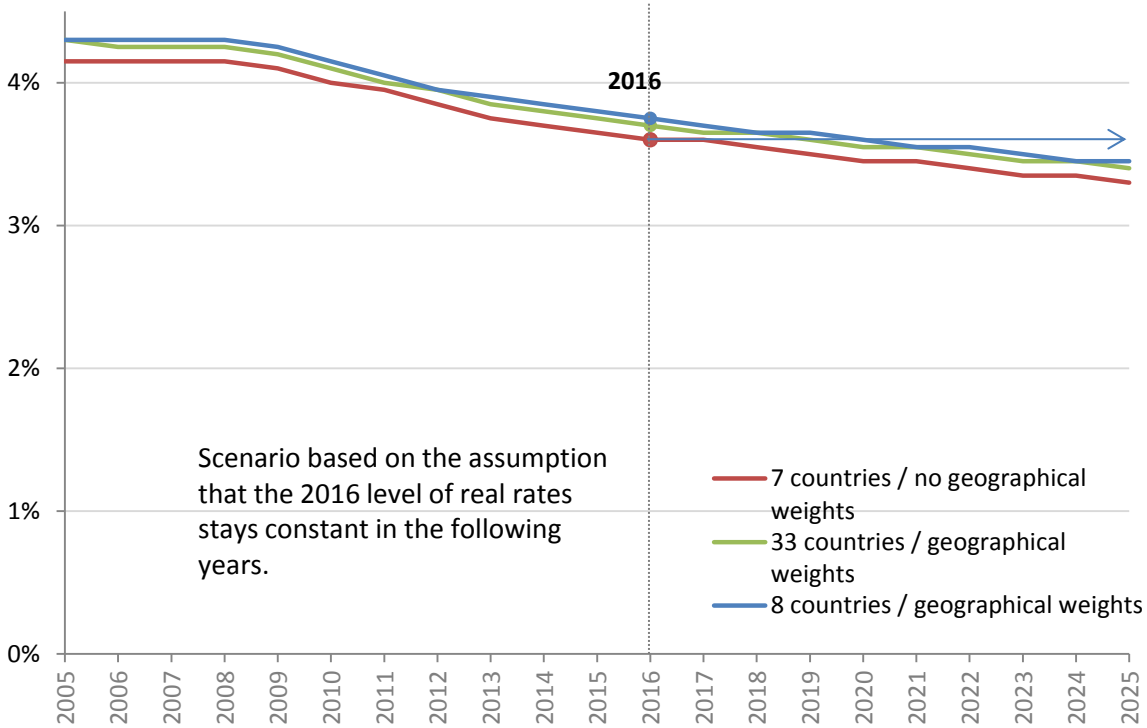
- From a conceptual perspective, the UFR is based on the assumption that interest rates will converge to a long-term equilibrium in the very long-term. On that basis, there is no theoretical need to include geographical weights in the aggregation should the set of economies be sufficiently homogeneous. The assumption may be more likely true for the set of 7 countries than for the set of 33 countries.

79. The increased complexity and the reduced reliability and predictability of the UFR are not justified on the basis of the impact of the different approaches. The following table sets out the UFR calculated for the three approaches discussed. The differences are very small. The calculation is based on a weighted average for the expected real rate as proposed for the consultation.

[5] It is unknown how much bonds denominated in euro in European insurers' portfolio are issued in each country of the euro area.

| Level of the UFR based on data up to 2016 | | |
|---|---|---|
| 7 countries / no geographical weights | 33 countries / geographical weights | 8 countries (including DK) / geographical weights |
| 3.60% | 3.70% | 3.75% |

80. The following figure shows the impact that each option would have had in the recent past and may have in the near future under the assumption that the 2016 level of real rates stays constant in the following years. The expected inflation rate is assumed to be 2%. The calculation is based on a weighted average for the expected real rate as proposed for the consultation.




## 2.8 Expected real rate – removal of term premium

### Introduction

81. The Delegated Regulation provides in Article 47 that "the ultimate forward rate shall not include a term premium to reflect the additional risk of holding long-term investments". In the consultation proposal, the term premium is excluded by using short-term nominal rates from the AMECO database of the European Commission.

82. The short-term rates of that database are annualized rates based on the following financial instruments:

- Belgium: 1961-1984, 4-month certificates of 'Fonds des Rentes'; from 1985, 3-month Treasury certificates.
- Germany: 3-month interbank rates.
- France: 1960-1968, call money; 1969-1981, 1-month sale and repurchase agreements on private sector paper; from 1982, 3-month sale and repurchase agreements on private sector paper (Pibor).
- Italy: 1960-1970, 12-month Treasury bills; 1971-1984, interbank sight deposits; from 1985, 3-month interbank rates.
- Netherlands: 1960-September 1972, 3-month Treasury bills; from October 1972, 3-month interbank rates.
- United Kingdom: 1961-September 1964, 3-month Treasury bills; from October 1964, 3-month interbank rates.
- United States: 3-month money market.

**Stakeholder feedback**

83. Some stakeholders note that the short-term nominal rates in the consultation proposal are mainly 3-month (annualized) interbank rates while the UFR is to be the ultimate one-year rate. Therefore the term premium corresponding to the additional risk of holding a one-year rate instead of a 3-month rate is excluded in the consultation proposal although these stakeholders argue that this term premium should be included in the UFR. In addition, they point out that there is an inconsistency in the consultation proposal as short-term real rates are obtained by deducting one-year inflation rates from 3-month nominal rates. The stakeholders propose to verify whether another database can provide historical one-year rates, instead of 3 to 6-month rates and, if not, to scale the average of 3-month data to an assumed one-year rate average.

**Resolution**

84. The stakeholders rightly pointed out that there exists a term premium on one-year rates compared to rates with shorter maturities. However, the fact that such a term premium exist on one-year rates does not mean that it should be included in the UFR. According to the Delegated Regulation on Solvency II the UFR shall not include a term premium to reflect the additional risk of holding long-term investments. This provides a basis for excluding any term premium from the UFR.

85. The question of the database was already discussed in the consultation paper. Stakeholders have not proposed alternative databases to those

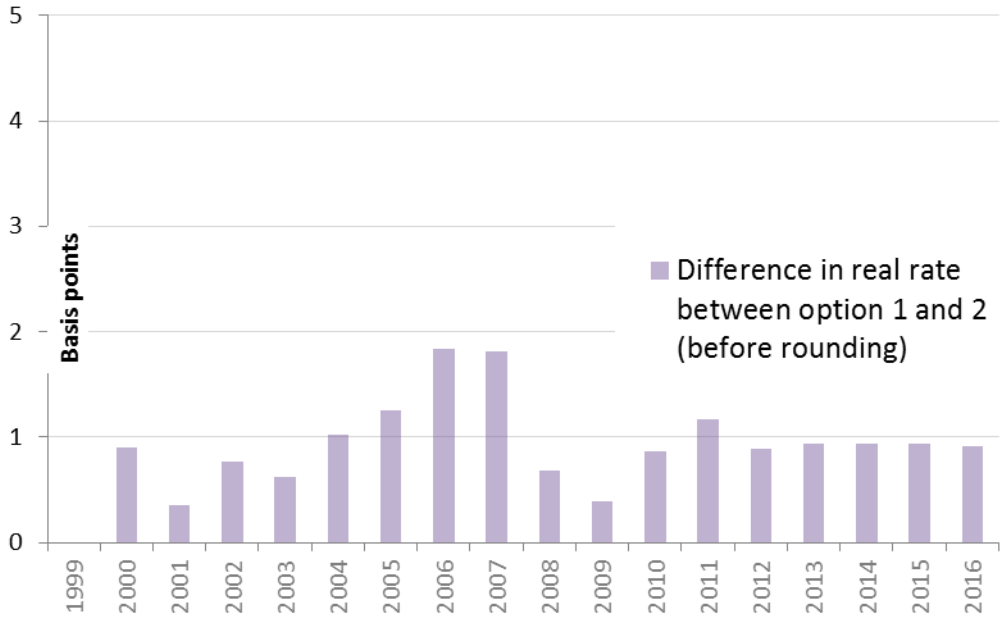
listed in the consultation paper. The AMECO database and the Macro-Economic Indicators database of the OECD were chosen as they are freely available and transparently maintained by public institutions. This also means that all the underlying data used by EIOPA to derive the UFR can be published without licencing and that the replicability of the methodology is ensured. No comparable database that provides short-term rates including the term premium for one year could be identified.

86. In order to assess the impact of the stakeholders' proposal to scaled the 3-month rates to one-year rates EIOPA has compared the use of 1-year interest rate swap rates with the use of the AMECO short-term rates. The swap data history does not cover the time period since 1960 but the time period since the late 1990s. For performing the comparison, the difference between the UFR of the consultation proposal and the UFR resulting from 1-year risk-free interest rates[6] were calculated. The rates of the Solvency 2 risk-free curves are credit risk adjusted. For the purpose of this test, credit risk adjustments (CRA) for the EUR, the GBP and the USD were re-calculated from 1999, 1997 and 1996 respectively.

87. The comparison shows that the 1-year rate term premium is not material at the level of the UFR. For 2016 the UFR under both approaches would amount to 3.65%. The results also shows in the methodology of the consultation proposal there is an implicit offsetting of the 1-year rate term premium and the credit risk adjustment such that AMECO's rates can be considered as equivalent to risk-free 1-year rates.

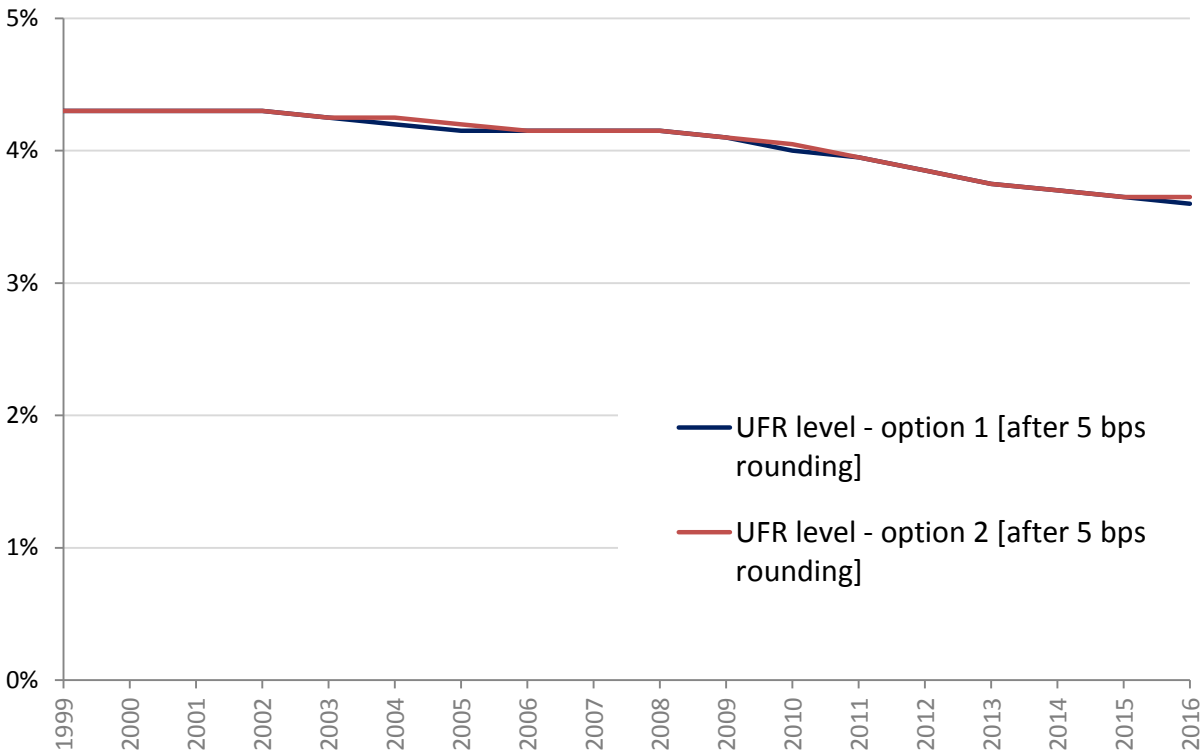
88. The following figure shows the difference between the stakeholder proposal (option 2) and the consultation proposal (option 1) in terms of annual real rates. The impact is shown before the rounding to full 5 basis points.

[6] The rates of the Solvency 2 risk-free curves are credit risk adjusted. For the purpose of this test, CRA for the EUR, the GBP and the USD were re-calculated from 1999, 1997 and 1996 respectively.




89. The following figure shows the impact that the consultation proposal (option 1) and the stakeholder proposal (option 2) would have had on the UFR in the recent past. The expected inflation rate is assumed to be 2%. The calculation is based on a weighted average for the expected real rate as proposed for the consultation.

90. The difference between the two options is immaterial. The impact does not justify the added complexity of scaling up the short-term interest rates of the AMECO database.


5%
4%
3%
2%
1%
0%
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
UFR level - option 1 [after 5 bps rounding]
UFR level - option 2 [after 5 bps rounding]

# 3. Final methodology to derive the UFR and its implementation

## 3.1 Methodology to derive the UFR

### Update of the UFRs

91. EIOPA will annually calculate the UFRs and, where they are sufficiently different according to the methodology from the then applicable UFRs, update them at the beginning of the next year. The updated UFRs will be announced every year by the end of March. Nine months after the announcement of the updated UFRs, EIOPA will use them to calculate the risk-free interest rate term structures for the term structures of 1 January of the following year.

### Calculation of the UFRs

92. For each currency the change of the UFR is limited in such a way that it increases or decreases by 15 bps or remains unchanged in accordance with the following rule:

$$UFR_t^L = \begin{cases} UFR_{t-1}^L + 15\ bps & if\ \ UFR_t \geq UFR_{t-1}^L + 15\ bps \\ UFR_{t-1}^L - 15\ bps & if\ \ UFR_t \leq UFR_{t-1}^L - 15\ bps \\ UFR_{t-1}^L & otherwise \end{cases}$$

where:

- $UFR_t^L$ denotes the UFR of year *t*, after limitation of the annual change,
- $UFR_{t-1}^L$ denotes the UFR of year *t*+1 , after limitation of the annual change,
- $UFR_t$ denotes the UFR of year *t*, before limitation of the annual change.

93. For each currency the UFR before limitation of the annual change is the sum of an expected real rate and an expected inflation rate. The expected real rate is the same for each currency. The expected inflation rate is currency-specific.

### Calculation of the expected real rate

94. The expected real rate is the simple arithmetic mean of annual real rates from 1961 to the year before the recalculation of the UFRs according to the following formula:

$$R = \frac{1}{n}\sum_{i=1}^{n} r_{1960+i}$$

where:

- *R* is the expected real rate,

- $n$ is the number of years since end of 1960,
- $r_i$ is the annual real rate for the year 1960+$i$,

95. For each of the years since 1961 the annual real rate is derived as the simple arithmetic mean of the annual real rates of Belgium, Germany, France, Italy, the Netherlands, the United Kingdom and the United States.

96. For each of those years and each country the annual real rate is calculated as follows:
*real rate* = (*short-term nominal rate – inflation rate*)/(1 + *inflation rate*).

97. The short-term nominal rates are taken from the annual macro-economic database of the European Commission (AMECO database).[7] The inflation rates are taken from the Main Economic Indicators database of the OECD.[8]

98. The expected real rate is rounded to full five basis points as follows:
    - When the unrounded rate is lower than the rounded rate of the previous year, the rate is rounded upwards.
    - When the unrounded rate is higher than the rounded rate of the previous year, the rate is rounded downwards.

**Calculation of the expected inflation rate**

99. For currencies where the central bank has announced an inflation target, the expected inflation is based on that inflation target according to the following rules:
    - The expected inflation rate is:
        - 1%, where the inflation target is lower than or equal to 1%,
        - 2%, where the inflation target is higher than 1% and lower than 3%,
        - 3%, where the inflation target is higher or equal to 3% and lower than 4%,
        - 4%, where the inflation target is 4% or higher.
    - Where a central bank is not targeting a specific inflation figure but tries to keep the inflation in a specified corridor, the midpoint of that corridor is relevant for the allocation to the four inflation rate buckets.

100. For currencies where the central bank has not announced an inflation target, the expected inflation rate is 2% by default. However, where past inflation experience and projection of inflations both clearly indicate that

[7] Short-term nominal rates used for deriving the expected real rate can be found in the annual macro-economic database of the European Commission's Directorate General for Economic and Financial Affairs, "AMECO". On AMECO online, select 13-Monetary variables, select Interest Rates and then tick the box Short-term nominal (ISN). (http://ec.europa.eu/economy_finance/ameco/user/serie/ResultSerie.cfm)

[8] Inflation rates used for deriving the expected real rate can be found on the website of the Organisation for Economic Co-operation and Development (OECD): go to the OECD Main Economic Indicators (MEI) and select consumer price indices. When accessing the database, choose consumer prices – all items for the subject, percentage change on the same period of the previous year for the measure and percentage for the unit. (http://stats.oecd.org/Index.aspx?DataSetCode=MEI_PRICES). OECD data used in this document were accessed in March 2016.

the inflation of a currency is expected in the long-term to be at least 1 percentage point higher or lower than 2%, the expected inflation rate will be chosen in accordance with those indications. The expected inflation rate will be rounded downwards to full percentage points.

101. The past inflation experience will be assessed against the average of 10 years annual inflation rates. The projection of inflation rates will be derived on the basis of an autoregressive–moving-average model.

## 3.2 Implementation of the methodology

102. The methodology to derive the UFR should be implemented in 2018. The first UFRs calculated according to the methodology should be announced at the beginning of April 2017. Those UFRs should be applied for the first time to calculate the risk-free interest rate term structures for 1 January 2018.

103. The initial application of the methodology in 2018 should be based on the following additional specification:
    - The UFR of 2017, denoted $UFR_{t-1}^{L}$ in paragraph 92, is:
        - 3.2% for the Swiss franc and the Japanese yen,
        - 5.2% for the Brazilian real, the Indian rupee, the Mexican peso, the Turkish lira and the South African rand,
        - 4.2% for all other relevant currencies.
    - The rounded expected real rate of the previous year referred to in paragraph 98 is equal to 2.2%.

# 4. Results of the information request to undertakings

## 4.1 Introduction

104. In order to complement the impact analysis provided for the public consultation on the UFR methodology, EIOPA has carried out an information request to insurance and reinsurance undertakings on the impact of UFR changes. The information request was carried out at the end of 2016. 336 insurance and reinsurance undertakings assessed the impact of changing the UFRs by 20 bps and by 50 bps on their prudential balance sheet and on their solvency position. The information request showed that the impact of these changes is very small. On average the SCR ratio decreases from 203% to 201% if the UFRs are changed by 20 bps and to 198% if the UFRs are changed by 50 bps.

105. This note is structured as follows:

    a. Information request
    b. Sample of undertakings
    c. Overview of the results
    d. Impact on technical provisions
    e. Mitigating effect of the recalculation of the TP transitional
    f. Impact on deferred taxes
    g. Impact on own funds
    h. Impact on the SCR
    i. Impact on the SCR ratio
    j. Movement analysis for the SCR ratios

## 4.2 Information request

106. The information request was addressed to a European sample of insurance and reinsurance undertakings. Participants were requested to report assets, liabilities, own funds and capital requirements according to a baseline and under two scenarios in which the level of the UFRs is changed.

107. The baseline coincides with the reporting of opening information under Solvency II (day-1 reporting), usually with a reference date of 1 January 2016. In particular, valuations according to the baseline are carried out with the relevant risk-free interest rate term structures based on the current UFRs.

108. **Scenario 1** consists of:

- a reduction of the UFR by 20 basis points for all currencies for which EIOPA provides risk-free interest rate term structures other than the currencies mentioned in the following bullet point,
- an increase of the UFR by 20 bps for the Hungarian forint, the Chilean peso, the yuan-renminbi, the Colombian peso, the yen and the Russian rouble.

109. **Scenario 2** consists of:

- a reduction of the UFR by 50 basis points for all currencies for which EIOPA provides risk-free interest rate term structures other than the currencies mentioned in the following bullet point,
- an increase of the UFR by 50 bps for the Hungarian forint, the Chilean peso, the yuan-renminbi, the Colombian peso, the yen and the Russian rouble.

110. For the Hungarian forint, the Chilean peso, the yuan-renminbi, the Colombian peso, the yen and the Russian rouble the UFR increases in both scenarios. This is based on EIOPA's consultation proposal that suggests increasing the UFR for these currencies in view of the higher inflation targets of their central banks.

111. For the baseline and the two scenarios participants had to provide the amount of the following items:

- Liabilities:
  - Best estimate (by line of business, with and without future discretionary benefits)
  - Risk margin (by line of business)
  - Technical provisions valued as a whole (by line of business)
  - Deferred tax liabilities
  - Other liabilities

- Assets:
  - Deferred tax assets
  - Other assets

- Own funds and capital requirements:
  - SCR
  - Own funds eligible to cover the SCR
  - MCR
  - Own funds eligible to cover the MCR

112. Participants could take a proportionate approach to the recalculation of assets, liabilities, own funds and capital requirements under scenario 1 and scenario 2. Where participants expected that the difference between the

baseline and the recalculated item was not material, they could choose not to make the recalculation.

113. Where participants have received supervisory approval for the use of internal models, undertaking-specific parameters, matching adjustments, or volatility adjustments, they made all calculations on that basis. In jurisdictions where the use of the volatility adjustment was not subject to approval, participants should apply the volatility adjustment in the calculations if they did so for day-1 reporting.

114. Where participants had received approval to use the transitional measure on the risk-free interest rate or the transitional measure on technical provisions, the impact of the transitional on the amount of technical provisions was taken into account. The transitional deduction of the transitional measure on technical provisions was kept constant in the scenarios.

115. The information request was carried out during November and December 2016.

## 4.3 Sample of undertakings

116. The information was requested from a representative sample of 336 insurance and reinsurance undertakings from 29 countries of the EEA. The sample consists of 198 life insurance undertakings, 95 composite insurance undertakings, 33 non-life insurance undertakings and 10 reinsurance undertakings.

117. For each country the sample was selected by the national supervisory authority. The objective of the sample was as follows:

- Life insurance: for each country a representative sample of life and composite insurance undertakings covering at least 75% of life insurance other than unit and index-linked business in terms of technical provisions.
- Non-life insurance: for each country a representative sample of non-life and composite insurance undertakings covering at least 20% of the market in terms of technical provisions that in particular captures non-life obligations most affected by a change of the UFR, including annuities stemming from non-life insurance business (e.g. workers' compensation) and health insurance similar to life insurance business. The sample should cover in particular at least 20% of the technical provisions for non-life annuities.
- Reinsurance: for each country a representative sample of non-life insurance undertakings covering at least 20% of the market in terms of technical provisions that in particular captures reinsurance obligations most affected by a change of the UFR.

118. The following figure 1 and tables 1 and 2 sets out the number and the market share (measured by amount of technical provision) of the sample by country.

**Figure 1. Number and type of undertakings by country**

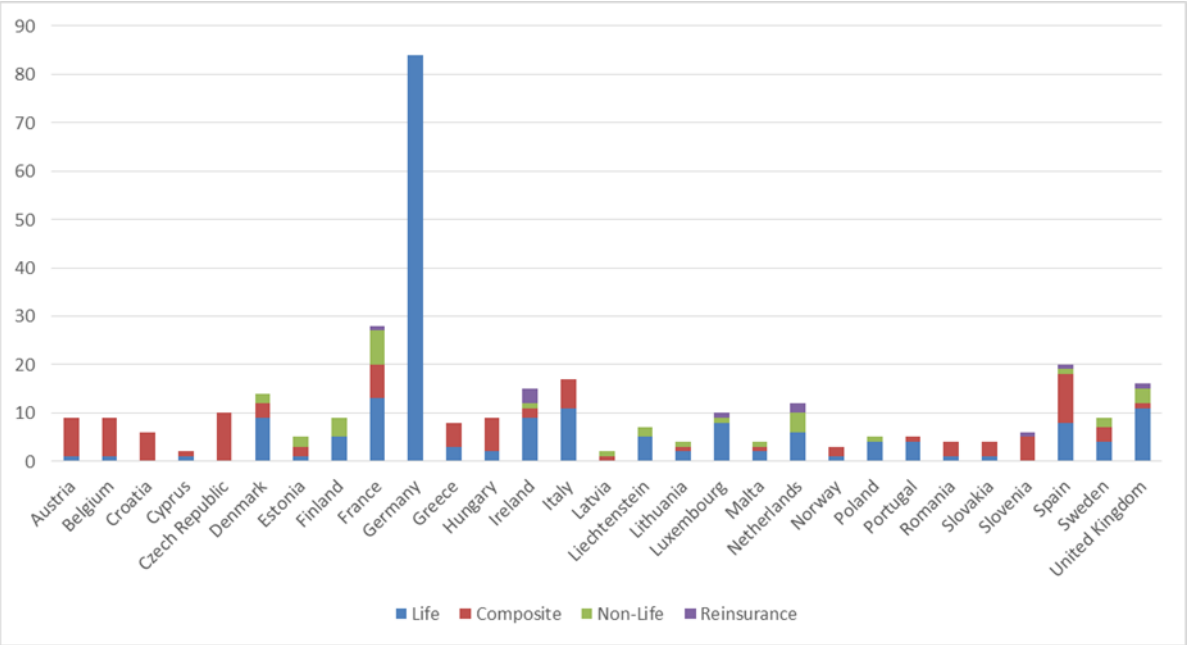



**Table 1. Number and type of undertakings by country**

| Country | Life insurers | Com-posite insurers[9] | Non-life insurers | Re-insurers | Total |
|---|---|---|---|---|---|
| Austria | 1 | 8 | 0 | 0 | **9** |
| Belgium | 1 | 8 | 0 | 0 | **9** |
| Croatia | 0 | 6 | 0 | 0 | **6** |
| Cyprus | 1 | 1 | 0 | 0 | **2** |
| Czech Republic | 0 | 10 | 0 | 0 | **10** |
| Denmark | 9 | 3 | 2 | 0 | **14** |
| Estonia | 1 | 2 | 2 | 0 | **5** |
| Finland | 5 | 0 | 4 | 0 | **9** |
| France | 13 | 7 | 7 | 1 | **28** |
| Germany | 84 | 0 | 0 | 0 | **84** |
| Greece | 3 | 5 | 0 | 0 | **8** |
| Hungary | 2 | 7 | 0 | 0 | **9** |
| Ireland | 9 | 2 | 1 | 3 | **15** |

[9] In this report the terms composite insurer and composite insurance undertaking denote insurance undertakings pursuing life and non-life insurance activities.

| | | | | | |
|---|---|---|---|---|---|
| Italy | 12 | 5 | 0 | 0 | **17** |
| Latvia | 0 | 1 | 1 | 0 | **2** |
| Liechtenstein | 5 | 0 | 2 | 0 | **7** |
| Lithuania | 2 | 1 | 1 | 0 | **4** |
| Luxembourg | 8 | 0 | 1 | 1 | **10** |
| Malta | 2 | 1 | 1 | 0 | **4** |
| Netherlands | 6 | 0 | 4 | 2 | **12** |
| Norway | 1 | 2 | 0 | 0 | **3** |
| Poland | 4 | 0 | 1 | 0 | **5** |
| Portugal | 4 | 1 | 0 | 0 | **5** |
| Romania | 1 | 3 | 0 | 0 | **4** |
| Slovakia | 1 | 3 | 0 | 0 | **4** |
| Slovenia | 0 | 5 | 0 | 1 | **6** |
| Spain | 8 | 10 | 1 | 1 | **20** |
| Sweden | 4 | 3 | 1 | 1 | **9** |
| United Kingdom | 11 | 1 | 3 | 1 | **16** |
| **Total** | **199** | **94** | **33** | **10** | **336** |

**Table 2. Market share of the sample of participants**

| Country | Life insurance | Non-life insurance | Re-insurance |
|---|---|---|---|
| Austria | 79% | 44% | - |
| Belgium | 83% | 81% | 100% |
| Croatia | 81% | 58% | - |
| Cyprus | 85% | 4% | - |
| Czech Republic | 99% | 95% | - |
| Denmark | 74% | 44% | - |
| Estonia | 85% | 77% | - |
| Finland | 89% | 92% | - |
| France | 78% | 37% | 31% |
| Germany | 100% | 0% | 0% |
| Greece | 88% | 32% | - |
| Hungary | 74% | 74% | - |
| Ireland | 70% | 61% | 49% |
| Italy | 77% | 59% | - |
| Latvia | 80% | 34% | - |
| Liechtenstein | 68% | 38% | - |
| Lithuania | 98% | 54% | - |
| Luxembourg | 76% | 24% | 61% |
| Malta | 93% | 30% | - |
| Netherlands | 88% | 29% | 99% |
| Norway | 84% | 0% | - |
| Poland | 80% | 36% | 33% |

| Country | Life insurance | Non-life insurance | Re-insurance |
|---|---|---|---|
| Portugal | 81% | 32% | - |
| Romania | 77% | 28% | - |
| Slovakia | 77% | 74% | - |
| Slovenia | 83% | 64% | 66% |
| Spain | 82% | 23% | 73% |
| Sweden | 71% | 56% | 44% |
| United Kingdom | 74% | 42% | 23% |

119. Undertakings from Iceland are not included in the sample because there are no material long-term insurance liabilities in Iceland. The Icelandic insurance market did also not participate in EIOPA's 2016 insurance stress test.

120. The sample does not include undertakings from Bulgaria because of the balance sheet review of the Bulgarian insurance sector that was carried out in parallel to the information request. Bulgarian life insurers participated in EIOPA's 2016 insurance stress test. According to the results of the stress test the Bulgarian life insurance market is less exposed to changes in long-term interest rates.[10]

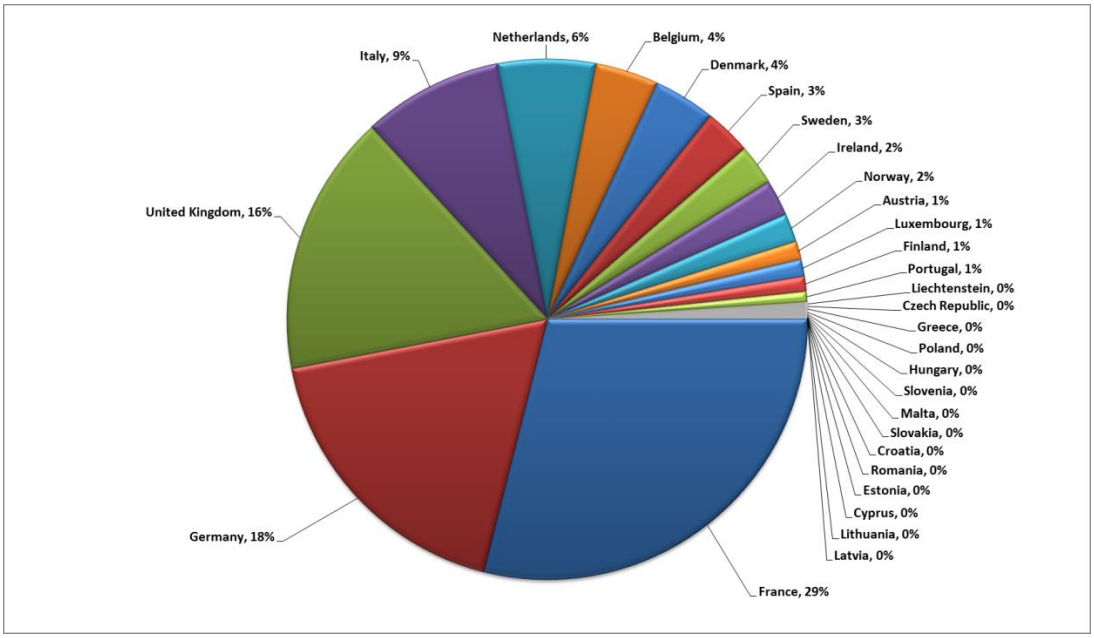
121. The German supervisory authority decided to include all German life insurance undertakings in the information request. The German sample does not include non-life insurance undertakings or reinsurance undertakings. According to the assessment of the German supervisory authority these undertakings are not materially exposed to changes of the UFR because of the lower duration of their liabilities.

122. For many countries no reinsurer was included in the sample because there is no relevant national reinsurance market.

123. Figure 2 shows the composition of the sample by country. The share of each country is measured in the amount of technical provisions. The main markets are France (29% of the overall technical provisions of the sample), Germany (18%), the United Kingdom (16%), Italy (9%) and the Netherlands (6%).

[10] See figure 31 on page 29 of the 2016 EIOPA insurance stress test report (https://eiopa.europa.eu/Publications/Surveys/EIOPA-BOS-16-302%20Insurance%20stress%20test%202016%20report.pdf).

**Figure 2. Composition of the sample by country (as share of overall technical provisions)**




124. From the 336 undertakings that participated in the information request 267 derive their solvency capital requirement (SCR) by means of the standard formula, 43 by means of a partial internal model and 26 with a full internal model.

## 4.4 Overview of the results

125. A change of the UFR modifies the risk-free interest rate term structure used to calculate the technical provisions for obligations with longer maturities. Consequently there is a direct effect of a UFR change on the amount of these technical provisions. The change of the amount of technical provisions can also affect other elements of the prudential balance sheet of Solvency II.

126. Typical indirect effects are:

    a. The change in technical provisions results in a change in deferred taxes. In that case, an increase of technical provisions would result in an increase of deferred tax assets or a reduction of deferred tax liabilities.

    b. The change in technical provisions results in a change of eligible own funds. An increase of technical provisions would usually result

in a decrease of eligible own funds. The increase can be mitigated by the change of deferred taxes (see first bullet point).

c. The change in technical provisions results in a change of the SCR and MCR. An increase of technical provisions would usually lead to an increase in the SCR and the MCR.

127. Table 3 sets out the average[11] relative change of the balance sheet items, eligible own funds and the capital requirements in scenario 1 and 2.

**Table 3. Average relative change of balance sheet items, own funds and capital requirements**

| | Average relative change in scenario 1 | Average relative change in scenario 2 |
|---|---|---|
| **Assets** | | |
| Deferred tax assets | +1.1% | +2.8% |
| Other assets | 0.0% | 0.0% |
| **Liabilities** | | |
| Technical provisions | +0.10% | +0.24% |
| Deferred tax liabilities | -0.6% | -1.4% |
| Other liabilities | 0.0% | 0.0% |
| **Own funds** | | |
| Eligible own funds to cover the SCR | -0.6% | -1.5% |
| Eligible own funds to cover the MCR | -0.7% | -1.6% |
| **Capital requirements** | | |
| SCR | +0.3% | +0.7% |
| MCR | +0.4% | +0.9% |

128. The change of eligible own funds and SCR leads to a change of the SCR ratio. The SCR ratio is the ratio of eligible own funds to cover the SCR and the SCR. In order to comply with the SCR, the SCR ratio needs to be at least 100%. Figure 3 sets out the average SCR ratios under the baseline and under scenarios 1 and 2. Figure 4 shows the average MCR ratios, being the ratio of eligible own funds to cover the MCR and the MCR. In order to comply with the MCR, the MCR ratio needs to be at least 100%.

[11] All averages of ratios provided in this section are weighted averages. The denominators of the ratios are used as weights.

**Figure 3: Average SCR ratios**

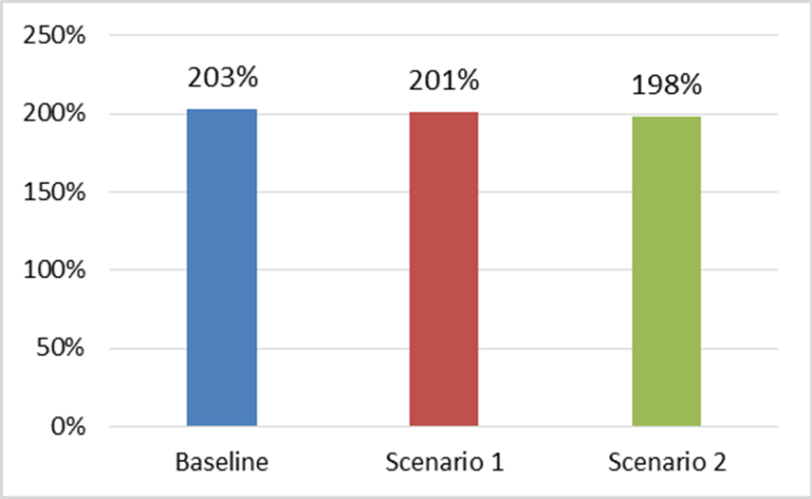
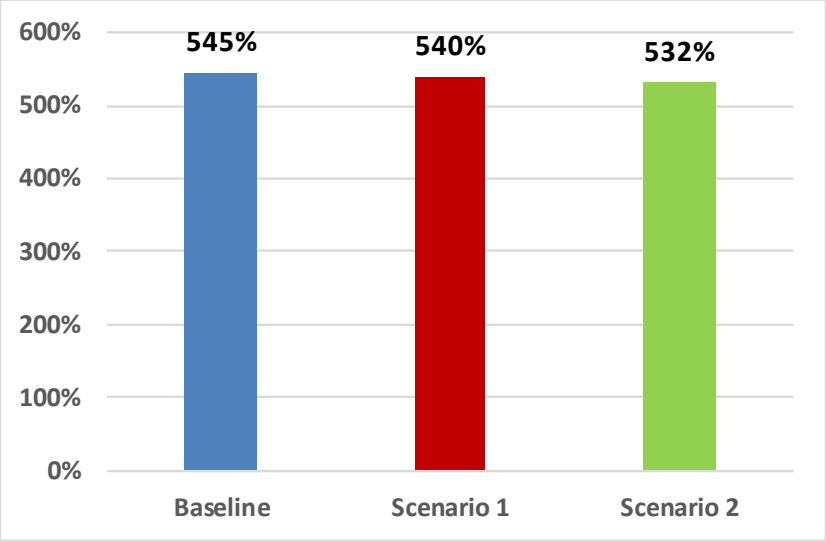


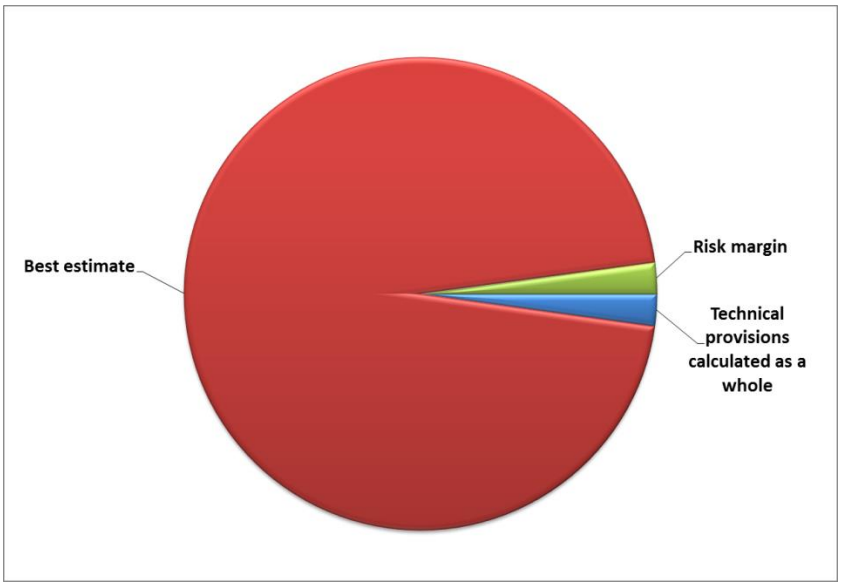

**Figure 4: Average MCR ratios**




## 4.5 Impact on technical provisions

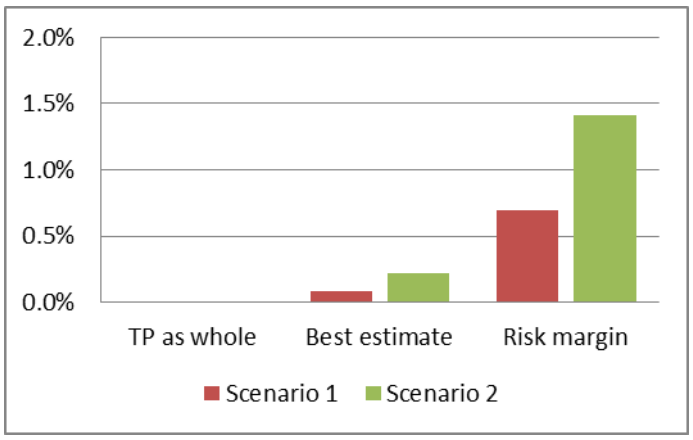
129. Technical provisions under Solvency II can consist of three components: the best estimate, the risk margin and technical provisions calculated as a whole. The best estimate constitutes the main part of the technical provisions in the sample (96%). The risk margin accounts for 2% of technical provisions. 2% of technical provisions were valued as a whole (see figure 5).

**Figure 5. Composition of technical provisions**




130. The impact of UFR changes on the components of technical provisions differs, as illustrated by figure 6. On average the relative change of the risk margin is higher than for the best estimate. The risk margin is discounted with the risk-free interest rates and its size depends on the SCR. When the discount rates decrease and the SCR then typically increases, the risk margin is affected by both changes. The technical provisions calculated as a whole are not discounted and therefore not affected by a change of the UFR.

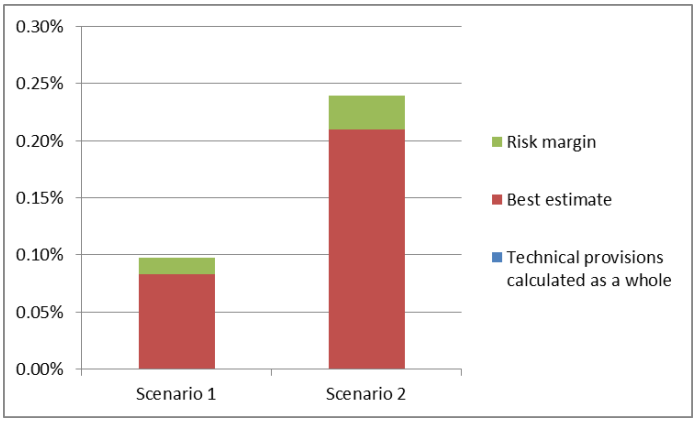
**Figure 6. Average relative change of components of technical provisions**




131. The overall increase of technical provisions is driven by the increase of the best estimate because the risk margin is only a small part of the technical provisions. This is illustrated in figure 7 that shows the average relative

increase of the technical provisions split into the contributions from the three components of technical provisions. (The component for technical provisions calculated as a whole is not visible because it does not contribute to the overall change.)

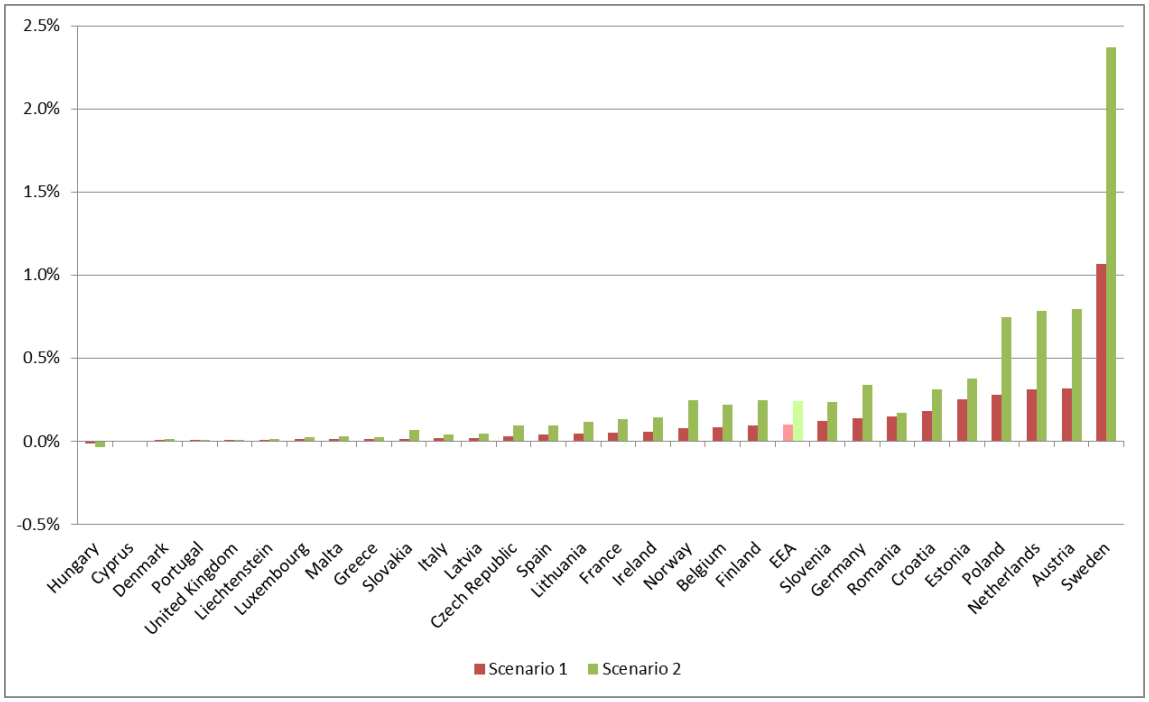
**Figure 7. Average relative change of technical provisions split into changes by components**




132. The impact of UFR changes on the amount of technical provisions differs across countries. Figure 7 shows the average relative increase of technical provisions by countries. The size of the impact depends in particular on the extrapolation parameters for the currencies of the countries and on the nature and duration of the insurance business done in the national markets. With regard to the extrapolation parameters see also section 4.2 of the consultation paper. For example, for the risk-free interest rates of the Swedish krona the extrapolation starts after maturity 10 years and forward rates approximately reach the UFR at maturity 20 years. In contrast, for the pound sterling the extrapolation starts at maturity 50 years and forward rates approximately reach the UFR at the maturity of 90 years. Consequently, only pound sterling insurance liabilities of maturities over 50 years are affected by UFR changes, while Swedish krona insurance liabilities with maturities over 10 years are affected.

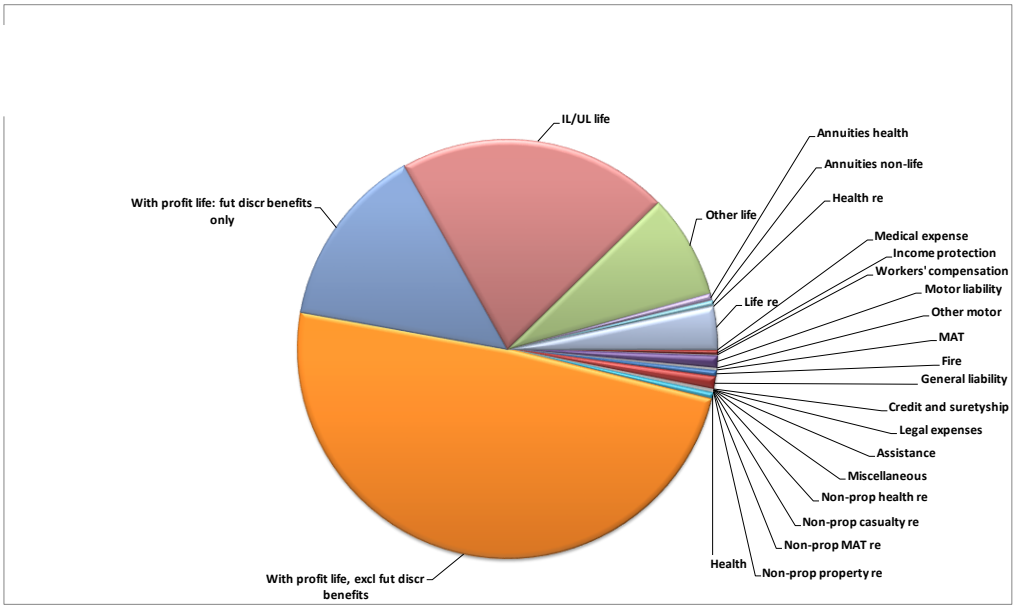
133. For some currencies scenarios 1 and 2 envisage an increase of the UFR. The Hungarian forint is the only EEA currency for which such an UFR increase is provided. Consequently, the technical provisions of Hungarian insurance undertakings decrease on average.

**Figure 8. Average relative change of technical provisions by country**




134. Figure 9 shows the composition of technical provisions by line of business. The main line of business is with-profit life insurance (63%). In the figure, the technical provisions for that line of business are provided separately for future discretionary benefits and other benefits. Index and unit-linked life insurance (21%) and other life insurance (8%) are also important lines of business. The lines of business of non-life insurance constitute only a very small part of the overall technical provisions.

**Figure 9. Composition of technical provisions by line of business**



135. Technical provisions for different lines of business are affected differently by UFR changes. Figure 10 sets out the average relative increase of technical provisions by line of business. The differences can be explained in particular by different durations of the insurance business. Information on the distribution of durations by line of business can be found in the section 4.12. The lines of business most affected are health insurance that is pursued on a similar technical basis to that of life insurance, with-profit life insurance and annuities stemming from health insurance and from non-life insurance contract. The figure also shows that the value of future discretionary benefits included in the technical provisions of with-profit insurance decreases in the scenarios. This has a mitigating effect on the overall increase of technical provisions.

**Figure 10. Average relative increase of technical provisions by line of business**

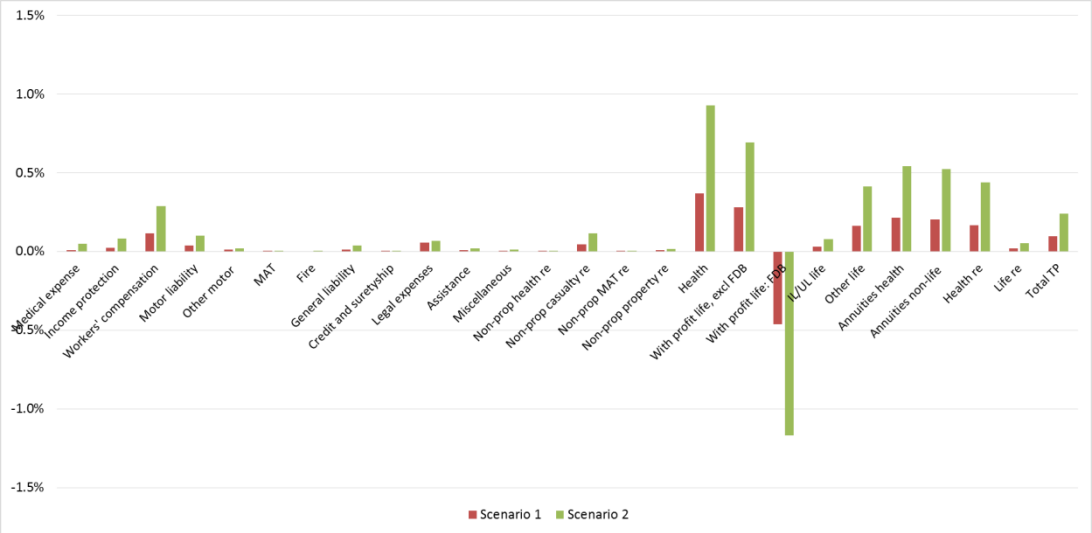
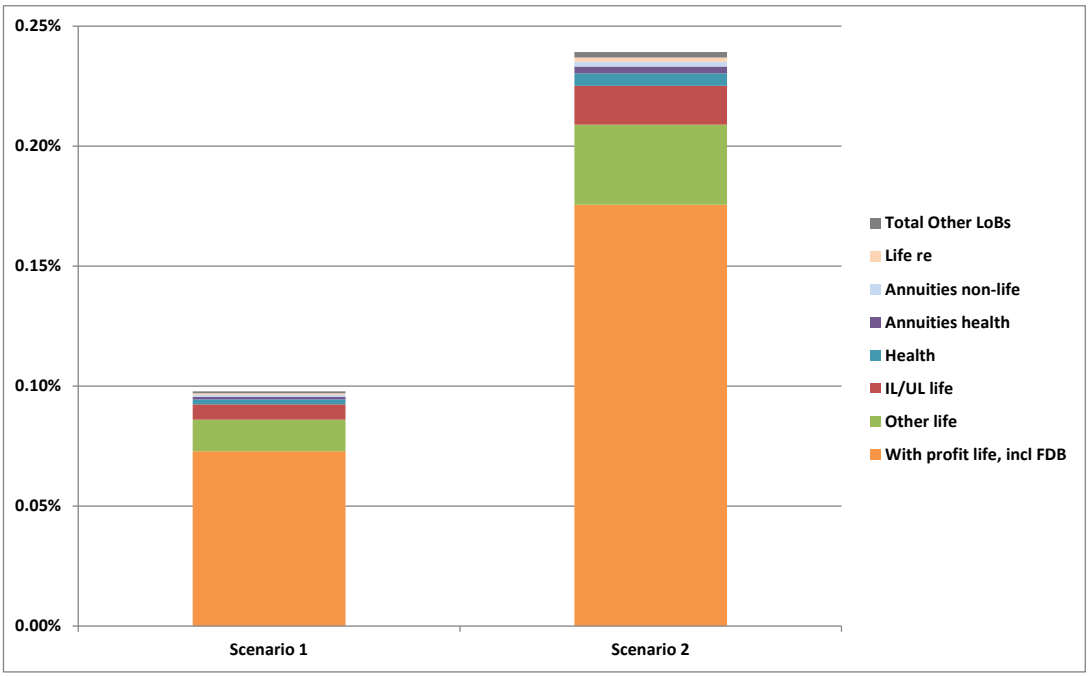


**Figure 11. Average relative change of technical provisions split into changes by lines of business**




136. Figures 12 and 13 show the average relative increase of the best estimate and the risk margin by line of business. The increase patterns observed at the level of the best estimate and at the level of the risk are similar to the pattern for the overall technical provisions. The relative increases of the risk margins are more pronounced than the relative increases of the best estimate.

**Figure 12. Average relative increase of the best estimate by line of business**

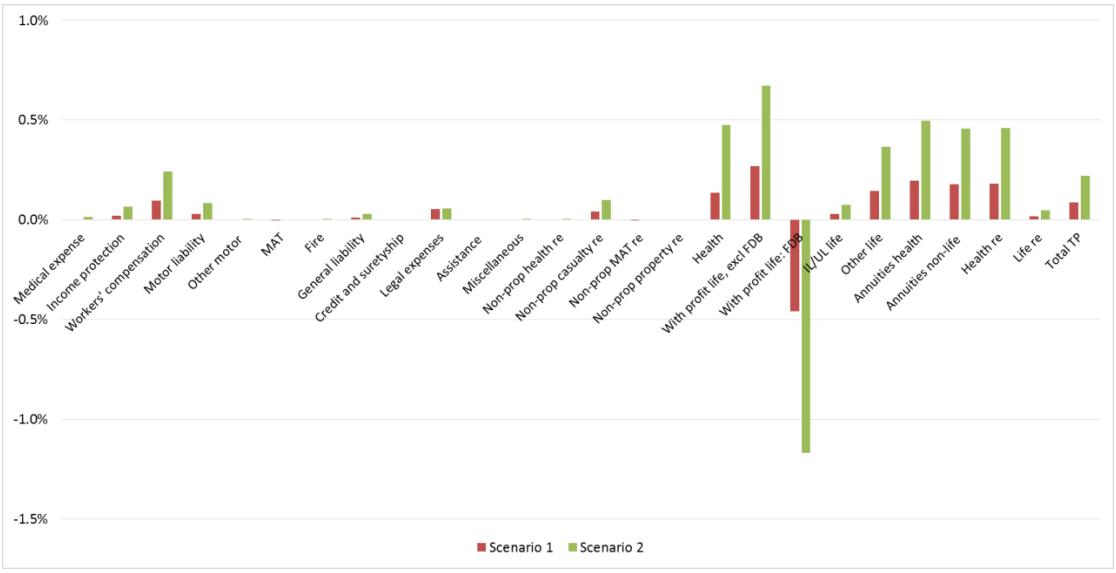
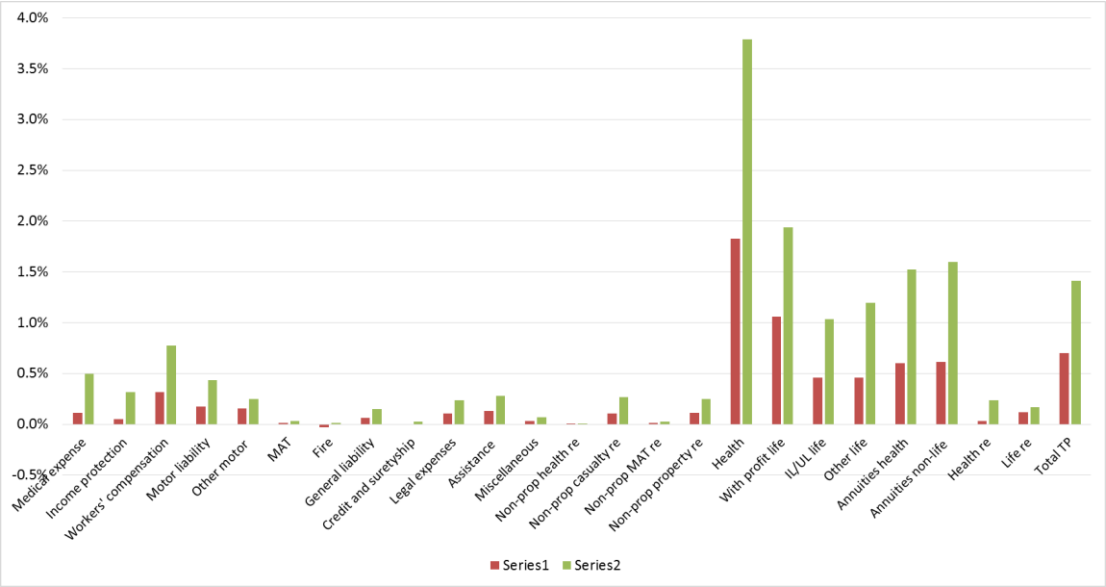
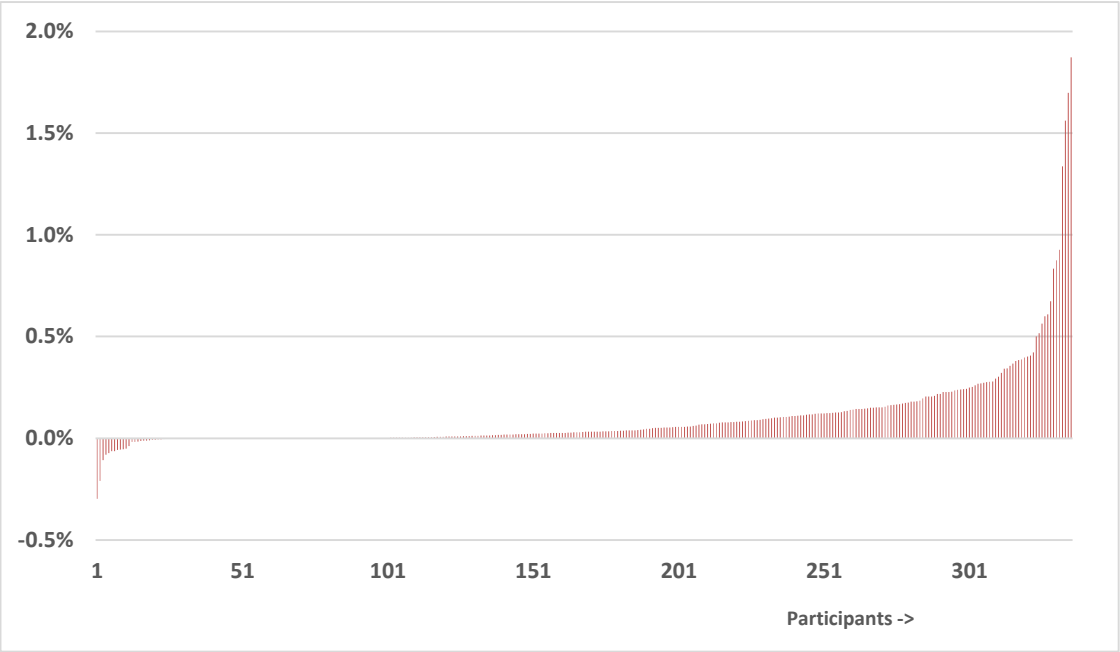


**Figure 13. Average relative increase of the risk margin by line of business**




137. The relative increase of technical provisions per undertaking is shown in figure 14. The participants are ordered by the size of the increase. For half of the participants the increase is below or equal 0.03% and for 75% of the participants below or equal 0.12%. 3.9% of the participants reported an increase above 0.5%, the maximum increase is 1.87%. Decreases of technical provisions were mainly reported by Hungarian participants. For the Hungarian forint the scenarios envisage an increase of the UFR. Another reason for decreasing technical provisions of some participants is that the lines of business mainly affected by UFR changes have negative technical provisions which decrease when the UFR is decreased.

**Figure 14. Relative change of technical provisions by participant (scenario 1)**




## 4.6 Mitigating effect of the recalculation of the TP transitional

138. The impact of UFR changes measured in the information request does not take into account mitigating effects of the recalculation of the transitional measure on technical provisions (TP transitional). 88 of the 336 participating undertakings apply the TP transitional.

139. According to Article 308d of the Solvency II Directive insurance and reinsurance undertakings may apply the TP transitional. The TP transitional allows the undertakings to deduct a certain amount (transitional deduction) from their technical provisions during a transitional period of 16 years, from 2016 (start of Solvency II) to 2031. The transitional deduction is calculated as the difference between the technical provisions according to Solvency I and the technical provisions according to Solvency II. At the beginning of Solvency II, the effect of the transitional deduction is that the amount of technical provisions coincides with that of Solvency I. The amount of the transitional deduction is phased out during the transitional period.

140. The application of the TP transitional is subject to prior approval by the national supervisory authority. The supervisory authority may allow or require that the amounts of technical provisions used to calculate the transitional deduction are recalculated every 24 months, or more frequently where the risk profile of the undertaking has materially changed.

141. The recalculation of the transitional deduction may mitigate the impact of UFR changes on the amount of technical provisions. Where a change of the UFR results in an increase of the technical provisions according to Solvency

II, the recalculation may lead to an increase of the transitional deduction that partly compensates the increase of technical provisions. This mitigating effect could completely offset the impact of UFR changes at the beginning of the transitional period. Over the transitional period the mitigating effect would be phased out.

142. Whether there is a mitigating effect depends on the national approach to the recalculation. EIOPA has therefore asked the national supervisor authorities (NSAs) that have approved the use of the TP transitional about their supervisory practice. NSAs from 11 countries (AT, BE, DE, ES, FI, FR, GR, LI, NO, PT, UK) have described their approach to the recalculation.

143. Most NSAs consider that the recalculation would in principle have a mitigating effect on the impact of UFR changes. However, some NSAs report reasons why the mitigating effect is impaired in their jurisdiction.

144. NSAs usually allow for the recalculation every 24 months or in case of a material change of the risk profile (DE, ES, FR, GR, LI, PT) or even expect such a recalculation every 24 months (BE, FI, UK) or annually (NO). One NSA is sceptical about allowing for the recalculation (AT).

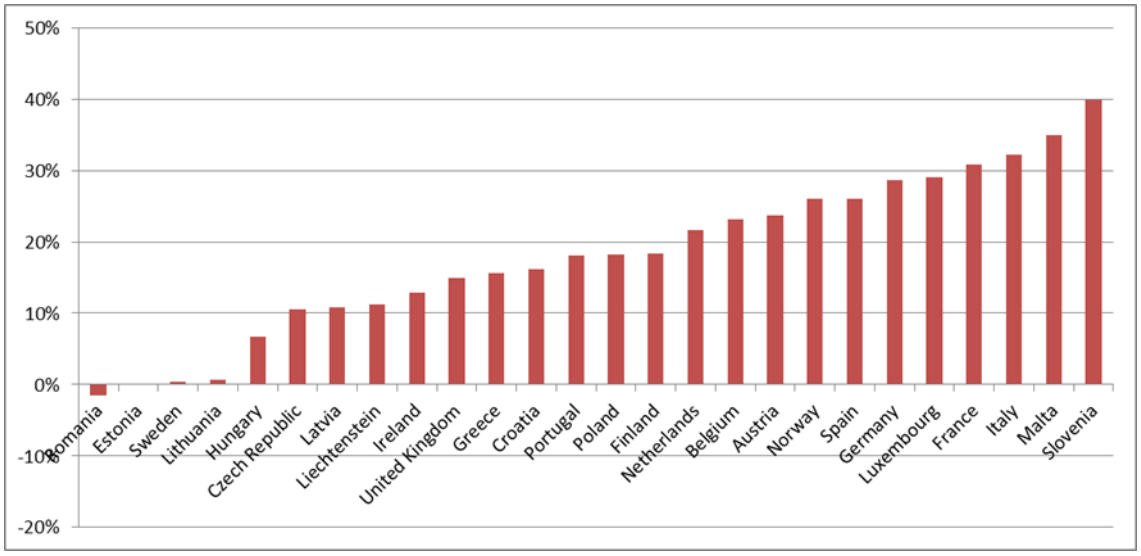
145. Several NSAs mention the negligible effects of UFR changes to Solvency II technical provisions (AT, GR, LI, PT, UK). Thus the overall effect (impact of UFR change after TP transitional mitigation) was also claimed to be minor. Three NSAs therefore conclude that the UFR changes cannot cause a material change in the risk profile of their undertakings (GR, PT, UK). Several NSAs reported, that it is not clear whether an adapted UFR alone would render a material change to an undertaking's risk profile (BE, DE, LI). Two NSA reject the idea that a change of the UFR can constitute a change of an undertaking's risk profile (FI, FR). This might nevertheless be subject to case-by-case assessment. Where the change of the UFR does not result in a material change of the undertaking's risk profile there may be a time gap between the UFR change and the recalculation of the transitional deduction that would delay the mitigating effect.

146. Due to national specificities four NSAs report that technical provisions according to Solvency I are expected to increase (AT, DE, LI, UK) over the next years. In one country (DE) the increase of Solvency I technical provisions is expected to outweigh the impact of the proposed UFR changes on Solvency II technical provisions. As a consequence the recalculation of the transitional deduction would in this particular case not have a mitigating effect on the impact of UFR decreases.

## 4.7 Impact on deferred taxes

147. Figure 15 illustrates the loss-absorbing effect of deferred taxes in scenario 1 by country. The increase of technical provisions is partly mitigated by an increase of deferred tax assets or a reduction of deferred tax liabilities. The figure shows the ratio of the increase in deferred taxes (deferred tax assets minus deferred tax liabilities) and the decrease of technical provisions. For example, a ratio of about 30% for France means that on average 30% of the increase of technical provisions of French participants was compensated by an increase in deferred taxes. Markets with very small average changes in technical provisions are not included in the diagram to avoid spurious numerical results.

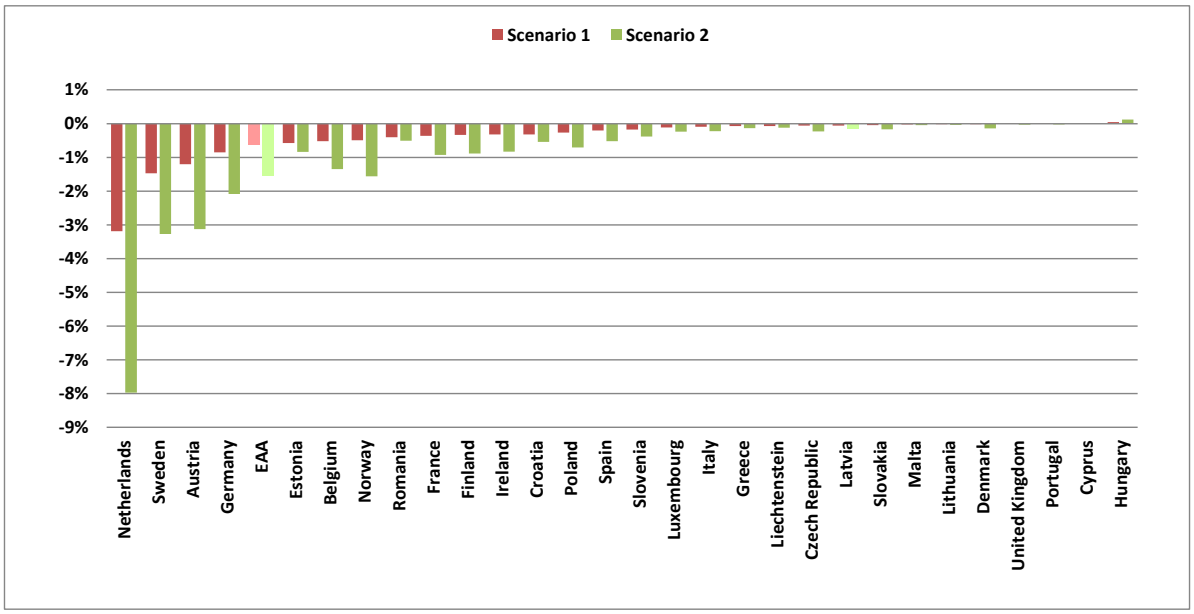
**Figure 15. Loss-absorbing effect of deferred taxes (Increase of deferred taxes by increase of technical provisions in scenario 1)**




## 4.8 Impact on own funds

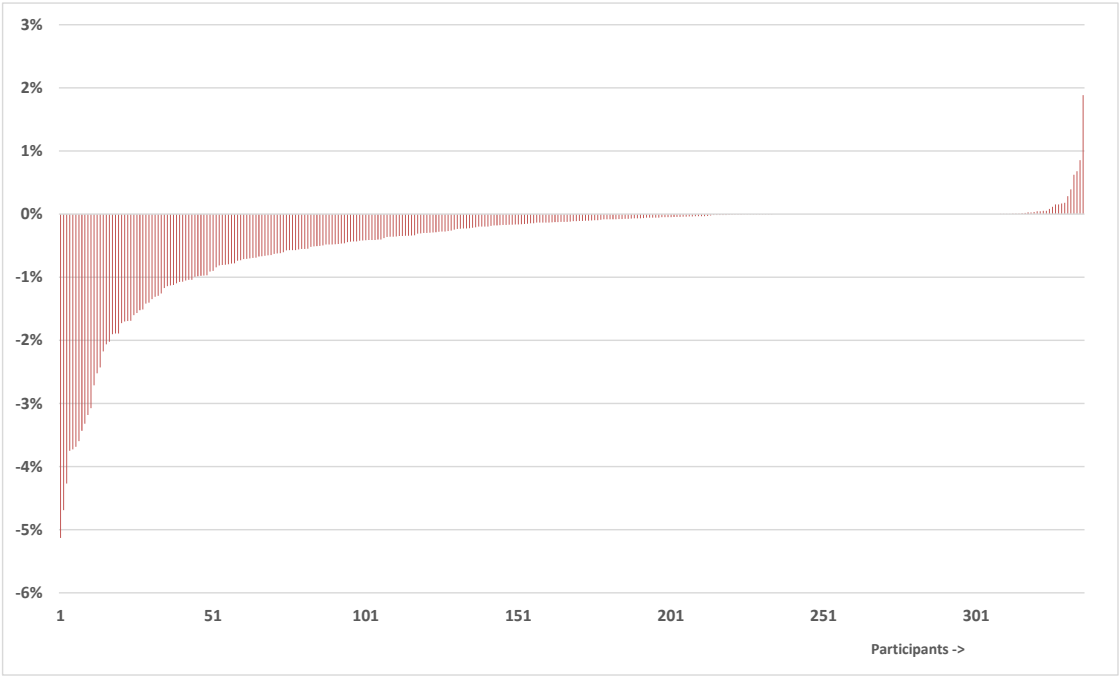
148. Figure 16 shows the average relative decrease of eligible own funds by country. The markets most affected are the Netherlands, Sweden, Austria and Germany. The differences between the countries can be traced back to differences in the increase of technical provisions in the scenarios, the loss absorbing capacity of deferred taxes and the overall amount of own funds. For example, Swedish insurers reported the highest relative increase of technical provisions (see figure 8), but this does not translate into the highest relative loss of own funds because of a comparably high level of own funds in the baseline.

**Figure 16. Average relative change of eligible own funds to cover the SCR by country**




149. The relative change of eligible own funds to cover the SCR per undertaking is shown in figure 17. The participants are ordered by the size of the change. For 75% of the participants the change is below or equal 0%, while for half of the participants the change is below or equal -0.12%. 5.1% of the participants reported a change below -2%, the maximum decrease is -5.13%.

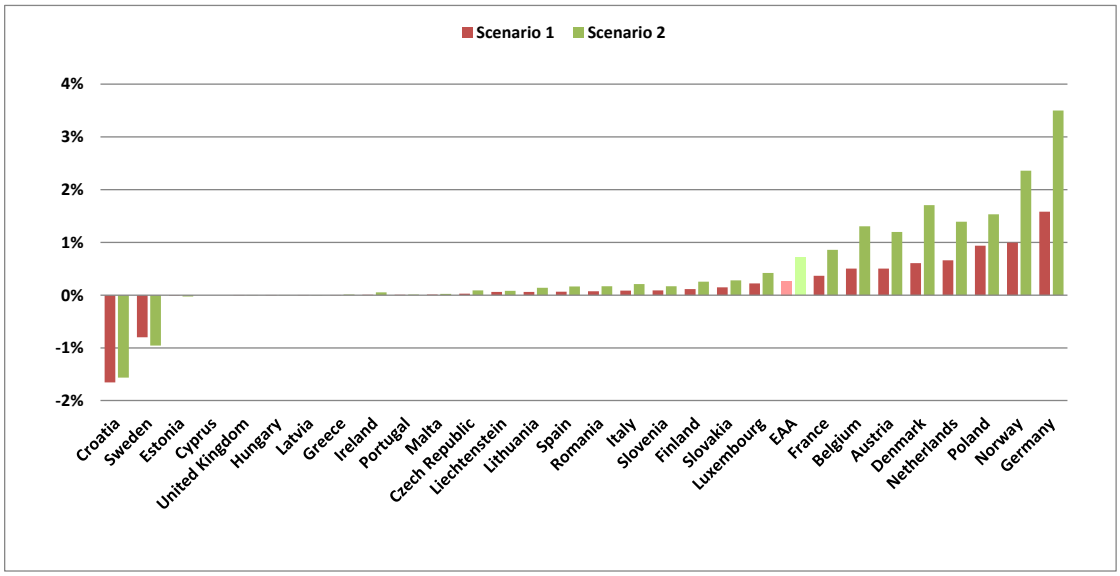
**Figure 17. Relative change of eligible own funds to cover the SCR by participant (scenario 1)**



## 4.9 Impact on the SCR

150. Figure 18 shows the average relative change of the SCR by country. A wide dispersion of the impact can be observed. The highest average impact was reported for Germany with increases of the capital requirement by about 1.6% in scenario 1 and 3.5% in scenario 2. An increase of the SCR can result from a decreased loss-absorbing capacity of deferred taxes (the increase in technical provisions leads to an increase of deferred tax assets or a decrease of deferred tax liabilities, cf. para. 147) or a decreased loss-absorbing capacity of technical provisions (because the value of future discretionary benefits included in the technical provisions of with-profit insurance decreases in the scenarios). For some countries an average reduction of the SCR can be observed. Reasons for a reduction of the SCR in the scenarios are reductions in lapse risk (the increase of technical provisions reduces the gap to the surrender values) and reductions in currency risk (the increase of technical provisions improves the currency matching of assets and liabilities). For the interest rate risk charge, the scenarios can lead to a reduction in interest rate risk (because of the relative shocks to the interest rates in the SCR standard formula) or to an increase (because of the lower level of the interest rates before and after shock).

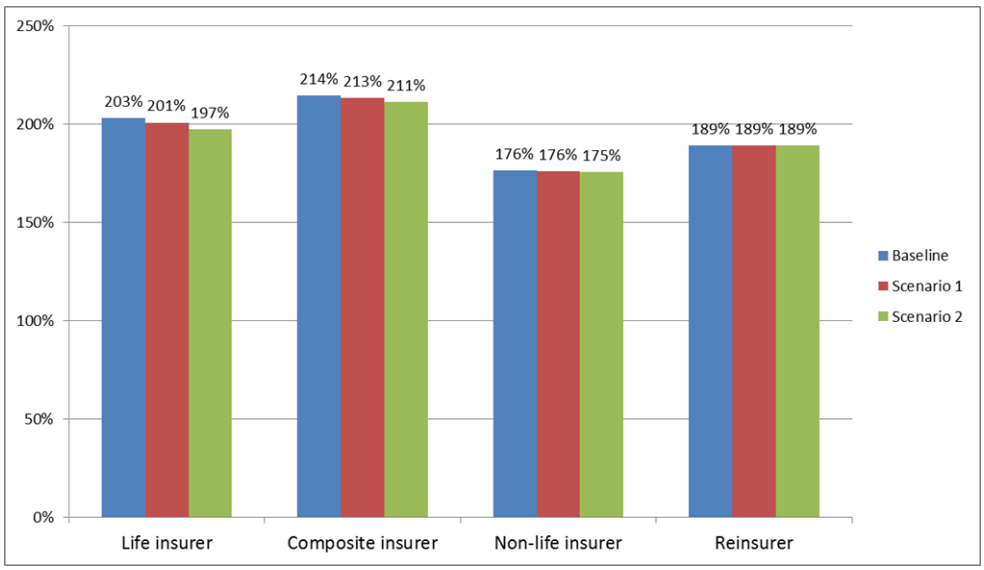
**Figure 18. Average relative change of the SCR by country**




## 4.10 Impact on the SCR ratio

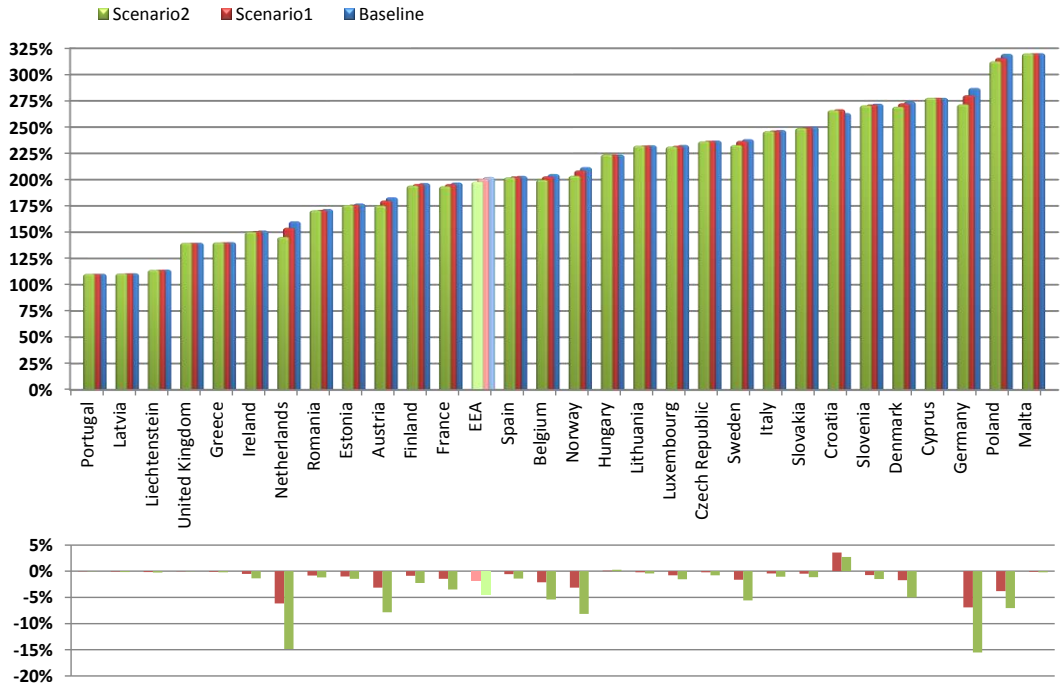
151. The impact of UFR changes depends on the type of undertaking. Figure 19 shows the average SCR ratios for life insurance, composite insurance, non-life and reinsurance undertakings. The impact of the two scenarios is most pronounced for life and composite insurance undertakings while non-life and reinsurance undertakings are less affected.

**Figure 19. Average SCR ratios by type of undertaking**




152. Figure 20 shows the average SCR ratios by country and, at the bottom, the change of the SCR ratio in the two scenarios. The countries are ordered by the size of their baseline SCR ratio. The strongest impact on the SCR ratio can be observed for Germany and the Netherlands. Also Norway, Austria, Poland and Sweden yield a higher impact. Compared to the level of the average SCR ratio the impact is small for all countries.

**Figure 20. Average SCR ratios by country**




153. Table 4 sets out the average SCR ratios in the base line and in the two scenarios by country.

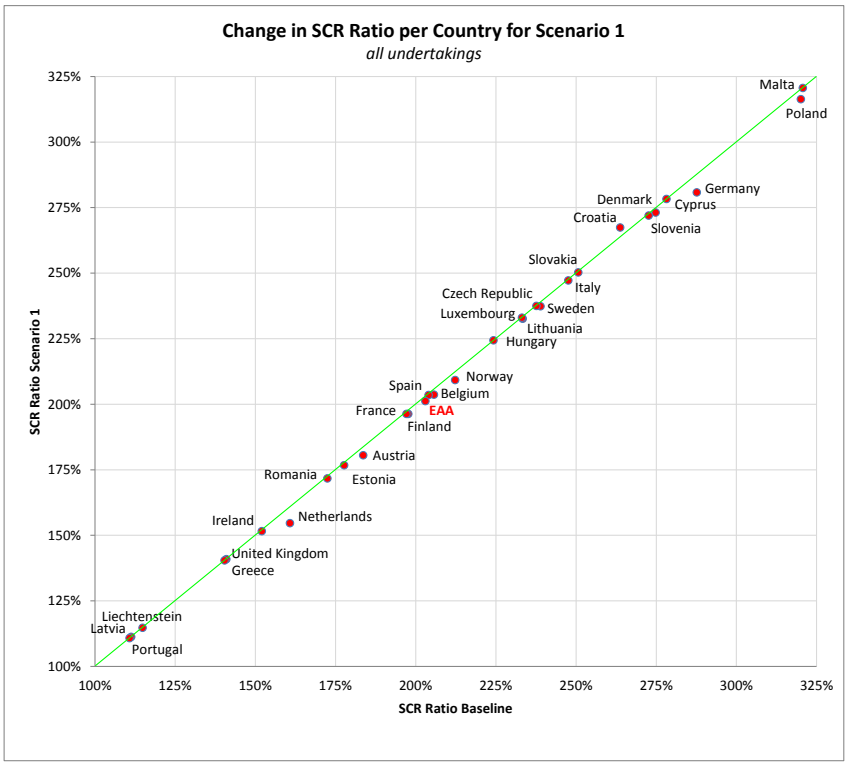
**Table 4. Average SCR ratios per country**

| Country | SCR ratio baseline | SCR ratio scenario 1 | SCR ratio scenario 2 |
|---|---|---|---|
| Austria | 184% | 181% | 176% |
| Belgium | 206% | 204% | 200% |
| Croatia | 264% | 267% | 267% |
| Cyprus | 278% | 278% | 278% |
| Czech Republic | 238% | 237% | 237% |
| Denmark | 275% | 273% | 270% |
| Estonia | 178% | 177% | 176% |
| Finland | 197% | 196% | 195% |
| France | 198% | 196% | 194% |
| Germany | 288% | 281% | 272% |
| Greece | 141% | 141% | 141% |

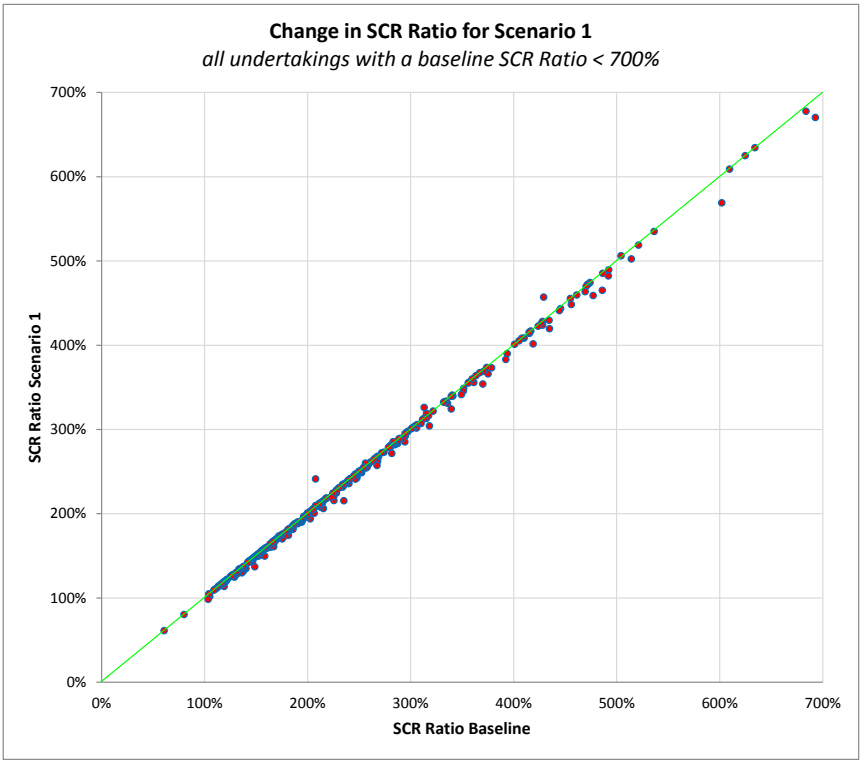
| Country | SCR ratio baseline | SCR ratio scenario 1 | SCR ratio scenario 2 |
|---|---|---|---|
| Hungary | 224% | 224% | 225% |
| Ireland | 152% | 152% | 151% |
| Italy | 248% | 247% | 247% |
| Latvia | 111% | 111% | 111% |
| Liechtenstein | 115% | 115% | 115% |
| Lithuania | 233% | 233% | 233% |
| Luxembourg | 233% | 233% | 232% |
| Malta | 321% | 321% | 320% |
| Netherlands | 161% | 155% | 146% |
| Norway | 212% | 209% | 204% |
| Poland | 320% | 316% | 313% |
| Portugal | 111% | 111% | 111% |
| Romania | 172% | 173% | 172% |
| Slovakia | 251% | 250% | 250% |
| Slovenia | 273% | 272% | 271% |
| Spain | 204% | 203% | 203% |
| Sweden | 239% | 237% | 233% |
| United Kingdom | 140% | 140% | 140% |
| **EEA** | **203%** | **201%** | **198%** |

154. Figure 21 shows the average SCR ratios in the baseline and in scenario 1. It is the same information as in figure 20, but presented differently. Each country is placed in the figure according to its average SCR ratio in the baseline (horizontal position) and its average SCR ratio in scenario 1 (vertical position). For countries on the green diagonal the average SCR ratio in the baseline and in scenario 1 coincide. For countries below the diagonal the average SCR ratio in scenario 1 is lower than in the baseline. This way of presentation also allows to show the SCR ratios for many individual participants in one picture, see figure 22. Each dot represents one undertaking. For presentational purposes only participants with an SCR ratio up to 700% are shown. The SCR ratio is quite resilient to the changes of the UFR in scenario 1 (the dots are all close to the diagonal). Only for few undertakings a stronger impact can be observed (their points are further away from the diagonal). These undertakings all have SCR ratios that are high compared to the changes incurred.

## Figure 21. Average SCR ratios by country in the baseline and scenario 1




## Figure 22. Average SCR ratios by participant in the baseline and scenario 1



155. Figures 23 and 24 present the impact of scenario 2 on the SCR ratios. The impact is stronger than under scenario 1, but is still quite small.

**Figure 23. Average SCR ratios by country in the baseline and scenario 2**

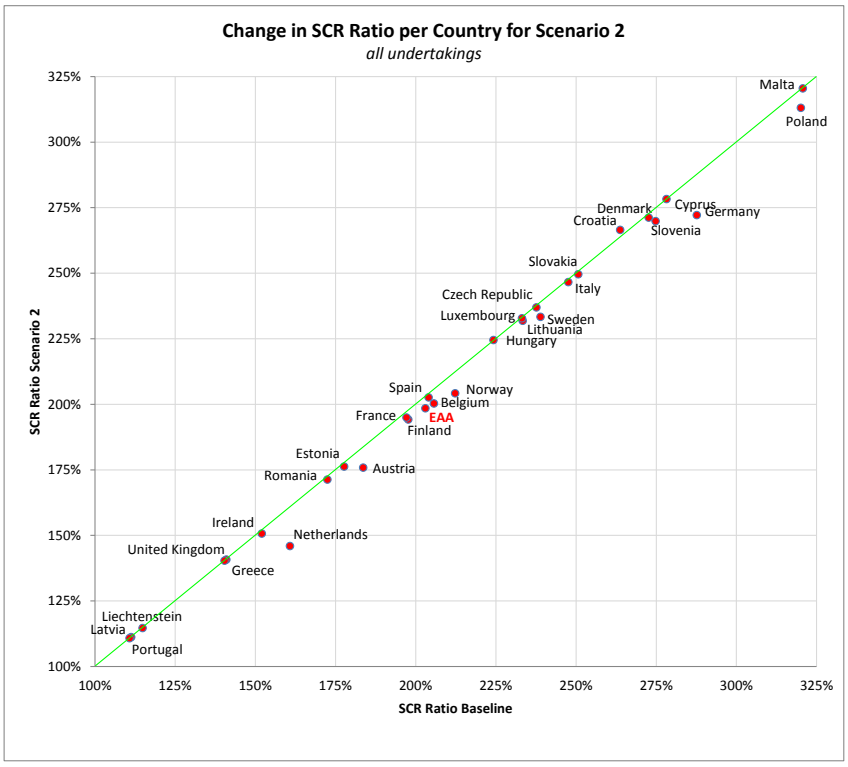
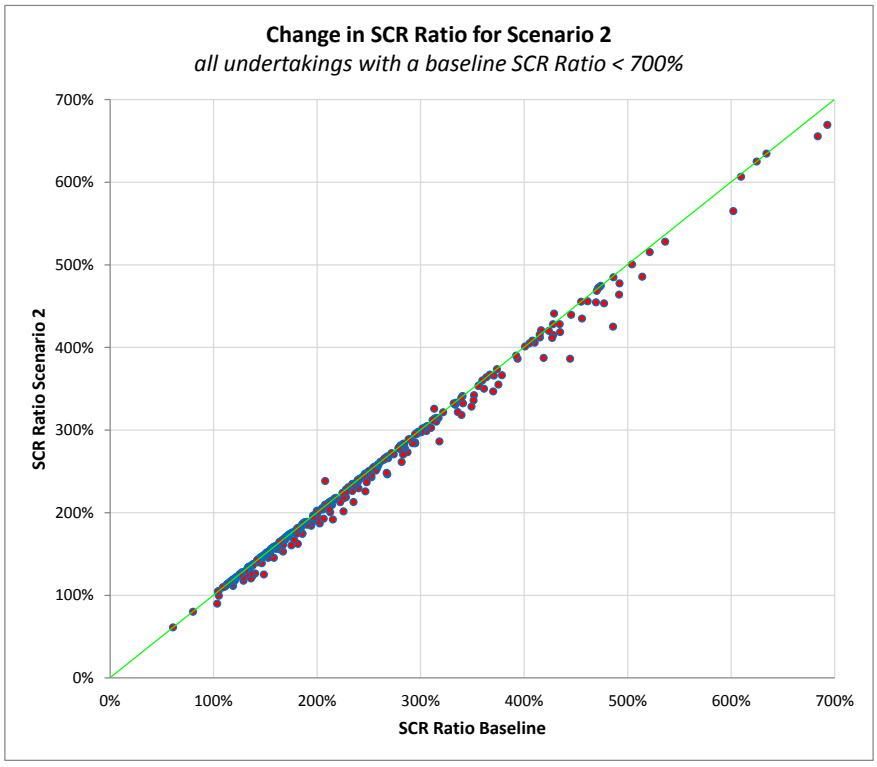



**Figure 24. Average SCR ratios by participant in the baseline and scenario 2**



156. The solvency position of almost all participants remains unchanged in scenarios 1 and 2. In the baseline, 334 undertakings comply with the SCR while 2 undertakings do not. In scenarios 1 and 2 two additional undertakings fail to comply with the SCR. These undertakings were already close to a breach of the SCR in the baseline with SCR ratios of 103% and 105%. For all other participants the tested changes of the UFR have no impact on their solvency position.

**Table 5. SCR compliance**

| | Baseline | Scenario 1 | Scenario 2 |
|---|---|---|---|
| **Participants complying with the SCR** | 334 | 332 | 332 |
| **Participants not complying with the SCR** | 2 | 4 | 4 |
| **Total** | 336 | 336 | 336 |

## 4.11 Movement analysis for the SCR ratios

157. This section sets out a conceptual framework for analysing the drivers of the change in SCR ratio in the scenarios. For that purpose the change of SCR ratio (in percentage points) is allocated to the changes in assets, liabilities, own funds and the SCR. This decomposition allows comparing the underlying drivers of the SCR ratio change and their contribution to the amount of the change.

158. The analysis shows in particular that the average change of the SCR ratio in scenario 1 of 1.83 percentage points stems mainly from an increase of technical provisions (accounting for 1.55 percentage points change of the SCR ratio) and an increase of the SCR (0.54 percentage points). The reduction of deferred tax liabilities and the increase of deferred tax assets mitigate the change by 0.16 and 0.13 percentage points respectively. Other drivers have a negligible impact.

159. The contribution to the SCR ratio change of 1.55 percentage points that stems from the increase of technical provisions can be further decomposed. The change can be traced back to the increase of the best estimate for life insurance (2.33 percentage points) and the increase of the risk margin for life insurance (0.23 percentage points). The decrease of future discretionary benefits reduces the increase of technical provisions. That

effect reduces the increase of the SCR ratio by 1.00 percentage points. Other drivers have a negligible impact.

160. The SCR ratio for scenario *i* is denoted by $SR_i$ according to the following definition:

$$SR_i = \frac{EOF_i}{SCR_i} \times 100\% \quad (1)$$

where:

*i* : b (baseline scenario), 1 (scenario 1) or 2 (scenario 2)

$EOF_i$ : Eligible Own Funds for scenario *i*

$SCR_i$ : SCR for scenario *i*

161. In addition to these variables the following variables for items of the balance sheet can be defined:

**Table 6. Definition of variables**

| Liabilities | Baseline | Scenario 1 | Scenario 2 |
|---|---|---|---|
| Technical provisions (net of reinsurance) | $TP_b$ | $TP_1$ | $TP_2$ |
| Deferred tax liabilities | $DTL_b$ | $DTL_1$ | $DTL_2$ |
| Liabilities other than technical provisions and deferred tax liabilities | $OL_b$ | $OL_1$ | $OL_2$ |

| Assets | Baseline | Scenario 1 | Scenario 2 |
|---|---|---|---|
| Deferred tax assets | $DTA_b$ | $DTA_1$ | $DTA_2$ |
| Assets other than reinsurance recoverables and deferred tax assets | $OA_b$ | $OA_1$ | $OA_2$ |

| Own funds and capital requirements | Baseline | Scenario 1 | Scenario 2 |
|---|---|---|---|
| SCR | $SCR_b$ | $SCR_1$ | $SCR_2$ |
| Total eligible own funds to meet the SCR | $EOF_b$ | $EOF_1$ | $EOF_2$ |
| SCR Ratio | $EOF_b/SCR_b \times 100\%$ | $EOF_1/SCR_1 \times 100\%$ | $EOF_2/SCR_2 \times 100\%$ |

162. The following equation for scenario *i* can be defined:

$$OA_i + DTA_i - (TP_i + OL_i + DTL_i) = EOF_i + NOOF_i \quad (2)$$

where:

$NOOF_i$ : Net Other Own Funds for scenario *i.*

163. The left hand side of equation (2) equals the excess of assets over liabilities. However not all of the excess of assets over liabilities may be eligible, where at the same time there may be "*other available own funds"* like for instance ancillary own funds. Therefore the balancing item "*Net*

*Other Own Funds"* to arrive at equation (2) is introduced. The net other own funds for scenario *i* can be seen as the difference of non-eligible own funds for scenario *i* ($NEOF_i$) and other available own funds for scenario *i* ($OAOF_i$). To explain this approach the eligible own funds are written in terms of the excess of assets over liabilities, non-eligible own funds plus other available own funds, i.e.:

$$EOF_i = OA_i + DTA_i - (TP_i + OL_i + DTL_i) - NEOF_i + OAOF_i \quad (3)$$

164. Combining equations (2) and (3) it follows immediately that:

$$NOOF_i = NEOF_i - OAOF_i \quad (3)$$

165. For the rest of this section the focus is on the analysis of the change in SCR ratio from the baseline scenario to scenario 1, i.e.:

$$\Delta SR = SR_1 - SR_b = \frac{EOF_1}{SCR_1} - \frac{EOF_b}{SCR_b} \quad (4)$$

Note: for ease of notation the multiplication with 100% is left out the left hand side of equation (4), however it should be kept in mind that $\Delta SR$ is measured in terms of %-points SCR ratio.

166. Now equation (4) could equally be written as:

$$\Delta SR = \frac{EOF_1}{SCR_1} - \frac{EOF_b}{SCR_b} + \frac{EOF_1}{SCR_b} - \frac{EOF_1}{SCR_b} \quad (5)$$

167. As the last two terms at the right hand side of equation (5) are equal, the net effect of adding and subtracting the same term is zero.

Rearranging terms the following equation can be derived:

$$\Delta SR = \frac{EOF_1 - EOF_b}{SCR_b} + EOF_1 \cdot \left(\frac{1}{SCR_1} - \frac{1}{SCR_b}\right) \quad (6)$$

168. The first term of the right hand side of equation (6) can be seen as the part of the change in the SCR ratio (under the baseline required solvency capital) due to a change in eligible own funds, while the second term can be seen as the part of the change in the SCR ratio, based on the eligible own funds for scenario 1, due to a change in the SCR.

169. Using equation (2) to substitute for the $EOF_b$- and $EOF_1$- terms in the left term of the right hand side of equation (6) and rearranging terms yields the following:

$\Delta SR =$

(7)

$$\frac{OA_1 - OA_b}{SCR_b} + \frac{DTA_1 - DTA_b}{SCR_b} - \frac{TP_1 - TP_b}{SCR_b} - \frac{OL_1 - OL_b}{SCR_b} - \frac{DTL_1 - DTL_b}{SCR_b} - \frac{NOOF_1 - NOOF_b}{SCR_b}$$

$$+ EOF_1 \cdot \left(\frac{1}{SCR_1} - \frac{1}{SCR_b}\right)$$

Equation (7) shows how the change in SCR ratio is driven by changes in respective balance sheet items.

170. Based on the submitted data EIOPA has implemented equation (7) both on the individual undertaking level as well as on the grouped country level. For the grouped country level the results are presented in the following table.

| Analysis of Change in SCR Ratio for Scenario1 | ΔScrRatio1 (in %-pts) | ΔScrRatio1 DTA (in %-pts) | ΔScrRatio1 OA (in %-pts) | ΔScrRatio1 TP (in %-pts) | ΔScrRatio1 DTL (in %-pts) | ΔScrRatio1 OL (in %-pts) | ΔScrRatio1 NOOF (in %-pts) | ΔScrRatio1 SCR (in %-pts) | |
|---|---|---|---|---|---|---|---|---|---|
| Germany | -6.89% | 0.41% | -0.03% | -3.45% | 0.58% | 0.00% | 0.05% | -4.44% | |
| Netherlands | -6.15% | 1.16% | -0.03% | -5.40% | 0.00% | 0.00% | -0.86% | -1.02% | |
| Poland | -3.81% | | | -1.08% | 0.19% | | 0.00% | -2.97% | |
| Norway | -3.12% | 0.21% | | -1.34% | 0.13% | | -0.05% | -2.08% | |
| Austria | -3.12% | 0.29% | 0.15% | -3.09% | 0.44% | | 0.00% | -0.91% | |
| Belgium | -2.09% | | 0.00% | -1.46% | 0.34% | 0.00% | 0.05% | -1.02% | |
| Denmark | -1.70% | | | -0.02% | -0.03% | 0.01% | -0.01% | -1.66% | |
| Sweden | -1.61% | | | -3.52% | 0.01% | 0.00% | 0.00% | 1.90% | |
| France | -1.43% | 0.05% | 0.05% | -1.10% | 0.29% | 0.00% | 0.00% | -0.72% | |
| Estonia | -1.00% | | | -1.07% | | | 0.05% | 0.02% | |
| Finland | -0.88% | | -0.02% | -0.94% | 0.17% | 0.00% | 0.14% | -0.23% | |
| Romania | -0.81% | 0.00% | | -0.68% | -0.01% | | 0.00% | -0.12% | |
| Luxembourg | -0.78% | 0.03% | 0.05% | -0.21% | 0.08% | -0.02% | -0.18% | -0.51% | |
| Slovenia | -0.73% | 0.00% | -0.06% | -0.71% | 0.28% | 0.00% | 0.00% | -0.25% | |
| Spain | -0.54% | 0.12% | | -0.54% | 0.02% | | -0.01% | -0.13% | |
| Ireland | -0.50% | 0.00% | 0.01% | -0.57% | 0.07% | 0.00% | 0.00% | -0.01% | |
| Slovakia | -0.48% | | 0.00% | -0.10% | -0.01% | | 0.01% | -0.37% | |
| Italy | -0.44% | 0.02% | -0.01% | -0.32% | 0.08% | 0.00% | 0.00% | -0.21% | |
| Czech Republic | -0.21% | | | -0.16% | 0.02% | | 0.00% | -0.06% | |
| Lithuania | -0.19% | 0.00% | 0.07% | -0.24% | | | 0.12% | -0.15% | |
| Liechtenstein | -0.15% | 0.01% | | -0.16% | 0.01% | | 0.06% | -0.07% | |
| Malta | -0.11% | | | -0.13% | 0.05% | | 0.00% | -0.03% | |
| Greece | -0.11% | 0.02% | 0.00% | -0.10% | 0.00% | | -0.02% | -0.01% | |
| Latvia | -0.07% | | | -0.09% | 0.01% | | 0.01% | 0.00% | |
| Portugal | -0.02% | 0.00% | | -0.02% | | | 0.00% | -0.01% | |
| United Kingdom | -0.02% | 0.00% | 0.00% | -0.02% | 0.00% | 0.00% | 0.00% | 0.00% | |
| Cyprus | | | | | | | | | |
| Hungary | 0.11% | | | 0.16% | -0.01% | | -0.04% | 0.00% | |
| Croatia | 3.58% | 0.11% | -0.01% | -1.01% | 0.05% | 0.44% | -0.42% | 4.42% | |
| EEA | -1.83% | 0.13% | 0.01% | -1.55% | 0.16% | 0.00% | -0.04% | -0.54% | |

171. One of the main drivers of the decrease in the solvency ratio is the change in technical provisions (TP). For most countries scenario 1 is a decrease of the level of the UFR of 20 basis points. As a result the technical provisions are expected to increase resulting in a decrease (ceteris paribus) of the eligible own funds.

172. As one of the reporting templates provides information about the changes in technical provisions per line of business it is possible to extent the analysis from the table above by extending equation (7) accordingly. The third term on the right hand side of equation (7) reads:

$$-\frac{TP_1 - TP_b}{SCR_b} \tag{8}$$

173. The technical provisions in their contributing parts over all line of businesses can be split as follows:

$$TP_i = \sum_{k \in \{LoBs\}} TPW_i^k + TPBE_i^k + TPRM_i^k \tag{9}$$

where:

$TPW_i^k$ : Technical Provisions calculated as a Whole for line of business *k* in scenario *i*

$TPBE_i^k$ : Technical Provisions on Best Estimate basis for line of business *k* in scenario *i*

$TPRM_i^k$: Technical Provisions Risk Margin for line of business *k* in scenario *i*

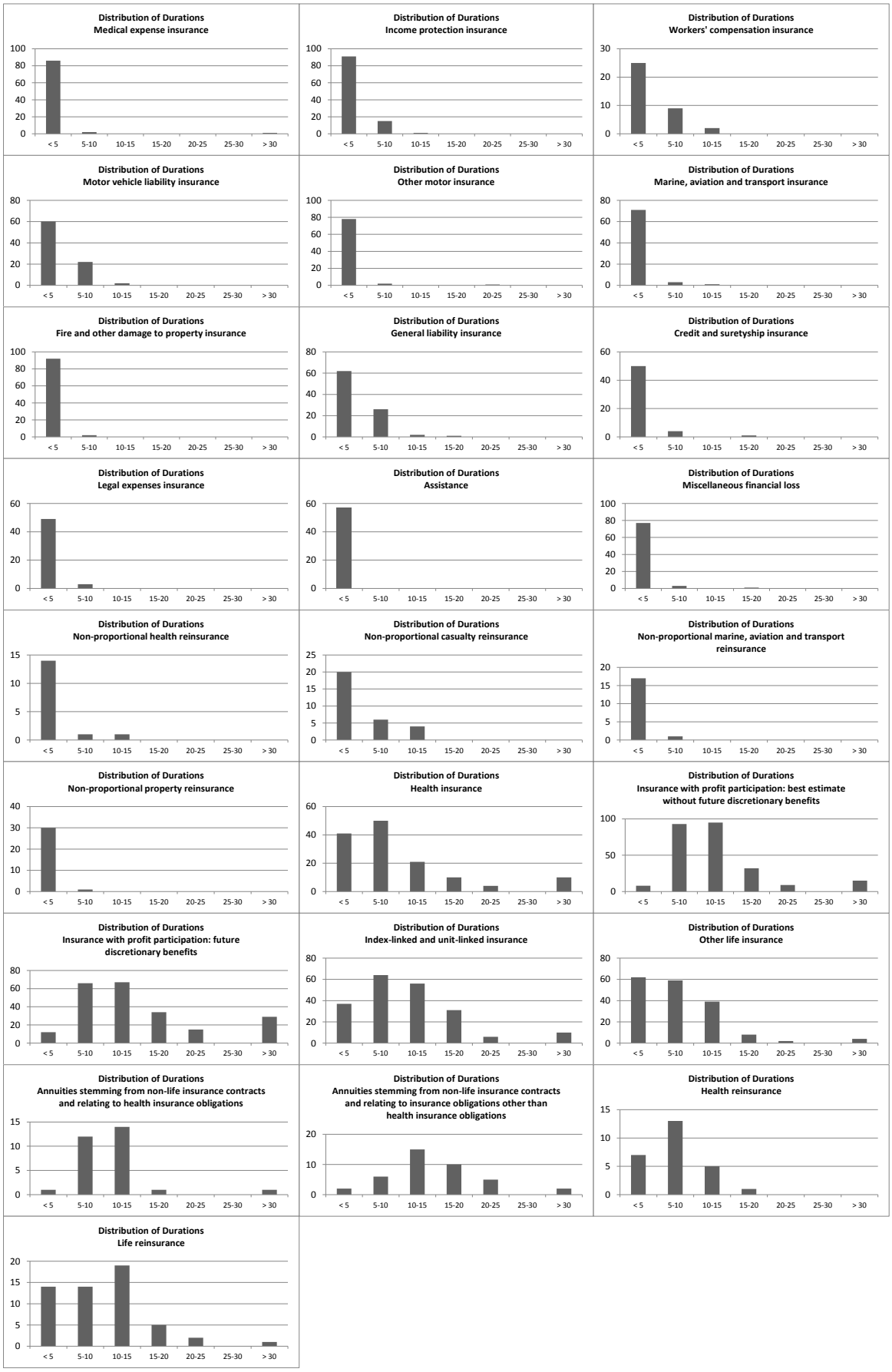
174. The technical provisions calculated as a whole are expected (by definition) not to be sensitive to changes in the level of the UFR. As the submitted data confirmed this expectation we have excluded this part of the provisions from the extended movement analysis hereafter.

175. As expected the submitted templates showed the highest sensitivity to changes in the UFR for the life lines of business. A special type of business within these lines is the profit participating policies with discretionary future benefits. By their nature future discretionary benefits have loss absorbing capacity, i.e. where expected future profits decrease these benefits can also be reduced because of their discretionary nature. However a decrease in the level of the UFR results in an increase of the best estimate technical provisions for most life lines of business. Such an increase could be compensated for by lowering the corresponding future discretionary benefits.

176. Based on this and using equation (9) EIOPA has extended the movement analysis accordingly which is shown in the following table.

| Analysis of Change in SCR Ratio due to Changes in TP BE + RM for Scenario1 | ΔScrRatio 1 TP (in %-pts) | ΔScrRatio1 TP TM RFR (in %-pts) | ΔScrRatio1 TP BE NonLife DirBusPropRe (in %-pts) | ΔScrRatio1 TP BE NonLife NonPropRe (in %-pts) | ΔScrRatio1 TP BE Life DirBus ex FutDiscrBen (in %-pts) | ΔScrRatio1 TP BE Life FutDiscrBen (in %-pts) | ΔScrRatio1 TP BE Life Re (in %-pts) | ΔScrRatio1 TP RM NonLife DirBusPropRe (in %-pts) | ΔScrRatio1 TP RM NonLife NonPropRe (in %-pts) | ΔScrRatio1 TP RM Life DirBus (in %-pts) | ΔScrRatio1 TP RM Life Re (in %-pts) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Germany | -3.45% | -0.01% | | | -8.89% | 6.53% | 0.00% | | | -1.08% | -0.01% |
| Netherlands | -5.40% | | 0.00% | 0.00% | -4.46% | 0.00% | 0.00% | | | -0.93% | |
| Poland | -1.03% | | -0.04% | 0.00% | -0.75% | 0.01% | | 0.00% | 0.00% | -0.23% | |
| Norway | -1.34% | | | | -6.82% | 5.47% | | | | -0.04% | |
| Austria | -3.09% | | 0.00% | | -3.19% | 0.62% | | 0.00% | 0.00% | -0.52% | |
| Belgium | -1.46% | | -0.01% | 0.00% | -1.51% | 0.28% | -0.03% | 0.00% | 0.00% | -0.17% | -0.01% |
| Denmark | -0.02% | | | | -3.89% | 3.70% | | | | 0.16% | |
| Sweden | -3.52% | | -0.02% | | -3.36% | | | | | -0.13% | |
| France | -1.10% | | -0.01% | 0.00% | -1.37% | 0.37% | -0.03% | 0.00% | 0.00% | -0.06% | -0.01% |
| Estonia | -1.07% | | 0.00% | | -0.54% | | | | | -0.53% | |
| Finland | -0.94% | | -0.09% | 0.00% | -0.78% | 0.11% | 0.00% | 0.00% | 0.00% | -0.12% | 0.00% |
| Romania | -0.68% | | 0.00% | | -0.66% | -0.03% | | | | 0.02% | |
| Luxembourg | -0.21% | | -0.01% | -0.07% | -0.64% | 0.80% | -0.05% | -0.02% | -0.02% | -0.17% | -0.05% |
| Slovenia | -0.71% | | -0.01% | | -0.66% | 0.06% | | | | -0.06% | |
| Spain | -0.54% | | 0.00% | 0.00% | -0.47% | -0.04% | 0.00% | 0.00% | 0.00% | -0.07% | 0.00% |
| Ireland | -0.57% | | | | -0.31% | 0.00% | -0.02% | | | -0.23% | -0.01% |
| Slovakia | -0.10% | | 0.15% | | -0.43% | 0.19% | | | | 0.01% | |
| Italy | -0.32% | -0.01% | 0.00% | 0.00% | -0.44% | 0.16% | 0.00% | 0.00% | 0.00% | -0.02% | 0.00% |
| Czech Republic | -0.16% | | -0.02% | 0.00% | -0.14% | 0.02% | | 0.00% | 0.00% | 0.00% | |
| Lithuania | -0.24% | | 0.00% | | -0.20% | 0.01% | | | | -0.04% | |
| Liechtenstein | -0.16% | | | | -0.17% | 0.01% | | | | | |
| Malta | -0.13% | | | | -0.22% | 0.13% | | | | -0.04% | |
| Greece | -0.10% | 0.02% | | | -0.18% | 0.07% | | | | -0.01% | |
| Latvia | -0.09% | | 0.00% | | -0.07% | | | 0.00% | 0.00% | 0.00% | |
| Portugal | -0.02% | | | | -0.15% | 0.14% | | | | 0.00% | |
| United Kingdom | -0.02% | | -0.01% | 0.00% | -0.02% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| Cyprus | | | | | | | | | | | |
| Hungary | 0.16% | | 0.10% | | 0.06% | 0.00% | | | | 0.00% | |
| Croatia | -1.01% | | -0.06% | | -0.86% | -0.03% | | | | -0.05% | |
| EEA | -1.55% | 0.00% | -0.01% | 0.00% | -2.33% | 1.03% | -0.01% | 0.00% | 0.00% | -0.23% | 0.00% |

# 4.12 Distribution of durations by line of business



## Annex – Resolution table

| Summary of Comments on Consultation Paper - EIOPA-CP-16-003<br>CP-16-003 UFR methodology and its implementation | | | | |
|---|---|---|---|---|
| EIOPA would like to thank the Insurance and Reinsurance Stakeholder Group (IRSG), Actuarial Association of Europe, Actuaris, Allianz Group, AMICE, CFO Forum and CRO Forum, Deutsche Aktuarvereinigung (DAV), Gesamtverband der Deutschen Versicherungswirtschaft (GDV), Global Warning, Institut des Actuaires (IdA), Institute and Faculty of Actuaries (IFA), Insurance Europe, The Swedish Society of Actuaries (SSA), Storebrand ASA, Toulouse School of Economics (TSE), and the University of Amsterdam (UoA).<br>The numbering of the paragraphs refers to Consultation Paper No. EIOPA-CP-16-003. | | | | |
| **No.** | **Name** | **Reference** | **Comment** | **Resolution** |
| 1. | IRSG | General Comment | The IRSG recognises the need for EIOPA to clarify and define an appropriate methodology for determining how and when the UFR could be updated in the future, and that with the current low interest rates, questions are being asked about this important Solvency II parameter.<br><br>However there is considerable misunderstanding about the purpose and role of the UFR. It is defined by SII as a long-term stable parameter specifically in order to ensure stability and avoid the SII framework creating artificial volatility in the valuation of long-term liabilities and it is not appropriate to consider changing it only 1 year after the start of SII or have a methodology that could lead to annual recalibrations in the future.<br>Key points are:<br><br>1) While we appreciate EIOPA's desire to meet the requirement to have a methodology to set the UFR going forward, the rationale for considering any change after less than 6 months of operation and to implement after 1 year appears to conflict with the spirit and letter of the legal texts which defines the UFR as a long-term stable | For resolution, please see section 2.2 of this consultation report. |

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| | | | parameter specifically in order to ensure stability and avoid the SII framework creating artificial volatility in the valuation of long-term liabilities. It also seems to conflict with EIOPA's own comments in its QIS 5 calibration paper where the aim was to declared of having a stable UFR over 100 years.<br><br>2) Although interest rates are currently low, a few years of low rates does not justify a fundamental change in a parameter designed as stable in the same way that a few years of high rates would not justify an increase. This is especially true given that the current low rates are linked to ECB monitory policy which is not expected to last far into the future. Pressure from certain commentators to reduce the UFR urgently may come from misunderstandings about its intended long-term, stable nature and its purpose. Contrary to what some appear to be believe, it is not the discount rate used for valuing liabilities. The UFR is an input parameter used for generating the risk free curve and it is this curve not the UFR which is used for discounting liabilities. Actual risk free rates for the EURO based for May based on the current UFR of 4.2% were far lower than the UFR – for example in June for the Euro, the 10 year risk free rate was 0.32%, and even for liabilities 60 years in the future the rate was only 2.76% and therefore conservative compared to what companies can and are actually earning. Comments from some that that the UFR at 4.2% seems high compared to what can be earned currently in the market highlight these misunderstandings – it is the discount rate not the UFR that should be compared to what can be currently earned in the markets.<br><br>3) There is no justification from a policyholder protection point of view for any rapid change because with the current UFR of 4.2%, Solvency II is already a conservative framework and there are a range of features of SII to ensure adequate provisions and overall policyholder protection. Solvency II conservative - it requires more assets to back liabilities than are expected to be needed to pay the claims as they fall due because of the market consistent basis for measurement<br><br>☐ Using risk free rate will tend to over-estimate the assets needed to support payment of a liabilities. (Re-)insurers invest in assets backing the insurance obligations. Principally the cash flows of assets are matching the cash flows of the liabilities. Based on the assumption that the whole of the economic balance sheet has to be determined using a risk free interest rate a difference occurs. The difference | The proposed methodology does not base the UFR on the current interest rate level. With regard to the expected real rate is based on the past real rates since 1960.<br><br>For resolution, please see section 2.2 of this consultation report. |

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| | | | exists because 1)The discount rate of the assets differs from that used for the liabilities. Furthermore the assets are adjusted to reflect additional risk characteristics (spreads). In this sense the earnings on assets will exceed the earnings on the risk free interest rate; and 2) (Re)insurers also invest in other investment categories such as property and equity investments which generally is expected to earn a higher return. For these additional risks the (re)insurer is already holding additional capital.<br><br>☐ Additional assets have to be held for risk margin and the time-value of options and guarantees. These are needed by SII because the market consistent approach used by Solvency II requires additional assets so that the portfolio can be transferred to a new owner if necessary. However, these assets are not actually actually expected to be needed to pay customer claims and so in practice provide additional layers of protection within the liability calculations. In fact these extra layers can actually increase significantly with low interest rates in ways not expected or tested when SII was designed and the UK supervisor has raised the large size and volatility of the risk margin under low interest rates as a major concern.<br><br>Solvency II also requires solvency capital in case the actual outcomes are different from the "base case" assumptions used to value liabilities and assets. SII requires insurers to test the impact of up to about 30 different extreme scenarios and hold enough capital to cover a combination of these.<br><br>☐ These include scenarios where assets underperform but also includes a low interest scenario which is equivalent (in May) to having the UFR instantly reduce to about 3%. This therefore ensures that insurers are holding enough extra capital to cope with potential future changes to reductions in the UFR and still deliver on their promises.<br><br>4) Any new UFR methodology and its implementation process can only be finalised as part of the SII review. This has a number of reasons<br><br>☐ Firstly a number of years is needed to assess the efficacy and impact of the current SII calibrations before parameters and other changes are finalised or implemented.<br><br>Particularly concern has been raised over how Solvency II treats long-term business and investments and may have unintended consequences on insurers' ability to invest | For resolution, please see section 2.2 of this consultation report. |

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| | | | long-term and could encourage procyclicality. Lowering the UFR is likely to impact long-term business more than any other business and so any change is not appropriate without a wider assessment of how Solvency II is working. Low interest rates have impacts on other parts of the framework with the result of making provisions more conservative and so time is needed to assess SII's overall levels of conservativeness, to see how SII is working in practice, back test any proposed UFR methodology and to assess any unintended consequences.<br><br>☐ Secondly, as noted above, low interest rates are likely to be have increased the level of overall prudence in the valuation of liabilities and capital requirements, potentially significantly for certain long-term products. For example, there have been questions raised over the calculation of the Risk Margin and the potential need to reconsider the cost of capital or other elements of its methodology as part of the Solvency II review because of how large and volatile it can become with low interest rates. Therefore before making a change which would make SII even more conservative, an assessment is needed of how low interest rates interact with other elements of SII.<br><br>☐ Other interactions also give rise to the need to consider changes to the UFR along with other potential changes and its likely impact on other parameters including the Convergence period, Last Liquid Point and calibrations of the interest rate shocks used for the the SCR calculation<br><br>5) It should also be recognised that changing UFR could have unintended consequences at a time when the EU is struggling financially and some efforts have been made to allow the insurance sector to continue and grow its contribution towards investments and growth. The insurance sector is quite unique in that it is large enough to make a real difference, and that it – contrary to the banking sector – sits on enormous amounts of capital with a very long term focus. The UFR is an important feature in maintaining the long term abilities of the insurance sector in providing these benefits to the society as a whole. If the UFR is set too low or changed too often, based on the type of temporary policy interventions we currently experience, EU risks accumulating too much unproductive capital in the insurance sector. This can stifle economic growth and make the financial recovery take longer. There is also a real risk that the very measure that was supposed to instill financial stability actually creates financial instability. | For resolution, please see section 2.2 of this consultation report. |

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| | | | 6) On the specific proposals, assuming the methodology and implementation process is not finalised until they can be incorporated into a wider review, the IRSG can support some key aspects of EIOPA's proposed methodology including:<br>☐ The use of long-term inflation plus long-term real interest rates as the basis for calibration<br>☐ The use of as much historical data as is available and to add to that data with each additional year over-time<br>☐ We agree with the proposal to increase the number of buckets to ensure that the framework also works for high inflation currencies<br>☐ We agree with rounding to the nearest 5bps | Noted. These features of the consultation proposal are unchanged. |
| | | | 7) The IRSG however proposes the following changes to EIOPA's methodology<br>☐ The most significant change we recommend is to achieve the stability required by the legal text and to avoid artificial and unmanagable volatiliy in long-term liabiltiies by applying the recalibration process at intervals (for example every 5 years) rather than annually. This combined with phasing in changes by the maximum of 10bp per year would achieve the stability required by the legal text and avoid artificial and unmanageable volatility in long-term liabilities. Annual reclaculations with a 5bp minimum threshold for change will not achieve the needed stability. Any methodology should be tested to determine how it would work in practice and impact valuations.<br>☐ Denmark should be included as one of the countries because almost as much data is available as for the other countries included and there seems be no rationale to exclude them.<br>☐ Use a simple average on the historical data rather than weighting recent years's data as more important than older data because there does not appear to be any evidence that recent data is more predictive of the future rates far in the future and if anything recent data may be distorted due to the ECB monitory policy. This would also help remove the dependency on the additional "beta" parameter. It is not clear how the beta parameter was determined, but while it may not impact the initial UFR calibration for 2015, it can have significant impact on the level of the UFR going | For resolution, please see section 2.5 of this consultation report.<br>For resolution, please see section 2.7 of this consultation report.<br>For resolution, please see section 2.7 of this consultation report. |

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| | | | forward.<br><br>Further details on many of the points above are provided in the responses to the questions. | |
| 2. | AAE | General Comment | We welcome the consultation paper by EIOPA on the methodology to derive the ultimate forward rate.<br><br>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.<br>"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.<br>Before discussing details of the proposal we have the following general comments:<br><br>The primary goals, as required by Article 47 of the Delegated Regulation, are:<br>☐ Stability<br>☐ Reliability<br>☐ Transparency<br>☐ Objectivity<br>☐ Replicability<br>☐ Prudence. | EIOPA believes that the use of expert judgement should be minimised in order to comply with the requirement of Article 47(1) of the Delegated Regulation that the methodology to derive the ultimate forward rate shall be clearly specified in order to ensure the performance of scenario calculations and that it shall be determined in particular in a transparent and objective manner. |

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| | | | 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.<br><br>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.<br><br>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.<br><br>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 | It is acknowledged that the extrapolated risk-free interest rates may not be market-consistent. However, in line with the requirement the Article 43 of the Delegated Regulation insurers should be able to earn the rates in practice.<br><br>Long-term expectations are understood to be expectations about what certain market parameters will be in the future. |

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| | | | all years.<br><br>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.<br><br>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.<br><br>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.<br><br>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.<br><br>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 | The consultation proposal is based on the role of long-term expectations as set out in Article 47 of the Delegated Regulation.<br><br>For resolution, please see section 2.2 of this consultation report.<br><br>The cost-of-capital rate will be reviewed as part of the SCR review.<br><br>Noted. These features of the consultation proposal are unchanged. |

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| | | | 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.<br><br>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. | For resolution, please see section 2.2 of this consultation report. |
| 3. | Actuaris | General Comment | Following the consultation paper issued by EIOPA regarding the methodology to derive the UFR we realized a counter analysis to challenge the result. We implemented step by step the given methodology to replicate results. In the first step, we uploaded all the variables of interest from the AMECO data base which will then lead us to derive the UFR's components. This consultation paper truly gave us much more insight on the way to derive the UFR and its underlying hypothesis.<br>Nevertheless, it appeared that some of the points raised in the article are still blurred such as the way to derive the real rate component (especially the one to use) and the geometric mean.<br>To sum up with our study we would be very grateful if you could provide us with the following points:<br>1) Is the real rate component from AMECO include term premium and convexity effect?<br>2) How can we get rid of the term premium and the convexity effect?<br>3) Which real rate did you really use?<br>4) How did you compute the weights of the geometric mean?<br>5) Can you provide us with the data base you used to perform this study? It will then enable us to challenge your results | 1) The AMECO rates are not adjusted for term premium or convexity effect.<br>2) See answer to 1.<br>3) See paragraph 25 of the consultation paper.<br>4) See paragraph 22 of the consultation paper.<br>5) An example calculation of the expected real rate is published together with this report. |
| 4. | Allianz | General | Allianz welcomes the opportunity to comment on the consultation paper on the | Please see |

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| | Group | Comment | methodology to derive the UFR and its implementation. We support the separate comments to this consultation made by Insurance Europe, the Gesamtverband der Deutschen Versicherungswirtschaft (GDV) and the joined response by the CFO Forum and CRO Forum.<br><br>In addition we want to highlight the following considerations, which in our opinion are particularly important to consider:<br><br>☐ The current level of the UFR is an integral part of the agreement on the Long-Term-Guarantee package compromise that underpins the Solvency II directive. It should not be changed in isolation within the first months after Solvency II was enacted without considering other related elements of Solvency II in order to maintain an overall consistency of calibration.<br><br>☐ If implemented as suggested, the proposed UFR methodology would result in annual changes in the level of the UFR, which is not in line with the legal requirement for the UFR to be "… stable and only change as a result of changes in long-term expectations" (Art. 47(1), Solvency II regulation (EU) 2015/35).<br><br>☐ The UFR by definition represents an expectation of the interest rate environment 60 years and more in the future. Given the complexity of such long-term economic forecasts, a UFR methodology that is based on a mechanistic approach without taking into account expert knowledge seems not advisable where unwarranted short term volatility in the UFR needs to be avoided. In particular the current low yield environment, which is attributable to the current monetary policy of the ECB, should not trigger a change in expectations of the interest rate environment 60 years from today.<br><br>☐ The actual discount rates for insurance liability valuation, derived from the current UFR, are already very low, e.g. 1,33% for a 20-year liability and 2,99% for a 60-year liability. As such the UFR is a parameter that impacts discount rates, but is not a discount rate itself.<br><br>Against this background we suggest:<br><br>☐ The UFR level should remain stable (at 4.2% for EUR) at least until the official | resolutions to these comments.<br><br>For resolution, please see section 2.2 of this consultation report. |

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| | | | Solvency II review in 2018.<br><br>☐ After 2018 the UFR should be subject to a periodic review (e.g. every 10 years) taking into account expert opinion for each such review. Any resulting changes in the UFR should be phased in over time (e.g. 10 bp each year). | |
| 5. | AMICE | General Comment | AMICE welcomes the opportunity to comment on the consultation paper on the methodology to derive the UFR and its implementation. AMICE members consider the UFR as a key input value which can have a high impact on market values and the firm´s solvency positions especially when the duration is high. As a general rule, AMICE believes that the UFR should be kept stable and not respond to short term or random developments.<br><br>There may be a long term trend in interest rates which suggests gradual adjustments to the UFR. However, the Ultimate Forward Rate should not be reviewed in isolation. We support the need to assess the suitability of the UFR with other components of the LTGA package; The timing of the review of the UFR methodology should therefore be aligned with that of the review of the standard formula, due by 2018. The review should be consistent with the approach taken in the past to calibrate the measures in the long-term guarantee package.<br><br>As stated in previous EIOPA consultations, we see the need for insurance companies to anticipate adjustments in the UFR and include them in their corporate planning and the ORSA. Thus, early warning indicators of the underlying trend of the UFR should be regularly produced in order for the industry to be aware of possible changes and prepare itself. Early warning indicators, as suggested in EIOPA paper, could be made available through the regular publication of the values underlying the composition of the UFR such as an updated value of the real interest rate and the inflation components.<br><br>We support the regular publication of the result of the UFR formula and a decision on whether an update of the UFR value is needed each time the computed amounts exceed the values of a "tunnel" (corridor) with an upper and lower threshold which should not exceed some basic points. Assessing the trend and the sustainability of such a trend is key (e.g. if inflation is too high and above expectations, the firm will | For resolution, please see section 2.2 of this consultation report.<br><br>The UFRs calculated with the proposed methodology will be replicable. EIOPA will announce changes to the UFRs in timely advance to their application.<br><br>Noted. |

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| | | | know that the UFR will have to be corrected). If the trend continues over a long period of time (10 - 15 yr) this would lead to a gradual adjustment in the UFR. The correction could be made by the amount exceeding the corridor.<br><br>EIOPA should broaden their analysis by including an approach by which the UFR would be determined based on historical nominal rates. There may be some arguments in favour and against a nominal rates' approach; However the approach has been disregarded without a full anyalsis or real justification. | According to Article 47 of the Delegated Regulation the UFR should take account of expectations of long-term real interest rates and expectations of inflation. Past nominal rates can be decomposed into past real rates and past inflation rates. As to the expectations of inflation, the inflation target of central banks is forward-looking and therefore deemed to be more relevant for the expected inflation rate than past inflation rates. |
| 6. | CFO/CRO FORUM | General Comment | Introductory comments<br>Thank you for the opportunity to work with you as you develop the methodology for | |

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| | | | calculating the Ultimate Forward Rate (UFR), which is an important element of the Risk Free Interest Rate (RFR) framework. We fully support the development of a transparent methodology for the calculation of the UFR, and feel that overall the methodology to determine the UFR should be kept straightforward, as the simple sum of long term expectations in real rates and inflation. We also welcome EIOPA's recent workshops with journalists/analysts, and we encourage EIOPA to continue to organise such educational sessions to build understanding of the UFR mechanism, which we consider is often misunderstood.<br><br>This document reiterates our key concerns on the proposals, as previously shared with you, including at the workshop organized by EIOPA on 14 June. In addition, we have responded to the specific questions posed by EIOPA in the consultation document.<br><br>It is premature to change the UFR and methodology<br>The current UFR rate is an integral part of the Long-Term Guarantee calibration agreed for Omnibus II. We believe that an immediate change to the UFR will undermine the market's perception of the Solvency II basis, raise doubts about its stability, and will lead to market volatility and unintended consequences. Furthermore, Solvency II was developed as a package, and it is inappropriate to single out particular issues. For example, the same conditions of current low interest rates that have given rise to the focus on the UFRs, also have impacts on risk-free rates (RFR) and other elements of Solvency II, such as the risk margin.<br><br>EIOPA is required to submit to the Commission an opinion on the assessment of the application of the Long-Term Guarantees measures in relation to the availability of long-term guarantees in insurance products, the behaviour of insurance and reinsurance undertakings as long-term investors and, more generally, financial stability. Based on the opinion submitted by EIOPA, the Commission will submit a report to the European Parliament and to the Council by 1 January 2021, or earlier if deemed appropriate.<br><br>It would be premature to change the UFR before that assessment takes place, and any | For resolution, please see section 2.2 of this consultation report. |

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| | | | changes in the methodology should be implemented at the same point in time and in conjunction with the possible changes that might result from the review of Solvency II in 2018 (at the earliest), providing an opportunity for the industry and regulators to gather data and experience during 2016 and 2017.<br><br>Unintended consequences of the UFR proposals, including long term investments<br><br>We believe that lowering the UFR rate would also have unintended consequences for long-term investment. A lower UFR would accentuate pressure on long-term obligations, which insurers would therefore be dis-incentivised to underwrite. However, those features are the main driver of long-term investment needs for insurers, and such a decision would therefore appear to be at odds at a time when the European Union is promoting long-term investment in the real economy, such as in equities or infrastructure.<br><br>Inconsistency with the objectives of the UFR in relation to stability<br><br>While EIOPA's proposed UFR methodology and the expert judgements may seem reasonable when taken individually, when taken as a whole we believe the methodology is inconsistent with Article 47 of the Delegated Acts, which requires the UFR to be stable and only vary with changes in long-term expectations.<br><br>In particular, EIOPA's proposed methodology based on averaging 3 to 6 month term financial instruments, with annual changes to the UFR rate, would not meet this objective. Indeed, as discussed further in our response to question 7 below, the methodology proposed by EIOPA would have led to an unstable UFR in 30 out of the last 36 years, and, should the current market situation last for the coming years, yearly changes would continue. We believe this methodology would therefore fail any stability test.<br><br>Supervisory and expert judgement is also important to guarantee that the outcome is consistent with the Regulation's intentions, and provides for good risk management incentives and sufficient financial stability of the sector. | For resolution, please see section 2.2 of this consultation report.<br><br>For resolution, please see section 2.4 of this consultation report. |

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| | | | Conclusion<br><br>In conclusion, we have strong concerns on the timing, overall impact and implementation of the current proposals, which we believe do not meet the objectives of the UFR, and risk significant unintended consequences. We would encourage EIOPA to continue to engage with the industry on this important issue, and stand ready to participate in further discussions with EIOPA. | |
| 7. | DAV | General Comment | DAV welcomes EIOPA's transparency and the invitation to comment on this consultation. We have the following general comments:<br><br>☐ We note that Article 47 states: "The UFR is stable and only changes as a result of changes in long-term expectations." In our opinion, a proposal to make a material change to the level of the UFR within the first year of the new Solvency II regime seems to be somewhat inconsistent with this requirement of Article 47. It would seem to be more consistent with the spirit and intent of the UFR rules to consider a review at a later date, taking into account (a) the findings from the EIOPA 2016 stress testing exercise (which includes data collection of UFR sensitivities), (b) EIOPA's review of the impact of long-term guarantee measures, and (c) EIOPA's review of the standard formula.<br><br>☐ In addition to the quantitative analysis provided in the consultation, we would recommend that EIOPA include a qualitative analysis of the views of central banks, macro-economic forecasters, and other bodies to assess whether the market's view of long-term expectations beyond the LLP have indeed really changed. This acts as a useful sense check against the data analysis.<br><br>☐ Despite of all methodology of UFR derivation, predicting capital markets over a time span of well over 50 years remains a complex task and any result derived will always remain 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 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 to hedge and factor into their risk management. We welcome the consideration of an annual limit and certainly recommend phasing in of changes to the UFR, but it is preferable from an actuarial perspective, for both phasing-in and steady-state, to have a more restrictive | For resolution, please see section 2.2 of this consultation report.<br><br>For resolution, please see section 2.5 of this consultation report. |

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| | | | limitation of the annual changes in the UFR, i.e. 5 to 10 bps given that the UFR should not rely on short term changes in the economic situation but represent changes to long-term expectations only. DAV considers 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 given that recent data is not likely to have more influence on the far future than past data; the arithmetic average therefore does not overestimate recent trends and leads to a stable UFR.<br>☐ The impact analysis provided in section 4 of EIOPA's paper 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 | For resolution, please see section 2.3 of this consultation report. |
| 8. | GDV | General Comment | GDV appreciates the opportunity to comment on the consultation paper on the methodology to derive the UFR and its implementation.<br><br>We understand that this methodology has to be clearly specified in order to allow for scenario calculations by insurance and reinsurance undertakings (cf. Article 47 of the Delegated Regulation).<br><br>However, even in the given low interest rate environment introducing a new methodology to calculate the UFR right now is neither required nor reasonable. The UFR should remain at its original level of 4.2%, at least until the upcoming review of the Solvency II standard formula and all LTG measures:<br><br>- Before any changes to the UFR are considered, the relevant stakeholders should gain sufficient experience with the new supervisory system.<br><br>- The UFR is a crucial component of the quantitative requirements under Solvency II – thus, it may not be changed in an isolated manner, but taking this wider context into account.<br><br>- A precipitant and isolated change would be in direct contradiction with the | For resolution, please see section 2.2 of this consultation report. |

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| | | | intentions of the European legislators which came to the Omnibus II compromise on basis of an UFR of 4.2%. With a different UFR level, the long-term guarantee measures would have been designed differently, too.<br><br>Although the derivation of the UFR could be more transparent and formalised in the future, for the time being a fixed level of the UFR would clearly enable insurance and reinsurance undertakings to do scenario calculations as required by the Delegated Regulation. Thus, in the short run, there is no pressure to act.<br><br>In this context, it should also be noted that the UFR is an interest rate which is expected to be effective only far in the future. The UFR is used as a parameter for the extrapolation of the risk free interest rate term structure – but it is not used for discounting. The discount rates used by the insurance and reinsurance undertakings are lower by far. For instance, as of 30 June 2016 the extrapolated interest rate for an obligation due in 60 years amounts to only 2.76 %.<br><br>If a new methodology to derive the UFR is introduced at some point in time, it is of utmost importance that the stability of the UFR is ensured.<br><br>It is inevitable to restrict the maximum changes of the UFR in order to ensure stability of the UFR over time and to avoid overly volatile results. The stability of the UFR is prescribed by law. Any methodology to derive the UFR must observe this legal setting. Moreover, a fast changing UFR would lead to severe short term movements in the overall results of the calculations. This would inevitably cast doubt on the validity of the entire quantitative requirements. It is necessary, as proposed in the consultation paper, to restrict the annual changes in both cases when either a new methodology to derive the UFR is introduced or when the inflation target of a central bank changes.<br><br>Nevertheless, the proposal of the consultation paper allows for an annual change of the UFR of up to 20 basis points. As a result, the UFR would decline substantially within the next few years. | For resolution, please see section 2.5 of this |

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| | | | | consultation report. |
| | | | This is not in line with the legal requirement of the UFR being stable over time. Thus, the proposal must be amended. Any change of the UFR must be phased-in at a slow pace. To this end, the UFR level must not be changed by more than 10 basis points within one year. | |
| | | | Besides the phasing-in, the general approach to calculate the target value of the UFR as the sum of expected long-term real real interest rate and expected inflation is sensible and in line with the Delegated Regulation. | Noted. The proposed approach is unchanged. |
| | | | Expectations of the long-term real real interest rate should be based on average real interest rates in the past. To this end, it is appropriate to use data since 1960 in a widening window approach as proposed in the consultation paper. | Noted. The proposed approach is unchanged. |
| | | | However, data from all points in time should be given equal weight. Data from different decades have all the same value for the estimation of the long-term expected real interest rate far in the future. In contrast, a higher weight for current data would overestimate the long-run consequences of short or medium term fluctuations. This disadvantage would be especially serious in the current financial market situation which is heavily distorted. This distortions caused by monetary policy might continue for several years. Nevertheless, the crisis measures are of temporary nature and do not change the equilibrium rate in the very long run (60 years, 100 years, or more from now). In addition, by equal weighting arbitrary weighting decisions are avoided and the complexity of the approach is reduced considerably. | For resolution, please see section 2.6 of this consultation report. |
| | | | In contrast, data from the seven countries considered should be weighted differently. Geographical weighting would considerably improve the representativeness of the real interest rate component. Besides that, there is no reason to forgo this worthwile improvement because it would neither reduce transparency nor add material complexity to the calculation. For all past years the weights are known already, while the unknown weighting for the current year has very little influence on the overall results. Furthermore, in most cases, the weights change only gradually from one year | For resolution, please see section 2.7 of this consultation report. |

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| | | | to the next.<br><br>Moreover, to apply 3-months interest rates is overly conservative. Because the UFR is used as an 1-year-forward rate, it should also be calibrated with 1-year-rates. If appropriate 1-year data are not available, the average of the 3-month data should be scaled at least.<br><br>Expectations of inflation rates should be based on central banks' inflation targets. To this end, it is appropriate to use a bucketing approach as proposed in the consultation paper.<br><br>Changes of the UFR in opposite directions in subsequent years should be avoided. To this end, the target value of the UFR (before phasing-in) should not be recalculated each year. In order to ensure a stable UFR, it would be more appropriate, instead, to maintain the target value for several years (e.g. 10 years). Once the target vaulue is recalculated, the new figure is phased-in with annual changes of maximal 10 basis points.<br><br>Finally, a new methodology to calculate the UFR has to be sufficiently tested by the insurance and reinsurance undertakings before it is implemented. It is also not feasible to apply the new UFR only three months after its announcement. Insurers should be granted at least six months to prepare themselves in order to ensure stability and predictability. | For resolution, please see section 2.8 of this consultation report.<br><br>Noted. The proposed approach is unchanged.<br><br>For resolution, please see section 2.4 of this consultation report.<br><br>For resolution, please see section 2.2 of this consultation report. A preparation period of nine months will be granted to insurance and reinsurance undertakings. |
| 9. | Global Warning | General Comment | Here are so graphics of econoic history which seem to me relevant about our current weird situation of 0 real interest rates worldwide in the advanced economy. | Noted. |

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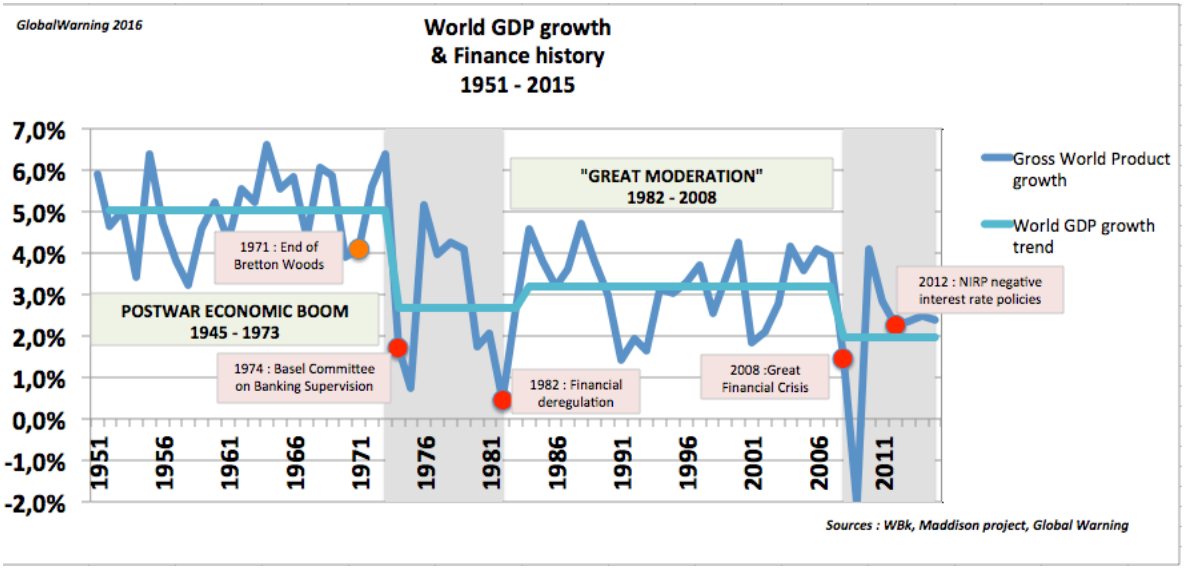
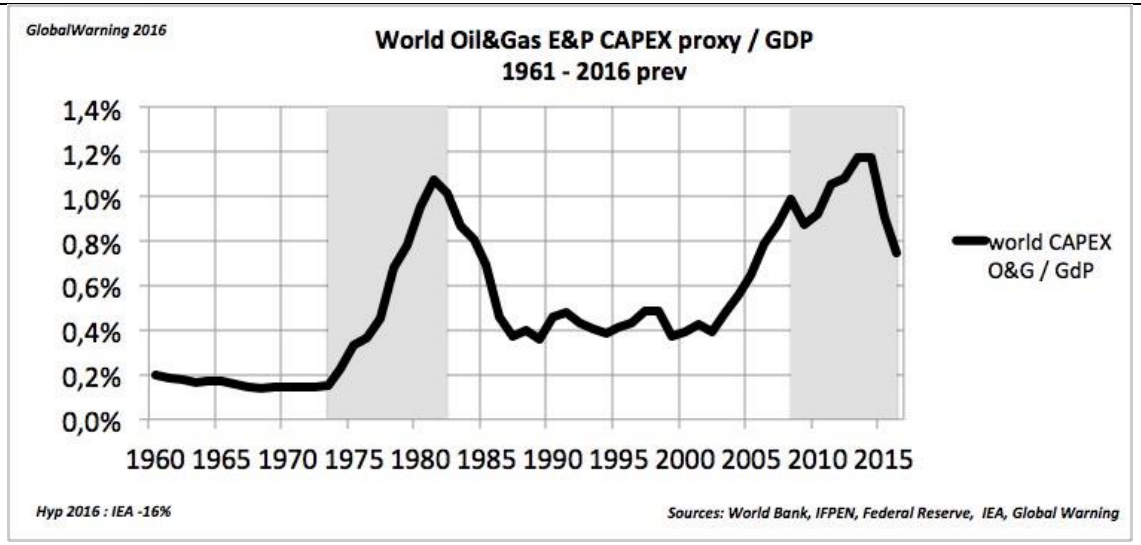
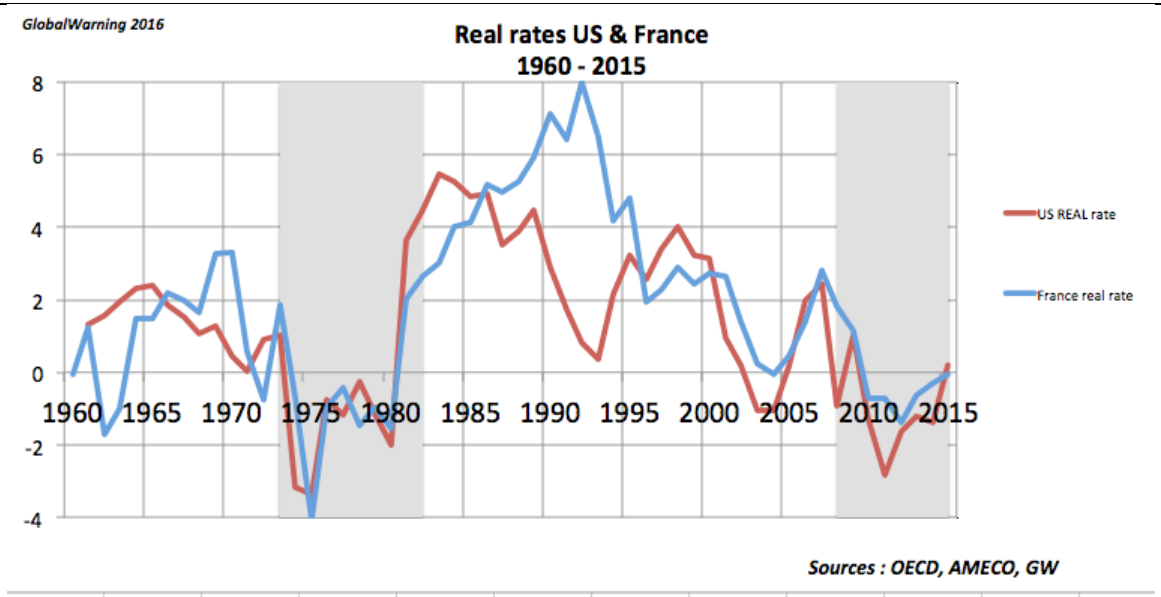
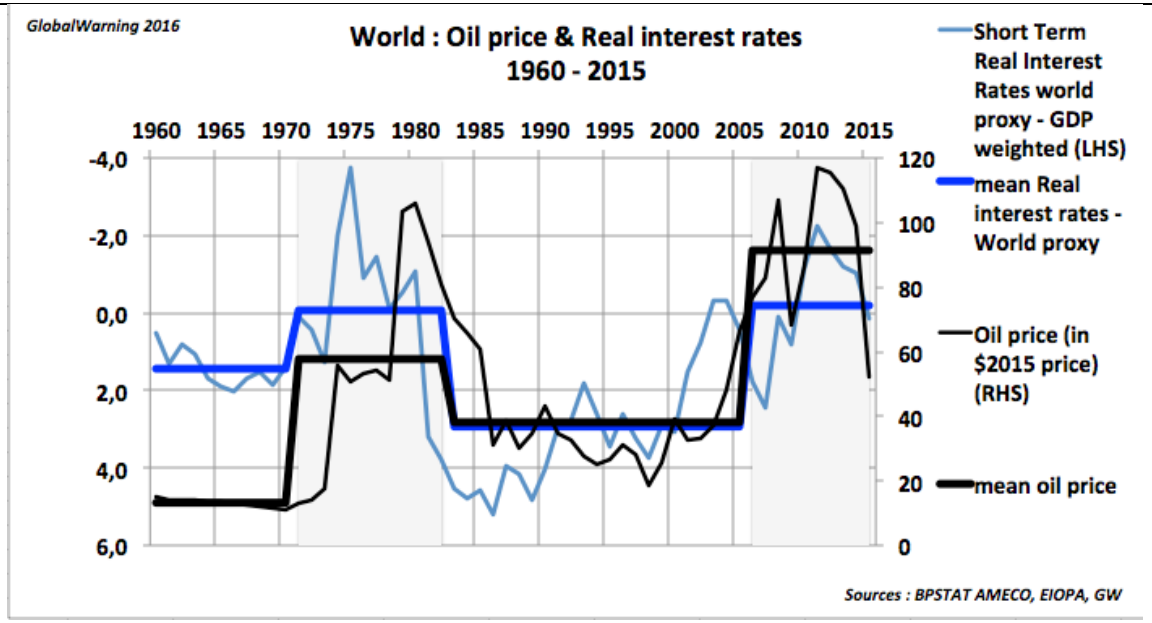
| | | | 1. Economic and financial history since WWII /<br>  <br><br>2. CAPEX Investments in Oil&GAs Exploration&Production, the « haert » of the economic engine, as it provides fuel for the « real economy ». | |




3. Real interest rates in USA and France.
Coupled economy, as most advanced economy are. Very obvious periods.




4. A corelation between real interest rates and oil prices (which triggers Oil&GAs CAPEX) :




5. CONCLUSION

Advanced economy needs very low interest rates, even negative ones, in time of oil constraints :

- the first oil shock
- the rise of China.

Here are oil consumption per worker, for China and for the rest of the world, post WWII :

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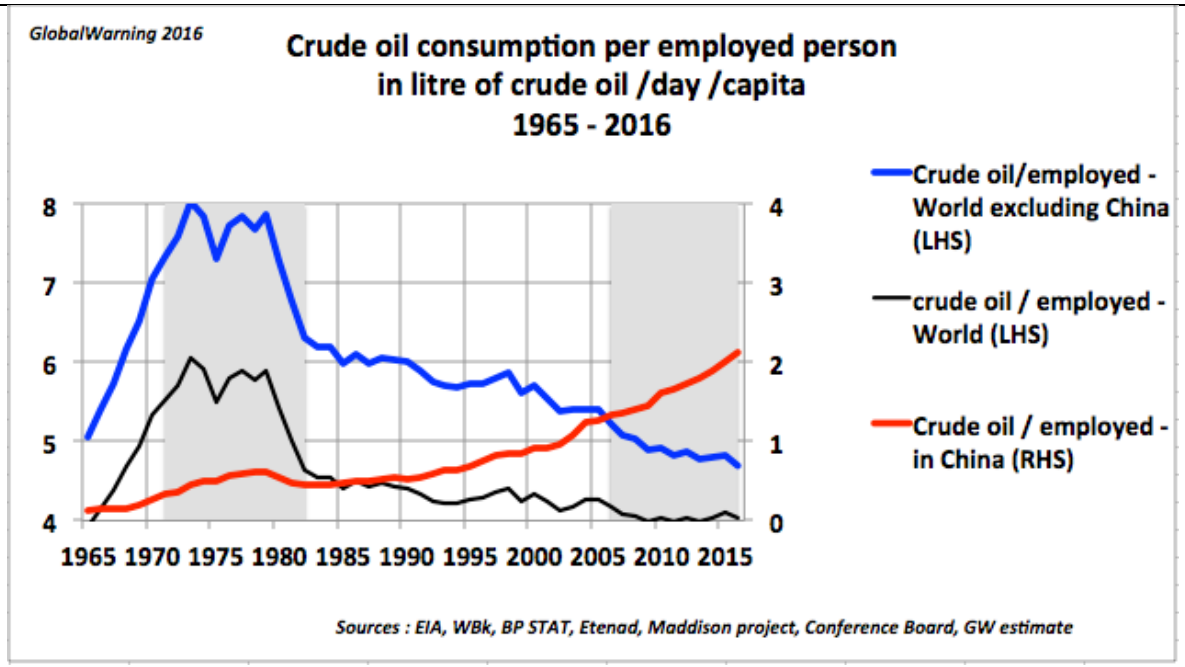
| | | |  | |
| 10. | IdA | General Comment | The Institut des Actuaires welcomes EIOPA's invitation to comment on this consultation.<br><br>The historically low level of the interest rates is a matter of highest concern for the Institut des Actuaires. The reduction in interest rates, which has twice in recent years exceeded the prudential stress scenarios, does clearly incent to take measures so that the prudential framework takes duly into account this new context.<br><br>On the consultation paper, we have the following general comments: | For resolution, |

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| | | | ☐ Article 47 states that : "The UFR is stable and only changes as a result of changes in long-term expectations." In our opinion, a proposal to make a material change to the level of the UFR within the first year of the new Solvency II regime could indicate some inconsistency in the regulations'frame.<br><br>☐ It is somewhat surprising that from the 1st year of application, an element wich is the result of a change in the very long term prospects needs to be changed.<br><br>☐ The UFR is a key element of the SII prudential framework and is linked to other parameters, that have been clarified after a long run process of overall calibration.<br><br>☐ It would be more consistent with the spirit and intent of the UFR rules to consider a review only once the stakeholders to the review process will be able to take into account (a) the findings from the EIOPA 2016 stress testing exercise (which includes data collection of UFR sensitivities), (b) EIOPA's review of the impact of long-term guarantee measures, and (c) EIOPA's review of the standard formula.<br><br>☐ Quantitative impacts on volatility of cash flows are not sufficiently known at this stage and it is regrettable that consultation ends before the publication of EIOPA 2016 stress testing exercise<br><br>☐ The proposed annual limit modification of the UFR 20 bp must be challenged based on quantitative impacts.<br><br>☐ In addition to the quantitative analysis provided in the consultation, we would recommend that EIOPA includes a qualitative analysis of the views of central bankers, macro-economic forecasters and other bodies to complete the analysis with the market's view of long-term expectations. This qualitative analysis will ac acts as a useful sense check against the data analysis.<br><br>☐ The change in UFR (before any limit) for Euro currency is a material 50bps step reduction. Sharp movements in the UFR are not easy to implement for insurance undertakings to hedge and to factor into their risk management. Hence, we welcome the consideration of an annual limit and recommend phasing in of changes to the UFR.<br><br>☐ The impact analysis provided in section 4 of EIOPA's paper is based one 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. | please see section 2.2 of this consultation report.<br><br>2016 stress test results and results from the information request on the UFR are available now.<br><br>Noted. The proposed approach is unchanged.<br><br>For resolution, please see section 2.3 of this consultation report. |

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| 11. | IFA | General Comment | Single real rate estimate used for all countries<br><br>The estimation basis assumes that all currencies / countries will converge to the same long-run real rate of return or real economic output. There is perhaps an argument for this where countries are close trading partners, e.g. in the Eurozone, but this is not necessarily true for different countries across the globe, reflected in very different yield curves prior to the last liquid point (LLP). We therefore feel that estimated real rates should reflect country-specific information where relevant.<br><br>Real rates estimated using historic time series<br><br>The assumption that a long-run historic time series can be used to estimate future rates relies on real rates being stationary and converging to a mean value. There is however very little evidence of this, with the ARMA model fitted in the consultation paper not achieving a close statistical fit.<br><br>The use of very long forward rates would seem more credible for this purpose, perhaps supplemented by historic data where forward rates are not available, although as a consequence, the derived Ultimate Forward Rate (UFR) will be less stable.<br><br>We note that there have been a number of step changes in rates of return over the past 40 years. The model assumes a degree of historic continuity which may not exist in reality. | Consistent data across countries o past real rates is not available. Furthermore, the estimated real rates per country are likely to be more volatile than the single estimated real rate.<br><br>The alternative to derive the UFR from forward rates was analysed in the consultation paper. EIOPA still believes that that approach has significant disadvantages: it is unclear how the term premium can be removed from the forward rate, the resulting UFRs would be less stable and there are not consistent data for all currencies to apply the |

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| | | | | method. |
| 12. | Insurance Europe | General Comment | Insurance Europe welcomes the opportunity to comment on the consultation paper on the methodology to derive the UFR and its implementation. We recognise the need going forward for transparency and formalisation of the methodology for determining and changing the UFR over time .<br><br>The need and appropriateness of changing the UFR at this stage is challengeable and questionable. This is because the UFR is a long-term parameter and a few years of low interest rates does not yet enough justifify a change in long-term expectations to trigger a change in the UFR, in the same way that a few years of higher rates would not justify an increase.<br><br>The UFR is an extremely important factor in the determination of the Solvency II discount. It was defined and intended as a stable and long-term parameter (the aim is to have a stable UFR over 100 years according to EIOPA's QIS 5 calibration paper) in order to avoid being itself a source of artificial volatility. Any update to the UFR methodology, its implementation time-table and implementation process should take this aim for stability into account. It should also take into account the overall level of prudency of the Solvency II framework as well as potential unintended consequences of a change. In particular, the same conditions of current low interest rates that have given rise to the focus on the UFRs, also have impacts on risk-free rates (RFR) and other elements of Solvency II, notably the risk margins for financial and non-financial risks and so there may be other impacts of low interests rates that need to be taken into account.<br><br>We therefore believe that the UFR value for the Euro (and also for a wide range of other currencies) should be kept at its current level of 4.2% until the review of the Solvency II standard formula. We do not think it is appropriate to change such an important element of Solvency II valuation separately from a wider analysis and the appropriate timing of this process is as part of the review processes built into Solvency II starting from 2018. | For resolution, please see section 2.3 of this consultation report. |

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| | | | Furthermore, the current UFR levels (4.2% for the Euro and a wide range of other currencies) were the basis of the entire Omnibus II compromise. The long-term guarantee measures (LTG measures) set by the European legislator would have been designed differently with a diverging UFR level. It is then of the utmost importance the political compromise pertains and that the UFR methodology and values are not changed outside of the wider context of the SII review and in particular the review of the LTG measures due by 2021.<br><br>Given the key role of the UFR as an anchor for Solvency liability calculations and the potential for very significant impact of any change, an impact analysis should be undertaken before any methodology and implementation planning is finalised. This impact analysis should include an assessment of the following:<br>☐ The impact on overall level of prudence of the Solvency II framework to avoid creating unintended and uncesssary burden.<br>☐ Potential pro-cyclical effects and other unintended consequences for customers or the wider economy.<br>☐ Back testing to ensure the objectives of producing a stable long-term rate, and avoiding additional volatility in liability calculations have been achieved.<br><br>Irrespective of the merits or otherwise of a particular methodology, finalisation of the methodology and any changes to UFR should be incorporated into the Solvency II review processes and not done as a stand-alone change. Below we provide arguments why this is the proper way to proceed:<br>☐ The Solvency II framework requires the UFR to be stable over time. The UFR should only change as a result of fundamental changes in long-term expectations according to Article 47 in the SII Delegated Regulation. While interest rates are currently expected to be low for a number of years it is too early to say if this will remain for the very long-term.<br>o Changes to the UFR can have a very significant impact, such as creating artificial volatility in insurers' balance sheets, bringing uncertainty and negating the stated purpose of the UFR to provide stability for long-term liability valuations. | |

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| | | | o Stability is an essential objective of the UFR and it should continue to be aligned with the outcome of the LTG Assessment and Omnibus II, as already agreed by co-legislators.<br><br>o With the current EIOPA proposal, the UFR would likely be recalibrated on annual basis. This is not in line with the legal requirement of stability of the UFR.<br><br>o As evidenced by EIOPA itself in its QIS 5 document on the Risk-free interest rates – Extrapolation method, "a central feature is the definition of an unconditional ultimate long-term forward rate (UFR) for infinite maturity and for all practical purposes for very long maturities".<br><br>☐ The actual discount rates used to value liabilities for Solvency II, with the current UFR of 4.2% (for the Euro and a wide range of other currencies), are already low (far lower than the UFR) and will already tend to be conservative relative to the actual cashflow yield from asset. Even though investment returns are also currently relatively low, they are still higher than the discount rates currently required by Solvency II and so technical provisions already have a level of conservativeness built into them.<br><br>o As an example, the discount rate for the Euro at years 10, 20 and 60-year maturity are 0.79%, 1.33% and 2.99% respectively according to the April RFR curves for the Euro published by EIOPA (including VA). Rates without the VA are even lower (0.58%, 1.12%, and 2.90% respectively). These discount rates do not appear to be excessive compared to actual investment returns possible with a portfolio of even relatively low risk investments.<br><br>o The proposed methodology would have lowered the discount rates with VA in April for 60 years to 2.70% (2.61% without VA). This does appear excessively conservative, and would have a significant impact on companies' capital position at a time where economic conditions are already extremely challenging.<br><br>☐ The current framework has other additional layers of buffers in the form of the risk margin which Solvency II requires to be included in the calculation of technical provisions but are not actually needed to pay claims. According to QIS 5 these could already increase technical provisions by up to approximately 10% and are likely to have become even larger since then due to the low interest rates. The risk margin calculation can also create significant volatility and therefore, before changing the UFR in a way that will increase technical provisions, the impact of low interest rates on | |

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| | | | these risk margins and the interaction with any changes to the UFR needs to be understood.<br><br>☐ In addition to the conservative nature of technical provisions calculation, there is already an SCR required for low interest rates which means companies are holding extra capital in case interest rates are lower than current rates and remain so for ever. The interest down shock is roughly equivalent to lowering the UFR for the Euro to 3.01% at 60-year. This means that companies hold enough capital to assume that the UFR will decrease to 3% instantaneously and therefore there is no urgency to already lower the UFR under SII (based on April 2016 data).<br><br>o The ORSA and other aspects of Pillar II require companies to carry out the necessary sensitivity analysis and risk management to ensure low interest rates issue are understood and managed by the company.<br><br>☐ There are dependencies with other elements of the Solvency II framework that need to be considered before changing the UFR.<br><br>o The Risk Margin and the value of options and guarantees are both elements of the technical provision calculation that increase when interest rates decrease. In fact, concern about the excessive size and volatility of the risk margin under low interest rates has been raised by a national surpervisor as a significant concern that needs addressing.<br><br>o The impact of any change of the UFR on the upward and downward interest rate shocks, as defined in the Article 166 and 167 of the SII Delegated Regulation may also need to be recalibrated based on the new UFR values as they were calibrated based on discount curves calculated with a 4.2% UFR.<br><br>☐ Insurers are already taking management actions to adjust for low interest rates. While low interest rates are creating real challenges for the industry, companies have been taking action — in some cases, for many years — to adapt their products, investment mix, hedges and capital levels. Solvency II makes this a requirement for all companies, creating the need for multiple layers of buffers and protection, as well as introducing very detailed monitoring to allow supervisors to ensure the necessary actions are being taken.<br><br>☐ Supervisors will know if a company faces specific related issues to low interest rates, or any other issue, and can intervene to ensure appropriate action and can monitor progress. Solvency II Pillar III requires an enormous amount of reporting and | |

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| | | | Pillar II gives supervisors powers and duties to intervene early if necessary. EIOPA also will have all the information. Therefore, if the concern is that individual companies facing problems may not be taking necessary actions, then there is no need to increase overall levels of conservatism for the entire industry to address this.<br><br>☐ Lowering the UFR values now can have unintended consequences on customers because it can push insurers unnecesseraly towards sub-optimal investment strategies, and on the economy because it may encourage pro-cyclical behaviors.<br><br>☐ The whole Solvency II framework is not yet business as usual for insurers. Given the large amount of work involved in Solvency II and additional pressure from low interest rates, insurers should be able to focus on implementation and adapting their business models without unnecessary uncertainty in key underlying parameters used in the valuation.<br><br>We provide below a summary of Insurance Europe comments on EIOPA's proposed methodology.<br><br>Elements of the methodology we support:<br><br>☐ We agree that transparency, replicability and predictability are of major importance when determining a methodology for the UFR and it should also foster appropriate risk management incentives.<br><br>☐ UFR should be the sum of long-term expected real interest rates plus expected inflation. Insurance Europe agrees to maintain the UFR as the sum of expected real rate and expected inflation as this approach is in line with Article 47 in the SII Delegated Regulation. We note that the word "long-term" should not be dropped from the description of real interest rates as it is a key part of the legal text. However, the meaning may be clarified so that it is clear that the UFR is a one year rate far in the future (at least 60 years for the Euro) – and therefore long-term should be understood in the sense stable over time and should not be understood as referring to the long-term maturity of the rates.<br><br>☐ We agree that a bucketing approach (*) to calibrate expected inflation target should be continued with an additional "high inflation" bucket to ensure few high inflation currencies are appropriately taken into account. | Noted. These elements of the consultation proposal are unchanged.<br><br>The expected real rate and expected inflation rates correspond to long-term expectations. The word is not included in the names for reasons of practicability. |

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| | | | (*)Finance Norway does not support the bucket approach as proposed by EIOPA. The design of the inflation component should be dealt with as part of the Solvency II review process.<br><br>☐ We agree that long-term historical data series can be used and additional years should be added as time passes. However, should the use of AMECO and MEI database confirmed, we would recommend starting the data at 1961 because although ideally data from earlier years would be used, 1961 is the first year a wide set of data is available.<br><br>☐ We agree that changes to the UFR, once triggered by the methodology should be spread in a predictable way over a number of years. However, we believe steps of 10bps should be used instead of the proposed 20bps.<br><br>Flaws in the proposed methodology and how these can be addressed:<br><br>☐ In the extrapolation, the UFR is used as the one year forward rate. It therefore seems incorrect to use 3-months interbank interest rates as a basis to calibrate the UFRs values. If there is no suitable source of 1-year maturity rates data then 3-month data must be scaled to provide 1-year maturity rates. EIOPA should therefore at least confirm that that no suitable 1 year rate data source is available and that the 3-month data referred to in the AMECO database have been annualized into 1-year rates equivalents. We note that one year expected inflation data is used as input and this is correct.<br><br>☐ The year 1960 should be excluded in the calibration of the annual rates as defined in EIOPA methodology because there are missing data for too many countries. Including it involves assumptions that bring noise in the overall calculation.<br><br>☐ Denmark should not be excluded from the country data used in the calculation of the expected real rate. There is not sufficient justification to exclude available data from Denmark for which there is almost the same data available as for other countries (and none is given in the consultation paper). It is reasonable to include at least Denmark because (1) AMECO and OECD data are currently available for this country (respectively as from 1961 and 1967) and (2) EIOPA has no rationale to exclude Denmark since EIOPA acknowledges that it based his decision considering the weights of currencies determined on the basis of a survey to which Denmark did not respond (see footnote 23 page 29). | Agreed. See revised methodology.<br><br>For resolution, please see section 2.5 of this consultation report.<br><br>For resolution, please see section 2.8 of this consultation report.<br><br>Agreed. See revised methodology.<br><br>For resolution, please see section 2.7 of this consultation report. |

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| | | | ☐ Geographical weights should be applied to country data. There is strong logic in country weighting. Since the expected annual yield arising from an average insurer' assets portfolio (proxied by the annual rate defined in EIOPA's proposal) is driven by the weighting of the yield of investments made across several countries, the assumption that the annual rate is based on a simple average is wrong. We believe that a geographical weighting of the countries considered improves the representativeness of the real interest rate component, and does not add material complexity being a simple calculation. In this regard, the EIOPA approach on geographical weighting as suggested in the consultation document represents a step in the right direction. However, it still contains some open issues that must be clarified before the implementation of the new UFR methodology.<br><br>☐ A simple average should be applied to the historical data series in the calculation of the expected real rate - there is no rational for using time weights in the calculation. There is no evidence provided that shows that recent data will be more representative of long-term rates than older data and therefore justify giving higher weighting for the recent years. In fact the opposite can be more logically argued because the current rates are a direct result of ECB monetary policy which is not intended to remain in place over the long-term and can be considered a distortion of natural rates. This would also reduce the complexity of the methodology and remove the expert judgment used to select the use of a weighted average with an exponential shape based on Beta=0.99.<br><br>☐ The methodology should result in a stable UFR and not annual changes – a simple and straightforward way to achieve this is to recalibrate at intervals of a significant number of years and to phase-in any changes. With the current EIOPA proposal, the UFR would likely be recalibrated on annual basis which is not in line with the legal texts which require a stable UFR.<br><br>o A target UFR value should therefore be recalculated after a long, fixed period of time. If the new figure differs from the existing UFR, the new figure would be phased-in over a number of years with a maximum annual change of 10 bps.<br><br>o Any methodology should be back tested to confirm it meets the objective of a long-term stable rate. | For resolution, please see section 2.6 of this consultation report.<br><br>For resolution, please see section 2.4 of this consultation report. |
| 13. | SSA | General Comment | ☐ We welcome that the proposed methodology to derive the UFR is transparent and that it provides the calculation of a stable and predictable UFR. | Noted. |

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| | | | ☐ We believe that the current UFR of 4.2% should be kept until the Solvency II standard formula has been reviewed. In particular, it must be ensured that the methodology and assumptions underpinning the discount rate is not changed elsewhere.<br><br>☐ It is in our view inappropriate to round the inflation target. The reason for this is that the inflation target is normally an important assumption for modelling inflation rates in cash flow projections used in the calculation of technical provisions. From a valuation point of view, it is inconsistent to round or adjust the inflation target in the UFR but allowing for it elsewhere in the calculation of technical provisions. Therefore, the expected inflation in UFR should be based on unadjusted currency specific inflation.<br><br>The same argument can be used against limiting the annual change in UFR, which is likely to be driven by a change in the inflation target. However, we believe that a stabilized UFR is a more important objective and agree with the proposed limit to the annual change of the UFR of 20 bps in this regard. | For resolution, please see section 2.2 of this consultation report.<br><br>We are not convinced that the use of inflation targets without bucketing results in more liable estimates of the expected inflation. It would however increase the volatility of the UFR. We note that most stakeholders agree with the proposed bucket approach.<br><br>Noted. This element of the methodology is unchanged. |
| 14. | Storebrand | General Comment | The Storebrand Group is a leading player in the Nordic market for long-term savings and insurance, operating a total of 1.8 million customers in Norway and Sweden. | For resolution, |

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| | | | Storebrand supports the view put forward by Insurance Europe that the UFR value should be kept at its current level until the review of the Solvency II standard formula.<br><br>Storebrand would like to comment on the proposed bucket approach for expected inflation. We believe central bank inflation targets should be used instead. If a bucket approach is used, it should be more granular, and in line with the international standard from IAIS. | please see section 2.2 of this consultation report.<br><br>We are not convinced that the use of inflation targets without bucketing results in more liable estimates of the expected inflation. It would however increase the volatility of the UFR. We note that most stakeholders agree with the proposed bucket approach.<br><br>The International Capital Standards of the IAIS are still under development. |
| 15. | TSE | General Comment | Underlying the consultation is the question of how should insurers price and discount safe financial liabilities whose maturity exceeds the maturity of liquid traded assets with equal degree of certainty – which is a key question in the economic science and linked to many theoretical works in the last decades.<br><br>In answering this question, EIOPA follows however a contestable purely statistical methodology that completely ignores the scientific progesses that have been made in economics over the last two decades.<br><br>In particular, two recent branches of the economics literature provide a scientifically- | |

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| | | | based approach to the problem of the UFR, which cannot be overlooked in the current economic and monetary context. Both indeed conclude that:<br><br>☐ there is no rationale to revise the UFR level even if the current observed short interest rates are lower than their levels at the time of its initial setting for Euro liabilities;<br><br>☐ there is even less rationale to envisage a yearly revision of UFR as most economic models would define it as a constant (as long as collective beliefs about the secular growth rate is perennial);<br><br>☐ there are credible and important arguments to keep the UFR around its current level for Euro liabilities (as a sum of a real long-term component close to 2 to 2.5% and an inflation target in the Eurozone of 2% as set by the ECB).<br><br>First, in asset-pricing theory, experts have developed models of "long-run risk" initiated by Bansal and Yaron (2004). These developments focus on slow-moving stochastic factors that affect the value of assets with extra-long maturities. They can explain the classical puzzles of asset prices that emerged from the traditional CAPM literature. Their predictive power for asset prices has been much improved compared to the CAPM. Therefore, these models could – and should -- be used to estimate what extra-long interest rates would prevail at equilibrium if a liquid market would exist for long-dated safe assets. In these models, the UFR is a deterministic function of the asymptotic growth rate of consumption. Although the short-term interest rate fluctuates widely with the volatile expectations about short-term economic growth, the UFR is almost constant, as are our beliefs about the growth of our economies in the coming centuries. We learned from this highly visible branch of the finance literature that the UFR should be revised only very infrequently, only when our collective beliefs about the long-term growth of our economy have been modified.<br><br>It must be noticed that the proposed methodology of the Consultation Paper is completely disconnected from this approach. The averaged short-term interest rates over the last 50 years, weighted or not, is indeed a very crude instrument to detect changes in beliefs about the secular growth of our economies. | For resolution, please see section 2.2 of this consultation report.<br><br>For resolution, please see section 2.4 of this consultation report.<br><br>We note that modelling the UFR as a deterministic function of the asymptotic growth rate does not completely solve the estimation problem, because the asymptotic growth rate still needs to be estimated. While there may be a correlation between real rates and economic grows, there is also evidence for difference, see |

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| | | | | footnote 16 of the consultation paper. |
| | | | The second branch of the economics literature that is related to the UFR is about the discount rate that should be used to evaluate the "social cost of carbon", i.e., the discounted value of the climate damages generated by emitting one ton of CO2 today. Because the duration of this "liability" can be measured in decades and centuries, many prominent economists (see for example the Stern Report (2007)) have taken a stand about what UFR should be used in climate change economics. There are clear arguments (law of one price; cost-benefit theory) for why governments, regulators and private parties should use the same rate to discount all safe assets and liabilities in the economy. Gollier (2012) provides a survey of the literature that emerged at the frontier between finance theory and environtmental economics about what UFR should be used. Drupp et al. (2015) report the results of a survey of over 200 experts of this field. This survey describes a strong consensus around a mean real UFR of 2.27% (to which one should add the inflation target component of 2% as set by the ECB to reach the UFR as defined by EIOPA, thus at 4.27%). The respondents were also asked to estimate the expected real interest rate in the distant future, yielding a mean estimation at 2.38%. Notice also that this literature focuses on "the" long-term discount rate, making it quite explicit that this rate should not vary through time. In fact, most models of this literature have that property that the UFR is a constant.<br><br>The Consultation Paper is based on the idea that markets provide no hint about how to value very distant costs and benefits. This is an exaggeration. Giglio, Maggiori and Stroebel (2015) estimated discount rates for maturities from 50 to 999 years by comparing real estate prices of freeholds (with infinite property rights) to those of leaseholds (with property rights of fixed maturity from 50 years to 999 years), both in the UK and in Singapore. Their analysis suggests that the discount rate for real estate assets is slightly below 2.6% for 100-year maturity, justifyring a UFR as set by EIOPA around 4.5%.<br><br>Bibliography | The objective of Solvency II is to protect the insurance policyholders and beneficiaries. It is far from clear that a UFR methodology for the discounting of insurance liabilities in that context can be compared with long-term discount rates for estimating the social cost of carbon.<br><br>As to the survey of Drupp et al., we note that it does not seem to report a strong expert consensus that the social discount rate is 2.27%. The expert views range from 0 to 10% which 92% |

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| | | | Bansal, R., and A. Yaron, (2004), Risks For the Long Run: A Potential Resolution of Asset Pricing Puzzles, Journal of Finance, 59, 1481–1509.<br><br>Drupp, M., M. Freeman, B. Groom and F. Nesje, (2015), Discounting disentangled, Grantham Institute on Climate Change and the Environment WP 172, London School of Economics.<br><br>Giglio, S., M. Maggiori, and J. Stroebel, (2015), Very long-run discount rates, Quarterly Journal of Economics, 130, 1-53.<br><br>Gollier, C., (2012), Discounting the planet's future: The economics of discounting in an uncertain world, Princeton University Press. | of experts being comfortable with a discount rate between 1% and 3%. 2.27% is the mean of the expert views. The earlier survey of Weitzman from 2001 is referred to in the paper of Drupp et al. with a mean expert view on the discount rate of 3.96%.<br><br>As to the analysis of Giglio, Maggiori and Stroebel it is not clear to what extent the difference between real estate prices for freeholds and leaseholds in the UK and Singapore correspond to the UFR for Solvency II. Where the comparison of these two prices yields an estimate for the UFR or its real rate component, we |

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| | | | | note that these are based on data from 1995 to 2013 (Singapore) and 2004 to 2013 (UK). For that period the proposed UFR methodology would provide higher UFRs than currently. |
| 16. | UoA | General Comment | The scope of this consultation is limited to the value of the UFR, but the stated goal of policyholder protection would have been served even better by a consultation on the entire term structure extrapolation procedure. Disadvantages of the current approach, such as inconsistencies with observed market data for liquid maturities and kinks in the nominal yield and forward curves, could then have been avoided or mitigated. This can for example be achieved by using a different method to determine the last liquid point and/or the speed of convergence, or by using methods that have been reported in the academic literature which define the UFR as a weighted average of historical or current forward rates from the liquid part of the curve. A simple special case of the last approach extends the last liquid forward rate to all higher maturities; that method was used by some central banks before the Solvency II extrapolation method was introduced. | EIOPA extrapolates the risk-free interest rates in line with the legal provisions of Solvency II. For the euro the legal text provides the last liquid point and the convergence period for market conditions similar to the market conditions at the entry into force of the Omnibus II Directive (see recital 30 of that |

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| | | | | Directive). The Solvency II Directive requires the extrapolation of the risk-free interest rates towards a UFR. |
| 17. | IRSG | Q1. (pg. 56) | Yes, the IRSG can support the use of expected inflation plus long-term real interest rates as the basis for calibration. | Noted. This element of the consultation proposal is unchanged. |
| 18. | AAE | 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?<br><br>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.<br><br>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. | The proposal to apply a single expected real rate is not necessary based on the assumption that the real rates of economies will converge. The main reason for this approach is that consistent data across all currencies to derive country-specific estimates are not available. Furthermore, currency-specific real rates are likely to be more volatile. We note that most |

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| | | | 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. | stakeholders agree to the proposed approach.<br>For resolution, please see section 2.8 of this consultation report. |
| 19. | AMICE | Q1. (pg. 56) | Q1: 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?<br>AMICE agrees to maintain the UFR as the sum of the expected real rate and expected inflation. However, an alignment with the wording used in the Delgated Acts is needed. Article 47 of the Solvency II Delegated Regulation lays down the principles for deriving the UFR. It is explicitly stated in Art. 47 (1) that the "ultimate forward rate referred to in paragraph 1 of Article 46 shall be stable over time and shall only change as a result in changes in long-term expectations."<br>The methodology proposed by EIOPA for estimating the UFR aims to estimate a long term equilibrium of the short term nominal interest rate that differs between currency areas. The proposed procedure is based on separate estimates of the real rate and expected inflation. In the Euro case, the UFR is estimated to be reduced from today's 4.2 to 3.7 percent. In our view the proposed method to estimate the real rate and inflation expectations is appropriate. However, EIOPA should take into account that this approach is based on an inherent assumption that interest rates will converge between member states and that the current policies for inflation targets will materialise exactly and eternally. None of these assumptions have materialised in recent years. The EIOPA estimate should also be validated by comparing the estimate of 3.7 percent to actual historical nominal rates. | The expected real rate and expected inflation rates correspond to long-term expectations. The word is not included in the names for reasons of practicability.<br>We acknowledge that past inflation rates were often higher than the expected inflation rate of 2% derived with the proposed methodology. The inflation target of central banks is |

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| | | | | forward-looking and therefore deemed to be more relevant for the expected inflation rate than past inflation rates. |
| 20. | CFO/CRO Forum | Q1. (pg. 56) | Overall, we believe the methodology to determine the UFR should be kept simple and should be the simple sum of long term expectations in real rates and inflation. Adding an adjustment for convexity would make the methodology and assessment more complex, in particular as expert judgment is needed in this area and the term premium is disregarded in accordance with the Regulation.<br><br>The methodology for real rates relies on short term instruments whose duration is significantly shorter than 1 year. While we acknowledge that using long term average rates would help ride over the cycle, using short term rates to infer long term expected rates is unlikely to provide for stability of the results. | Noted. This element of the consultation proposal is unchanged.<br><br>For resolution, please see section 2.8 of this consultation report. |
| 21. | DAV | Q1. (pg. 56) | Yes, DAV agrees with the basic principle that UFR should equal the sum of the expected real rate and expected inflation.<br><br>However, we have concerns over the approach used to determine each component and the frequency with which the UFR would be refreshed – these are referred to elsewhere in this consultation response.<br>Apart from this, DAV appreciates the date proposed when the UFR is expected to be publicly available to enable companies to forecast the UFR development. | Noted. This element of the consultation proposal is unchanged.<br><br>Please see resolutions there.<br>Changes to the UFR will be announced by end of March of the preceding year, see the first |

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| | | | | paragraph of the methodology description in section 3. |
| 22. | GDV | Q1. (pg. 56) | Yes, we agree to maintain the general approach and to calculate the UFR as the sum of expected long-term real interest rate and expected inflation.<br><br>This approach is reasonable and in line with the Delegated Regulation on Solvency II. | Noted. This element of the consultation proposal is unchanged. |
| 23. | Global Warning | Q1. (pg. 56) | The approach seems sound. Provided the forecast of expected real rate is sound. See §203 comment.<br><br>Macroeconomists have been unable to provide wise explanations about the so-called economic "secular stagnation". They have been unable to explain what is really the components of the so-called "Solow residual", which should explain 70% of long-term economic growth, when capital and labour only provide explainations for a meagre 30%.<br><br>With some other macroeconomists, we suppose that the importance of energy in economic growth is strongly underestimated. As the most efficient energy carrier, oil is of crucial economic importance, far beyond its only price. | Noted. |
| 24. | IdA | Q1. (pg. 56) | Q1: 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?<br><br>IA agrees with the basic principle that UFR should equal the sum of the expected real interest rate and expected inflation rate. However, we have concerns on the approach used to determine each component and the frequency with which the UFR would be refreshed.<br>For instance there is no evidence that using time weight in calculation should be more appropriate then using a simple average, as the current rates are a direct result of ECB | Noted. This element of the consultation proposal is unchanged.<br><br>For resolution, please see section 2.6 of this consultation report. |

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| | | | monetary policy which is not intended to remain in place over the long-term.<br>Another exemple is about using 3-months interbank interest rates to estimate a 1 year rate witch could lead to under estimate long term UFR. | For resolution, please see section 2.8 of this consultation report. |
| 25. | IFA | Q1. (pg. 56) | We agree with the approach. As noted in the consultation, the approach is theoretically sound and consistent with the Solvency II Delegated Regulation. | Noted. This element of the consultation proposal is unchanged. |
| 26. | Insurance Europe | Q1. (pg. 56) | Q1: 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?<br><br>Yes, Insurance Europe agrees to maintain the UFR as the sum of expected real rate and expected inflation as this approach is in line with the Article 47 in the SII Delegated Regulation. However, clarification is needed as it is confusing that EIOPA refers to "expected real rate" in their proposal while the regulation (Article 47) refers to "long-term real interest rate".<br>☐ The UFR is an essential part of the SII framework and it plays a very significant role in the prudential calculation of technical provisions and thus for insurers' capital requirements. The idea that the UFR should be based on long-term expectations and thereby provide a stable anchor for the calculation of the yield is very sensible.<br>☐ But we note that Article 47 of the Delegated Acts states that: "For each currency the ultimate forward rate shall take account of expectations of the long-term real interest rate and of expected inflation, provided those expectations can be determined for that currency in a reliable manner." EIOPA should keep this definition and avoid "redrafting" the legal text. | Noted. This element of the consultation proposal is unchanged.<br>The expected real rate and expected inflation rates correspond to long-term expectations. The word is not included in the names for reasons of practicability. |
| 27. | SSA | Q1. (pg. 56) | ☐ We believe there is a risk that a general European UFR will not be proper for small countries. We find it important that not only expected inflation but also the real interest rates can be country specific. This could be achieved by letting the national FSA decide whether the default UFR from EIOPA is suitable in their country and else | We disagree with this proposal. In order to ensure a consistent |

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| | | | calculate an UFR by the same method (i.e. using a similar time period and type of averaging), but based on national data. | calculation of technical provisions the risk-free interest rates for a currency should be the same for all countries. |
| 28. | UoA | Q1. (pg. 56) | The fundamental assumption underlying the approach proposed in the consultation paper is that forward rates for very high maturities can be reliably estimated as the sum of weighted averages of historical real rates and central banks' inflation targets. But this leads to extrapolated nominal term structures that are incompatible with, for example, current market data for the deep, liquid and transparent part of the euro curve between maturities 20 and 30. This suggests that this fundamental assumption does not necessarily hold under all circumstances. It also suggests that the proposed approach may be at odds with Article 43(a) of the Delegated Regulation, which states that insurance and reinsurance undertakings must be able to earn the rates in a risk-free manner in practice. | Noted. |
| 29. | IRSG | Q2. (pg. 56) | The IRSG agrees with the use of as much historical data as is available and to add to that data with each additional year over-time.<br><br>However, Denmark should be included as one of the countries because almost as much data is available as for the other countries included and there seems be no rationale to exclude them. | For resolution, please see section 2.7 of this consultation report. |
| 30. | AAE | 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?<br><br>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. | Noted. These elements of the consultation proposal are |

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| | | | 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<br><br>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.<br><br>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.<br><br>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. | unchanged. |
| | | | 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 | The link between the future point in time to which the estimate relates (e.g. 60 years, |

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| | | | should be for longer series. | the convergence point for the euro) and the length of the time series for the estimation (e.g. 66 years, from 1960 to 2015). Additional data, where they are relevant, should improve the reliability of the estimation. |
| 31. | Actuaris | Q2. (pg. 56) | Yes, the widening window seems to be the most accurate method since it enable us to capture long-term pattern. | Noted. This element of the consultation proposal is unchanged. |
| 32. | AMICE | Q2. (pg. 56) | Q2: 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?<br>We consider the widening window approach to be appropriate. We do, however, propose that longer time series are used, when available and appropriate. The availability of longer time series should generally not be a concern. | We deem the data before 1960 not relevant because of the impact of World War II and the following economic recovery. |
| 33. | CFO/CRO Forum | Q2. (pg. 56) | Having in mind the overall objective of deriving UFR levels, which is to provide a long-term, stable over time and counter-cyclical convergence point, we believe that the | EIOPA believes that the use of |

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| | | | whole sample of historical data should be considered, and expert judgment should be used to remove outliers. | expert judgement should be minimised to ensure that the methodology can be clearly specified and that the UFR is determined in a transparent and objective manner.<br><br>Also extreme values for real rates experienced in the past were a part of the economic reality and are therefore relevant for estimating the future. |
| | | | Given the long term nature of the UFR, we believe it makes more sense to use historical data instead of current implied market expectations to derive the long term real interest rate. Using market implied long term expected real rates would introduce volatility in the UFR, contrary to the fundamental principles of the UFR. In contrast, the use of historical data acts as a counter-cyclical measure and thus provides an outcome that is better aligned with the purpose of the extrapolation towards a stable UFR. | Noted. This element of the consultation proposal is unchanged. |
| 34. | DAV | Q2. (pg. 56) | DAV acknowledges 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. First of all, it ensures that isolated extreme amplitudes do not gain too much weight as they are not significant from a long term perspective. Second, calculating | Noted. This element of the consultation proposal is unchanged. |

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| | | | the UFR will become more and more stable over time as further data are included in the calculation of the expected real rate.<br><br>It should be noted that the question on 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. | |
| 35. | GDV | Q2. (pg. 56) | Yes, we consider using data since 1960 in a widening window approach to be appropriate for averaging past real interest rates.<br><br>Long time series of historic data allow to calculate a long term average. Because no trend is evident in the data, this average can be interpreted as an equilibrium. Hence, this average rate is the best estimate for the real interest rate far in the future. In contrast, an estimation solely based on current market data would be heavily distorted by the influence of short-run fluctuations which are irrelevant in the long run.<br><br>Data before World War II or from its direct aftermath should not be applied because the political and economical state of the world at that time was too different from nowadays. As high quality data are available since 1960/61 this seems to be best starting point for the calculation. In order to get the most reliable and most stable estimates, all available data since that point in time should be applied. This is achieved by the widening window approach. This approach seems to be most suitable to ensure stability of the UFR over time and should be applied.<br><br>However, the data from the seven countries considered should be weighted differently. Geographical weighting would considerably improve the representativeness of the real interest rate component in comparison to simple equal-weighting. Besides that, there is no reason to forgo this worthwile improvement because the geographically weighting discussed on page 32 is transparent, replicable and would not add material complexity | Noted. This element of the consultation proposal is unchanged.<br><br>For resolution, please see section 2.7 of this consultation report. |

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| | | | to the calculation. In particular, the weights of all past years are known. The unkown weighting for the current year has very little influence on the overall results. Furthermore, in most cases, the weights change only gradually from one year to the next.<br><br>Moreover, to apply 3-months interest rates is overly conservative. Because the UFR is used as an 1-year-forward rate, it should also be calibrated with 1-year-rates. If appropriate 1-year data are not available, the average of the 3-month data should be scaled at least. | For resolution, please see section 2.8 of this consultation report. |
| 36. | Global Warning | Q2. (pg. 56) | No. At the macroeconomic level we are experiencing is a huge transition which started in the 1970s. The formula gives too much weight to the distant past, and softens the structural decrease in real interest rates.<br><br>The two oil crisis period were a turning point in world history. Growth has slowly declined since that time. This has accelerated in the advanced economy since the birth of China might in the 2000s. | Excluding the first decades of the time series from the average would make the estimate too volatile. |
| 37. | IdA | Q2. (pg. 56) | Q2: 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?<br><br>Whether this window is appropriate, it can only be considered in conjunction with whatever weighting 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 calculated average from the widening window seems to exhibit material variation over time. EIOPA should test the stability of the widening window approach to ensure that the UFR remains stable over time. | The consultation paper includes an assessment of the stability of the widening window approach. |
| 38. | IFA | Q2. (pg. 56) | We agree that in order to obtain a stable estimate of long-run real rates of return, a significant period of historical data is required, with rates going back to 1960 achieving this purpose. However we do not believe that the historic averaging approach is appropriate; refer to comments made in the general comments section above. | Please see resolutions there. |
| 39. | Insurance | Q2. (pg. 56) | Q2: According to the proposed methodology the expected real rate is calculated on the | |

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| | Europe | | 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?<br><br>Yes the period is appropriate, but we have the following comments on the particular data sources and calculation methodology:<br><br>☐ Historical data should be used as using current market data to generate the UFR is not in line with requirement of stability, especially because current data are subject to short-term volatility. Historical rates have to be used because there is absolutely no evidence that current or recent market data such as forward rates can actually be used as useful or reliable predictors of rates in the future. In fact academic studies (Choudry, Macauley, Hickman, Culbertson, Fama) have found evidence that forward rates are not accurate predictors of future spot rates – see comments on paragraph 38 for sources and further information. Current and recent forward rates seem to do nothing other than provide forecast line with current rates – therefore when forward rates were high, they (wrongly) predicted future spot rates would be high, now when forward rates are low they predict (potentially wrongly too) that future spot rates will be low.<br><br>☐ EIOPA has decided to base its proposal on database from the European Commission (AMECO) and the OECD (MEI). While these appear reasonable sources, EIOPA should made clear in its assessment whether these database are consistent and whether EIOPA has investigated other potential sources.<br><br>☐ In the extrapolation, the UFR is used as the one year forward rate. It is therefore seems incorrect to use 3-months interbank interest rates as a basis to calibrate the UFRs values. It therefore seems incorrect to use 3-months interbank interest rates as a basis to calibrate the UFRs values. . If there is no suitable source of 1-year maturity rates data then 3-month data must be scaled to provide 1-year maturity rates. EIOPA should therefore at least confirm that no suitable 1 year rate data source is available and that the 3-month data referred to in the AMECO database have been annualized into 1-year rates equivalents. We note that one year expected inflation data is used as input and this is correct.<br><br>☐ We agree that long-term historical data series can be used and additional years should be added as time passes as proposed. However, should the use of AMECO and MEI database confirmed, we would recommend starting the data at 1961 because although ideally data from earlier years would be used, 1961 is the first year a wide | Noted. This element of the consultation proposal is unchanged.<br><br>The options for other data sources are set out in the consultation paper.<br><br>For resolution, please see section 2.8 of this consultation report.<br><br>Agreed. See revised |

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| | | | set of data is available.<br><br>☐ The year 1960 should be excluded in the calibration of the annual rates as defined in EIOPA methodology because there are missing data for too many countries. Including it involves assumptions that bring noise in the overall calculation.<br><br>☐ Denmark should not be excluded from the country data used in the calculation of the expected real rate. There is not sufficient justification (and none is given in the consultation paper) to exclude available data from Denmark for which there is almost the same data available as for other countries. It is reasonable to include at least Denmark because (1) AMECO and OECD data are currently available for this country (respectively as from 1961 and 1967) and (2) EIOPA has no rationale to exclude Denmark since EIOPA acknowledges that it based its decision considering the weights of currencies determined on the basis of a survey to which Denmark did not respond (see footnote 23 page 29).<br><br>☐ Geographical weights should be applied to country data. There is strong logic in country weighting. Since the expected annual yield arising from an average insurer' assets portfolio (proxied by the annual rate defined in EIOPA's proposal) is driven by the weighting of the yield of investments made across several countries, the assumption that the annual rate is based on a simple average is wrong. We believe that a geographical weighting of the countries considered improves the representativeness of the real interest rate component, and does not add material complexity being a simple calculation. In this regard, the EIOPA approach on geographical weighting as suggested in the consultation document represents a step in the right direction. However, the EIOPA approach still contains some open issues that must be clarified before the implementation of the new UFR methodology. | methodology.<br><br>For resolution, please see section 2.7 of this consultation report.<br><br>For resolution, please see section 2.7 of this consultation report. |
| 40. | SSA | Q2. (pg. 56) | ☐ We believe that the widening window approach, i.e. to fix the start date and using weights for averaging real rates, is unnecessarily complicated as there are no evidences that the inclusion of past economic cycles from 1960 is most appropriate for calculating an UFR. We think that a rolling window approach using 50 years' worth of data and equal weights would take both of the desired goals, i.e. stability in the UFR and the representativeness of the time period used, into account in a more simple and transparent way. | For resolution, please see section 2.7 of this consultation report. |
| 41. | IRSG | Q3. (pg. 56) | The IRSG proposes to use a simple average on the historical data rather than weighting recent years's data as more important than older data because there does | For resolution, please see section |

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| | | | not appear to be any evidence that recent data is more predictive of the future rates far in the future and if anything recent data may be distorted due to the ECB monitory policy. This would also help remove the dependency on the additional "beta" parameter. It is not clear how the beta parameter was determined. but while it may not impact the initial UFR calibration for 2015, it can have significant impact on the level of the UFR going forward. | 2.6 of this consultation report. |
| 42. | AAE | 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?<br><br>This is a matter of (expert) judgement rather than objective theory. (see our remarks in General Comments). There is no theoretically correct weighting approach.<br><br>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. | Noted.<br><br>For resolution, please see section 2.6 of this consultation report. |
| 43. | AMICE | Q3. (pg. 56) | Q3: 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?<br>The most questionable aspect of the proposed weights is the fact that a weight of zero is given to all years prior to 1960. We propose, as also mentioned in Q2, that weights are also given to years prior to 1960 by utilising a longer time series. The proposal regarding the relative distribution of weights within the utilised time series is of less concern. The proposed mechanism may serve the purpose. | For resolution, please see section 2.6 of this consultation report. |
| 44. | CFO/CRO Forum | Q3. (pg. 56) | Instead of using the geometric weighted average, we believe a simple arithmetic average would serve the goal of stability better and would prevent significant levels of judgement and subjectivity. | For resolution, please see section 2.6 of this consultation |

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| 45. | DAV | Q3. (pg. 56) | DAV considers 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. | For resolution, please see section 2.6 of this consultation report. |
| 46. | GDV | Q3. (pg. 56) | We consider equal weights to be most appropriate.<br><br>The real interest rates in the sample exhibit no trend or break but rather some kind of medium range cycle. Thus, data from different decades have all the same value for the estimation of the long-term expected real interest rate far in the future.<br><br>In contrast, a higher weight for current data would overestimate the long-run consequences of short or medium term fluctuations. This disadvantage would be especially serious in the current financial market situation which is heavily distorted. This distortion caused by monetary policy might continue for several years. Nevertheless, the crisis measures are of temporary nature and do not change the equilibrium rate in the very long run (60 years, 100 years, or more from now). Thus, all data from the time series should be weighted equally (i.e. beta = 1). This has also the advantage to avoid arbitrary weighting decisions and to reduce the complexity of the approach considerably.<br><br>However, the data from the seven countries considered should be weighted differently. Geographical weighting would considerably improve the representativeness of the real interest rate component in comparison to simple equal-weighting. Besides that, there is no reason to forgo this worthwile improvement because the geographically weighting discussed on page 32 is transparent, replicable and would not add material complexity to the calculation. In particular, the weights of all past years are known. The unkown weighting for the current year has very little influence on the overall results. Moreover, in most cases, the weights change only gradually from one year to the next. | For resolution, please see section 2.6 of this consultation report.<br><br>For resolution, please see section 2.7 of this consultation report. |

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| 47. | Global Warning | Q3. (pg. 56) | The weight are much too high. The inertia parameter 0,99% is too high. To give such weight to the 70s and the "golden" sixties is irrelevant. | Reducing the parameter would make the estimate for the expected real rate too volatile. |
| 48. | IdA | Q3. (pg. 56) | Q3: 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?<br><br>This is an expert judgement – Theoretically, there is no correct weighting approach. In the absence of any statistical evidence that can be used to prove that more recent data could be a better predictor of the long-term average, equal weighting seems a reasonable default approach. | For resolution, please see section 2.6 of this consultation report. |
| 49. | IFA | Q3. (pg. 56) | We agree that a geometric weighting scheme is appropriate; it favours most recent data and therefore allows more recent trends in real rates of return to influence the long-run estimate. As above, we do not however believe that the historic averaging approach is appropriate; refer to comments made in the general comments section above. | Noted. This element of the consultation proposal is unchanged. |
| 50. | Insurance Europe | Q3. (pg. 56) | Q3: 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?<br><br>Insurance Europe considers equal weights (i.e. Beta=1) should be used, in other words a simple average.<br><br>Insurance Europe disagrees with the approach taken to give more weights on the most recent years. While there appears to be some evidence of changes between the period covering the first half of the 20th centuary and since then, we are not aware of any evidence of any further fundamental shift since then. There is no way to know if rates will stay low for the next 50 years or increase from current levels back to the higher | For resolution, please see section 2.6 of this consultation report. |

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| | | | levels seen during the period until about 10 years ago. Therefore, a simple average should be applied to the historical data series in the calculation of the expected real rate.<br><br>There is no evidence provided that shows that recent data will be more representative of long-term rates than older data and therefore justify giving higher weighting for the recent years. In fact the opposite can be more logically argued because the current rates are a direct result of ECB monetary policy which is not intended to remain in place over the long-term and can be considered a distortion of recent natural rates. This would also reduce the complexity of the methodology and remove the expert judgment used to select the use of a weighted average with an exponential shape based on Beta=0.99. | |
| 51. | SSA | Q3. (pg. 56) | ☐ We believe that a rolling window approach using 50 years' worth of data and equal weights should be used (see Q2). | For resolution, please see section 2.6 of this consultation report. |
| 52. | IRSG | Q4. (pg. 56) | Yes, we agree with the proposal to increase the number of buckets to ensure that the framework also works for high inflation currencies. | Noted. This element of the consultation proposal is unchanged. |
| 53. | AAE | 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?<br><br>The use of inflation buckets allows for a higher degree of replication and might increase the robustness of calculation.<br><br>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. | Noted. This element of the consultation proposal is unchanged. |

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| 54. | AMICE | Q4. (pg. 56) | Q4: 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?<br><br>It might not be a relevant presumption that the inflation rate in a distant future will be exactly that of the current targets of the current policymakers. The future might bring other policymakers with other targets, and additionally the ability of any policymaker to achieve any target will be notoriously weak. There is also the effect of inherently unpredictable changes in inflation targets. However, and given that inflation targets are used, the exact target should be used for each currency area; there is no reason to use a bucket approach. | The use of buckets ensures consistency with the current UFRs. This approach is simple to implement, easy to replicate and allows for a stable output. We note that most of the stakeholders that commented support the bucket approach. |
| 55. | CFO/CRO Forum | Q4. (pg. 56) | The current methodology derives the long-term expectation on inflation rates based on inflation targets, and on this basis introduces four different buckets. We agree with the current approach as we anticipate the expected inflation rate will remain stable, given central banks target inflation rates tend to move very little.<br><br>We believe the current approach of differentiating currencies according to the relevant target inflation seems reasonable overall, and has the merit of having been tested and known by firms for some years now.<br><br>In contrast, a methodology whereby as many UFR levels as currencies would be determined seems unrealistic, and would imply a capacity to assess a significant number of parameters, leading to low stability and potential inconsistencies in outcome over time.<br><br>Since the introduction of target inflation is quite recent, we believe that historical inflation rates, provided a sufficiently long track record is available, could be used as an additional benchmark to provide comfort on the outcome using inflation targets. While keeping in mind the overall objectives of the UFR in terms of stability and | Noted. This element of the consultation proposal is unchanged. |

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| | | | counter-cyclicality, we believe expert judgment is particularly relevant in this area. | |
| 56. | DAV | Q4. (pg. 56) | We have no major objections to the bucketing approach. DAV considers it appropriate to use the buckets with specified values for the expected inflation rate as suggested by EIOPA. The specified buckets cover the current data satisfactory. More buckets do not seem adequate with respect to the data sources available. | Noted. This element of the consultation proposal is unchanged. |
| 57. | GDV | Q4. (pg. 56) | Yes, we consider both the bucketing approach and the chosen buckets to be appropriate.<br><br>Inflation persistently differs by country. Thus, even in the long run, it would not be sensible to expect the same inflation rate all over the world. In order to avoid a bulk of slighlty different inflation estimates, it is reasonable to define several buckets which pool countries of similar inflation patterns. By adding a high inflation bucket, the few high inflation currencies are appropriately taken into account.<br><br>The general approach of considering central banks' inflation targets is reasonable. In contrast, historic inflation rates would not be suited for the forecast of the future inflation rate. In most countries, inflation patterns have materially changed in the past. The reason is that inflation is not a natural rate but to a high degree subject to policy mesasures. Thus, to apply fixed inflation targets as forecast for future inflation is the most sensible approach. In the euro area, e.g., the ECB adheres to its inflation target and aims to achieve this target at least in the mid run – whatevers it takes.<br><br>If inflation targets change nevertheless, the UFR would change abruptly. In this situation, a phasing-in with a limitation of the annual change is needed in order to ensure the required stability of the UFR and to avoid overly volatile results (see Q5). | Noted. This element of the consultation proposal is unchanged. |
| 58. | Global Warning | Q4. (pg. 56) | By itself, economist should undertake a new analysis of inflation. High inflation was a rare global event in world economic history. It is a symptom of energy importance that such a weird period happened in the 1970s, when the world faced oil contsriants, twice. Since that transition time, inflation figures has got smaller and smaller, and unconventionnal monetary policies have been unable to revive inflation, nowhere. | Noted. |

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| 59. | IdA | Q4. (pg. 56) | Q4: 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?,<br><br>We have no major objection to the bucketing approach. | Noted. This element of the consultation proposal is unchanged. |
| 60. | IFA | Q4. (pg. 56) | We do not agree with the proposed approach. It is difficult to see why the 'four buckets' approach is used to allow for inflation expectations, rather than a 'pure inflation target'. The rationale given in the consultation paper is that it leads to the same UFRs for all European countries. However, this ignores the fact that certain central banks in Europe have higher long-run inflation targets and are intentionally differentiating monetary policy from that of countries with lower inflation targets. Actual inflation targets should therefore be used to ensure that yield curves reflect available economic information for each country. | The use of buckets ensures consistency with the current UFRs. This approach is simple to implement, easy to replicate and allows for a stable output. We note that most of the stakeholders that commented support the bucket approach. |
| 61. | Insurance Europe | Q4. (pg. 56) | Q4: 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?<br><br>Yes, the proposed inflation bucketing (*) and addition of an extra bucket is appropriate in order to achieve stability and ensure the framework works for all high inflation currencies too.<br>☐ With regards to data from OECD, EIOPA should make clear whether the initial impact of changing the data source has been assessed and whether the definition of the central banks regarding inflation rates is similar to the definition as used by the OECD in their MEI database.<br>(*)Finance Norway does not support the bucket approach as proposed by EIOPA. The | Noted. This element of the consultation proposal is unchanged.<br><br>The OECD inflation rate relates to consumer prices. Central banks' inflation targets are usually also |

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| | | | design of the inflation component should be dealt with as part of the Solvency II review process. | based on that inflation concept. |
| 62. | IRSG | Q4. (pg. 56) | Yes, we agree with the proposal to increase the number of buckets to ensure that the framework also works for high inflation currencies. | Noted. This element of the consultation proposal is unchanged. |
| 63. | SSA | Q4. (pg. 56) | ☐ It is in our view inappropriate to use inflation buckets for the expected inflation rate. The reason for this is that the inflation target is normally an important assumption for modelling inflation rates in cash flow projections used in the calculation of technical provisions. From a valuation point of view, it is inconsistent to adjust the inflation target in the UFR but allowing for it elsewhere in the calculation of technical provisions. Therefore, the expected inflation in the UFR should be based on unadjusted currency specific inflation targets. | The use of buckets ensures consistency with the current UFRs. This approach is simple to implement, easy to replicate and allows for a stable output. We note that most of the stakeholders that commented support the bucket approach. |
| 64. | Storebrand | Q4. (pg. 56) | Q4: "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?"<br><br>Storebrand believe the best option is "Alternative 3", where the expected inflation is set equal to the inflation target for that currency (paragraph 109 and 110). A large number of central banks have an inflation target, and as EIOPA points out, these inflation targets have an important influence on the expected inflation. We therefore see no appropriate reason why one should opt for a bucket-approach instead. The isolated effect of the proposed bucket approach for Norwegian insurers is a reduction of the UFR with 50 bp, from 2,5 % to 2 %. | The use of buckets ensures consistency with the current UFRs, including for the Norwegian krone. This approach is simple to implement, easy to replicate and allows for a stable output. We note that most of the |

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| | | | The buckets are meant to serve as proxies for the local central bank expected inflation rate for that particular currency. Storebrand finds the use of rather imprecise buckets for the expected inflation rate in vast contrast to the rest of the fine-tuned and granular modeling of other components in the Solvency II regime. Further, the rules for determining the right bucket are not quite in accordance with general rounding rules.<br><br>If EIOPA decides to use a bucket approach, it should be in line with the international standard from IAIS, as described in paragraph 204. The IAIS bucket approach, using 6 buckets, 2.5 % being one of them, would be more fine-tuned and appropriate for currencies that to not fit into the few EIOPA buckets. A more granulated approach to the buckets would also address the volatility EIOPA predict if the pure inflation target is used. | stakeholders that commented support the bucket approach.<br><br>The International Capital Standards of the IAIS are still under development. |
| 65. | AAE | 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?<br><br>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.<br><br>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. | For resolution, please see section 2.5 of this consultation report. |

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| | | | 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.<br><br>In addition to this: As mentioned in our general comments:<br><br>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. | For resolution, please see section 2.2 of this consultation report. |
| 66. | AMICE | Q5. (pg. 56) | Q5: 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?<br>We consider a limit to the annual change of the UFR to be appropriate. We do, however, propose to set the limit at 10 bps. Combined with our proposal that the rounding (cf Q6) is also made to 10 bps, we propose the simple, yet expedient, procedure that all changes to the UFR are of the size 10 bps. In paragraph 126 it is stated that a limit at 10 bps "modifies the course of the real rate average". This is, however, an artefact based on a too short time series, and would not appear when a suitably long time series is used. Otherwise, the UFR would move too much and this is not in line with the aim of reducing the volatility of the longer term cash flows. | For resolution, please see section 2.5 of this consultation report. |
| 67. | CFO/CRO Forum | Q5. (pg. 56) | There is a general consensus of support across our membership for the proposed limit, although some have suggested that a reduced limit of 10bps would be more appropriate. However, we would like to stress the importance of the fact that the limit cannot be a substitute for a genuinely stable UFR. | For resolution, please see section 2.5 of this consultation report. |
| 68. | DAV | Q5. (pg. 56) | A limit on the annual change of the UFR is necessary from an actuarial point of view to smooth significant changes in the inflation rate over several periods. A stable UFR is necessary for stable Solvency results and covers the essential part of the UFR, a long-term expectation of real rates and inflation.<br>A limit on the annual change of the UFR would provide greater predictability for the | Noted. This element of the consultation proposal is unchanged. |

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| | | | purposes of risk management and interest rate hedging.<br><br>The proposed magnitude of the annual change of 20bps appears too high without any further impact analysis. For both phasing-in and steady-state, it would be preferable to have a more restrictive limitation of the annual changes in the UFR, i.e. 5 to 10 bps instead of 20 bps. EIOPA's proposal of the UFR methodology allows the UFR to change by 100 bps within 5 years as required e.g. in projections of Solvency requirements in the ORSA. We regard this change too high from the perspective of a particularly long term parameter. Our proposal would limit the change of the UFR over a typical ORSA horizon of 5 years to 25 bps to 50 bps and hence only half of the change of the EIOPA proposal. For the ORSA a predictable and stable UFR is an indispensable requirement. In case a company wants to analyse the influence of more significant changes to the UFR to their risk profile, it can include such sensitivities in the companies individual ORSA process. | For resolution, please see section 2.5 of this consultation report. |
| 69. | GDV | Q5. (pg. 56) | Yes, we consider a limitation of the annual changes of the UFR as appropriate.<br><br>It is inevitable to restrict the maximum changes of the UFR in order to ensure stability of the UFR over time and to avoid overly volatile results. This holds for both cases – when a new methodology to derive the UFR is introduced and when the inflation target of a central bank changes.<br><br>The stability of the UFR is prescribed by law. Any methodology to derive the UFR must observe this legal setting. Moreover, a fast changing UFR would lead to severe short term movements in the overall results of the calculations. This would inevitably cast doubt on the validity of the entire quantitative requirements.<br><br>However, we do not consider the proposed limit to be appropriate. An annual change of up to 20 basis points is not in line with the legal requirement of a stable UFR and would cause overly volatile results. Instead, any change of the UFR must be phased-in at a slow pace. To this end, the UFR level must not be changed by more than 10 basis points compared to the previously applied level to ensure stability over time.<br><br>Moreover, it should also be avoided that changes in opposite directions occur in | Noted. This element of the consultation proposal is unchanged.<br><br>For resolution, please see section 2.5 of this consultation report.<br><br>For resolution, |

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| | | | subsequent years. To this end, the target value of the UFR (before phasing-in) should not be recalculated each year. In order to ensure a stable UFR, it would be more appropriate, instead, to maintain the target value for several years (e.g. 10 years). Once the target value is recalculated, the new figure is phased-in with annual changes of maximal 10 basis points. | please see section 2.4 of this consultation report. |
| 70. | Global Warning | Q5. (pg. 56) | The question is not relevant if the first starting calculus is adequate. If not, and overoptimistic assumptions are made in the formula, this proposed threshold could be trigered too often. | Noted. |
| 71. | IdA | Q5. (pg. 56) | Q5: 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?<br><br>Yes, a limit on the annual change would be appropriate and would provide greater predictability for the purposes of risk management and interest rate hedging. The amount of the annual limit should be calibrated after considering the aggregate impacts of changes to UFR – therefore, we could not comment on whether 20bps is itself appropriate – an impact analysis would be preferable. | For resolution, please see section 2.5 of this consultation report. |
| 72. | IFA | Q5. (pg. 56) | We do not agree with the proposed approach. As a consequence of the way in which real rates of return are estimated, significant changes in the UFR are likely to result from changes to central bank inflation targets. This should then feed through to the methodology used to determine the yield curve so that it reflects current information and is market consistent. | Not limiting the annual change of the UFR may result in drastic changes of the UFR where the inflation target is changes. That would not be in line with the stability objective for the UFR set out in article 47 of the Delegated Regulation. |

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| | | | If a 20 bps limit is used, but with the true UFR a significantly different value, then companies may come under pressure to disclose the impact of the ultimate level of the UFR in addition to the 'limited' rate. | This pressure seems to exist already today. The closer the UFR gets to a realistic value the lower the pressure will become. |
| 73. | Insurance Europe | Q5. (pg. 56) | Q5: 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?<br><br>Yes it is very important that any changes are spread over a number of years . However the annual change should be limited to 10bps given the very significant impact any changes can have. | For resolution, please see section 2.5 of this consultation report. |
| 74. | SSA | Q5. (pg. 56) | ☐ Although this may imply the inconsistent use of economic assumptions in the cash flow projection and the discount rate, we believe that a stabilized UFR is a more important objective and agree therefore with the proposed approach. | Noted. This element of the consultation proposal is unchanged. However, the limit was decreased to 15 bps so that the UFR will change more gradually. |
| 75. | IRSG | Q6. (pg. 56) | Yes, the IRSG agrees with rounding to the nearest 5bps as a sensible way to avoid spurious accuracy. | Noted. This element of the consultation proposal is unchanged. |
| 76. | AAE | 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? | Noted. This element of the consultation |

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| | | | 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. | proposal is unchanged. |
| 77. | AMICE | Q6. (pg. 56) | Q6: According to the proposed methodology the expected real rate component is rounded to 5 bps. Do you consider such a rounding necessary and appropriate?<br>We consider a rounding of the change in UFR to be appropriate, in order to avoid frequent and minute changes in the UFR. We do, however, propose that the rounding is made to 10 bps. Combined with our proposal that the limit to the annual change (cf Q5) is also set at 10 bps, we propose the simple, yet expedient, procedure that all changes to the UFR are of the size 10 bps. | For resolution, please see section 2.4 of this consultation report. |
| 78. | CFO/CRO Forum | Q6. (pg. 56) | We do not disagree with the suggestion to round the expected real rate component to 5bps. | Noted. This element of the consultation proposal is unchanged. |
| 79. | DAV | Q6. (pg. 56) | 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 necessary from an actuarial perspective. | Noted. This element of the consultation proposal is unchanged. |
| 80. | GDV | Q6. (pg. 56) | Yes, we consider the proposed rounding to be appropriate.<br>By means of rounding, many very small changes of the UFR are avoided. Otherwise, meaningless changes of 1 or 2 basis points would occur each year.<br>However, it should also be avoided that changes in opposite directions occur in subsequent years. To this end, the target value of the UFR (before phasing-in) should not be recalculated each year. In order to ensure a stable UFR, it would be more appropriate, instead, to maintain the target value for several years (e.g. 10 years). | Noted. This element of the consultation proposal is unchanged.<br>For resolution, please see section 2.4 of this consultation |

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| | | | Once the target vaule is recalculated, the new figure is phased-in with annual changes of maximal 10 basis points. | report. |
| 81. | IFA | Q6. (pg. 56) | We agree with the proposed approach. Rounding changes in rates to 5 bps is preferable as this ensures that spurious annual changes are smoothed out and do not create unnecessary noise. However, we would suggest that further rounding may also be possible (to 25 bps?). | Noted. This element of the consultation proposal is unchanged. |
| 82. | Insurance Europe | Q6. (pg. 56) | Q6: According to the proposed methodology the expected real rate component is rounded to 5 bps. Do you consider such a rounding necessary and appropriate?<br><br>Yes, within the framework of the proposed methodology, a 5bps rounding seems reasonnable. | Noted. This element of the consultation proposal is unchanged. |
| 83. | SSA | Q6. (pg. 56) | ☐ We agree with the proposed approach, although we do not believe rounding is particular needed due to the small volatility in expected real rates. | Noted. This element of the consultation proposal is unchanged. |
| 84. | IRSG | Q7. (pg. 56) | No, the IRSG does not consider the implementation methodology appropriate because it seems very unlikely to achieve the required long-term and stable outcome set out in the legal text. Test should be done under different interest rate movement assumptions to test the proposed methodology but it appears very likely to lead to changes almost annually to the UFR. This would not constitute a long-term stable outcome.<br><br>A simple way of achieving a stable and long-term calibration would be to apply the recalibration process at intervals (for example every 5) rather than annually. This combined with phasing in changes by the maximum of 10bp per year would achieve the stability required by the legal text and avoid artificial and unmanageable volatility in long-term liabilities.<br><br>Such an approach may be more in line with how other bodies set parameters that are | For resolution, please see section 2.4 of this consultation report. |

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| | | | intended to be long-term and stable. For example, before finalising the UFR recalibration process it may be worth investigating how often the ECB reviews their long-term inflation target. | |
| 85. | AAE | Q7. (pg. 56) | Do you consider the proposed implementation of the methodology appropriate?<br><br>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. | The first application of the UFR methodology is set to the beginning of 2018 instead of mid-2017 in order to provide insurance and reinsurance undertakings more time for their preparations. |
| 86. | Actuaris | Q7. (pg. 56) | The proposed methodology is still unclear regarding the real rate component which is the one driving the UFR. Otherwise, it seems to be appropriate. | Noted. |
| 87. | AMICE | Q7. (pg. 56) | Q7: Do you consider the proposed implementation of the methodology appropriate? (continued)<br>We oppose a mechanistic approach by which the UFR could be updated on an annual basis. Stating a +-5bp corridor is unnecessary having in mind 50 years ahead. The UFR should be kept stable over time unless the long term economic fundamentals have significantly changed. | For resolution, please see section 2.4 of this consultation report. |
| 88. | CFO/CRO Forum | Q7. (pg. 56) | Please see the discussion of our key concerns on the implementation of the methodology in the 'General Comment' section above. We have also provided further supporting comments in this section.<br><br>The Long Term Guarantee measures were adopted to address excessive volatility, arising from the current measurement of assets and liabilities, that would not reflect the insurance business model, i.e. the package of measures was aimed at avoiding pro-cyclicality and its unintended consequences. Beyond investable asset maturity terms, the UFR aims at providing stability for long tail obligations. The Regulation | For resolution, please see section 2.2 of this consultation |

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| | | | states that the UFR is stable over time, and only changes as a result of changes in long-term expectations. Setting the level of the UFR should hence ride over the economic cycle for the very long run, and changing the 4.2% because of current low environment would contradict the mechanism itself.<br><br>As mentioned above, the rationale for justifying the 4.2% has been set based on inflation targets from central banks and long term expectations for real rates. The current low interest rate environment for the Euro reflects the monetary policy of the ECB, whose objective is to sustain growth in Europe. The Governing Council of the ECB communicated that it expects the key ECB interest rates to remain at present or lower levels for an extended period of time. ECB medium-term orientation reflects the fact that monetary policy cannot, and should not, attempt to fine-tune developments in prices or inflation over a few weeks or months, but subscribes to a much longer term perspective.<br><br>The UFR adjusts the interest rates for the very long term, hence referring to the target inflation and looking at long term real rates based on long historical time series is sensible. EIOPA has been charged with providing co-legislators with an annual report on the effectiveness of the Long Term Package until 1 January 2021. EIOPA did carry out some sensitivities testing to the level of UFR in the LTGA report, and co-legislators adopted the Omnibus II agreement based on the 4.2%.<br><br>The revised methodology as proposed by EIOPA would lead to a decrease in the UFR level of the extant 4.2% to 3.7% over a three year period of time. Should the current market situation last for the coming years, the UFR level would keep decreasing over this period, reaching 3.2% or 3.1% by 2030. The methodology would have led to changes to the UFR in the 3.7% bucket in 30 out of the last 36 years (from the real rates component only), which is not seen as a stable methodology from year to year, and yearly change is likely to continue in the future.<br><br>EIOPA has estimated that a decrease of the UFR level by 50 bps and 100 bps respectively would decrease capital resources by 5% (€-11 bn) and 10% (€-22 bn). We feel this impact estimate underestimates the likely impact, by not considering the | report.<br><br>For resolution, please see section 2.4 of this consultation report.<br><br>According to the information request carried |

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| | | | effect on the SCR and the risk margin (the lower the rates, the more in the money the guarantees, increasing the combined effect of low rates and longevity risks), partly offset by deferred taxes absorption. | out at the end of 2016, a change of the UFR by 50 bps would decrease capital resources on average by 1.5%.<br>The average SCR ratio would move from 203% to 198%. These results take into account the effect on the SCR and the risk margin. |
| 89. | DAV | Q7. (pg. 56) | No. The main challenges we have are in relation to the<br>(a) limit of the annual change of the UFR of 20 bps. From an actuarial perspective, for both phasing-in and steady-state, it would be preferable to have a more restrictive limitation of the annual changes in the UFR, i.e. 5 to 10 bps. A limit on the annual change of the UFR would provide greater predictability for the purposes of risk management and interest rate hedging.<br>(b) the frequency of recalibration – this does not seem aligned to the intent of the UFR being a long-term counter-cyclical measure. Regular changes to the UFR will introduce volatility that cannot easily be hedged.<br>The statistical analysis seems transparent and robust – although we note that this long-term assumption is still in essence an expert judgement. However, our concern is primarily with the potential size and frequency of change. EIOPA should consider a more restrictive annual change and less frequent updates and/or phasing in of changes to UFR. Furthermore, the first update should arguably be scheduled after the stress testing exercise and the formal reviews of the long-term guarantees measures. | For resolution, please see section 2.5 of this consultation report.<br>For resolution, please see section 2.4 of this consultation report. |
| 90. | GDV | Q7. (pg. 56) | No, we do not consider the proposed implementation to be appropriate.<br>First and foremost, introducing a new methodology to calculate the UFR right now is | For resolution, please see section 2.2 of this consultation |

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| | | | neither required nor reasonable. Before any changes to the UFR are considered, the relevant stakeholders should gain sufficient experience with the new supervisory system. The UFR should remain at its original level of 4.2%, at least until the upcoming review of the Solvency II standard formula and all LTG measures. The UFR is a crucial component of the quantitative requirements under Solvency II – thus, it may not be changed in an isolated manner, but taking this wider context into account. Any other approach would be in direct contradiction with the intentions of the European legislators which came to the Omnibus II compromise on basis of a UFR of 4.2%.<br><br>Furthermore, a new methodology to calculate the UFR hat to be sufficiently tested by the insurance and reinsurance undertakings before it is implemented.<br><br>Moreover, it is not feasible to apply the new UFR only three months after its announcement. Insurers should be granted at least six months to prepare themselves in order to ensure stability and predictability. | report. |
| 91. | Global Warning | Q7. (pg. 56) | It is urgent to revise the UFR, which level is in july 2016 ridiculous, from an asset owner point of view. From a liability and credit point of view, other revisions have been undertaken in many countries in order to assess what would be the « correct » discount rate for investments, especially public investments.<br><br>I provide here an exemple of how long term discount evolved in France : | The first application of the UFR methodology is set to the beginning of 2018 in order to provide insurance and reinsurance undertakings more time for their preparations. |

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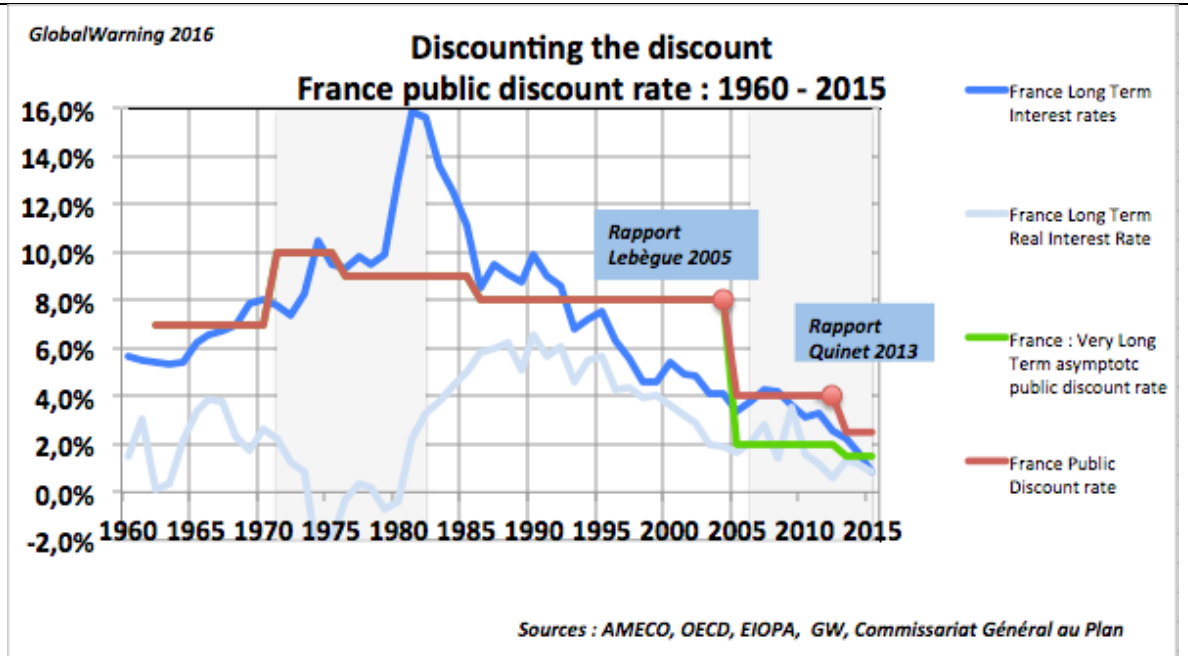
| | | |  <br>On the graph one can see France real long term interest rates, as well as France public infrastructures discount rates. On can see how both went down in unisson after the 1970-1982 period. | |
| 92. | IFA | Q7. (pg. 56) | We agree with the proposed approach. The application of a phased-in change to UFRs from the existing basis to the updated methodology will be less disruptive to companies that are making hedging and investment decisions based on the level of UFRs.<br>The implementation method is however likely to be thought of as a type of transitional measure or phased-in adjustment where companies would be under pressure to disclose the impact of the ultimate level of the UFR in addition to the 'limited' rate. | Noted. This aspect of the implementation is unchanged.<br>This pressure seems to exist already today. The closer the UFR gets to a realistic value the |

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| | | | | lower the pressure will become. |
| 93. | Insurance Europe | Q7. (pg. 56) | Q7: Do you consider the proposed implementation of the methodology appropriate?<br><br>No. The need and appropriateness of changing the UFR at this stage is challengeable and questionable. This is because the UFR is a long-term parameter and a few years of low interest rates does not yet enough justifify a change in long-term expectations to trigger a change in the UFR, in the same way that a few years of higher rates would not justify an increase.<br><br>There are two separate implementation concerns. Firstly, the UFR should be recalibrated every 10 years and not annually and secondly the new calculation methodology cannot be finalized and applied before the SII review has been completed.<br>In regards to the first concern – re-calibration process:<br>☐ Annual adjustments of the UFR as suggested in EIOPA's proposed methodology goes against the legal text which intended that the UFR be a stable long-term parameter and to avoid volatility and uncertainty regarding the prudential valuation of technical provisions and capital requirements. As evidenced by EIOPA itself in its QIS 5 document on the Risk-free interest rates – Extrapolation method, "a central feature is the definition of an unconditional ultimate long-term forward rate (UFR) for infinite maturity and for all practical purposes for very long maturities". This is a major issue in particular for life insurers because they will have to de-risk their investments as they will not only have to take account of any present level of the UFR but also the volatility in the UFR. This would result in a reduction of life insurers capacity to hold risky investments, causing them to get lower return out of their investments and in turn, will create an incentive for companies to increase their level of premiums and/or lower pensions promises.<br>☐ The methodology should result in a stable UFR and not annual changes – a simple and straightforward way to achieve this is to recalibrate at intervals of a significant number of years and to phase-in any changes. With the current EIOPA proposal, the UFR would likely be recalibrated on annual basis which is not in line with | For resolution, please see section 2.2 of this consultation report.<br><br>For resolution, please see section 2.4 of this consultation report. |

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| | | | the legal texts which require a stable UFR.<br><br>o A target UFR value should therefore be recalculated after a long, fixed period of time. If the new figure differs from the existing UFR, the new figure would be phased-in over a number of years with a maximum annual change of 10 bps.<br><br>o Any methodology should be back tested to confirm it meets the objective of a long-term stable rate.<br><br>☐ Insurers should be granted at least six months (rather than the proposed 3 months) from the announcement of a new calibration in order to ensure that the new methodology will be embedded into their operation systems. The process that insurers will have to follow to meet this goal is time consuming so insurers need more time between the annoucement and the implementation/first publication of risk-free-rates curves using the new UFR values.<br><br>o Indeed, once the new UFR is known, insurers are required to assess the impact directly and consider whether they still meet the new SCR with their Eligible Own Funds as per the requirement to continuous meet their SCR needs (Article 138 of the SII Directive 2009/138/EC), especially for the next 3 months. This implies that all insurers sensitive to the RFR will have to calculate the SCR based on 31 March data, which will entail a re-run of the internal models as as the end of Q1 for internal model users. A change in the UFR will also imply that insurers who are managing their ALM based on the RFR will have to change their assets and liabilities mix by unwinding asset positions or derivative positions.<br><br>In regards to the second concern: timing of finalizing and first application of methodology:<br><br>☐ We strongly believe that the overall level of prudency of the Solvency II framework has to be taken into account as well as potential unintended consequences of a change. In particular, the same conditions of current low interest rates that have given rise to the focus on the UFRs, also have impacts on risk-free rates (RFR) and other elements of Solvency II, notably the risk margins for financial and non-financial risks and so there may be other impacts of low interests rates that need to be taken into account.<br><br>☐ Given the key role of the UFR as an anchor for Solvency liability calculations, an impact analysis should be undertaken before any methodology and implementation | For resolution, please see section 2.5 of this consultation report.<br><br>For resolution, please see section 2.2 of this consultation report.<br><br>For resolution, please see section 2.2 of this consultation report. |

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| | | | planning is finalised. This impact analysis should include an assessment of the following:<br><br>o The impact on overall level of prudence of the Solvency II framework to avoid creating unintended and uncesssary burden.<br><br>o Potential pro-cyclical effects and other unintended consequences for customers or the wider economy.<br><br>o Back testing to ensure the objective of producing a stable long-term rate, and avoiding additional volatility in liability calculations has been achieved.<br><br>We therefore believe that the UFR value for the Euro (and also a wide range of other currencies) should be kept at its current level of 4.2% until the review of the Solvency II standard formula. We do not think it is appropriate to change such an important element of Solvency II valuation separately from a wider analysis and the appropriate timing of this process is as part of the review processes built into Solvency II starting from 2018. EIOPA also noted the interlinked nature of the framework in its y EIOPA in its Technical Findings on the Long-Term Guarantees Assessment report dated from 14 June 2013 ( EIOPA/13/296) where it stated (pages 72-73): "(…) it is difficult to judge on one parameter of the extrapolation approach in isolation as LLP, UFR and convergence period are closely interlinked in terms of their impact on the level and volatility of the solvency position of insurers".<br><br>Furthermore, the current UFR levels (4.2% for the Euro and a wide range of other currencies) were the basis of the entire Omnibus II compromise. The long-term guarantee measures (LTG measures) set by the European legislator would have been designed differently with a diverging UFR level. It is then of the utmost importance the political compromise pertains and that the UFR methodology and values are not changed outside of a wider review of the SII review and in particular the review of the LTG measures due by 2021.<br><br>We highlight also the following reasons why there is no urgency from a policy holder protection or any other point of view to rush changes to the UFR:<br><br>☐ The actual discount rates used to value liabilities for Solvency II, with the | |

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| | | | current UFR of 4.2% (for the Euro and a wide range of other currencies), are already low (far lower than the UFR) and will already tend to be conservative relative to the actual cashflow yield from asset. Even though investment returns are also currently relatively low, they are still higher than the discount rates currently required by Solvency II and so technical provisions already have a level of conservativeness built into them.<br><br>o As an example, the discount rate for the Euro at years 10, 20 and 60-year maturity are 0.79%, 1.33% and 2.99% respectively according to the April RFR curves for the Euro published by EIOPA (including VA). Rates without the VA are even lower (0.58%, 1.12%, and 2.90% respectively). These discount rates appear conservative rather than excessively high compared to actual investment returns possible with a portfolio of even relatively low risk investments.<br><br>o The proposed methodology would have lowered the discount rates with VA in April for 60 years to 2.70% (2.61% without VA). This does appear excessively conservative, and would risk forcing companies into excessively conservative reserving and so have a significant impact on companies' capital position at a time where economic conditions are already extremely challenging.<br><br>☐ The current framework has other additional layers of buffers in the form of the risk margin which Solvency II requires to be included in the calculation of technical provisions but are not actually needed to pay claims. According to QIS 5 these could already increase technical provisions by up to approximately 10% and are likely to have become even larger since then due to the low interest rates. The risk margin calculation can also create significant volatility and therefore, before changing the UFR in a way that will increase technical provisions, the impact of low interest rates on these risk margins and the interaction with any changes to the UFR needs to be understood.<br><br>☐ In addition to the conservative nature of technical provisions calculation, there is already an SCR required for low interest rates which means companies are holding extra capital in case interest rates are lower than current rates and remain so for ever. The interest down shock in April is actualy roughly equivalent to lowering the UFR for the Euro to 3.01% at 60-year and therefore there is no urgency to already lower the UFR under SII. This means that companies hold enough capital to assume that the UFR will decrease to 3% instantaneously and therefore there is no urgency to already lower the UFR under SII (based on April 2016 data). | |

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| | | | o The ORSA and other aspects of Pillar II require companies to carry out the necessary sensitivity analysis and risk management to ensure low interest rates issue are understood and managed by the company.<br><br>☐ There are dependencies with other elements of the Solvency II framework that need to be considered before changing the UFR.<br><br>o The Risk Margin and the value of options and guarantees are both elements of the technical provision calculation that increase when interest rates decrease. In fact, concern about the excessive size and volatility of the risk margin under low interest rates has been raised by a national surpervisor as a significant concern that needs addressing.<br><br>o The impact of any change of the UFR on the upward and downward interest rate shocks, as defined in the Article 166 and 167 of the SII Delegated Regulation may also need to be recalibrated based on the new UFR values as they were calibrated based on discount curves calculated with a 4.2% UFR.<br><br>☐ Insurers are already taking management actions to adjust for low interest rates. While low interest rates are creating real challenges for the industry, companies have been taking action — in some cases, for many years — to adapt their products, investment mix, hedges and capital levels. Solvency II makes this a requirement for all companies, creating the need for multiple layers of buffers and protection, as well as introducing very detailed monitoring to allow supervisors to ensure the necessary actions are being taken.<br><br>☐ Supervisors will know if a company faces specific related issues to low interest rates, or any other issue, and can intervene to ensure appropriate action and can monitor progress. Solvency II Pillar III requires an enormous amount of reporting and Pillar II gives supervisors powers and duties to intervene early if necessary. EIOPA also will have all the information. Therefore, if the concern is that individual companies facing problems may not be taking necessary actions, then there is no need to increase overall levels of conservatism for the entire industry to address this.<br><br>☐ Lowering the UFR values now can have unintended consequences on customers because it can push insurers unnecesseraly towards sub-optimal investment strategies, and on the economy because it may encourage pro-cyclical behaviors.<br><br>☐ The whole Solvency II framework is not yet business as usual for insurers. Given the large amount of work involved in Solvency II and additional pressure from | |

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| | | | low interest rates, insurers should be able to focus on implementation and adapting their business models without unnecessary uncertainty in key underlying parameters used in the valuation. | |
| 94. | SSA | Q7. (pg. 56) | ☐ Firstly, we believe that a revised methodology for UFR should be implemented first after it can be ensured that the discount rate will not be changed otherwise in the near future. We believe therefore that the current UFR of 4.2% should be kept until the Solvency II standard formula has been reviewed.<br>☐ Secondly, provided that the timing of introducing a new UFR is right, we agree that the proposed implementation of the methodology according to option 2 is appropriate. | For resolution, please see section 2.2 of this consultation report.<br>Noted. |
| 95. | AAE | 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. | Noted. |
| 96. | AMICE | Paragraph 5. | It is worth pointing out that not all health insurance products have a long duration. Reference should be made to health insurance as a line of business (LoB) within the life insurance (or SLT Health) segment. | The reference to life and health insurance was meant to say that the affected products belong to that type of insurance not that all life and health insurance products are affected. |
| | | | In the methodology used to derive the Risk Free Rate, EIOPA seems to suggest that a 30 year tenor point is available for the Euro. However, Recital 30 of the Omnibus II Directive states that under market conditions similar to those at the date of entry into force of that Directive, the starting point for the extrapolation of risk- free interest rates, in particular for the Euro, should be at a maturity of 20 years.The economic environment has surely changed since the Solvency II Framework Directive entered into force. | Noted. EIOPA will on an annual basis make an assessment of the depth, liquidit and transparency of the relevant |

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| | | | | financial markets. EIOPA will the also assess whether market conditions are still similar to the date of entry into force of that Directive. |
| 97. | Insurance Europe | Paragraph 5. | It has to be noted that not all health insurance has a long duration. Reference should be made to Health insurance as LoB within Life insurance (or SLT Health). | The reference to life and health insurance was meant to say that the affected products belong to that type of insurance not that all life and health insurance products are affected. |
| 98. | AAE | Paragraph 6. | There is a typo here, the term « risk-free interest rates » is repeated. | Thank you. The sentence should read: "The extrapolated risk-free interest rates are based both on the risk-free interest rates ~~risk-free interest rates~~ up to the last liquid point and the UFR. |
| 99. | Global Warning | Paragraph 7. | The shape of the UFR provided is weird. It is even more so since EIOPA publication date. | Noted. |

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| | | | The curve at the end of the LLP (last liquid point) is meaningless.<br><br>It signifies :<br>- trust in the 2% inflation target achievement is low …<br>- 2,2% real interest rate is just unreal.<br>For instance, France OAT 30 ans rate is 0,9620% as of 14/07/16<br><br>Interestingly, EIOPA itself has feel obliged to propose a stress test scenario called « Low for long ». According to such a « plausible scenario » :<br><br>*3. Stress test framework 3.1 Low for Long (LY)*<br>19 This scenario assesses the impact of a long-lasting low yield scenario with low rates for all maturities.<br>20 It is based on a situation of secular stagnation. Savers facing a lack of long term investment opportunities and permanently low productivity growth - combined with a scarcity of risk free assets - drive down yields at all maturities.<br>In view of this EIOPA designed a specific low curve of the risk free rate developed on the lowest spot rate observed in the market in recent periods. Due to the low-for–long nature of the scenario, the extrapolated part of the curve, defined according to the Solvency II methodology, is projected utilizing a reduced ultimate forward rate defined according to the assumption of the scenario.<br>(…)<br>assuming an extreme scenario of no-growth in the next 60 years for the EA, the ultimate forward rate (UFR) set at 2.0% according to the inflation target set by ECB; | The extrapolated risk-free interest rates were derived in line with the legal framework for Solvency II.<br><br>Noted. |
| 100. | CFO/CRO Forum | Paragraph 8. | As noted in our general comments above, we welcome EIOPA's ongoing work to build understanding of the UFR mechanism. | Noted. |
| 101. | Insurance Europe | Paragraph 10. | Article 47 of the SII Delegated Regulation lays down the principles for deriving the UFR. It is explicitly stated in Art. 47 (1) that the "ultimate forward rate referred to in paragraph 1 of Article 46 shall be stable over time and shall only change as a result in | For resolution, please see section 2.2 of this |

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| | | | changes in long-term expectations".<br><br>In our view an annual adjustment of the UFR does not constitute stability, and we don't see enough justification that long term expectations have changed or will change in the future on an annual basis. We therefore believe that the UFR value for the Euro (and also for a wide range of other currencies) should be kept at its current level of 4.2% until the review of the Solvency II standard formula. We do not think it is appropriate to change such an important element of Solvency II valuation separately from a wider analysis and the appropriate timing of this process is as part of the review processes built into Solvency II starting from 2018. This wider analysis would need to clearly captures changes in long term expectations of interest rates and inflation, and would need to demonstrate clearly that such long-term expectations have in fact changed before proceeding to any change in the UFR values. | consultation report. |
| 102. | TSE | Paragraph 10. | It is apparent that the procedure proposed by the Consultation Paper violates Article 47. For example, under this proposition, the UFR will change not because of "changes in long-term expectations", but because of persistent changes in short-term expectations.<br><br>One can also questions the objectivity and the time consistency of the procedure. EIOPA should make more explicit what stochastic model it has in mind for interest rates. If, as stated in paragraph 53, the best predictive model for interest rates is an AR(1), EIOPA should recognize a crucial consequence of this model, which is that the real UFR is a constant equaling the historical (unweighted and non-truncated backward) mean of the short-term real interest rates. But then, why should it revise the UFR every year? The historical mean of interest rates over the last, say, 100 years (using for example the Dimson-Marsh-Staunton data set), is not expected to change every year. EIOPA should either stick to this assumption and abandon the idea to revise the UFR periodically, or it should explain what stochastic model for interest rates | We do not agree with this view. The UFR is derived as the sum of expected real rate and expected inflation rate which are estimates for long-term expectations.<br><br>The risk-free interest rates are not derived on the basis of a stochastic model.<br><br>The historical mean of real rates is changing as years pass and |

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| | | | it has in mind that will trigger its periodical revision of the UFR. This is a crucial condition for objectivity, transparency, consistency and credibility. | new realised real rates are added to the time series. |
| 103. | AAE | 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. | Noted. |
| 104. | AMICE | Paragraph 11. | Reference should also be made in this paragraph to the role of the UFR as a stabiliser of volatile long-term cash flows.<br><br>The rates of the term structure only refer to the liquid part of the term structure. This requirement cannot hold for the non-liquid part of the term structure as no market is available. | The section reports the legal provisions on the UFR. A role of the UFR as a stabiliser of volatile long-term cash-flows is not set out in the Articles of Solvency II.<br><br>Noted. |
| 105. | Insurance Europe | Paragraph 11. | Reference should also be made to the purpose of the UFR e.g. to stabilise the volatility of the longer term cash flows.<br><br>The rates of the term structure are only referring to the liquid part of the term structure. This requirement cannot hold for the non-liquid part of the term structure as no market is available. | The section reports the legal provisions on the UFR. A role of the UFR as a stabiliser of volatile long-term cash-flows is not set out in the Articles of Solvency II.<br><br>Noted. |
| 106. | TSE | Paragraph | The requirement that financial intermediaries should be able to earn the rates of the | |

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| | | 11. | term structure in a risk-free manner is theoretically impossible, as soon as we recognize that future interest rates are uncertain. Uncertainty is the essence of the question raised by the UFR. Because of this uncertainty, there is a crucial reinvestment risk that should be taken into account when estimating the UFR. Because of the absence of liquid long-term safe assets, there is just no way for "insurance and reinsurance undertakings to be able to earn the rates of the term structure in a risk-free manner in practice" as required by Article 43 of the Delegated Regulation. Given this intrinsic impossibility, some interpretation must be made about the true intention of the regulator. A natural interpretation is that insurers should be able to earn the rates of the term structure *in expectation*, so that their pricing of long-term insurance products would be actuarially fair, a standard practice on this market. But this interpretation is incompatible with the proposal made in this Consultation Paper. In particular, it is incompatible with the proposal to ignore the term premium. **In other words, it is inconsistent for EIPOA to work on the presumption that future interest rates are uncertain and to ignore that this uncertainty when determining the UFR**. This inconsistency can be summarized by the following theorem.<br><br>THEOREM: If future interest rates are uncertain, the following two statements are mutually incompatible:<br>1. Insurance and reinsurance undertakings should be able to earn the rates of the term structure (Article 43 of the Delegated Regulation) in expectation;<br>2. The UFR net of the rate of inflation is the expected short-term interest rate, i.e., there is no term premium (conclusion 3.3.5 of the Review) in expectation.<br><br>PROOF: Without loss of generality, we ignore here inflation. Let $r_t$ denote the interest rate that will prevail in $t$ years from now (date 0). Let $r_t^*$ denote the term structure of the safe discount rates imposed by EIOPA. What insurance and reinsurance undertakings will be able to earn from each euro of their current reserve in $T$ years from now is<br>$$FV_T = exp\left(\sum_{t=1}^{T} r_t\right). \quad (1)$$<br>Now, suppose that $r_t$ is not known today, i.e., it is a random variable whose mean is the historical average short-term interest rate $\overline{r}$ . In that case, condition 1 means we must have | The exclusion of the term premium is a legal requirement (Article 47 of the Delegated Regulation).<br><br>If insurance and reinsurance undertakings were not able to earn the risk-free interest rates, then the inclusion of a term premium in the UFR will not improve that situation as it increases the risk-free interest rates. |

$$exp\left(\sum_{t=1}^{T} r_t^*\right) = E_0\left[FV_T\right] = E_0\left[exp\left(\sum_{t=1}^{T} r_t\right)\right]. \quad (2)$$

Statement 2 implies that for large maturities $T$, the discount rate must converge to $\bar{r}$. Thus, for large maturities $T$, condition (2) can be rewritten as follows:

$$exp\left(\bar{r}T\right) = E_0\left[exp\left(\sum_{t=1}^{T} r_t\right)\right]. \quad (3)$$

But this condition coud be true only if

$$E_0\left[exp\left(\sum_{t=1}^{T} r_t\right)\right] = exp\left(\sum_{t=1}^{T} E_0\left[r_t\right]\right), \quad (4)$$

Which cannot be true as soon as interest rates are uncertain, because the exponential function is convex. This concludes the proof of the theorem. □

In fact, this theorem is a direct consequence of the fact that the Expectations Hypothesis used until the 80's in finance theory to price bonds has no scientific foundation, as shown by Cox, Ingersoll and Ross (1981) and Gilles and LeRoy (1986). The Expectation Hypothesis basically means that the term premium is zero in expectation, so that the proposal made in conclusion 3.3.5 of this Consultation Paper is nothing else than the reemergence of an old false theory that has long been rejected by the theory and by the large empirical literature on bond pricing. For example, Froot (1989) states that "if the attractiveness of an economic hypothesis is measured by the number of papers which statistically reject it, the expectations theory of the term structure is a knockout."

This is not a marginal problem. To illustrate, suppose that the average short-term interest rate fort he next 100 years will be either 1% or 3% with equal probabilities. If one would apply an UFR equaling to the average short-term rate, which is 2% in this context, the future value of 1€ in 100 years is 7.4€. But in reality, the expected future value of this 1€ in 100 years is 11.4€, which corresponds to a certainty equivalent interest rate of 2.4% per annum. For a discussion about the impact of uncertain future interest rates, see Pazner and Razin (1975), and Gollier (2004, 2016).

**To sum up, the objective contained in the Delegated Regulation to determine the UFR in such a way for insurers to be able to earn this rate in the long run in a risk-free manner is scientifically impossible to realize**. It can be attained only in expectation. But under this interpretation, the proposed methodology to

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| | | | determine the UFR by ignoring the term premium is incompatible with the fundamental laws of the pricing of safe assets. Proposing such a regulation is parallel to proposing to launch a rocket to Mars when asking the engineers in charge to ignore the fundamental laws of physics.<br><br>The consequence of this inconsistency prevents any possibility to organize this discussion on a scientifically sounded basis. It renders the problem of answering to the seven questions individually irrelevant.<br><br>The two branches of the literature mentioned in my "general comment" above provide ample evidence and arguments for why it is socially desirable to integrate a term premium to the real UFR. Ignoring this term premium is ignoring that there is uncertainty about what interest rate and economic prosperity will prevail in many decades from now, a fact of life.<br><br>**Finally, it makes no sense to me to accept a term premium for all maturities below the LLP, and to ignore it for the estimation of the UFR.**<br><br>Bibliography<br><br>Cox, J.C., J.E. Ingersoll, and S. Ross, (1981), A reexamination of traditional hypotheses about the term structure of interest rates, *Journal of Finance* 36, 769-799.<br><br>Froot, K.A., (1989), New hope for the expectations hypothesis of the term structure of interest rates, *Journal of Finance* 44, 283-305.<br><br>Gilles, C., and S.F. LeRoy, (1986), A note on the local expectations hypothesis: A discrete-time exposition, *Journal of Finance* 41, 975-979.<br><br>Gollier, C., (2004), Maximizing the expected net future value as an alternative strategy to gamma discounting." *Finance Research Letters* 1 (2): 85-89.<br><br>Gollier, C., (2016), Gamma discounters are short-termist, *Journal of Public Economics*, forthcoming.<br><br>Pazner, E. A. and A. Razin, (1975), On expected present value vs. expected future value, *Journal of Finance* 30 (3): 875-877. | |

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| 107. | AMICE | Paragraph 12. | If the UFR is set too low, insurers may have to set aside provisions which are too high. This may also cause problems for the survival of insurers and their ability to pay out claims/benefits to policyholders; Moreover the non-availability of own funds may hamper innovation and other necessary developments within the insurance industry. | Noted. |
| 108. | Insurance Europe | Paragraph 12. | The UFR does not in itself determine whether technical provisions are adequate. Rather, it is the discount yield curve in conjunction with the best estimate liability cash flows that determine whether provisions are adequate. It is important to take note that the discount yield varies along with variations in the market rates that are used for deriving the yield curve. The UFR on the other hand does not need to change in order for the yield curve to adapt to changing market conditions.<br><br>Furthermore, it should be noted that setting a UFR too low could imply that insurers have to set up provisions which are too high. This can also cause problems for the existence of insurers and their ability to pay out claims/benefits to policyholders – in particular the unavailability of own funds can hamper innovations and other necessary changes/adaptations within the insurance industry. | Noted.<br><br>Noted. |
| 109. | UoA | Paragraph 12. | To achieve the stated objective, choosing the UFR appropriately is not enough. The choice of the last liquid point and the speed of convergence are equally important if one wants to avoid that insurance undertakings may set up provisions for their long-term obligations towards policholders which are too low. | This is acknowledged, but the topic of the consultation paper is the UFR. EIOPA will review the appropriateness of the LLPs on an annual basis. |
| 110. | AMICE | Paragraph 13. | "Long-term nature" suggests that insurers can anticipate the future developments well in advance. However, EIOPA's proposal to calculate an updated UFR in March and implement it in June is not consistent with this statement. | We understand that "long-term" in the term long-term expectations refers to the time horizon of the |

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| | | | | expectations, not the duration of the expectations. |
| 111. | Global Warning | Paragraph 13. | I agree. UFR should be changed as fast as long-term macroeconomic expectations. | Noted. |
| 112. | Insurance Europe | Paragraph 13. | Long term nature suggest that insurers can anticipate on the future development well in advance. EIOPA proposal of calculating the new UFR in March and implement this in June is not consistent with this statement. | We understand that "long-term" in the term long-term expectations refers to the time horizon of the expectations, not the duration of the expectations. |
| 113. | AMICE | Paragraph 14. | The conclusions from the QIS5 final report and the setting of the UFR at 4.2% were key in the finalisation of the calibration of the Solvency II Standard Formula. The level of the UFR and all the other components of the extrapolation method were instrumental in reaching the Omnibus II agreement in which the variables related to the Volatility Adjustment, Matching Adjustment and other LTGA measures were also set. A different UFR at that moment in time would have had a distinct impact on those other measures. The review should be consistent with the approach taken in the past to calibrate the measures in the long-term guarantee package. | For resolution, please see section 2.2 of this consultation report. |
| 114. | Insurance Europe | Paragraph 14. | The QIS5 including analysis and a UFR set at 4.2% was used to finalise the Solvency II legislation, requirements and final calibration. The fact that the UFR was set at 4.2% including all the other components of the extrapolation technique was instrumental in the Omnibus II agreement in which also the variables surrounding the Volatility Adjustment, Matching Adjustment and other LTGA measures were set. A different UFR at that stage would also have a distinct impact on those other measures. In principle the other variables of the LTGA measures and other calibrations should than also be reviewed at the same time to ensure consistency within the SII framework. | For resolution, please see section 2.2 of this consultation report. |
| 115. | AAE | 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. » | We acknowledge that the wording could be clearer. The sentence was |

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| | | | | meant to say that the methodology should be aligned to the legal provisions where it is not in line with them. |
| 116. | AMICE | Paragraph 15. | See comment to paragraph 14 | Please see resolution there. |
| 117. | Insurance Europe | Paragraph 15. | See comment at paragraph 14 | Please see resolution there. |
| 118. | AMICE | Paragraph 16. | See comments to paragraph 11 (second) | Please see resolution there. |
| 119. | Global Warning | Paragraph 16. | I totally agree. As well as revision of discount rates, UFR should be a global warning signal, and prepare a change of mind regarding long term finance.<br><br>UFR Change would have a small impact on P&C Insurance. But its effect on savings (life insurance, pensions) could be huge and help trigger a wave of investments in « useful » and « real economy » infrastructures. | Noted. |
| 120. | Insurance Europe | Paragraph 16. | EIOPA states that "some stakeholders" are concerned that the currently used UFR values are too high. It is important to note that it is entirely inappropriate to compare the currently used UFR values and the market values from which the observable part of the discount curves are derived.<br><br>Indeed, the actual discount rates used to value liabilities for Solvency II, with the current UFR of 4.2% (for the Euro and a wide range of other currencies), are already low (far lower than the UFR) and will already tend to be conservative relative to the actual cashflow yield from asset. Even though investment returns are also currently relatively low, they are still higher than the discount rates currently required by Solvency II and so technical provisions already have a level of conservativeness built into them. | Noted. |

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| | | | ☐ As an example, the discount rate for the Euro at years 10, 20 and 60-year maturity are 0.79%, 1.33% and 2.99% respectively according to the April RFR curves for the Euro published by EIOPA (including VA). Rates without the VA are even lower (0.58%, 1.12%, and 2.90% respectively). These discount rates appear conservative rather than excessively high compared to actual investment returns possible with a portfolio of even relatively low risk investments.<br>☐ The proposed methodology would have lowered the discount rates with VA in April for 60 years to 2.70% (2,61% without VA). These do appear excessively conservative, and would risk forcing companies into excessively conservative reserving and so have a significant impact on companies' capital position at a time where economic conditions are already extremely challenging. | |
| 121. | UoA | Paragraph 16. | Most reported concerns are not focussing on the interest rate for maturities of 60 years or higher but on maturities directly after the so-called last liquid point, for which there is still sufficient liquidity. It is unlikely that the artificially created curve for these maturities, which contains data points which have zero depth and zero liquidity, provides a more accurate estimate of the cost of riskfree cashflows than rates that are based on the fixed income markets in which such cashflows are constantly bought and sold. | Noted. |
| 122. | AAE | 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.<br>Use of the word drastic is alarming and should be amended.<br>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 »<br>Typo : « may » | Noted.<br>Noted.<br>Thank you. These are indeed typos. |
| 123. | AMICE | Paragraph 17. | EIOPA refers to changes in long term expectations. More guidance is needed as to what is meant by long-term expectations. Moreover, we query what the actual | See paragraph 16. |

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| | | | definition should be as many stakeholders assess the current interest rate environment to be the long term expectation. Clarification should be provided as to what is the difference between the long-term expectations that are observed in the liquid part of the curve and those addressed in the UFR. The UFR should capture the long-term expectations beyond the last liquid point and indeed in 60 years time. | |
| 124. | Global Warning | Paragraph 17. | Typo : « may result » | Thank you. This is indeed a typo. |
| 125. | Insurance Europe | Paragraph 17. | Many stakeholders are assessing the current interest rate environment to be the long term expectation. EIOPA should be clearer on what long-term expectations are as stakeholders can be clear on what changes in long-term expectations really means. In our views, long term expectation should be expectations beyond the last liquid point. | See paragraph 16. |
| 126. | AMICE | Paragraph 18. | Should this phasing in not also be applied for other major variables used to set the RFR, for example changing the Last Liquid Point or changing the CRA? | We acknowledge the relevance of these questions, but they are out of the scope of the consultation paper. |
| 127. | CFO/CRO Forum | Paragraph 18. | Please see our general comments above and our response to Question 7, with regards to the implementation and timing of changes to the UFR. | Please see resolution there. |
| 128. | Insurance Europe | Paragraph 18. | We believe that this phasing in should also be applied when changing other major features used to set the risk-free rates term structures, for example the Last Liquid Point or the Credit Risk Adjustment. | Noted. |
| 129. | AMICE | Paragraph 19. | How can this approach be consistent with the stament made by EIOPA that insurers can anticipate the change in long term expectations? | The proposed period of three months is consistent with the approach applied for other parts of the methodology for risk-free interest rates, for example |

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| | | | The announcement that the UFR changes (following the March calculation) would require insurers which are sensitive to a change in the UFR to re-calculate the Solvency Capital Requirements and assess their compliance. Morevoer, this approach would require insurers to calculate, on an intermediate basis, the Solvency II ratio. Those insurers which breach the Solvency II ratio will have to notify it to the national supervisory authority and will only have a three-month period to take remedial actions. This period is extremely short; Insurers should be granted a longer period from the announcement of a new calibration.<br><br>Additionally, insurers which hedge based on the RFR would have to change their hedging at the same moment in time which could distort the market in a short period of time. | the update of the representative portfolios and the changes resulting from the DLT assessments.<br><br>Please note that the binding risk-free interest rate term structures are updated on a quarterly basis, even if the UFR is kept unchanged.<br><br>In view of the minimal impact of UFR changes on the SCR ratios, as shown in the information request on the UFR, breaches of the SCR caused by a change of the UFR are very unlikely and would only affect undertakings close to a breach. |
| 130. | Insurance Europe | Paragraph 19. | Further to response to question 7, once insurers will be notified to the change to the UFR in March of a given year, they will have to assess the impact of this change on their SCR running their calculations and assessing their on-going compliance. Those insurers who will have a breach will have to notify their supervisors and will have only three month to take remedial actions. We believe that a longer period of time between the notification of changes to the UFRs and the use of the new UFRs in the | Please note that the binding risk-free interest rate term structures are updated on a quarterly basis, |

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| | | | determination of the risk-free interest rate term structure is needed so nsurers can cope with the changing situation. For instance, insurers who are using the risk-free rates term structure to hedge would need to change their hedging over the same period. | even if the UFR is kept unchanged.<br>In view of the minimal impact of UFR changes on the SCR ratios, as shown in the information request on the UFR, breaches of the SCR caused by a change of the UFR are very unlikely and would only affect undertakings close to a breach. |
| 131. | CFO/CRO Forum | Paragraph 20. | Please see our response to Question 5, above. | Please see resolution there. |
| 132. | AAE | 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. | Article 47 of the Delegated Regulation requires that the UFR should take into account expectations of long-term real interest rates and expectations of inflation and that it should not include a term premium. |
| 133. | CFO/CRO | Paragraph | We note that inflation will likely be the main trigger for significant changes in the UFR | Noted. |

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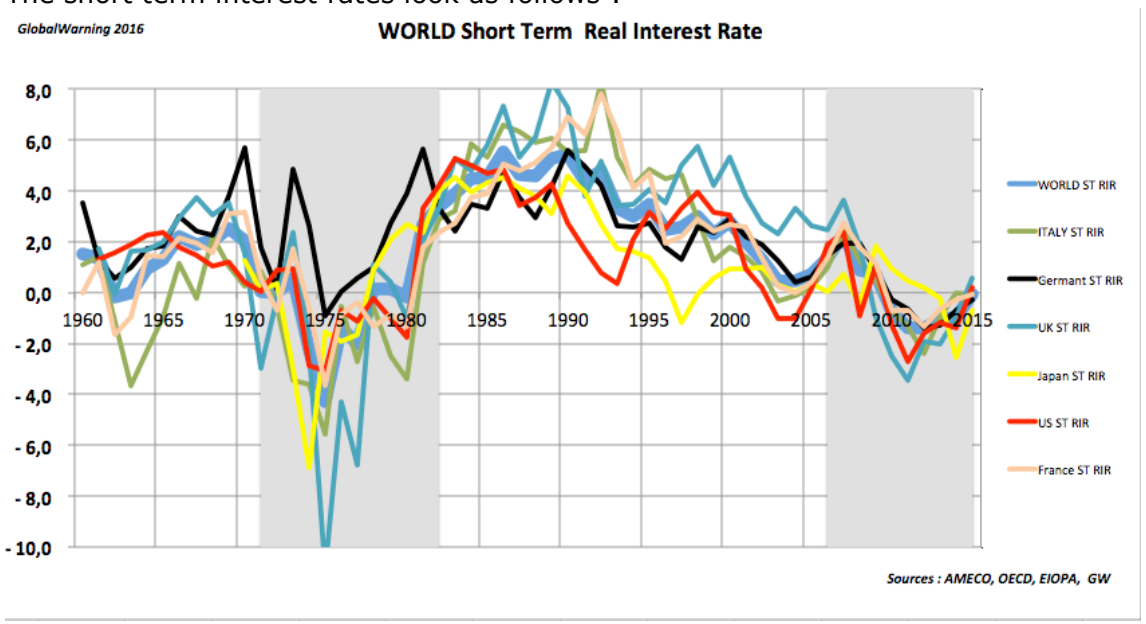
| | Forum | 21. | and in the current economic environment, there is the possibility of large inflation changes for several currencies, which may lead to the destabilisation of the UFR. | |
| 134. | AAE | Paragraph 22. | Methodology is acceptable if decision is taken in favor of this « mathematical » 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 | Noted. |
| 135. | Actuaris | Paragraph 22. | Which real rate component are you truly considering at each date ? The one from the AMECO data base or the one computed using inflation and nominal short term interest rate? | Please see paragraph 24. |
| 136. | CFO/CRO Forum | Paragraph 22. | Please see our response to Question 3, above, which suggests that a simple arithmetic average would serve the goal of stability better, and would prevent significant levels of judgement and subjectivity. Should a slight geometric weighting to more recent data be applied, no objections were raised by our members to a factor of 0.99. | Please see resolution there. |
| 137. | Global Warning | Paragraph 22. | The short term interest rates look as follows :<br>  <br>It is obvious that the 1960 starting point is biased. The « golden » sixties were special | Noted. |

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| | | | time, as were the 1970s with the 2 oil shocks. With the recent oil schock due to China, it seems low real interest rates are here to stay. Figures for 206 should be weak once again.<br>The difference between GT1 (1970-1982) and GT2 (2006-2016) when real interest rates have been very low is that in the first period, inflation and nominal IR where high ; when in the second period, both were low. | |
| 138. | Insurance Europe | Paragraph 22. | See response to question 3 | Se resolution there. |
| 139. | IRSG | Paragraph 23. | Foot note #10 : OECD inflation rate for the Netherlands for 1960 is not available (data accessed on 13&14 June 2016). However, the corresponding data point for France is available. Was the inflation rate for France or for the Netherlands used in EIOPA's calculation? | The methodology was changed to exclude the year 1960. |
| 140. | AAE | 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. | See the explanation of the proposal in 3.3.4. |
| 141. | CFO/CRO Forum | Paragraph 23. | Measuring real rates using a basket of developed nations is consistent with the objective of the UFR as a long-term steady-state scenario. However, whilst the economies chosen represent a high proportion of the insurance exposure in the EU, this choice may not be appropriate for exposures in developing economies (we would not consider the inflation buckets as an offset for this discrepancy). | For resolution, please see section 2.7 of this consultation report. |
| 142. | IRSG | Paragraph 23. | Foot note #10 : OECD inflation rate for the Netherlands for 1960 is not available (data accessed on 13&14 June 2016). However, the corresponding data point for France is available. Was the inflation rate for France or for the Netherlands used in EIOPA's calculation? | The methodology was changed to exclude the year 1960. |
| 143. | AAE | Paragraph 24. | Using short term rates might lead to methodological inconsistencies with definition of inflation rate – even if annualised | For resolution, please see section 2.8 of this consultation report. |
| 144. | AMICE | Paragraph 24. | EIOPA should be precise in the definition. More guidance is needed as to what is meant by short-term nominal rate and inflation rate. | See paragraph 25. |
| 145. | CFO/CRO | Paragraph | Please see our response above to Question 2. | Please see |

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| | Forum | 24. | | resolution there. |
| 146. | AAE | 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. | Noted. This element of the methodology is unchanged. |
| 147. | AMICE | Paragraph 25. | Could EIOPA confirm whether the definition of the inflation rates used by the OECD is similar to the inflation rates used by central banks in their monetary policies? | The OECD inflation rate relates to consumer prices. Central banks' inflation targets are usually also based on that inflation concept. |
| 148. | CFO/CRO Forum | Paragraph 25. | Please see our response above to Question 2. | Please see resolution there. |
| 149. | DAV | 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. | Noted. This element of the methodology is unchanged. |
| 150. | Insurance Europe | Paragraph 25. | Further to response to question 2. The proposed EIOPA's approach methodology has some limitations, and we want to highlight the following:<br><br>☐ Data. It should be noted that the short term nominal rates referred to in paragraph 25 of EIOPA's consultation paper are in fact mainly 3-month (annualised) interbank rates. It does not seem clear why the methodology should be based on 3-month rates.<br>o The Article 47(2) of the SII Delegated Regulation states that "the ultimate forward rate shall not include a term premium to reflect the additional risk of holding long term investments." The UFR is construed so as to be the ultimate one-year rate, and thus it should entail the risk of holding investments for a one year period and not for a shorter maturity period. Basing the UFR on 3-month rates may lead to a rate | For resolution, please see section 2.8 of this consultation report. |

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| | | | which does not adequately reflect the risk of holding one year investments.<br><br>☐ Accuracy of Forecast. The graph below shows the average real rate used in EIOPA's proposed approach. It shows two distinct periods where rates are negative. Early and mid 1970'ies were heavily influenced buy the collapse of the Bretton Woods system and the severe oil crisis. Both, factors which influenced short term rates. Looking at the graph, it becomes clear that the considerable spike in real rates that followed from around 1980 and ten years on could not have been foreseen, had predictions of the real rate been based on a weighing of data where recent years were assigned the highest weights. The negative rate period from 1969 until 1977 would have dragged down the forecast to a level much below that which turned out to be reality.<br><br>o The level of rates in the past apparantly does not hold much information about future levels, and in conclusion, there seems to be no clear argument for assigning different weights to either distant or recent years. Rather, it would seem natural to assign equal weights to all years. | It is plausible that the low real rates of that period had an impact on the expectations about the future.<br><br>For resolution, please see section 2.6 of this consultation report. |
| 151. | AMICE | Paragraph 26. | More guidance is needed as to the rationale for 5 bp. Could EIOPA explain whether this serves the purpose of not changing the UFR very often? Could EIOPA explain whether it has been back tested over the historic period? | Please see section 3.5.1 of the consultation paper. |
| 152. | CFO/CRO Forum | Paragraph 26. | Please see our response above to Question 6. | Please see resolution there. |
| 153. | AAE | 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:<br><br>☐ In the 0%-1% corridor up to 1%<br><br>☐ in the 1-2% corridor up to 2%<br><br>☐ In the 2%-3% corridor down to 2%<br><br>☐ In the 3%-4% corridor down to 3%<br><br>In effect, the proposed approach tries to draw rates to 2% and there is no justification for this. | 2% is the most common inflation target. The rounding rules contribute to the consistency of the calculated UFRs with the current UFRs. |
| 154. | CFO/CRO | Paragraph | Please see our response above to Question 4. We welcome the additional buckets to | Please see |

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| | Forum | 27. | better match long-term nominal rates in some emerging markets. | resolution there. |
| 155. | IRSG | Paragraph 28. | The source for inflation targets should also be stated (for some countries - China, India, South Korea and Russia - the inflation targets found differ from the one published by EIOPA). | The sources for the inflation targets will be provided. The inflation targets were updated. |
| 156. | DAV | Paragraph 28. | It is not specified how the expected inflation will be chosen in accordance with the past inflation experience and the projection of inflations. However, this does not seem to be important for the European insurance market. | Please see section 3.43 of the consultation paper. |
| 157. | Insurance Europe | Paragraph 28. | On which sources will EIOPA rely on to perform this assessment of past inflation experience and projection of inflations? | EIOPA will mainly rely on announcements of the central banks. |
| 158. | CFO/CRO Forum | Paragraph 30. | Please see our general comments above and our response to Question 7, with regards to the implementation and timing of changes to the UFR. | Please see resolutions there. |
| 159. | AAE | 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. | Noted. This element of the methodology is unchanged. |
| 160. | Insurance Europe | Paragraph 36. | See response to question 1 | Please see resolution there. |
| 161. | UoA | Paragraph 37. | In papers such as the one by Ang, Bekaert and Wei cited in the footnote for this paragraph, the authors decompose nominal rates into real rates, expected inflation and inflation risk premiums ('term premiums'). But they do not assume that the last ones are zero or that the first two are constant over time. On the contrary, they emphasize that regime shifts can occur which may cause these values to change and they state (at the end of page 832 in their paper): 'We obtain inflation risk premiums of [this] low magnitude only in high real rates regimes and in normal times assign almost all of the positive nominal yield spread to inflation risk premiums'. That does not correspond to the methodology proposed in the consultation paper. | The exclusion of the term premium as required by Article 47 of the Delegated Regulation should not be understood to imply that the term premium |

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| | | | | does not exist. The proposed methodology does not assume that the real rate and the inflation are constant. |
| 162. | IRSG | Paragraph 38. | The IRSG believes further comments and analysis of each of the alternative UFR approaches listed would help readers assess whether they are valid comparison points.<br><br>Barrie & Hibbert:<br><br>☐ The Barrie-Hibbert methodology can be considered a valid alternative method for comparison purposes because it is a robust method that has been developed based on a valid economic rationale and is consistent with the approach specified in the legal text Article 47(2) of the SII Delegated Regulation. The consultation document indicates in the list of cons that the UFR includes a term premium but the document also indicates that their method also produces a UFR without term premium of 4.2% and with term premium of 5.7%. Therefore this criticism can be ignored if the figure without term premium is taken as the basis for comparison. The valid disadvantages identified are the lack of transparency over sources of data and detailed methodology but the UFR it produces is valid for comparison purposes.<br><br>Dutch UFR:<br><br>☐ The DNB methodology is based on (1) using the swap rates (published by Bloomberg from 09/08/2001 to 31/12/2015) to determine spot rates (extrapolating the term structure where needed), (2) deriving the 1 year forward rate in 20 years maturity from these spot rates and (3) taking 10 years average (from 2005 to 2015).<br><br>☐ We consider there to be several problems with this methodology. Firstly this approach is based on a core assumption that forward rates can be used to estimate spot rates in the future. Our review of academic and empirical research indicates that this assumption is incorrect with rather evidence that forward rates are not good predictors of future spot rates (see below). In fact it seems that forward rates tend to predict future spot rates which reflect current conditions so when current spot rates | Noted.<br><br>Please note that these UFR estimates relate to the year 2010.<br><br>Noted. The approach was not taken up for the proposed UFR methodology. |

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| | | | are high they predict that future spot rates will be high and when current rates are low they predict low future spot rates. Also, the DNB uses 20 year forward rates when it is 60 year forward rates we are aiming to forecast. Finally, as the DNB itself indicated (Advisory report of the UFR Committee page 40), the 10 years average is arbitrary and we believe that this actually creates a volatile UFR and does not ensure a stable outcome as required by the SII legal text. For example extending the average from the arbitrary 10 to say 14 years, increases the UFR produced from 3.3% to 3.9%.<br><br>o Academic findings: "Forward rates are not therefore a prediction of what spot interest rates are likely to be in the future, rather a mathematically derived set of interest rates that reflect the current spot term structure and the rules of no-arbitrage" (Choudry, 2008:17*). The finding that forward rates are not good predictors of future spot rates is also supported by Macauley (1938), Hickman (1942) and Culbertson (1957).<br><br>o Empirically findings: Based on the data used in the Dutch UFR, the Figure below shows the 1 year spot rate at the end of 2015 as predicted by the historical forward rates for each year from 2001. So we see what the 14 year forward in 2001 was predicting for the 1 year spot rate in 2015, and the 13 year forward rate in 2002 was predicting for the 2015 1 year spot rate. In 2015 we show the actual 1 year spot rate. If the forward rates were good predictors we woud see a straight line predicting slightly negative rates but we see instead that it is obvious that these forward rates are not good predictors. In fact as noted above forward rates seem to predict (wrongly) that spot rates in the future will be similar to current spot rates.<br><br>o Using an average of forward rates will not provide a better prediction for actual interest rates in the future<br><br>Graph below supports academic and empirical studies which indicate that forward rates are poor predictors of actual rates in the future. The graph indicates that for the last 15 years forward rate predictions seemed to simply reflect current rates at the time rather than have any real predictive power. For example forward rates in 2001 predicted current rates would be 6%.<br><br>IAIS:<br><br>☐ The IAIS data cannot be considered suitable for comparison purposes or a | |

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| | | | potential method. The data was generated only for the purpose of generating data for a field testing exercise and was never intended as an actual regulatory measure used for any purpose other than testing potential methodologies. It used expected growth rates instead of real interest rates to generate a UFR. It was never proposed as a valid methodology based on economic practice or theory. The only justification we are aware of for using this data was that it was an OECD source and available for a large range of countries and this was convenient for the purposes of the testing exercise. | Noted. The approach was not taken up for the proposed UFR methodology. |
| | | | ☐ EIOPA furthermore references Bruce Hansens and Ananth Seshadris paper "Uncovering the Relationship bwtween Real Interest Rates and Economic Growth" and conclude that there may be a low correlation between economic growth and future real rates. This, as we see it, cannot be used an argument against using long term expected growth as a proxy for long term real rates. Hansen and Seshadri state that their data reveals a negative 0.20 correlation between growth and future real rates. However, the correlation is tested and found to be statistically insignificant. Further to this, Hansen and Seshadri are not concerned with the long run relationship between growth and interest rates in a stable run. Rather, they are concerned with the offsetting effects between changes in growth and interest rates in the much shorter run in order to assess what – if any – effect a correlation between the two have for the ability to make projections for trust funds capital accumulations and for the uncertainty of such projections. This is clearly an entirely different matter compared to figuring out what the Solvency II UFR should be. | We acknowledge the difference between the correlation of realised growth and realised real rates and the correlation of growth expectations and real rate expectations. Nevertheless, findings on the correlation of realised growth and realised real rates may not be irrelevant for the correlation of growth expectations and real rate expectations. |
| | | | Swiss SST:<br>The Swiss SST uses a simple adjustment factor to scale down the SII UFR and will therefore automatically produce a UFR which is lower than the SII UFR. It clearly cannot be valid to use the Swiss SST UFR as any sort of useful comparison or potential method to be used for generating the SII UFR. | Noted. The approach was not taken up for the |

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| | | | * Choudhry M. (2008). The yield curve, and spot and forward interest rates<br>Surrey: Yieldcurves.com<br>Accessible from<br>http://www.yieldcurve.com/Mktresearch/files/Choudhry_IntroToYieldCurve_Jan2008.pdf | proposed UFR methodology. |
| 163. | AMICE | Paragraph 38. | Assessment of alternatives:<br><br>Historical nominal rates' approach: Pros<br>- More simple and straight forward approach.<br>- UFR will not be subject to political changes but it will rely on economics.<br>- Nominal rates can be observed for different currencies historically.<br>- Statistics of the short term nominal interest rate are available for 160 years. Taking an arithmetic mean of the nominal interest rate for different time horizons between 40-160 years (or a weighted mean according to EIOPA's proposition) we will end up with a fair stable result between 5.0-5.5 percent for the Swedish currency, for example.<br><br>Historical nominal rates' approach: Cons<br>- The ECB monetary policy should be included in the methodology.<br>- The application of longer time periods in combination with historical nominal rates does not work for all currencies.<br>- Different buckets for different periods and currencies may be needed, which brings additional complexity (i.e different buckets for the 1914-1950 and 1960 – 2016 periods ). | We acknowledge that this is in principle an option. However, according to Article 47 of the Delegated Regulation the UFR should take account of expectations of long-term real interest rates and expectations of inflation. Past nominal rates can be decomposed into past real rates and past inflation rates. As to the expectations of inflation, the inflation target of central banks is forward-looking and therefore |

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| | | | | deemed to be more relevant for the expected inflation rate than past inflation rates. |
| 164. | CFO/CRO Forum | Paragraph 38. | Please see our response above to Question 1. | Please see resolution there. |
| 165. | Global Warning | Paragraph 38. | It is clear from the last 40 years that forward rates provide no guidance to the level of future rates. It is the case for intrest rates as it is also true for oil price futures.<br><br>Besides , macroeconomic models failure is nowaday well known and DGSE macroeconomic models (so frequent in the recent past) which forget money and credit seem weird. | Noted. |
| 166. | Insurance Europe | Paragraph 38. | Barrie & Hibbert:<br>☐ We consider that only the Barrie-Hibbert methodology can be considered a valid alternative method for comparison purposes because it is a robust method that has been developed based on a valid economic rationale and is consistent with the approach specified in the legal text Article 47(2) of the SII Delegated Regulation. The consultation document indicates in the list of cons that the UFR includes a term premium but the document also indicates that their method also produces a UFR without term premium of 4.2% and with term premium of 5.7%. Therefore this criticism can be ignored if the figure without term premium is taken as the basis for comparison. The valid disadvantages identified are the lack of transparency over sources of data and detailed methodology but the UFR it produces is valid for comparison purposes.<br><br>Dutch UFR:<br>☐ The DNB methodology is based on (1) using the swap rates (published by Bloomberg from 09/08/2001 to 31/12/2015) to determine spot rates (extrapolating the term structure where needed), (2) deriving the 1 year forward rate in 20 years maturity from these spot rates and (3) taking 10 years average (from 2005 to 2015). | Noted.<br><br>Please note that these UFR estimates relate to the year 2010.<br><br>Noted. The approach was not taken up for the proposed UFR methodology. |

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| | | | ☐ We consider there to be several problems with this methodology. Firstly this approach is based on a core assumption that forward rates can be used to estimate spot rates in the future. Our review of academic and empirical research indicates that this assumption is incorrect with rather evidence that forward rates are not good predictors of future spot rates (see below). In fact it seems that forward rates tend to predict future spot rates which reflect current conditions so when current spot rates are high they predict that future spot rates will be high and when current rates are low they predict low future spot rates. Also, the DNB uses 20 year forward rates when it is 60 year forward rates we are aiming to forecast. Finally, as the DNB itself indicated (Advisory report of the UFR Committee page 40), the 10 years average is arbitrary and we believe that this actually creates a volatile UFR and does not ensure a stable outcome as required by the SII legal text. For example extending the average from the arbitrary 10 to say 14 years, increases the UFR produced from 3.3% to 3.9%.<br><br>o Academic findings: "Forward rates are not therefore a prediction of what spot interest rates are likely to be in the future, rather a mathematically derived set of interest rates that reflect the current spot term structure and the rules of no-arbitrage" (Choudry, 2008:17) (**). The finding that forward rates are not good predictors of future spot rates is also supported by Macauley (1938), Hickman (1942) and Culbertson (1957).<br><br>o Empirically findings: Based on the data used in the Dutch UFR, the Figure below shows the 1 year spot rate at the end of 2015 as predicted by the historical forward rates for each year from 2001. So we see what the 14 year forward in 2001 was predicting for the 1 year spot rate in 2015, and the 13 year forward rate in 2002 was predicting for the 2015 1 year spot rate. In 2015 we show the actual 1 year spot rate. If the forward rates were good predictors we woud see a straight line predicting slightly negative rates but we see instead that it is obvious that these forward rates are not good predictors. In fact as noted above forward rates seem to predict (wrongly) that spot rates in the future will be similar to current spot rates.<br><br>IAIS:<br><br>☐ The IAIS data cannot be considered suitable for comparison purposes or a potential method. The data was generated only for the purpose of generating data for a field testing exercise and was never intended as an actual regulatory measure used for any purpose other than testing potential methodologies. It used expected growth rates instead of real interest rates to generate a UFR. It was never proposed as a valid | Noted. The approach was not taken up for the proposed UFR methodology. |

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| | | | methodology based on economic practice or theory. The only justification we are aware of for using this data was that it was an OECD source and available for a large range of countries and this was convenient for the purposes of the testing exercise.<br><br>☐ EIOPA furthermore references Bruce Hansens and Ananth Seshadris paper "Uncovering the Relationship bwtween Real Interest Rates and Economic Growth" and conclude that there may be a low correlation between economic growth and future real rates. This, as we see it, cannot be used an argument against using long term expected growth as a proxy for long term real rates. Hansen and Seshadri state that their data reveals a negative 0.20 correlation between growth and future real rates. However, the correlation is tested and found to be statistically insignificant. Further to this, Hansen and Seshadri are not concerned with the long run relationship between growth and interest rates in a stable run. Rather, they are concerned with the offsetting effects between changes in growth and interest rates in the much shorter run in order to assess what – if any – effect a correlation between the two have for the ability to make projections for trust funds capital accumulations and for the uncertainty of such projections. This is clearly an entirely different matter compared to figuring out what the Solvency II UFR should be.<br><br>Swiss SST:<br><br>The Swiss SST uses a simple adjustment factor to scale down the SII UFR and will therefore automatically produce a UFR which is lower than the SII UFR. It clearly cannot be valid to use the Swiss SST UFR as any sort of useful comparison or potential method to be used for generating the SII UFR.<br><br>(**) Choudhry M. (2008). The yield curve, and spot and forward interest rates<br><br>Surrey: Yieldcurves.com<br><br>Accessible from | We acknowledge the difference between the correlation of realised growth and realised real rates and the correlation of growth expectations and real rate expectations. Nevertheless, findings on the correlation of realised growth and realised real rates may not be irrelevant for the correlation of growth expectations and real rate expectations.<br><br>Noted. The approach was not taken up for the proposed UFR methodology. |

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| | | | http://www.yieldcurve.com/Mktresearch/files/Choudhry_IntroToYieldCurve_Jan2008.pdf | |
| 167. | Insurance Europe | Paragraph 41. | With the exception of Barrie-Hibbert, the other "methodologies" listed in this paragragh should have been discarded (based on the analysis above) as unsuitable for both comparisons to the current UFR of 4.2%. | Noted. |
| 168. | CFO/CRO Forum | Paragraph 42. | Please see our response above to Question 1. | Please see resolution there. |
| 169. | GDV | Paragraph 42. | We agree with the conclusion to maintain the general approach and to calculate the UFR as the sum of expected long-term real interest rate and expected inflation. This approach is reasonable and in line with the Delegated Regulation on Solvency II.<br><br>However, we disagree with the conclusion to give current data a higher weight. In fact, we consider equal weights to be most appropriate.<br><br>The real interest rates in the sample exhibit no trend or break but rather some kind of medium range cycle. Thus, data from different decades have all the same value for the estimation of the long-term expected real interest rate far in the future.<br><br>In contrast, a higher weight for current data would overestimate the long-run consequences of short or medium term fluctuations. This disadvantage would be especially serious in the current financial market situation which is heavily distorted. This distortions caused by monetary policy might continue for several years. Nevertheless, the crisis measures are of temporary nature and do not change the equilibrium rate in the very long run (60 years, 100 years, or more from now). Thus, all data from the time series should be weighted equally (i.e. beta = 1). This has also the advantage to avoid arbitrary weighting decisions and to reduce the complexity of the approach considerably. | Noted. This element of the methodology is unchanged.<br><br>For resolution, please see section 2.6 of this consultation report. |
| 170. | Global Warning | Paragraph 43. | There is no such thing as « stationnary » phenomenon since WWII.<br><br>It is partly true that « past data may include information which may not be in line with | Noted.<br><br>In order to make the UFR move |

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| | | | expectations because it relates to outdated markets structures or policy making ».<br>The world is not « stationnary » indeed, and it has physical constraints : it needs neo-physiocrats thinking ! | more gradually, in line with the legal stability objective for the UFR, the average for calculating the real rate component of the UFR will be a simple average instead of a weighted average that puts more weight on recent observations. |
| 171. | Global Warning | Paragraph 45. | See point $38. | Please see resolution there. |
| 172. | AAE | Paragraph 46. | On advantages of historical vs forward rates the following can be said .<br>The use of forward rates :<br>- 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.<br>- makes the UFR predictable, rendering risk estimates meaningless.<br>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 forecasts. | Noted. It is still believed that the disadvantages of the approach outweigh the advantages. |
| 173. | AAE | Paragraph 47. | It would be useful to see the historical evidence of the 0.2% change. | The 0.2% relate to the change of the UFR according to the proposed methodology. |
| 174. | UoA | Paragraph | When an UFR calculation method based on forward rates results in estimates that are | Noted. We |

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| | | 47. | less stable over time, this is not necessarily a disadvantage. Financial risk management implies that one must constantly assess whether changes in the financial markets necessitate an adjustment in current strategies and/or policies. If estimators are used which change only very slowly under the most detrimental circumstances, this may pose a serious risk in the long run. As stated in paragraph 17 of the consultation document: 'It should also be considered that delaying any change of the UFR due to current changes in long-term expectations may result in even more drastic changes of the UFR in the future, in case the long-term expectations have then moved further away from the current UFRs'. Paragraph 1 of Article 47 in the Delegated Regulation does not quantify the term 'stable' so it should not be used to disqualify alternative approaches in which the inherent uncertainty in long term interest rates manifests itself in the form of fluctuations in estimates over time. | acknowledge that the term "stable" is up to interpretation, but that should not imply that the legal requirement can be ignored. |
| 175. | Insurance Europe | Paragraph 48. | See response to question 3 | Please see resolution there. |
| 176. | AAE | Paragraph 49. | Typo in the following sentence: "Figure 1 shows that the exponentially weighted average proved too much volatile." | Thank you. That was indeed a typo. |
| 177. | Actuaris | Paragraph 49. | How did you get this figure ? As we can see, both the red and blue curves are likely the same<br>at the very beginning and the end of the time span.<br>It then draw our intention on the way the weighted geometric mean was computed. How come<br>both curves are the same at the beginning and the end of the time span while we are comparing<br>decreasing weight with constant weight. According to the formula Paragraph 22, the parameter beta should be very low at the beginning of the period compared to the end. The difference between both curves should be large at the beginning and tightened thereafter. | Please note that the weights are increasing from 1960 to 2015, see specification in paragraph 24 of the consultation paper. |
| 178. | Global Warning | Paragraph 49. | Your graph (Figure 1) is biased, as it starts in 1980. Here is the complete graph of the UFR : | The graphs only start at 1980 because before that point in time |

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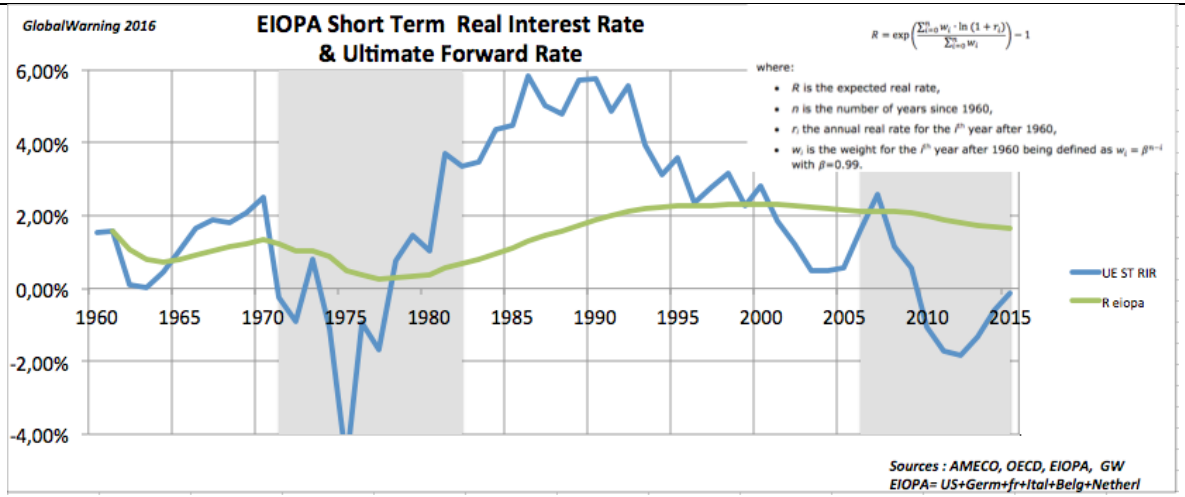
| | | |  <br>The low starting UFR is due to negative real interest rates in the 1970s the EIOPA proposal does not comment that, which is a weakness. This graph shows how very high RIR in the 1980s and 1990s have inertia on today rates, which will take time to get to zero with the proposed formula.<br><br>And especially the 0,99% « control parameter », which « disappears » vey slowly. | the time series for the estimation is not long enough to derive from them stable expected real rates. The methodology was not developed for these short time series.<br><br>Noted.<br><br>In order to make the UFR move more gradually, in line with the legal stability objective for the UFR, the average for calculating the real rate component of the UFR will be a simple average instead of a weighted average that puts more weight on recent observations. |
| 179. | Insurance Europe | Paragraph 51. | See response to question 3 | Please see response there. |

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| 180. | TSE | Paragraph 53. | This paragraph is crucial. It raises the question of how to model the dynamics of short and long interest rates, and, at least implicitly, of our collective beliefs about the future prosperity of our economy. The Delegated Regulation stipulates that the UFR should be based upon these expectations, and that changes in the UFR should be transparently justified by changes in these expectations. We know that the term structure of interest rates aggregates information about these expectations.<br><br>Financial econometrics provides the statistical tools to filter the dynamics of interest rates in order to detect changes in long-term expectations. See for example Ang and Liu (2004), or Collin-Dufresne et al. (2015). But doing this would require again that EIOPA expresses first its representation of the stochastic dynamics of interest rates.<br><br>Bibliography<br><br>Ang, A., and J. Liu, (2004), How to discount cashflows with time-varying expected returns, Journal of Finance 59, 2745-2783.<br>Collin-Dufresne, P., M. Johannes, and L.A. Lochstoer, (2015), Parameter learning in general equilibrium: The asset pricing implications, American Economic Review, forthcoming. | Noted.<br><br>The risk-free interest rates are not derived on the basis of a stochastic model. |
| 181. | Global Warning | Paragraph 54. | Too much weight on historical data.<br>Today situation is not a boom and bust cycle. It could be a structural long-term shift. | In order to make the UFR move more gradually, in line with the legal stability objective for the UFR, the average for calculating the real rate component of the UFR will be a simple average instead of a |

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| | | | | weighted average that puts more weight on recent observations.. |
| 182. | AAE | Paragraph 56. | Assigning a higher importance to data stemming from current markets is a valuation that is questionable considering the 60 years horizon. | For resolution, please see section 2.6 of this consultation report. |
| 183. | CFO/CRO Forum | Paragraph 56. | Please see our response to Question 3, above, which suggests that a simple arithmetic average would serve the goal of stability better, and would prevent significant levels of judgement and subjectivity. Should a slight geometric weighting to more recent data be applied, no objections were raised by our members to a factor of 0.99. | Please see resolution there. |
| 184. | GDV | Paragraph 56. | We agree with the conclusion to apply historic data on real interest rates. Long time series of historic data allow to calculate a long term average. Because no trend is evident in the data, this average can be interpreted as an equilibrium. Hence, this average rate is is the best estimate for the real interest rate far in the future. In contrast, an estimation solely based on current market data would be heavily distorted by the influence of short-run fluctuations which are irrelevant in the long run.<br><br>We disagree with the conclusion to introduce higher weights for more recent data.<br><br>We consider equal weights to be most appropriate. The real interest rates in the sample exhibit no trend or break but rather some kind of medium range cycle. Thus, data from different decades have all the same value for the estimation of the long-term expected real interest rate far in the future.<br><br>In contrast, a higher weight for current data would overestimate the long-run consequences of short or medium term fluctuations. This disadvantage would be especially serious in the current financial market situation which is heavily distorted. This distortions caused by monetary policy might continue for several years. Nevertheless, the crisis measures are of temporary nature and do not change the | For resolution, please see section 2.6 of this consultation report. |

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| | | | equilibrium rate in the very long run (60 years, 100 years, or more from now). Thus, all data from the time series should be weighted equally (i.e. beta = 1). This has also the advantage to avoid arbitrary weighting decisions and to reduce the complexity of the approach considerably. | |
| 185. | TSE | Paragraph 56. | Using weights to measure the average interest rates makes no sense if EIOPA believes that interest rates follow an AR(1) process, a process favored by EIOPA in its paragraph 53. However, weighting more recent interest rates make sense if one recognizes that the dynamics of interest rates contains a slow-moving state variable that influences interest rates. The literature on long-run risk mentioned earlier provides various illustrations of such a phenomenon: slow-moving fluctuations of the trend of economic growth, stochastic volatility, parametric uncertainty,…<br><br>The way by which the evolution of interest rates is impacted by the change of this long-run variable – and so, the frequency and intensity of the UFR – depends upon the assumptions that are made to describe the dynamics of the economy. EIOPA should describe its representation of this process. | Noted.<br><br>The risk-free interest rates are not derived on the basis of a stochastic model. |
| 186. | Global Warning | Paragraph 58. | I am not sure OECD is a « public institution » ? | The term is used to distinguish public from private institutions. The OECD, being an intergovernmental organisation, shares the relevant features of public institution with regard to the provision of input data for the UFR calculation. |
| 187. | Insurance Europe | Paragraph 60. | Choosing the rigth data for setting the UFR is something that should be treated with the utmost care. It is obviously of paramount importance that the data can be proved | The choice of the databases is |

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| | | | reliable and actually represent that it is claimed they represent. EIOPA should provide further evidence as to why the selected database are the best to determine the UFR. | explained in section 3.3.2 of the consultation report. |
| 188. | GDV | Paragraph 61. | We agree with the conclusion to change the source of data in favour of the EU AMECO and OECD MEI databases only if the average of the 3-month data from the AMECO database is scaled in order to get a proper estimation for a 1-year real interest rate. | For resolution, please see section 2.8 of this consultation report. |
| 189. | Insurance Europe | Paragraph 61. | See our comment in question 2 | Please see resolution there. |
| 190. | AAE | 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) | Consistent data across countries o past real rates is not available. Furthermore, the estimated real rates per country are likely to be more volatile than the single estimated real rate. |
| 191. | CFO/CRO Forum | Paragraph 67. | Please see our response above to Question 4. | Please see resolution there. |
| 192. | GDV | Paragraph 67. | We agree with the conclusion to estimate the UFR based on a single average for the real interest rates in all countries. | Noted. This element of the methodology is unchanged. |
| 193. | CFO/CRO Forum | Paragraph 77. | Please see our comments above on Paragraph 23. | Please see resolution there. |
| 194. | GDV | Paragraph 77. | We agree with the conclusion to base the real rate component on historic data from Belgium, France, Germany, Italy, the Netherlands, the United Kingdom and the United | Noted. This element of the |

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| | | | States.<br><br>However, we disagree with the conclusion not to apply different geographical weights. Geographical weighting would considerably improve the representativeness of the real interest rate component in comparison to simple equal-weighting. Besides that, there is no reason to forgo this worthwile improvement because the geographically weighting discussed on page 32 is transparent, replicable and would not add material complexity to the calculation. In particular, the weights of all past years are known. The unkown weighting for the current year has very little influence on the overall results. Furthermore, in most cases, the weights change only gradually from one year to the next. | methodology is unchanged.<br><br>For resolution, please see section 2.7 of this consultation report. |
| 195. | Insurance Europe | Paragraph 77. | See our comment in question 2 | Please see resolution there. |
| 196. | Insurance Europe | Paragraph 80. | We agree that if the UFR should be based on historical data, then the term premium should be excluded by basing the real rate component on instruments where the yield includes a zero or negligible term premium. However, EIOPAs presentation of the term premium in paragraph 80 seems overly simplified. In fact, the term premium is the excess yield that investors require to commit to holding a long-term bond instead of a series of shorter-term bonds. Thus, a key component of the term premium is investor expectations about the future course of short-term interest rates over the lifetime of the long-term bond. This makes deriving the term premium a rather complicated matter resting on a number of assumptions.<br><br>On these grounds we support EIOPA proposed way of excluding the term premium. However, for one-year bonds we would argue that the term premium given the present low rates is very close to zero. Thus, we see no reason why EIOPA proposed approach should not be calibrated on one-year instruments. | For resolution, please see section 2.8 of this consultation report. |
| 197. | Global Warning | Paragraph 82. | AS mentioned before, the use of short term RIR is not an issue, compared to long-term RIR. Markets are unable to forecast long term trends. | Noted. |
| 198. | CFO/CRO Forum | Paragraph 84. | Please see our response above to Question 2. | Please see resolution there. |
| 199. | AAE | Paragraph | The timing of interest-rates / inflation can be tightened up. Formally, expected | The comment is |

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| | | 85. | inflation and interest rates need to be exactly aligned in terms of timing and forecast horizon. More detail / validation on this would be appreciated. | not very clear. the removal of the term premium does not involve the inflation rate. |
| 200. | Actuaris | Paragraph 85. | How did you exclude the term premium using the AMECO data base? The real rate issued by AMECO and the one computed using the formula from Paragraph 24 are way to different. Can you provide us with a clear methodology or an explicit formula to proceed accurately ? | The real rates from the AMECO database are not used. They are calculated from the AMECO nominal rates, see paragraph 24. |
| 201. | CFO/CRO Forum | Paragraph 85. | We would suggest that the meaning of 'short' and ' long' with respect to the AMECO database be specified. | For resolution, please see section 2.8 of this consultation report. |
| 202. | GDV | Paragraph 85. | We disagree with the conclusion to apply 3-months interest rates from the AMECO database without subsequent adjustment. To apply 3-months interest rates is overly conservative. Because the UFR is used as an 1-year-forward rate, it should also be calibrated with 1-year-rates. If appropriate 1-year data are not available, the average of the 3-month data should be scaled at least. | For resolution, please see section 2.8 of this consultation report. |
| 203. | Global Warning | Paragraph 86. | The emphasis on long-term economic history is welcome. It should be done by regulators much more often.<br><br>Unfortunately, the window is just that : the apex of worldwide economic growth in 1970, followed by an irregular but steady decline, now called « secular stagnation ». | Noted. |
| 204. | Global Warning | Paragraph 87. | Obvious. | Noted. |
| 205. | CFO/CRO Forum | Paragraph 90. | Please see our comments above in response to Question 2. | Please see resolutions there. |

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| 206. | Global Warning | Paragraph 91. | The EIOPA paper mentions explicitely « all past economic cycles ». There were cycles, augmented since the financial deregulation of the 1980s.<br>But today global trend is no cycle.<br>In other words,secular stagnation is probably a misconception : we have in 2016 a global warning that growth rates could go negative in the no so distant future. | The average real rate derived under the widening window approach will slowly adjust to trends. |
| 207. | Actuaris | Paragraph 94. | We got the same figure as you but we used a widening window with arithmetic mean and real rate component from AMECO. Why not using the nominal short one to make sure we got rid of the term premium? | According to the proposed methodology AMECO nominal short rates are used to exclude the term premium. |
| 208. | AAE | 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. | Noted. This element of the methodology is unchanged. |
| 209. | CFO/CRO Forum | Paragraph 99. | Please see our comments above in response to Paragraph 49. | Please see resolution there. |
| 210. | GDV | Paragraph 99. | We agree with the conclusion to use a widening window approach starting in 1960 to average the real rate component.<br><br>Long time series of historic data allow to calculate a long term average. Because no trend is evident in the data, this average can be interpreted as an equilibrium. Hence, this average rate is the best estimate for the real interest rate far in the future. In contrast, an estimation solely based on current market data would be heavily distorted by the influence of short-run fluctuations which are irrelevant in the long run.<br><br>Data before World War II or from its direct aftermath should not be applied because the political and economical state of the world at that time was too different from | Noted. This element of the methodology is unchanged. |

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| | | | nowadays. As high quality data are available since 1960/61 this seems to be best starting point for the calculation. In order to get the most reliable and most stable estimates, all available data since that point in time should be applied. This is achieved by the widening window approach. This approach seems to be most suitable to ensure stability of the UFR over time and should be applied. | |
| 211. | Global Warning | Paragraph 99. | This window starting in 1960 is a huge bias. | The average real rate derived under the widening window approach will slowly adjust to trends. |
| 212. | CFO/CRO Forum | Paragraph 100. | Where EIOPA refers to the 'inflation target' we suggest the text is made more explicit to reference which forecasts/quotes have been used. | The references will be made available. |
| 213. | CFO/CRO Forum | Paragraph 102. | We would suggest that the inflating target to be applied is clearly specified (e.g. the term of the forecast). | The references will be made available. |
| 214. | AAE | Paragraph 103. | Evidence of the effectiveness of inflation targets would be beneficial to support this paragraph. | The claim of the paragraph is on the influence of inflation targets on expectations rather than on their effectiveness for the realised inflation. An analysis of the latter aspect is therefore not a priority. |
| 215. | AAE | 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? | The OECD inflation rate relates to |

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| | | | | consumer prices. Central banks' inflation targets are usually also based on that inflation concept. |
| 216. | Insurance Europe | Paragraph 105. | EIOPA should indicate clearly sources expected to be used for these currencies. | The references will be made available. |
| 217. | AAE | 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. | The ARMA model is a common choice for projecting time series. For the projection at least 10 years of data will be used. |
| 218. | CFO/CRO Forum | Paragraph 108. | Please see our comments above in response to Question 4. | Please see resolutions there. |
| 219. | IRSG | Paragraph 111. | The source for inflation targets should also be stated (for some countries - China, India, South Korea and Russia - the inflation targets found differ from the one published by EIOPA) – c.f comment for paragraph 28. | The references will be made available. |
| 220. | CFO/CRO Forum | Paragraph 116. | Please see our response above to Question 4, on our comments on Paragraph 23. | Please see resolutions there. |
| 221. | GDV | Paragraph 117. | We agree with both the conclusions to retain a bucketing approach and to add a high inflation bucket.<br><br>Inflation persistently differs by country. Thus, even in the long run, it would not be sensible to expect the same inflation rate all over the world. In order to avoid a bulk of slightly different inflation estimates, it is reasonable to define several buckets which pool countries of similar inflation patterns. By adding a high inflation bucket, the few high inflation currencies are appropriately taken into account. | Noted. This element of the methodology is unchanged. |

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| | | | The general approach of considering central banks' inflation targets is reasonable. In contrast, historic inflation rates would not be suited for the forecast of the future inflation rate. In most countries, inflation patterns have materially changed in the past. The reason is that inflation is not a natural rate but to a high degree subject to policy mesasures. Thus, to apply fixed inflation targets as forecast for future inflation is the most sensible approach. In the euro area, e.g., the ECB adheres to its inflation target and aims to achieve this target at least in the mid run – whatevers it takes. | |
| 222. | CFO/CRO Forum | Paragraph 119. | Please see our comments above in the General Comments, with regards to the timing and frequency of changes to the UFR rate. We consider an annual change/revision to the UFR to contradict the requirement as stated in Article 47 of the Regulation. | Please see resolutions there. |
| 223. | Insurance Europe | Paragraph 119. | See our comment in question 7<br><br>Further to that, the implementation of UFR changes over the long term is a critical issue. In our view it is essential to ensure that insurers, and particularly life insurers – being long term investors – have the opportunity to adjust their investments to changes in the UFR. However, it is equally essential to ensure that speculators cannot exploit knowledge about future changes to the UFR to take positions in anticipation of life insurers' expected portfolio changes.<br><br>We therefore invite EIOPA to think about this point and recognise that there are no urgency in changing the UFR as companies have a wide range of management actions to cope with changes in underlying economics circumstances. | Please see resolutions there.<br><br>For resolution, please see section 2.2 of this consultation report. |
| 224. | CFO/CRO Forum | Paragraph 121. | Please see our comments above on Paragraph 21. | Please see resolutions there. |
| 225. | CFO/CRO Forum | Paragraph 122. | Please see our response to Question 5, above. | Please see resolutions there. |
| 226. | Global Warning | Paragraph 122. | I see no reason for that. Energy (crude oil) volume could get lower very fast. That could trigger a lasting recession worldwide, which the UFR should take into account. | The stability of the UFR is a legal requirement according to |

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| | | | EIOPA should even consider negative UFR and its impact on solvency II. | Article 47 of the Delegated Regulation. |
| 227. | Insurance Europe | Paragraph 122. | See our comment in question 5 | Please see resolutions there. |
| 228. | Insurance Europe | Paragraph 133. | As stated in the General Comments section, we believe the UFR methodology should result in a stable UFR and not annual changes thereof – therefore the calculation should be done only every 10 years with a phase-in implementation. With the current EIOPA proposal, the UFR would likely be recalibrated on annual basis. This is not in line with the legal requirement of stability of the UFR.<br><br>Furthermore, EIOPA states that the introduction of a limit to the annual change of UFR is in line with stakeholder feedback from the 2015 consultation. The paragraph 216 of the consultation paper on the UFR review shows that feedback generally pointed to a gradual transition when the UFR is updated. However, respondents most likely have not anticipated that EIOPA would put forward a proposal for an annual update of the UFR and then use the feedback to argue that stakeholders support this proposal.<br><br>The paragraph 216 also shows that feedback pointed at the necessity that all changes to the UFR should be accompanied by a consultation of stakeholders and an impact assessment. Clearly, this indicates that respondents were anticipating much less frequent updates than EIOPA is now putting forward. | For resolution, please see section 2.4 of this consultation report.<br><br>We acknowledge different views on the frequency of UFR changes, but we understand, also from this consultation, that most stakeholders support an annual limit to changes of the UFR in general. |
| 229. | Global Warning | Paragraph 134. | The point is irrelevant. We are definetely not in a « steady state » economy ! | The stability of the UFR is a legal requirement according to Article 47 of the Delegated Regulation. |
| 230. | CFO/CRO Forum | Paragraph 136. | Please see our response to Question 5, above. | Please see resolutions there. |
| 231. | GDV | Paragraph | We agree with the conclusion to apply mechanisms to limit both the frequency and the | Noted. This |

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| | | 136. | magnitiude of annual changes of the UFR.<br><br>It is inevitable to restrict the maximum changes of the UFR in order to ensure stability of the UFR over time and to avoid overly volatile results. To restrict annual changes is necessary in both cases when a new methodology to derive the UFR is introduced and when the inflation target of a central bank changes.<br><br>The stability of the UFR is prescribed by law. Any methodology to derive the UFR must observe this legal setting. Moreover, a fast changing UFR would lead to severe short term movements in the overall results of the calculations. This would inevitably cast doubt on the validity of the entire quantitative Solvency II requirements.<br><br>However, we disagree with the conclusion to limit the annual changes with a cap of 20 basis points. An annual change of up to 20 basis points is not in line with the legal requirement of a stable UFR and would cause overly volatile results. Instead, any change of the UFR must be phased-in at a slow pace. To this end, the UFR level must not be changed by more than 10 basis points compared to the previously applied level to ensure stability over time.<br><br>Moreover, it should also be avoided that changes in opposite directions occur in subsequent years. To this end, the target value of the UFR (before phasing-in) should not be recalculated each year. In order to ensure a stable UFR, it would be more appropriate, instead, to maintain the target value for several years (e.g. 10 years). Once the target vaule is recalculated, the new figure is phased-in with annual changes of maximal 10 basis points. | element of the methodology is unchanged.<br><br>For resolution, please see section 2.5 of this consultation report.<br><br>For resolution, please see section 2.4 of this consultation report. |
| 232. | Actuaris | Paragraph 137. | Which rate did you use to compute the UFR ? Can you provide us with the data base you truly use to challenge your results? | The data used for the calculation of the expected real rate are specified in paragraph 25 of the consultation |

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| 233. | Global Warning | Paragraph 138. | The proposed UFR rate of 1,7%, instead of today 2,2%, is a progress. It is still far from the mark. (DNB 2013 revision was -0,9%). EIOPA could look ridiculous in a short period of time, if 2016 trends were confirmed … | EIOPA has to derive the UFR in line with the legal framework for Solvency II. |
| 234. | CFO/CRO Forum | Paragraph 140. | Please see our general comments above and our response to Question 7, with regards to the implementation and timing of changes to the UFR. | Please see resolutions there. |
| 235. | AAE | 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. | Noted. |
| 236. | CFO/CRO Forum | Paragraph 144. | Please see our general comments above and our response to Question 7, with regards to the implementation and timing of changes to the UFR. | Please see responses there. |
| 237. | GDV | Paragraph 144. | We agree with the proposal to apply a mechanism to limit the magnitiude of annual changes of the UFR during the initial implementation of the revised methodology to calculate the UFR.<br><br>It is inevitable to restrict the maximum changes of the UFR in order to ensure stability of the UFR over time and to avoid overly volatile results. To restrict annual changes is necessary in both cases when a new methodology to derive the UFR is introduced and when the inflation target of a central bank changes.<br><br>The stability of the UFR is prescribed by law. Any methodology to derive the UFR must observe this legal setting. Moreover, a fast changing UFR would lead to severe short term movements in the overall results of the calculations. This would inevitably cast doubt on the validity of the entire quantitative requirements.<br><br>However, we disagree with the proposal to limit the annual changes with a cap of 20 basis points. An annual change of up to 20 basis points is not in line with the legal requirement of a stable UFR and would cause overly volatile results. Instead, any | Noted. This element of the methodology is unchanged.<br><br>For resolution, please see section |

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| | | | change of the UFR must be phased-in at a slow pace. To this end, the UFR level must not be changed by more than 10 basis points compared to the previously applied level to ensure stability over time.<br><br>Moreover, it should also be avoided that changes in opposite directions occur in subsequent years. To this end, the target value of the UFR (before phasing-in) should not be recalculated each year. In order to ensure a stable UFR, it would be more appropriate, instead, to maintain the target value for several years (e.g. 10 years). Once the target vaule is recalculated, the new figure is phased-in with annual changes of maximal 10 basis points.<br><br>In addition, we disagree with the proposed implementation in general.<br><br>First and foremost, introducing a new methodology to calculate the UFR right now is neither required nor reasonable. Before any changes to the UFR are considered, the relevant stakeholders should gain sufficient experience with the new supervisory system. The UFR should remain at its original level of 4.2%, at least until the upcoming review of the Solvency II standard formula and all LTG measures. The UFR is a crucial component of the quantitative requirements under Solvency II – thus, it may not be changed in an isolated manner, but taking this wider context into account. Any other approach would be in direct contradiction with the intentions of the European legislators which came to the Omnibus II compromise on basis of an UFR of 4.2%.<br><br>Furthermore, a new methodology to calculate the UFR hat to be sufficiently tested by the insurance and reinsurance undertakings before it is implemented.<br><br>Moreover, it is not feasible to apply the new UFR only three months after its announcement. Insurers should be granted at least six months to prepare themselves in order to ensure stability and predictability. | 2.5 of this consultation report.<br><br>For resolution, please see section 2.4 of this consultation report.<br><br>For resolution, please see section 2.2 of this consultation report.<br><br>For resolution, please see section 2.2 of this consultation |

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| 238. | AAE | 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. | For resolution, please see section 2.3 of this consultation report. |
| 239. | CFO/CRO Forum | Paragraph 145. | As noted in our general comments above, we welcome EIOPA's ongoing work to build understanding of the UFR mechanism. | Noted. |
| 240. | Global Warning | Paragraph 181. | Fixed guarantee suppose positive economic growth. This is no longer a given.<br>Some countries like Italy, with a very long economic history, and a brillant past, knows that « de-growth » can happen. | Noted. |
| 241. | Global Warning | Paragraph 198. | I do agree with the UFR Committee that the level of 4,2% is « insufficently substanciated ». | Noted. |
| 242. | Global Warning | Paragraph 203. | This point is of utmost interest. EIOPA states that for the IAIS (International Association of Insurance Supervisor) :<br><br>Following Von Neumann (1932) and Solow (1956), the real interest rates are assumed to be equal to the economic growth in the very long-term, should the economic growth be sustainable (i.e. the economic growth equals the potential growth). The long-term economic growth relies on an economic growth forecast at 50 years.<br><br>These growth forecast are worth EIOPA attention. See « Policy challenges for the next 50 years » (OECD 2014), which content is more than challenging ! | Noted. |