

# The transitional mechanism for the alternative extrapolation

Implications of the European Commission's proposal for the SII Directive

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On 22 September 2021 the European Commission (EC) published its highly anticipated amendment to the Solvency II (SII) Directive. There is no doubt that one of the most impactful changes will be a new extrapolation method of the liability discount curve. To avoid “disruption” of the insurance business the Commission introduces<sup>1</sup> a transitional mechanism that phases in the new extrapolation method until the end of 2031. The transitional mechanism may introduce additional curve dynamics and pose new risk management challenges.

In this paper we summarise the proposed amendments to the extrapolation methodology and discuss the potential implications they may have for insurers. These proposed amendments have also been adopted in the European Council's position, which has recently been published.<sup>2</sup> Any recently published draft counterproposals by members of European Parliament are outside the scope of this note.<sup>3</sup>

## Background

Currently, the liability discount curve is determined using market rates that are extrapolated to an Ultimate Forward Rate (UFR) based on the Smith-Wilson extrapolation method. In the opinion of the European Insurance and Occupational Pensions Authority (EIOPA), the current extrapolation method contributed to an “underestimation of technical provisions for insurance liabilities and setting wrong risk management incentives.”

In EIOPA's opinion<sup>4</sup> an alternative extrapolation method (AM) was introduced that takes into account information on longer-term interest rates (where available) and ensures appropriate incentives. In our previous briefing notes we have described the technicalities of the alternative extrapolation method and the impact of lower interest rates on the curve dynamics.<sup>5</sup> In these notes we have, amongst other things, discussed the relevance of the speed of convergence parameter on the level of the yield curve.

## Proposed amendments

In line with EIOPA's opinion, the Commission has proposed changing the extrapolation method and specified that this method should take into account information on longer-term interest rates, where available. Further important details are deferred to Delegated Acts, but the Commission has indicated it will consider building on the formula and parametrisation proposed by EIOPA.

However, one notable difference from EIOPA's opinion is the Commission's proposal for the *transitional mechanism* (TM) that phases in the new extrapolation method. The transitional mechanism is not optional (like transitional *measures* are) and the impact of the mechanism needs to be disclosed.

EIOPA proposed a smoothed introduction of the curve using a *smoothing mechanism* for the speed of convergence parameter (SoC or  $\alpha$ ). The smoothing mechanism makes this parameter dependent on the level of the interest rate at year 20 (20Y), the first smoothing point (FSP):

- Ten percent when the interest rate is 0.5% or higher
- X when the interest rate is -0.5% or lower
- Linearly interpolated between 10% and X when the interest rate is between -0.5% and 0.5%

<sup>1</sup> More information about the proposed amendments by EC is available at [https://ec.europa.eu/info/publications/210922-solvency-2-communication\\_en](https://ec.europa.eu/info/publications/210922-solvency-2-communication_en).

<sup>2</sup> On 17 June 2022, the European Council has published its position on EC's proposal for the Solvency II Directive, which is available at: <https://www.consilium.europa.eu/en/press/press-releases/2022/06/17/solvency-ii-council-agrees-its-position-on-updated-rules-for-insurance-companies/>.

<sup>3</sup> On 6 June 2022, the European Parliament's rapporteur on the Solvency II reform has published a draft report concerning EC's proposal, which is available at: [https://www.europarl.europa.eu/doceo/document/ECON-PR-732668\\_EN.pdf](https://www.europarl.europa.eu/doceo/document/ECON-PR-732668_EN.pdf).

<sup>4</sup> EIOPA's opinion on the 2020 review of Solvency II is available at [https://www.eiopa.europa.eu/document-library/opinion/opinion-2020-review-of-solvency-ii\\_en](https://www.eiopa.europa.eu/document-library/opinion/opinion-2020-review-of-solvency-ii_en).

<sup>5</sup> See [https://www.milliman.com/-/media/milliman/pdfs/2020-articles/articles/11-5-20-the\\_impact\\_of\\_alternative\\_extrapolation\\_methods-v1.ashx](https://www.milliman.com/-/media/milliman/pdfs/2020-articles/articles/11-5-20-the_impact_of_alternative_extrapolation_methods-v1.ashx).

In this formula X is equal to 20% during the first year of application of the alternative extrapolation method and decreases linearly to 10% in 2032.

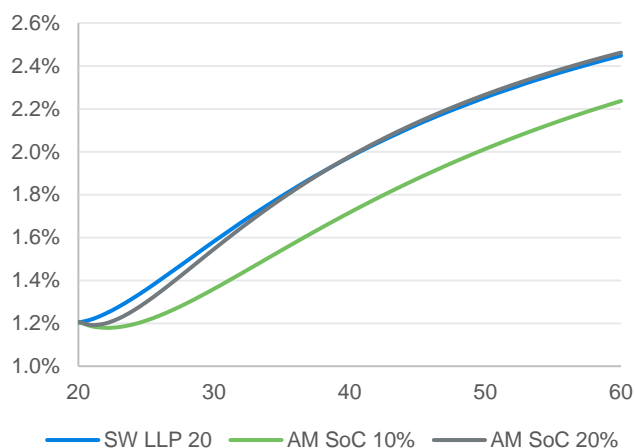
Instead of using a smoothing mechanism as proposed by EIOPA, the Commission decided to fix the initial SoC parameter at the application date (of the Solvency II amendments). Under the proposed transitional mechanism, the initial SoC parameter is chosen such that the Solvency II curves based on current extrapolation methodology and on the alternative extrapolation are “sufficiently similar” as per the application date. Those parameters of the extrapolation shall be decreased linearly at the beginning of each calendar year, during the transitional period. The final parameters of the extrapolation shall be applied as of 1 January 2032.

In Figure 1, the extrapolated interest rates are shown for the current Smith-Wilson extrapolation methodology (SW) and for the alternative extrapolation method<sup>6</sup> (AM, with an SoC of 10% and 20%) as defined in the opinion of EIOPA. It is still uncertain what definition of “sufficiently similar” will be used in calibrating the initial SoC parameter under the transitional mechanism. However, Figure 1 indicates this initial SoC parameter (per end of March 2022) will most likely be closer to 20% than the final SoC parameter of 10% that was proposed by EIOPA.

## Illustration of transitional mechanism

If the definition of “sufficiently similar” will have a quantitative nature, then it can be expected that the initial SoC parameter will have a dependency on the level of interest rates.

**FIGURE 1: EXTRAPOLATED INTEREST RATE CURVES (ZERO RATES) AS OF END OF MARCH 2022 (SOURCE: REFINITIV, EIKON AND MILLIMAN)**



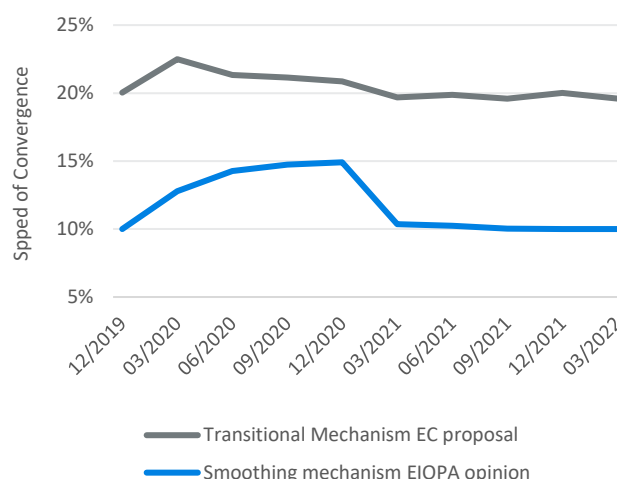
<sup>6</sup> In Figure 1 and in the remainder of this note the formula and all other parameters in the alternative extrapolation method are equal to those proposed by EIOPA, unless specified otherwise.

We have analysed what would be the implied speed of convergence parameter if, under the transitional mechanism, the curve impact were to be minimised.<sup>7</sup> The results from 2019 year-end until end of March 2022 are shown in Figure 2. Figure 2 also includes a comparison against the implied SoC parameters under the smoothing mechanism as proposed by EIOPA. Under such a minimisation approach for the transitional mechanism, there is some time dependency for the implied SoC parameter (driven by rate levels and other curve parameters), but it is not as strong as under EIOPA’s smoothing mechanism (when the mechanism is not capped or floored).

Using the implicit SoC parameter for March 2022 the rate impact is approximately 2 basis points (bps) on average for years 21 to 60. This has approximately a 0.3% lowering effect on a set of proxy liabilities.<sup>8</sup> For this example, we have used a proxy cash flow, internally constructed, representing an average Dutch life insurance company. The cash flow is calibrated to represent a life insurance liability with duration 16 when applying the Solvency II curve including the volatility adjustment (VA).

However, it should be noted that the definition of “sufficiently similar” still leaves room for interpretation. In conjunction with the limited time dependency of an “optimised” SoC parameter, it could be argued that a rounded SoC parameter of 20% also leads to “sufficiently similar” curves. For the timeframe analysed in Figure 2, the average distance between 21Y and 60Y rates varies from 2 bps to 5 bps if the SoC parameter is set to 20%

**FIGURE 2: IMPLICIT SPEED OF CONVERGENCE (SOC) PARAMETER FROM END OF DECEMBER 2019 TO END OF MARCH 2022**



<sup>7</sup> By minimising the average distance between 21Y-60Y rates under the current and alternative extrapolation methodology.

<sup>8</sup> Please note that EIOPA’s alternative method also introduces differences for 1Y-20Y interest rates, but these differences have a less material impact

## Solvency ratio volatility caused by the transitional mechanism

In our previous briefing notes<sup>9</sup> we have described how higher SoC parameters dampen the interest rate sensitivity and as a result EIOPA's proposed smoothing mechanism dampens the interest rate sensitivity as well. As indicated by Figure 1 and Figure 2, the transitional mechanism will lead to higher implicit SoC parameters and hence even more dampening than the smoothing mechanism. Given that the initial interest rate curve is expected to be similar to the current curve based on Smith-Wilson extrapolation, the initial impact on interest rate sensitivities—like the initial transition impact—is also expected to be small. These effects are indeed confirmed by the interest rate sensitivities shown in the table in Figure 3.

**FIGURE 3: IMPACT OF DIFFERENT SOC PARAMETERS ON THE INTEREST RATE SENSITIVITY (AS % OF INITIAL BEL), AS OF MARCH 2022**

Impact on BEL Scenario	SW LLP 20	10% SoC	20% SoC	TM SoC	Smoothed SoC
A: +100 bps	-12,2%	-13,1%	-12,3%	-12,2%	-13,1%
Base					
B: -100 bps	14,6%	16,1%	14,9%	14,7%	15,1%
Transition impact					
	0,0%	1,8%	0,3%	0,3%	1,8%

The sensitivities in Figure 3 are based on +/-100 bps parallel movements of the swap curve as of March 2022 and assume all other curve parameters—credit risk adjustment (CRA), VA and UFR—remain unchanged. The resulting sensitivities are expressed as a percentage of the initial best estimate liability (BEL) under the current Smith-Wilson curve (i.e., BEL as of March 2022).

The transitional mechanism based on an implicit SoC parameter (as calculated for Figure 2 above) has, however, one peculiarity: the timing of the interest rate shock. Interest rate shocks before the application date are expected to be dampened, because the impact of the shock will be absorbed in the calibration of the initial SoC parameter. After the application date the SoC parameter is set and no possibility for absorption exists anymore. As illustrated by the outcomes in the table in Figure 4, this effect is rather limited. A shock after the application date has a marginally higher impact, in line with the sensitivity for an SoC parameter of 20% (as expected given the implicit SoC per March 2022 shown in Figure 2).

**FIGURE 4: INTEREST RATE SENSITIVITY (AS % OF INITIAL BEL) UNDER TRANSITIONAL MECHANISM BEFORE AND AFTER APPLICATION DATE, AS OF MARCH 2022**

Impact on BEL Scenario	Shock before application date	Shock after application date
A: +100 bps	-12,2%	-12,3%
Base		
B: -100 bps	14,7%	14,9%

Further analysis shows that this path dependency is also limited for combined interest rate shocks. An interest rate movement of +100 bps (-100 bps) before the application date, followed by an interest rate movement of -100 bps (+100 bps) after the application date has approximately a 0.1% increasing (lowering) effect on a set of proxy liabilities.

For the other extrapolation mechanisms in Figure 3, the impact of these combined shocks is exactly zero, as expected for a curve that remains unchanged after a combined up and down interest rate shock.

## Conclusions

With concerns on path dependency eliminated and with the results from Figure 3, it can be concluded that with the transitional mechanism as proposed by the European Commission the envisaged updates to the extrapolation method will have almost no initial impact on interest rate sensitivities for the BEL.

As the transitional mechanism unwinds, the interest rate sensitivity will, however, increase again. The extent to which this sensitivity will increase depends on the exact final formulae and parametrisation to be adopted in the Delegated Acts, although the Commission has indicated its intention to build on EIOPA's proposal. Additional final interest rate sensitivity should therefore be expected and any difference from the initial interest rate sensitivity will become visible as a "speed-of-convergence-drag," just like the well-known UFR-drag. The final interest rate sensitivity will also be visible in the impact of the transitional mechanism that needs to be disclosed.

The additional volatility will need to be addressed in the movement analysis and projections. In addition, companies will need to decide how to deal with expected additional volatility in their interest rate risk management.

<sup>9</sup> On impacts of the smoothing mechanism, at [https://nl.milliman.com/-/media/milliman/pdfs/2020-articles/london-solvency-ii/12-29-20-solvency\\_ii\\_2020\\_review\\_\\_eiopas-v1.ashx](https://nl.milliman.com/-/media/milliman/pdfs/2020-articles/london-solvency-ii/12-29-20-solvency_ii_2020_review__eiopas-v1.ashx).

It is now up to the European Parliament to adapt, amend or reject the proposals made by the European Commission. The European Parliament's rapporteur on the Solvency II reform has already published a draft report, containing a counterproposal that fixes the SoC in the extrapolation method at 20% (with no transitional mechanism). Figure 1 indicates this will lead to extrapolated rates that are much closer to the current Smith-Wilson extrapolation methodology than EIOPA's proposal.

After the final legal text of the revised SII Directive has been approved by the European Parliament, the European Commission will decide to adapt, amend or reject any further proposals made by EIOPA for the Delegated Acts. It is expected that reforms to the Solvency II framework will come into force in three to five years (not earlier than 1 January 2024).



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