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ACTUARIAL ASSOCIATION OF EUROPE SOLVENCY II PROJECT

FOCUS ON THE VOLATILITY ADJUSTMENT IN THE S2 2020 CONTEXT

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Context

The Volatility Adjustment (VA) plays a central role in the stabilisation of Own Funds when fixed income markets are under stress due to widening credit-spreads. This component is part of the Solvency II 2020 review and has been subject to the holistic impact assessment (HIA) including the complementary information request (CIR) of June 2020, which reflects the COVID-19 crisis situation.

In its opinion on Solvency II review from December, 17th 2020, EIOPA confirms its advice to calculate the VA as the sum of a "permanent component" and a "macroeconomic component".

The AAE is pleased to take this opportunity to analyse and comment on the desirable properties of the VA for the different stakeholders and how to best ensure appropriate risk management and communication.

General components of the permanent VA

As part of the assessment, EIOPA has proposed the following formula for the general components of the VA for undertaking i:

$$VA^{i}_{perm} = GAR \cdot AR_{4,i} \cdot AR_{5,i} \cdot Scale_c \cdot RC_S_c$$

EIOPA has proposed the following approach for each component (see Appendix for further detail):

- **General Application Ratio** (GAR) from 65% (current regulation) to 85%
- **Application Ratio 4** ($AR4$) – fixed income and duration mismatch inferred from the ratio of basis point sensitivities between fixed income assets and best estimate liabilities
- **Application Ratio 5** (AR5) – liquidity of liabilities based on qualitative criteria:
  - 100% if policies are not lapsable
  - 75% for policies with limited lapse and mortality
  - 60% for other policies

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- **Scaling factor** ($Scale_c$) – gross up factor to reflect the liquidity premium of other assets than the ones in the representative portfolio further corrected by AR4
- **Risk Corrected Spread** (RC_S_c), based on representative portfolio for currency c[1]
  Risk correction based on a combination of current spread and Long-Term Average Spread (LTAS) rather than LTAS only (current regulation)
  Subtract for expected risk (government) 30%*(Spread < LTAS) + 20%*(Spread > LTAS)
  Subtract for expected risk (corporates) 50%*(Spread < LTAS) + 40%*(Spread > LTAS)

Considered approaches for the macroeconomic VA

We note a difference in approach between

- The CP on Solvency II review, where the macroeconomic VA would be calculated immediately at country level, based on excessive spreads and acts as a maximum when triggered; versus
- The HIA and CIR where the macroeconomic VA is the country VA with lower trigger and smoothed mechanism acting as an additive component[2].

Main objectives, deficiencies and possible solutions

We can identify 5 main objectives in designing the VA:

1. Prevent procyclical investment behavior
2. Mitigate the impact of exaggerations of bond spreads on Own Funds
3. Reflect of the heightened risk of defaults observed during a crisis
4. Capture the relevant investment horizon in the risk correction
5. Ensure simplicity of the VA calculation

The main deficiencies include:

Deficieny	Comments	Possible solutions
Over- or undershooting effect of the VA	The over-shooting/under-shooting effect occurs when the dampening effect of the VA is significantly higher/lower than the losses on the assets without sufficient economic substantiation. This is an important deficiency that has actually been exacerbated during the COVID-19 crisis. The conditions to have a perfect match would be the following: – No basis-risk with the EU representative portfolio, so	A perfect match is not desirable in all cases and some appropriate discrepancies between assets and liability movements are justified in line with good risk management practices. The proposed application ratios on duration and volume, on liquidity plus the scaling factor will definitively improve this important deficiency of the VA. However, there is still a residual significant contributor to the over-/ under-shooting effect given the

[1] E.g. EIOPA representative portfolio for the Eurozone.
[2] See appendix for a detailed comparison between the two approaches.

Deficieny	Comments	Possible solutions
	undertaking specific portfolio (eventually incl. assets that show similar spread sensitivities such as Private Equity or Direct Property) – No basis-risk with risk-correction spread calibrations as it is currently the case for some asset classes (e.g. government bonds and mortgages) – No Application ratio similar to the matching adjustment – A stable risk correction factor or limited risk correction so that the full asset spread movement can be recognized in the VA	prescribed use of the EU representative portfolio. Moreover, the EU portfolio composition is updated only on a yearly basis, resulting in a time-lag while extra asset movements are naturally observed in times of crisis due to market volatility. The use of Own Assets Weights or "Own VA[3]" is technically the best solution, only if (i) the effectiveness of the VA is sufficient enough; (ii) this represents all the assets of an insurer in an appropriate way[4]. Allowing for the Own VA in Pillar I calculations has sparked many reactions given the potential introduction of capital charges on government bonds, the lack of comparability among insurers[5] and the lack of safeguards against wrong investment incentives. The risk of not considering the own VA properly is that undertakings start hedging this basis risk and reproduce the EU portfolio, leading to herd behaviour and additional systemic risk. The entity specific VA should at least be part of the ORSA exercise in case of significant deviation with the underlying assumptions of the standard formula. **We therefore believe that an Own VA, with appropriate safeguards,**

[3] The "Own VA" based on undertaking specific assets weights has both conceptual similarities and differences to the existing Solvency II Matching Adjustment (MA). The MA also allows firms meeting certain requirements to determine their liabilities using discount rates that depend in part on the assets they actually hold. The requirements are significantly stricter than those envisaged for the Own VA (e.g. very predicable liability cash flows, use of replicating portfolios, risk fencing, closer supervisory oversight) and, in practice, use of the Matching Adjustment is largely limited to UK and Spain. There is no direct equivalent in the MA to the proposed VA application ratios and scaling factor, given the MA replication requirement. Some of the pillar 2 and 3 measures being proposed by EIOPA for the Own VA such as a risk management policy (ALM and liquidity risk) evidencing no VA gaming and reporting of change in Own VA portfolio over the year build on oversight practices applicable to existing MA portfolios.

[4] Some discussions took place w.r.t. Dutch mortgages in order to better reflect their characteristics (not a mapping to corporate bonds). The mortgage market appears however to be quite heterogeneous across Member States given the specific regulations in place and existing options.

[5] We note that the lack of comparability will become a fact given the introduction of $AR4$ and $AR5$.

Deficieny	Comments	Possible solutions
		should optionally coexist with the EU VA by communicating the ratio with Own VA to the supervisor next to the ratios with the EU VA and be part of the Risk Management System. In its December opinion, EIOPA limits the permanent dynamic VA (DVA)[6] to internal model users only and introduces a reduction limit up to min(dynamic VA EU portfolio, dynamic VA own portfolio) (e.g. mainly addressing the overshooting effect). **The resulting basis risk will thus be more pronounced for standard formula users with a low representation of their own portfolio in the EU portfolio[7].**
Application of VA does not take into account illiquidity characteristics of liabilities	While a higher proportion of the VA should be recognized for illiquid liabilities, the "illiquid characteristic" remains difficult to define. Two approaches were considered in the CP on the S2 2020 review: analysis of illiquid share based on stressed CF or bucketing according to specific criteria.	**Determining the share of illiquid liabilities under stressed scenarios has the advantage of being more objective and should be part of the liquidity risk management process**. As a response to COVID-19, we also note that supervisors have recently requested more reporting on liquidity and EIOPA has been encouraged by the European Systemic Risk Board to further develop a liquidity monitoring framework. The purpose would be to leverage as much as possible on this framework and to perform this calculation on a yearly basis, or more frequently only in exceptional circumstances.
Misestimation of risk correction	The risk correction aims at isolating the expected credit loss component of the spread to infer the liquidity premium or the risk-corrected spread that can actually contribute to the VA given the long-term nature and illiquidity of insurance liabilities.	**Defining the risk-correction as a combination of "Point In time" and "Through The Cycle" approach for the excessive part helps to maintain the countercyclical potential of the VA while considering current markets.**

[6] Where the SCR spread can be reduced following VA increase.

[7] We also note the considerable impact of the DVA in the last LTG report (SCR at EU level is reduced by 47PP without DVA versus 12PP without SF VA).

Deficieny	Comments	Possible solutions
	Three risk-correction approaches have been considered so far: – Long-term average spread (LTAS) based on 30 year historical data that is through the cycle (TTC) and very stable over time. This current approach is perceived as being too stable and not market consistent enough as a fixed amount calibrated over a long-time horizon is deducted from the market spread at calculation date – Relative risk correction calibrated as a fixed percentage of the spread which has the merit of being Point In Time (PIT) and more market consistent, but reduces significantly the countercyclicality of the VA – A combination of PIT under relatively low spread levels where a TTC component is added when spreads exceed a specific threshold. This approach is currently tested in the holistic impact assessment	However, it does require the estimation of a number of additional parameters, which could lead to challenges given the scarcity of representative crisis-time liquidity spread data. **Alternatively, a reduction of the 30 year horizon to calibrate the LTAS could be considered to be more aligned with average economic cycle duration. We note that the own funds buffer for compressed spreads[8] (mentioned in the HIA but not retained in the December opinion) takes a 7 year horizon to determine the negative spread adjustment at country level.**
Cliff effect of country specific increase	When the country specific VA is triggered because of increased risk correction spread of one specific country compared to the EU zone, there is a "cliff effect" because of the discontinuity in the underlying calculation. This can be tempered by some smoothing mechanism as	We welcome such a smoothing mechanism to stabilize the SII ratio over time due the changes in underlying portfolio. While the country VA reduces the basis risk, there is still some basis risk for the smaller players in one country given

[8] EIOPA has considered measures to ensure that buffers of own funds are build up during times when risk premia on fixed income assets are excessively compressed ("symmetric VA"). This extra buffer is calculated as the difference between the CF of the fixed income portfolio discounted at the Annual Effective Rate and the same CF discounted at the Annual Effective Rate – the Negative Spread Adjustment (NSA), where NSAt = 0.35 · ($CSt - Av(CSt$)) where the average of the Credit Spread is defined over 7 years for a reference portfolio at country level.
Whilst such a buffer may be desirable from a supervisory perspective for macro prudential purposes, we understand that the insurance industry is generally against this idea for reasons such as: a belief that technical provisions are already high enough once the risk margin is included; complexity and potential lack of transparency; lack of direct linkage with asset-liability management; potential lack of supervisory convergence and potential impact on dividend distribution. If such an idea were to be developed further then we would recommend EIOPA explore how to link such an idea better to firms' liabilities (and the macro prudential factors influencing these liabilities) and whether there is a less complex approach that is capable of achieving similar macro prudential goals.
EIOPA finally disregarded this approach in its December opinion because of possible interplay issues between this buffer and the VA and because of the risk of consistent application across Member States.

Deficieny	Comments	Possible solutions
	currently tested in the holistic impact assessment.	their limited contribution to the country representative portfolio. **In addition to the quicker activation of the smoothed country-specific VA in times of financial crisis under the macro-economic VA, we believe that an additional VA correction should be considered in a stepwise mechanism[9] under exceptional crisis situations,** namely where all indicators (not only spread) are stressed and volatile as we are still experiencing with COVID-19. The calculation based on whole country spread (see appendix) has the merit of recognizing that excess spread in those circumstances is not only due to increased default risk but also to a shock on the economy as a whole. Working at country level is appropriate when looking at the recent Covid-19 crisis as every EU member was facing a specific situation in terms of propagation rate, testing and hospital capacity resulting in country specific measures with different impacts on the economy. **The additional stepwise macro-economic VA on top of the activated country VA could be considered for both the EU VA and Own VA after EIOPA and local supervisor approvals with appropriate Solvency, Financial and Liquidity safeguards. This should be calibrated consistently with the country VA.**
Underlying assumptions of VA unclear	It is not always clear whether the VA represents a "compensation for exaggerations in bond spread" or "an additional illiquidity premium on assets that replicate the liabilities". Next to the definition of the essence of the VA, the interaction between the different application ratios	It is essential from a risk management perspective to have a thorough understanding of the VA calibration before communicating properly to the stakeholders and contributing to financial stability. While some margin can be built into the VA framework, we encourage EIOPA to provide all

[9] Without having a clear view at this stage, a similar yearly variation as applicable under the UFR (e.g. max 15bp annual variation) could be introduced to stabilize VA evolution.

Deficieny	Comments	Possible solutions
	(general, ALM mismatch, illiquidity, scaling factor) do not ensure there is no GAP or overlap or ensure global consistency of the VA framework.	relevant information to allow undertakings to contribute to the financial stability while protecting policyholders. **It is also key to ensure consistency and absence of double-counting with all spread components of the framework (VA, SCR spread and eventual dynamic VA).**

Key takeaways

We believe that the ”Own VA” based on undertaking specific portfolio can coexist with the “EU VA” by communicating the resulting ratio to the supervisor on request and should be part of the risk management system together with the ORSA exercise.

We support the definition of the risk correction as a combination of “Point-in-Time” approach supplemented by a “through-the-Cycle” approach in times of excessive spreads as it allows for both market-consistency and countercyclicality. An alternative to reduce the stability of the risk correction would be to calibrate the long term average spread on a shorter horizon than 30 years under the “through-the-cycle” approach.

In the case of the EU VA, the quicker activation of the smoothed country VA following heightened spreads in one specific country has the merit of stabilizing the SII ratio over time due to the temporary change in underlying representative portfolio (country versus EU). We welcome the qualification of country VA as macroeconomic VA in the complementary information request.

In exceptional circumstances, as experienced during COVID-19 crisis, the permanent VA plus activated country VA should be completed by a stepwise additional macro-economic VA recognizing the extraordinary shock on the economy at country level. This additional macro-economic VA should only exist at EIOPA initiative and after local supervisor approvals based on Solvency, Financial and Liquidity safeguards.

Finally, we recommend EIOPA should give as much information as possible on the underlying assumptions of the VA to allow undertakings to contribute to financial stability while managing their solvency and financial positions.

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APPENDIX

Evolution of the permanent VA

Below table gives an overview of the different components of the permanent VA as considered under the Holistic Impact Assessment versus current regulation:

Component	Definition	New formula: VA = $GAR \cdot AR4 \cdot AR5 \cdot Scale_c \cdot RC_S_c$	Curent formula: VA = $GAR \cdot RC_S_c$
General Application Ratio (GAR)	While the exact calibration remains unclear, the purpose of the GAR is to account for the remaining mismatch between assets and liabilities in case liabilities are not fully replicated by assets	85%	65%
Application Ratio 4 (AR4)	Fixed income and duration mismatch inferred from the ratio of basis point sensitivities between fixed income assets and best estimate liabilities	Undertaking specific: AR_4= min{($PVBP(MV_{i,c}^{FI})$ $/PVBP(BEL_{i,c})$);1}[10]	N.A.
Application Ratio 5 (AR5)	Ratio depending on the liquidity of liabilities based on qualitative criteria	Undertaking specific: $AR5=\max\left(\min\left(\frac{BEI \cdot AR5,I+BEII \cdot AR5,II+BEIII \cdot AR5,III}{BEI+BEII+BEIII};100\%\right);60\%\right)$ •100% if policies are not lapsable (AR5,I) •75% for policies with limited lapse and mortality (AR5,II) •60% for other policies (AR5,III)	N.A.
Scaling factor ($Scale_c$)	Gross up factor to reflect the liquidity premium of other assets than the ones in the representative	Currency specific: $Scale_c = 1/(W_{gov,c} + W_{corp,c})$ •$W_{gov,c}$: weight of government bond portfolio in the	N.A.

[10] $MV_{i,c}^{FI}$ = the market value of undertaking's *i* investment in fixed income investments in currency *c* (fixed income investments identified on basis of their CIC)

$PVBP(MVi,cFI) = \frac{MVi,cFI(CS)-MVi,cFI(CS+GAR \cdot Scalec \cdot RC_Sc)}{GAR \cdot Scalec \cdot RC_Sc}$ as proxy for assets duration inferred from the price value of a basis point of the fixed income investments of undertaking *i* in currency *c*.

$PVBP(BELi,c) = \frac{(BELi,c(RFRc)- BELi,c(RFRc+GAR \cdot Scalec \cdot RC_Sc))}{GAR \cdot Scalec \cdot RC_Sc}$ as proxy for liabilities duration inferred from the price value of a basis point of the best estimate of the liabilities of undertaking *i* in currency *c*

Component	Definition	New formula: VA = $GAR \cdot AR4 \cdot AR5 \cdot Scale_c \cdot RC_S_c$	Curent formula: VA = $GAR \cdot RC_S_c$
	portfolio for currency c[11] further corrected by AR4[12]	representative portfolio for currency c; • $W_{corp,c}$: weight of corporate bond portfolio in the representative portfolio for currency c	
Risk correction spread (RC_S_c)	Result after subtracting from the full spread the part that is not related to expected credit risk (Risk Correction -RC) and that contributes to the VA. Risk correction can based either based on a combination of current spread and Long-Term Average Spread (LTAS) rather than LTAS only (current regulation)	•RC_Gov= 30%*(Spread < LTAS_G) + 20%*(Spread > LTAS_G) • RC_Corp = 50%*(Spread < LTAS_C) + 40%*(Spread > LTAS_C)	•RC_Gov= 30%*LTAS_G • RC_Corp = max(35%*LTAS_C , PD+CoD) Where PD & CoD represent the Probability of Default and Cost of Downgrading[13]

Evolution of the macroeconomic VA

Approach used in the HIA and CIR[14]

The total VA applicable for an undertaking i located in country j is:

$$VA^i_{perm} + VA^i_{macro,j}$$

The macro-economic VA is an additive component to the permanent VA, which depends on the level of the risk corrected (RC) spread in each country j, relatively to the currency RC spread:

$$VA^i_{macro,j} = GAR * AR_4 * AR_5 * \omega_j * \max(\mathrm{RC_Sc,j} * \mathrm{Scalec,j} - 1.3 * \mathrm{RC_Sc} * \mathrm{Scalec}\,;\ 0)$$

where
• $Scalec,j$ denotes the scaling-factor for country j using currency c;
• RC_Sc, denotes the risk-corrected spread of the reference portfolio for country j using currency c;

[11] E.g. EIOPA representative portfolio for the Eurozone.
[12] This factor was introduced during the complementary information request of June 2020.
[13] In most cases, the first term based on 30 year Long-Term Average Spreads would be higher and be retained for the risk-correction factor.
[14] See para 61 of the Technical specification of the complementary information request.

• ωj is a component designed to ensure a gradual and smooth activation of the country component and mitigating the cliff effect (ωj = 0 $if\ RC_Sc,j \leq 60$ bp; $(RC_Sc,j - 60)/30\ if$ 60 bp < $RC_Sc,j \leq$ 90 bp; 1 $if\ RC_Sc,j >$ 90 bp)

Approach considered in the Dec 2019 CP

In case the permanent VA is calculated based on the EU representative portfolio rather than undertaking specific portfolio (approach 1 of the HIA), the macro-economic VA can be considered.

The maximum between the permanent VA and macro-economic VA defines the final VA for undertaking I in currency c provided the macro-economic VA is triggered:

$$VA_{i,c} = \max\left(VA_{i,c}^{perm}; VA_{i,c}^{macro}\right)\ in\ case\ \ VA_{i,c}^{macro}\ is\ triggered$$

The macro-economic VA is defined as:

$$VA_{i,c}^{macro} = \ GAR * AR_{i,c}^{macro} * \max(S_{JURi} - \bar{\bar{S}}_{JURi}^{60} - \text{corridor};\ 0)$$

where
• $AR_{i,c}^{macro}$ is an application ratio for the liabilities of undertaking I in currency c which is set to 1;
• S_{JURi} is the country spread for the jurisdiction/country of undertaking i;
• $\bar{\bar{S}}_{JURi}^{60}$ is the average spread over the last 60 months for the jurisdiction of undertaking i;
• Corridor is the corridor by which the risk-corrected country should exceed its average before the macro-economic VA is activated, set at 20 bp.

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