Position Paper

Insurance Europe proposals on the Risk Margin

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This paper gives an overview of the key elements of the Solvency II risk margin which should be addressed, and includes proposals on how these issues could be addressed, as part of the 2020 Solvency II review.

Risk margin – introduction

The 2020 Solvency II review is the right time to review the risk margin, its scope and design.

The risk margin, which is part of the technical provisions on the Solvency II balance sheet, is an amount over and above the best estimate of the funds needed to pay customer claims and benefits, including administration costs. Its prudential purpose is to ensure that, in the rare case that an insurer fails, there would be enough funds available above the best estimate of liabilities to transfer the liabilities to a third party, ie to another insurer, to allow an orderly run-off of the portfolio.

However, the current risk margin methodology and calibration results in excessive levels of additional capital being required. It also creates artificial balance sheet volatility.

The aggregate level of the risk margin is very high (ie EUR 155 billion in Q3 2018[1]). This reduces insurers' own funds significantly and therefore limits the risk-taking capacity of the industry and ability to grow. For some products, particularly long-term protection type products, the risk margin can be as high or even higher than the SCR which can significantly impact product availability and the price to the consumer.

The current methodology also makes the risk margin sensitive to movements in interest rates, generating artificial volatility which cannot be hedged, and according to research from the Bank of England[2], making companies prone to procyclicality. Furthermore, there is no evidence that the value of the current risk margin is reflective of actual transfer pricing, nor any evidence that volatility introduced is reflective of reality.

[1] According to EIOPA solo statistics for EEA countries.

[2] https://www.bankofengland.co.uk/-/media/boe/files/working-paper/2017/the-impact-of-solvency-2-regulations-on-life-insurers-investment-behaviour#page=4

However, it is clear that an excessive risk margin can have a major impact on the costs and availability of certain products, particularly long-term products, to the detriment of policyholders. Also, it could trigger otherwise unnecessary and harmful actions for insurers, particularly those under pressure from low interest rates.

What are the key elements that need addressing?

The idea behind the risk margin is to attempt to quantify the additional amount of money for which a third party would accept a portfolio of insurance liabilities. Additional capital would be required because the portfolio would be valued based on best-estimates, and therefore the third party would be taking on some risk and would want extra compensation for taking on such risk. Quantifying the appropriate amount has proven to be very difficult, and it was decided to derive the risk margin from the fact that the third party would have to hold solvency capital, based on Solvency II requirements, during the run-off of the portfolio, and would only do so if this capital earned a return, the Cost of Capital.

This led to the formula below:

$$RM = CoC \cdot \sum_{t \geq 0} \frac{SCR(t)}{(1 + r(t+1))^{t+1}}$$

CoC parameter **prescribed at 6%** by DA

Risk-free discounting

Projected SCRs based on the transfer of liabilities to a **"reference undertaking"**

In addition to improving the quantification of the risk margin, another important consideration is how it should be funded. Currently it is added to the valuation of the liabilities. However, this is very inefficient because it requires all companies to hold extra capital even though the risk margin is only needed by the tiny fraction of companies who actually fail. Given the high level of the risk margin at over EUR 150bn, other, more efficient, ways of ensuring an appropriate level of risk margin is available when needed should be considered.

Therefore, three areas of improvement should be considered in the 2020 Review:

1. Recalibrating the Cost of Capital
2. Improving the methodology for projecting future capital requirements
3. Funding of the risk margin on the balance sheet

1 Recalibrating the Cost of Capital

The Cost of Capital[3] is an important parameter in the calculation of the risk margin, it is currently set at 6%, which is too high. As a fixed parameter, irrespective of the level of interest rates, it creates artificial balance sheet volatility.

Insurance Europe believes that the Cost of Capital rate should be set to 3%, as per its previous analysis. Another, potentially complementary, option could be to link the CoC rate to the risk-free rate to reduce artificial volatility.

The EC asks EIOPA, in the 2020 Call for Advice, to assess the appropriateness of the design of the risk margin including the ongoing appropriateness of:

- *the design of the risk margin, in light of the work currently undertaken by EIOPA on the transfer value of liabilities, in the context of the Commission's Call for information.*
- *the assumptions regarding the asset mix of the receiving undertaking, in particular with regard to the assumption of risk-free investments. This assessment should take into account the potential interactions between the recognition of market risk and the use of the volatility adjustment and the matching adjustment in the risk margin calculation*
- *the use of a fixed cost-of-capital rate for all insurance and reinsurance undertakings*
- *the assumptions used to derive the cost of capital rate, including the absence of leverage and the derivation of the equity risk premium.*

Proposal: Set the Cost of Capital rate to 3%

EIOPA investigated the CoC rate as part of the 2018 review[4] and defended the 6% status quo. However, Insurance Europe and the CFO forum identified a number of flaws in EIOPA's approach to determine the CoC, including the items raised by the Commission.

An overview of issues and their flaws are identified in the table below.

[3] Art 77(5) of the Solvency II Directive specifies that '*The Cost-of-Capital rate used shall be equal to the additional rate, above the relevant risk-free interest rate, that an insurance or reinsurance undertaking would incur holding an amount of eligible own funds, equal to the Solvency Capital Requirement necessary to support insurance and reinsurance obligations over the lifetime of those obligations.*

[4] https://eiopa.europa.eu/Publications/Consultations/EIOPA-18-075-EIOPA_Second_set_of_Advice_on_SII_DR_Review.pdf#page=341

Flaws	Equity Risk Premium	β	Adjustment	Difference vs EIOPA *(per parameter)*	Corrected Cost of Capital *(cumulative)*	Explanation
Technical error – **inconsistent assumptions behind parameters**	*[7.02%-8.09%]*	*0.90*	*0.80*	(1.68%-1.94%)	**5.05%-5.82%**	Using an industry β without a deleverage adjustment is incompatible with EIOPA's 100% equity funding assumption for reference undertaking
Incompatible with SII Delegated Regulations - **no correction to β for minimal market risk**	*[7.02%-8.09%]*	*0.81*	*0.80*	(2.19%-2.52%)	**4.55%-5.24%**	Using an industry β without an adjustment reflecting that market risk has been hedged is incompatible with the requirement to minimise market risk within the Reference Undertaking as set out in Solvency II Delegated Regulations article 38(h)
Equity Risk Premium (ERP) that is inconsistent with SII regulation and ignores assessment from a range of expert studies	*[4%-6%]*	*0.81*	*0.80*	(4.15%-3.88%)	**2.59%-3.89%**	ERP selected by EIOPA is backward looking, which is inconsistent with art. 77.5 and is materially higher than the recommendation by expert studies due to a range of issues

The analysis above results in a beta in the range of [0.81 – 0.9] and an equity risk premium in the range of [4% - 6%] leading to a Cost of Capital between 2.6% and 3.9%.

In addition, recent industry analysis has identified a further inconsistency in EIOPA's methodology, EIOPA has calculated the average beta parameter based on market-capitalisation weights. This weighting distorts the results because the betas of the individual undertakings are strongly correlated with market capitalisation. Introducing a more appropriate approach of equal weighting for each undertaking, would reduce the beta to 0.75 and further support a re-calibration of the Cost of Capital to 3%.

See appendix for further explanations and evidence relating to the points above.

Why CoC should be linked to the risk-free rates.

The risk margin is overly sensitive to changes in risk-free rates. While a reduction in the CoC rate would reduce, proportionally, the absolute size of the risk margin, there is no mitigation of the sensitivity of the risk margin to interest rate movements. One of the reasons it is so much higher than expected is that the methodology was never tested for low interest rate conditions.

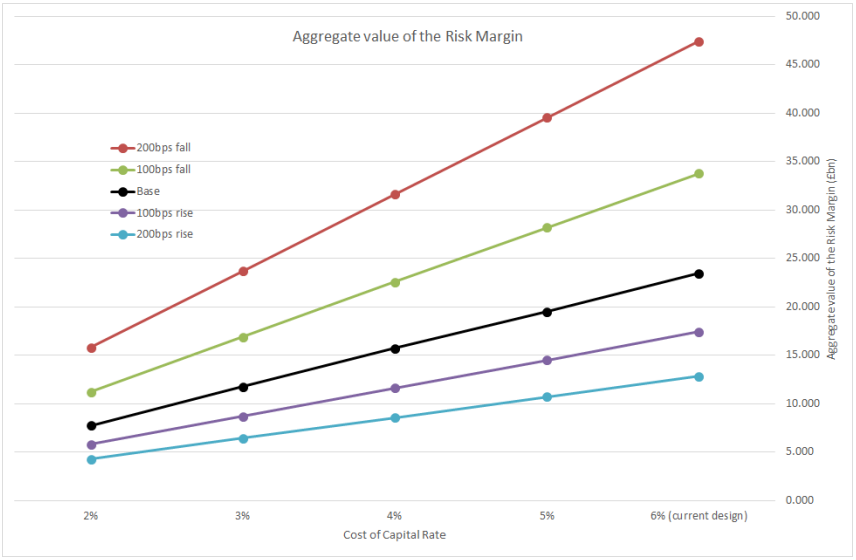
For example, a survey[5] gauging the impact of the risk margin on the Solvency II balance sheet demonstrated how, for several levels of the CoC, the risk margin would be affected by movements of ±100 bps and ±200 bps in the risk-free rate (see graph 1).

[5] Survey ran by the ABI on 14 companies, representing 75% of the aggregate UK Life risk margin, on data from year end 2016.

Specifically:

- If risk-free rates decrease by 100bps, the risk margin would increase by more than 40%
- If risk-free rates decrease by 200bps, the size of the risk margin would more than double

Graph 1: Aggregate size of the RM as a function of the CoC rate, including ±100bps and ±200bps changes in risk-free rate.



Alternative proposal: link the CoC rate to the prevailing level of risk-free rates

One solution to mitigate the artificial volatility inherent in the design of the risk margin is to determine the CoC as a function of the risk-free rate. For example, the CoC could vary according to a weighted average of risk-free interest rates for different currencies, or by splitting it into a floating interest rate risk element and a fixed credit risk element. The weighted average approach appears to be a particularly practical and objective solution.

2 Improving the methodology for projecting capital requirements

The capital requirements used in the calculations have a major impact on the size of the risk margin and lead to very high levels for long-term business.

A range of improvements to the current method used to determine and project the future, adjusted capital requirements should be considered, including:

- **taking into account the dependency over time of future capital requirements;**
- **the allowance for diversification both at group level and between life and non-life undertakings;**
- **adjustments for longevity risk, following the presence of a strong market for longevity hedging**

The capital required by the third party is not the same as the capital the current insurer holds. In order to determine the risk margin, only the SCRs in respect of non-hedgeable risks (essentially operational, underwriting and unavoidable market risks relating to insurance obligations) are projected. This projection currently does not take into account any dependency over time.

2.1 Alternative 'Path Dependency' approach

The current approach for calculating the risk margin treats all future capital funding requirements as independent payments (ie based on future unconditional SCRs) and does not take into account any dependency over time. However, any economic approach to valuing risky payments would have to take into account the dependence of risks over time to avoid inappropriate conclusions – such as policyholders lapsing more than once, or implausibly low mortality rates which imply that more capital is at risk than the worst-case scenario of policyholders living forever. In other words, the current design of the risk margin is flawed because it effectively assumes that projected SCR equates to capital at risk.

In practice, the projected SCRs do not always equate to capital at risk. This is because some risks are not independent over time. Some non-hedgeable risks (such as mortality/longevity risk and lapse risk) are effectively non-repeatable, so if they crystallise in one time period they cannot reoccur. For example, lapse exposure reduces following a lapse stress, ie a 40% lapse stress in one year followed by a 40% lapse stress in the next year equates to a 64% total lapse (and not 80% as implied by the current approach). This will have a downward impact on the calculation of forward SCR capital requirements.

The non-repeatability means it is not appropriate to value the projected SCRs in the risk margin calculation as independent payments, which is the presumption implicitly made when applying the formula currently specified in Article 37(1) of the Delegated Regulation. Instead, when setting the compensation required to finance a liability (ie the level of payment required, in the form of a risk margin, to take on that risk), an investor will consider the distribution of outcomes at maturity of the liability being financed. In other words, when providing this capital an investor will necessarily consider the ultimate risk when assessing the compensation required to provide that capital. The impact of such risk dependency is to limit the ultimate loss that an investor can experience on any particular risk – if a risk cannot occur twice, it should not be charged twice.

Consequently, any investor providing the capital required to support regulatory requirements for the reference undertaking would not be expected to charge a cost of capital rate for the proportion of capital that is not at risk. Put in a different way, an investor would charge a lower cost of capital to fund regulatory capital requirements for a particular risk that exhibits risk dependence over time than an equivalent risk with no dependence over time.

Proposal: undertakings should be allowed to use a scalar λ to derive the projected SCR in the risk margin formula

Insurance Europe proposes that undertakings are allowed to model risk dependence over time in their SCR projections in the risk margin calculation. Therefore, undertakings should be allowed to use a scalar λ to derive the projected SCR in the risk margin formula provided in Article 37(1) of the Delegated Regulation, ie:

$$RM = CoC \sum_{t \geq 0} \frac{SCR(t)}{\left(1 + r(t+1)\right)^{t+1}}$$

where $SCR(t) = \lambda\ SCR'(t)$ and $SCR'(t)$ denotes the unconditional SCR at time t, where $\lambda \leq 1$. In this context, λ represents an estimate of the degree to which the ultimate risk reduces relative to a series of independent risks, and is linked to the reduction in size of future 1-in-200 risks following a 1-in-200 loss in previous periods.

2.2 Transfer to a reference undertaking

The current risk margin approach does not give sufficient allowance for diversification between risks within an insurance company.

Proposal: More diversification should be recognised within the reference undertaking

- **Group diversification –** the consolidated risk margin has to be calculated as the simple sum of the risk margin of the participating insurance or reinsurance undertaking and the proportional shares of the risk margin of related insurance and insurance undertakings. This effectively means that it is calculated gross of intra-group transactions. This implies that no diversification benefit can be assumed between different entities of a group, while it would be reasonable to assume that the level of diversification a group manages to achieve could also be reproduced by a reference undertaking.
- **Diversification between life and non-life** – when calculating the risk margin, for a composite insurer, pursuing both life and non-life business, an assumption is made that the life and non-life insurance obligations are taken over by two separate reference undertakings. This implies that no diversification benefit can be assumed between life and non-life insurance portfolios. This separation of life and non-life obligations is arbitrary and should therefore be removed.

The changes proposed above are consistent with the reality of how insurance groups are managed in practice and with the SCR treatment of diversification. The excessively onerous Solvency II approach creates unintended incentives for the industry to restructure their organisations in order to enable appropriate diversification and overcome artificial constraints.

2.3 Longevity considerations

There is now compelling evidence of a strong market in longevity hedging, primarily via longevity swaps but also via reinsurance structures, as insurers are now prepared to exchange significant potential returns for certainty of outcome. This has arisen primarily due to the flawed design of the risk margin under Solvency II.

DA Article 38 (1) provides a list of assumptions regarding the reference undertaking, in order to calculate the risk margin. Specifically, DA Art 38(1)(l) states that "*the reference undertaking will, subject to points **(e)** and **(f)**, adopt future management actions that are consistent with the assumed future management actions, as referred to in Article **23**, of the original undertaking." As there is now a deep and liquid market, for longevity hedging, companies should be able to make use of this and* it should be possible to include a management action which puts longevity reinsurance in place.

The hedgeability of longevity risk opens the possibility for the following proposals:

Proposal: Reinterpretation of technical provisions

Given the recent longevity risk transfer activity since the finalisation of the Solvency II text, it is now unreasonable to assume no longevity risk can be transferred throughout the period of run-off. Therefore, the industry proposes that for the determination of the risk margin, undertakings should be able to use longevity reinsurance to price the transfer value of the risk.

Under current legislation, the projected SCRs used in determining the risk margin should be calculated for a reference undertaking which has purchased assets to optimise its capital position. Insurance Europe proposes that this asset-side restructuring to minimise the SCR should be extended to include the ability of firms to hedge longevity risk. Firms should assess how much longevity exposure they believe could be traded out and at what cost, both in terms of quantum at time zero, and run-off over time. The net exposure could then be used in the projected SCR calculations for risk margin purposes.

Proposal: Adoption of a future management action putting longevity reinsurance in place

- In summary, the Management Action Solution involves an insurer approving a management action that provides that it would seek reinsurance to cover certain liabilities in specifically defined circumstances, namely when it de-risks its assets. If certain current assumptions in the risk margin framework remain unchanged, these defined circumstances would be deemed to occur upon any transfer to a transferee insurer, and therefore the transferee insurer can be treated (for the purposes of the risk margin calculation) as having put in place longevity reinsurance in line with the management action. That management action would be reflected in determining the transferee insurer's SCR for the purposes of calculating the risk margin.
- The risk margin calculation then reflects that as part of de-risking the assets, the transferee insurer puts in place longevity reinsurance in line with the insurer's management action, as the circumstance for doing so is deemed to have been triggered.
- The Management Action Solution provides an alternative basis for calculating the risk margin, including a charge for longevity reinsurance that reflects the availability and cost of reinsurance based on observable prices and the time taken to purchase the longevity reinsurance. The Management Action Solution does not reduce the Risk Margin to zero.

2.4 Other proposals

The Call for Advice asks EIOPA to assess the appropriateness of the design of the risk margin, without challenging the approach based on the Cost of Capital. Some fundamental changes to the framework that nonetheless comply with this requirement are as follows:

Proposal: Change to the Level 1 Risk Margin definition retaining the CoC approach

Using the advice given by EIOPA to take a "through the cycle" approach to avoid procyclicality, the value of the risk margin could be deliberately smoothed over time.

The risk margin is based on a cost of capital approach for non-hedgeable risks, which currently includes mass lapse risk. For a number of products (eg unit-linked products without surrender guarantees), the fact of having a large part of the own funds financed by future profits, results in a large mass lapse risk SCR because, under a mass lapse, those profits would be lower. In the context of the risk margin it does not make sense for the loss of profits to increase the risk margin because neither the current shareholder nor a third party taking over the portfolio would have to invest capital to cover the risk. If there is no capital investment, there can be no cost of capital and as such there is no risk margin relating to this risk.

Proposal to exclude mass lapse risk from risk margin calculations under specific conditions

To the extent that it can be shown that the amount of mass lapse risk corresponds to a positive value of future profits in own funds, mass lapse risk should not be part of the risks leading to a cost of capital for the assumed reference undertaking in Art 38-39 of the DA, ie mass lapse risk should in those cases be reduced or excluded from the risk margin calculation.

3 Where on the balance sheet should the risk margin be as part of the own funds

Some or all of the risk margin should be funded through the MCR. The ladder of intervention ensures that NSAs can intervene while there is still at least the MCR available as additional capital to be used in case there is a need for a run-off or transfer to a third party. The risk margin can therefore be funded from the MCR.

While the previous proposals provide justification for reducing the size of the risk margin, in addition to applying these, where the risk margin is funded on the balance sheet should also be considered. The insurance industry acknowledges the need to ensure an orderly transfer in rare case of a failure. Solvency II already foresees safeguards to protect policyholders - the MCR is intended to ensure policyholder protection under stress, and the aggregate EU MCR is significantly larger (c 50% larger at YE2017) than the current aggregate risk margin.

Proposal to assess risk margin against existing capital requirements

The risk margin should be assessed against the existing capital requirements. A company should calculate its risk margin and its MCR; as long as the MCR is higher than the risk margin, the ladder of intervention allows supervisors to be reassured that risk margin is available to support transfer in case of failure.

Appendix - based on the 'joint Insurance Europe CRO/CFO Paper on the Cost of Capital'

The Cost of Capital in the Solvency II context does not refer to the traditional market cost of capital of an insurance company, but rather what cost of capital rate would a Reference Undertaking incur to support the insurance obligations as defined under Solvency II[6].
In their advice, EIOPA did not propose any change to the formula originally applied by CEIOPS to derive the Cost of Capital (CoC) rate:

CoC rate = Equity Risk Premium * β * adjustment factor

Where:

- Equity Risk Premium (ERP) is the difference between the return on the equity market and the risk-free rate. It represents the extra return that investors demand above risk-free to invest in equities.

- **β** reflects the volatility of the Reference Undertaking, as defined in the Solvency II regulations, compared to the total market; it is a factor that increases or decreases the risk premium level compared to the market average so as to reflect the risks specific to the Reference Undertaking[7].

- the **adjustment factor** was introduced by CEIOPS, and maintained by EIOPA, to allow for economic aspects not reflected in the capital asset pricing model (CAPM) estimation of the Cost of Capital (i.e. not already captured in the ERP or β); this is because of the specific provisions of the Solvency II regulations on Cost of Capital[8].
EIOPA's final advice was to **recommend no change** to the current 6% Cost of Capital, based on their findings which EIOPA summarized in the following table[9]:

	ERP	β	Adjustment	Cost of Capital
Advice	[7.02% -8.09%]	1.2	0.80	**[6.7%-7.8%]**

[6] Please see appendix 2 for the specific requirements for the Reference Undertaking in article 38 of the Delegated Regulations.
[7] In particular, the Reference Undertaking's minimal exposure to market risk needs to be taken into account.
[8] For example, a correction for franchise risk needs to be made to reflect that the Solvency II balance sheet does not include future new business.
[9] Please see EIOPA's second set of advice to the European Commission on specific items in the Solvency II Delegated Regulation, EIOPA-BoS-18/075, 28 February 2018.

However, there **are a number of shortcomings in EIOPA's approach.** The table below summarizes the main ones, along with an estimation of the **cumulative** impact on the advice of correcting them. For each shortcoming, the modified parameter is highlighted in red.

Flaws	Equity Risk Premium	β	Adjustment	Difference vs EIOPA *(per parameter)*	Corrected Cost of Capital *(cumulative)*	Explanation
Technical error – **inconsistent assumptions behind parameters**	*[7.02%-8.09%]*	*0.90*	*0.80*	(1.68%-1.94%)	**5.05%-5.82%**	Using an industry β without a deleverage adjustment is incompatible with EIOPA's 100% equity funding assumption for reference undertaking (*see 2.1 below*)
Incompatible with SII Delegated Regulations - **no correction to β for minimal market risk**	*[7.02%-8.09%]*	*0.81*	*0.80*	(2.19%-2.52%)	**4.55%-5.24%**	Using an industry β without an adjustment to reflect minimal market risk is incompatible with the requirement to minimise market risk within the Reference Undertaking as set out in Solvency II Delegated Regulations article 38(h) (*see 2.2 below*)
ERP that is inconsistent with S2 regulation and ignores assessment from a range of expert studies	*[4%-6%]*	*0.81*	*0.80*	(4.15%-3.88%)	**2.59%-3.89%**	ERP selected by EIOPA is backward looking, which is inconsistent with art. 77.5[10] and is materially higher than the recommendation by expert studies due to a range of issues[11] (*see 2.3 below*)

The resulting impacts of these corrections are reductions in the Cost of Capital with each of them being material to consider. Consequently, a downward adjustment to the Cost of Capital as part of the 2018 review is justified.

The various shortcomings identified are discussed in more detail in the sections below.

[10] Art. 77.5 of the Solvency 2 Directive reads "the Cost-of-Capital rate used shall be equal to the additional rate, above the relevant risk-free interest rate, that an insurance or reinsurance undertaking would incur holding an amount of eligible own funds … necessary to support insurance and reinsurance obligations over the lifetime of those obligations" which implies a forward-looking dimension.

[11] Please see section 2.3 for more details and references

1.0 Use of inconsistent assumptions

The first shortcoming in EIOPA's analysis is to use different underlying assumptions on the capital structure of an insurer depending on the parameter. Assumptions underlying parameters should be homogeneous. This technical error of inconsistency significantly distorts the outcome of the analysis.

The Solvency II directive[12] requires that "*the Cost-of-Capital rate used shall be equal to the additional rate, above the relevant risk-free interest rate, that an insurance or reinsurance undertaking would incur holding an amount of eligible own funds…equal to the Solvency Capital Requirement".* In their analysis, EIOPA start from a traditional Weighted Average Cost of Capital (WACC) reasoning, but then assume a zero weight for the debt financing considering that this type of funding is minimal and can be ignored[13]. However, for the beta parameter, EIOPA simply uses a *levered* beta reflecting the actual capital structure of insurance companies using Solvency II eligible equity *and* debt. EIOPA's own data shows that debt capital is a substantial part (23.5%) of the *total* eligible own funds of insurers. The *levered* beta therefore reflects the use of debt by insurers and as such its use is inconsistent with their assumption of a capital structure with no debt. An *unlevered* beta should be used for the analysis instead.

EIOPA has identified 0.9 as an unlevered beta in its technical advice[14]. Using this unlevered beta parameter[15] to correct the analysis, materially impacts the outcome of the formula. It reduces the suggested Cost of Capital by **1.7% - 2%** to a range **below 6%**.

2.0 No asset risk related correction in beta factor is incompatible with Solvency II Delegated Regulations

Article 38 of the Delegated Regulations sets out the assumptions that must be used for the Reference Undertaking when determining the Solvency II risk margin. In sub (h) of this article, it is stated that it should be assumed that the Reference Undertaking selects its assets '*in such a way that they minimise the Solvency Capital Requirement for market risk that the reference undertaking is exposed to*'.

The result of this requirement is that the Solvency II risk margin should cover predominantly underwriting risk, which is considered a non-hedgeable risk. Such risks are generally considered to have a low correlation (beta) with the market. EIOPA applies no correction to the beta parameter for the fact that it is sourced from insurers which hold assets with market risk and therefore they are using a beta that will reflect that insurers are more correlated to the rest of the market than the Reference Undertaking would be. Therefore, the unlevered beta for insurers requires a further downward adjustment in order to be an appropriate beta for the Solvency II Reference Undertaking.

The adjustment of removing the asset risk from the beta parameter would have a material impact. For the analysis presented in the table above, a simple but limited downward shift of 10% in the beta is used to correct for this[16]. This is a conservative, high-level estimate as asset risk presents a material part of insurance companies Solvency II risk profiles[17] and unlevered betas of actual insurance companies as reported by Damodaran[18] are still around or lower than the resulting 0.81 after the 10% adjustment. After this suggested correction, the Cost of Capital rate would be reduced by a half a percent point to a range of **4.55% to 5.24%.**

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[12] See appendix 2 art. 77.5.

[13] See EIOPA's second set of advice to the European Commission on specific items in the Solvency II Delegated Regulation, Feb. 28, 2018, p. 344.

[14] P. 368, EIOPA's second set of advice to the European Commission on specific items in the Solvency II Delegated Regulation, EIOPA-BoS-18/075, 28 February 2018. "A. Damodaran derives an unlevered beta of 0.9".

[15] The 0.9 for the beta is a prudent number; in the CFOF/CROF and IE responses, a level of 0.65-0.8 was suggested as a more appropriate level for the beta in the context of the Solvency II risk margin.

[16] Alternatively, as in the CRO/CFO Forum response to EIOPA during the consultation phase it is possible to adjust for this via a change to the adjustment factor, which for the final outcome of the calculation has a similar effect.

[17] Please see e.g. p.43 EIOPA's Financial Stability Report (December 2017): https://eiopa.europa.eu/Publications/Reports/Financial_Stability_Report_December2017.pdf

[18] Please see e.g. average global betas for insurance http://pages.stern.nyu.edu/~adamodar/

Therefore, correcting a technical error and ensuring the calculation is in line with the Solvency II regulations, while still relying on EIOPA's own data and analysis, signals a Cost of Capital rate of around 5%.

3.0 EIOPA's derivation of the ERP presents several shortcomings

The ERP selected by EIOPA is backward-looking. As such, it is inconsistent with the Solvency II Directive which implies that the cost of capital should be determined on a forward-looking basis. This introduces an upward bias in the ERP, of around 2%. Furthermore, the historical ERP selected by EIOPA is higher than the recommendation by various expert studies that are available for external reference (see table below). These independent, academic studies make their recommendations based on careful analysis taking into account the range of methods and their strengths and weaknesses to arrive at an appropriate ERP.
The following shortcomings in EIOPA's derivation of the ERP are identified as sources of the upward bias in EIOPA's findings:

1. **EIOPA used backward-looking ERP, which is inconsistent with the Solvency II Directive and leads to an upward bias. Correcting this would reduce the ERP by up to 2%.**
   EIOPA's use of a backward-looking approach is inconsistent with the requirements of sub-paragraph 3 of Article 77(5) in the Solvency II Directive which imply that the Cost of Capital rate should be determined on a forward-looking basis, as the risk margin covers cost of the capital to manage the future risk of the existing insurance liabilities over the lifetime of these liabilities. This paragraph reads: "the Cost-of-Capital rate used shall be equal to the additional rate, above the relevant risk-free interest rate, that an insurance or reinsurance undertaking would incur holding an amount of eligible own funds, as set out in Section 3, equal to the Solvency Capital Requirement necessary to support insurance and reinsurance obligations over the lifetime of those obligations."

   In addition, according to external sources, a forward-looking ERP is more suitable than a backward-looking one, as backward-looking returns are inflated. This is because they do not reflect the impact of defaulting firms ('survivorship bias'). Indeed, bankrupt companies generate negative equity returns. As, by construction, they are excluded from the computation of the backward-looking total equity return, an upward bias is introduced in the computation of the equity risk premium. Separate studies have indicated that changing from a backward-looking approach to a forward-looking approach has an impact of around -2% and is therefore too important to ignore. EIOPA rejected forward-looking methods considering them too volatile. The ERP based on historical return models requires certainly fewer assumptions to be calculated. However, if using an historical return ERP, it is essential to address its upward bias, by making a correction.

2. **EIOPA mixed their basis for risk free rates** – using 30-day for data points until 2006, whilst using 1-year rates from 2007 onwards[19]. To be consistent, for example 1-year rates should have been used for all data points. However, the literature on risk premium research highlights the need to decide the appropriate investment horizon and often provides ERP estimates for long-term (e.g. based on 10-year rates) which are lower than the short-term ERPs. For a reference undertaking investing long-term in a run-off portfolio it is reasonable to at least consider if the longer- term ERP is in fact the more appropriate reference point.

3. **Ignored geometric mean.** The literature on risk premiums also highlights the important difference between arithmetic and geometric means when attempting to determine an appropriate ERP and many studies provide historic ERPs using both methods. In these studies, the geometric mean is often cited as the most appropriate for investment purposes. Use of a geometric mean would result in a lower ERP. EIOPA made no mention of this issue or justification for not using a geometric mean.

As a result, EIOPA's final ERP, within a range of 7 and 8.1%, seems unrealistically high compared to other relevant studies, which indicate that an appropriate ERP would be in the range of 4% to 6%. Important in the light of the specific request from the European Commission to EIOPA in the review of the Cost of Capital, is the

[19] Please see p.357-359 in EIOPA's second set of advice to the European Commission on specific items in the Solvency II Delegated Regulation

observation that expected premiums as estimated have declined significantly since the end of the Global Financial Crisis[20].

Analysis and views from Academic experts

Academic evidence	ERP	Remarks	Link
Dimson, Marsh and Staunton (2011)	3%-3.5%	• Based on a geometric mean. • Arithmetic mean for the world index indicates 4.5 – 5%.	link[i]
Norges bank (2016) – The equity risk premium	3%-6%.	• Estimate that the expected World ERP is around 6 percent as at January 2016, but if accounted for the effect of the current low interest rates or put less emphasis on recent cash flow growth data, the estimate for a World ERP is 3 to 4 percent. • ‘’The expected premium as estimated by these models has declined significantly since the end of the Global Financial Crisis.’’	link[ii]
Damodaran (2016)	2.80%-5.87%	• ERP can vary depending on e.g. time period chosen and using arithmetic instead of geometric averages. • Suggested range of 2.8% to 5.87%. • Concludes, however, that it is possible to arrive at ‘’outlandishly high or low premiums, but only if estimation approaches are used that do not hold up to scrutiny’’.	link[iii]
Ibbotson and Chen (2003)	3.97% - 5.90%	• 3.97% based on geometric, 5.90% based on arithmetic.	link[iv]
Fama and French (2002)	2.55% - 4.32%	• Based on dividend and earnings growth models. • The backward-looking ERP over 1951 and 2002 was 2% higher than the forward looking one.	link[v]

Using a forward-looking assumption consistent with the Solvency II directive and reflecting a more realistic approach will lead to a lower ERP, more likely ranging from 4% to 6%. This will drive further down the range for a realistic Cost of Capital rate that is suitable for the specific purpose of the Solvency II risk margin calculation.

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[i] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1940165

[ii] https://www.nbim.no/contentassets/2b92009ffa9440f98eec8f32a0996ca2/discussion-note-1-16---equity-risk-premium.pdf

[iii] https://poseidon01.ssrn.com/delivery.php?ID=595118123002083088018093122070081068052035058029030050009003085102005025011115065076118021122027111056019100018001086099021108015080078007034119100107120065080031073081071093113096007087080027125123024122119016120080114110028030090079002101126091&EXT=pdf

[iv] https://psc.ky.gov/PSCSCF/2005 cases/2005-00057/Documents on CD/Articles/Ibbotson - Participating in the Real Economy - FAJ 2003.pdf

[v] https://psc.ky.gov/pscecf/2012-00221/rateintervention@ag.ky.gov/10252012c/Fama_French_--_Equity_Premium.pdf

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[20] https://eiopa.europa.eu/Publications/Requests%20for%20advice/CfA_annex.pdf