

Implementation of a dynamic volatility adjustment in the standard formula for spread risk SCR

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A flaw within the standard formula – deviation from the total balance sheet-approach

The adoption of the “total balance sheet” approach, where all the risks relating to both assets and liabilities and their interactions are considered, was noted by the European Commission¹ as one of the major advances achieved by the Solvency II framework.

Solvency II defines **own funds** as the **excess of assets over liabilities** plus subordinated liabilities² and determines the solvency capital requirement (SCR) as the amount the own funds would change after a 1-in-200 extreme scenario. This approach means the insurer should hold at least the amount of own funds needed to withstand that extreme scenario and still have enough assets to cover all liabilities. This is the foundation of Solvency II and one of the reasons it is a world-class, risk-based framework.

The Directive, therefore, foresees that the 1-in-200 scenarios used to calculate the SCR should be applied to both sides of the balance sheet³, ie, **the value of the assets and liabilities should both be recalculated** in accordance with the given scenario.

The total balance sheet approach is already used in the standard formula for risks that impact assets and liabilities, such as interest rate risk and currency risk SCR.

However, under the standard formula **this approach is not used to calculate the spread risk SCR for insurers who use the volatility adjustment**. Instead, the current methodology applies the extreme spread shock scenario only to the assets and ignores the offsetting impact of the volatility adjustment on the value of the liabilities. This flaw means the true economic impact of that scenario is not correctly measured and **results in significant over-estimation of the spread risk, particularly for long-term business**.

The importance of applying a total balance sheet approach in calculating the spread risk SCR is, however, already recognised and allowed for in the calculation of the spread risk SCR for standard formula matching adjustment portfolios and for internal model users.

¹ https://ec.europa.eu/commission/presscorner/detail/en/MEMO_07_286

² Solvency II Directive, Article 88

³ Solvency II Directive, Article 105 (d)

Why incorporating a dynamic volatility adjustment (DVA) can address this flaw

The VA was included in the Solvency II framework to recognise that insurers, as long-term liability driven investors, are not fully exposed to short-term losses arising from changes in credit spreads. This is due to their asset-liability management, the predictability of liability cashflows and the insurer's ability to avoid forced asset sales.

The term "dynamic VA" is used in the context of applying the total balance sheet approach. When assessing the impact of a spread change scenario, the VA is said to be dynamic if it is changed according to the spread scenario. This ensures that the VA used to value the liabilities is consistent with the spread scenario used to value the assets. This consistency ensures the overall impact of the scenario on the insurer's own funds is measured correctly.

Another way to consider the issue is by recognising that the risk arising to insurers that invest in corporate bonds and loans and that can avoid the risk of forced asset sales is much closer to default risk. Requiring them to hold capital for the risk of spread movements caused by short-term market volatility is inconsistent with the risk-based nature of Solvency II. The current spread risk charges within the standard formula implicitly include default risk. Applying the DVA will result in capital charges for spread risk that are closer to the real risks being taken by the insurer and mitigate excessive capital requirements driven by short-term market volatility.

How a DVA can be incorporated into the standard formula⁴

Insurance Europe proposes to adjust the current spread risk SCR submodule so that the DVA is incorporated in a way that is **prudent, risk-sensitive and easy to implement**. Insurers using the VA would multiply the existing spread risk SCR charges by a DVA Reduction Factor before applying them:

$$\text{stress}_i \text{ (with DVA)} = \text{stress}_i * \text{DVA Reduction Factor}_i$$

The DVA Reduction Factor is based on the economic effect that applying a DVA would have on the insurer's balance sheet under the 1-in-200 stress scenario. There is a floor included in the formula so that there is a minimum level set for each rating category (credit step) which would limit how much the spread risk can be reduced by the inclusion of the DVA. The floor is proposed to be set using the "reduction factors" already used by matching adjustment portfolios in Solvency II.

The proposed approach is risk-based, prudent and consistent with the economic principles of Solvency II:

- It applies the total balance sheet approach
- It is prudent because the floor is sufficiently conservative
- It is consistent with the approach for the spread risk in the matching adjustment

Unrated bonds

The long-term financing of SMEs is a key political objective of the European Commission. Unrated bonds are expected to be central to the financing of SMEs targeted in the CMU and therefore it is important to ensure the correct treatment of spread risks is also available for these assets.

The implementation of the Insurance Europe proposal on the DVA would contribute to this objective by aligning the capital requirement with the long-term risks faced by insurers when investing in these assets. However, for this to be effective, Insurance Europe proposes:

⁴ This proposal relates solely to the standard formula. Different approaches to DVA modelling have been developed for internal models which should be assessed in the context of the specific internal model.

- The reduction factors in Article 181 for unrated debt are set at 82.5%. This would ensure that the reduction factors for unrated debt are set consistently with their spread risk charges, as set out in Article 176.
- Ensuring that the credit rating approaches for unrated debt, detailed in Articles 176a, b and c, can be used in conjunction with the standard formula DVA.

Insurance Europe further supports the enhancement of Articles 176a, b and c. Further information on how EIOPA could improve these is contained in the Joint Industry Response to the EIOPA consultation on its draft advice on the 2020 Review of Solvency II⁵.

⁵ [Joint Industry Response to the EIOPA consultation on its draft advice on 2020 Review of Solvency II](#)

Annex: Details on the proposed changes to the standard formula

The stress factors for spread risk, set out in Article 176, are adjusted for those undertakings that use the volatility adjustment as follows:

$$\text{stress}_i \text{ (with DVA)} = \text{stress}_i * \text{DVA Reduction Factor}_i$$

$$\text{DVA Reduction Factor}_i = \max\left(\left(1 - \min\left(\frac{\text{PVBP}(\text{BEL}_{j,c})}{\text{PVBP}(\text{MV}_{j,\text{CFI}})}, 1\right)\right), \text{RF}_{\text{CQS}}\right)$$

- Stress_i = standard formula stress factors for spread risk for instrument i
- $\text{PVBP}(\text{BEL}_{j,c})$ equals the value change in the best estimate arising from a basis point increase in credit spreads of undertaking j in currency c .
- $\text{PVBP}(\text{MV}_{j,\text{CFI}})$ equals the value change arising from a basis point increase in credit spreads of the corporate bonds and loans of undertaking j in currency c .
- RF_{CQS} = reduction factors from dynamic MA modelling (Article 181), as noted in the table below (subject to a change in the reduction factors for unrated debt).

PVBP terms are already defined and used within the volatility adjustment as they are needed to calculate the overshooting ratio (AR4). However, it is necessary to define separate terms $\text{PVBP}(\text{BEL}_{j,c})$ and $\text{PVBP}(\text{MV}_{j,\text{CFI}})$, which reflect the sensitivity of the insurer's liabilities and corporate bonds and loans to change in their spreads (and does not reflect the sensitivity of any fixed income instruments which are not in the scope of the spread risk submodule, eg, some mortgage loans and EEA sovereign bonds).

Reduction factors from Article 181

	0	1	2	3	4 and higher
RF _{CQS}	45%	50%	60%	75%	100%

The above reduction factors are consistent with the existing regulation. However, Insurance Europe supports a change to the reduction factor applicable to unrated debt to 82.5% (it is currently 100%). The 82.5% reduction factor is consistent with the existing spread charges, set out in Article 176.

It is also worth highlighting that the reduction factors are already extremely prudent, and no evidence has been provided to support such extreme calibrations.

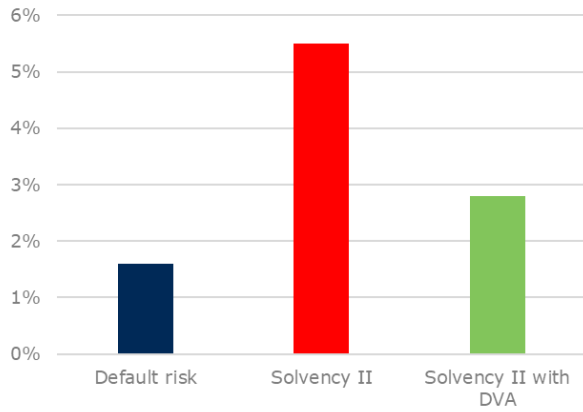
Comparison of capital charges for corporate bonds

The charts below show a comparison of the undiversified capital charges for two different corporate bonds under 1) CRD IV, 2) the current Solvency II standard formula and 3) the Solvency II standard formula with a DVA.

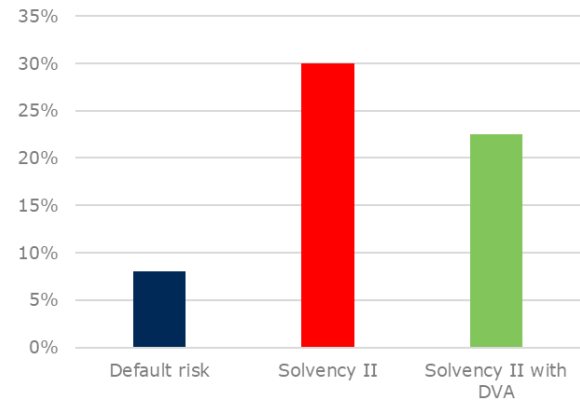
These demonstrate the clear over-estimation of the currency spread risk charges for insurers using the standard formula.

They also show that the DVA proposal remains prudent relative to alternative assessments of the risk of corporate bond investment.

Capital charges for 5-year, AA-rated bond



Capital charges for 20-year, BBB-rated bond



Capital charges are undiversified

Default risk is based on CRD IV, credit risk charges
DVA based on industry proposal

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