Countercyclical measures in Solvency II

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Solvency II includes a number of elements that were intended to reduce procyclicality and excessive volatility, and to enable insurers to provide long-term guarantees, often referred to as the long-term guarantees measures. In her May 2020 speech[1], Charlotte Gerken, Executive Director of Insurance Supervision at the Bank of England, enumerated the following measures the:

- Matching Adjustment (MA);
- Volatility Adjustment (VA);
- Transitional Measure on Technical Provisions (TMTP);
- Symmetric Adjustment to the Standard Formula scenario for equity risk (SAE); and
- Ladder of Intervention;

We would also add Extrapolation, which was not mentioned in the speech as it has less relevance for sterling denominated liabilities in the UK.

We will address the operation of the Matching Adjustment, a topic of particular interest to UK insurers, in another blog.

Here we consider how the other mechanisms performed during the market turmoil in 2020 resulting from the Covid-19 crisis, and the lessons than can be learned, particularly with respect to reforming Solvency II either as part of the EU Solvency II 2020 review or in the UK post Brexit.

The European Systemic Risk Board ("ESRB"), whose role is to oversee the financial system of the European Union and prevent and mitigate systemic risk, addressed this topic recently in their October 2020 letter to the European Commission on Solvency II. Their overall conclusion was that "*with Solvency II being a mark-to-market regime, volatility in financial markets is reflected in insurers' solvency ratios. Existing tools, such as the symmetric adjustment for equity risk (SAE), the volatility adjustment (VA) and the matching adjustment (MA), attenuate this volatility, but the crisis highlighted certain shortcomings with some of them.*"[2]

Lest the ESRB be accused of hindsight, they had actually highlighted many of these same issues in a report published in February 2020, just before the market turmoil broke, entitled "Enhancing the macroprudential dimension of Solvency II"[3].

Volatility Adjustment (VA)

The Volatility Adjustment is a mechanism that allows, where applicable, an addition to the risk-free rate that reflects part of the market spread on bonds.   It is designed to mitigate the effect of low liquidity of bonds or exceptional increases in credit spreads.

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[1] https://www.bankofengland.co.uk/-/media/boe/files/speech/2020/life-beyond-solvency-ii-a-view-from-the-top-of-the-regulator.pdf

[2] https://www.esrb.europa.eu/pub/pdf/other/esrb.letter201016_on_response_to_Solvency_II_review_consultation~8898c97469.en.pdf

[3] https://www.esrb.europa.eu/pub/pdf/reports/esrb.200226_enhancingmacroprudentialdimensionsolvency2~1264e30795.en.pdf

The graph below shows how the VA for sterling, in the UK, and for Euros behaved during 2020. The European Insurance and Occupational Pensions Authority ("EIOPA") usually publish the VA at month ends, but during the crisis published it at more frequent intervals.

Figure 1: Volatility adjustment for sterling (UK) and Euros during 2020
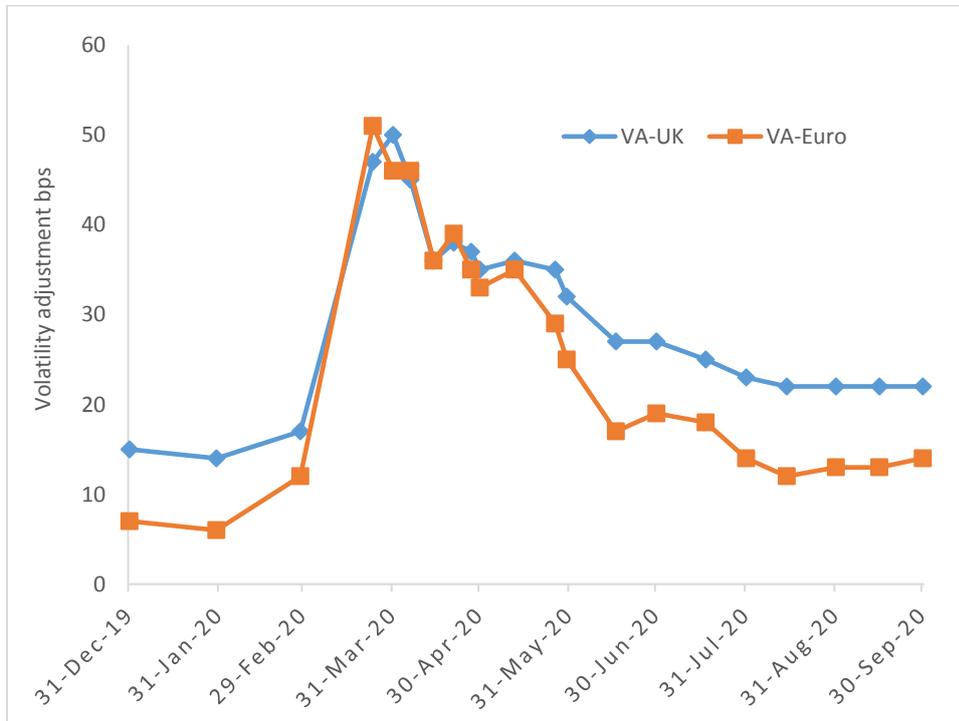
Source: EIOPA

On the positive side, we see how the VA increased significantly during the market stress, which would have supported the insurers' solvency where the VA was used. For example the Euro VA increased from 7bps at end 2019 to 46bps at end March 2020, an increase of 39bps.

The ERSB letter suggests that in some countries insurers were given exceptional permission to apply the VA for the first time.

The UK VA increased by 33bps in March 2020 alone. However, corporate bond spreads widened by over 100bps in the same period, per the Bank of England speech, which concluded: "*While the VA provided some cushion against the rise in spreads, a significant amount of the market stress would have been passed through to insurers' balance sheets*."

Furthermore, the VA is not based on the actual investments held by an insurer, neither in relation to the duration of those assets nor their composition. It can also therefore suffer an 'overshooting' problem, as explained by EIOPA in their 2019 Consultation Paper on the 2020 Solvency II Review[4]:

"*An overshooting effect occurs in particular where, under a scenario of widening credit spreads, the dampening effect of the VA exceeds the effect of a loss in the market value of fixed income assets.*"

This can have the counterintuitive effect that an insurer's reported solvency is improved by an increase in market spreads, such as in March-April 2020.

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[4] https://www.eiopa.europa.eu/sites/default/files/publications/consultations/eiopa-bos-19-465_cp_opinion_2020_review.pdf

EIOPA have made proposals in their Consultation Paper to address the overshooting issue, but in a May 2020 paper consultants from Milliman[5] concluded that while the proposed new approach did reduce the overshooting, it also significantly reduces the offset provided by the VA. Per their analysis, the Euro VA with the proposed revised design would have only increased by 20bps in Q1 2020, just half of the 39bps increase under the current design. For Dutch and Belgian insurers, they estimate this revised method would have reduced Solvency Capital Requirement ("SCR") ratios by 10%-40% in the first quarter of 2020.

Further, within the Eurozone insurers portfolios are relatively heterogeneous between countries, but the Euro VA is a one-size-fits-all measure. There is an additional country-specific mechanism, but it tends to act rather slowly and inefficiently, and it did not function at all during the Covid-19 crisis.

These two issues were highlighted by the ESRB:

"*The basis risk of the VA led to counter-intuitive results, with, first, the SCR ratio of some insurers increasing in the midst of the crisis. Second, while credit spreads of some countries increased in April for a short period of time, the country-specific add-on was not activated in a timely manner, which created volatility in some insurers' balance-sheets. These under and over-shooting effects of the VA should be corrected.*"

A final issue with the VA relates to its performance when markets are strong. It is not a symmetrical mechanism, and so doesn't require insurers to build up capital buffers in such conditions. The ESRB have recommended that this issue also be addressed, albeit this doesn't appear currently to be on EIOPA's agenda:

"*Beyond these shortcomings, transforming the VA into a symmetric VA that would form an additional own funds item would also mitigate some of the credit spreads' volatility.*"

Specific proposals as to how this might be done were included in their February 2020 paper.

Transitional Measure on Technical Provisions (TMTP)

Similar to the volatility adjustment, the ESRB indicated that some supervisors have allowed new requests for applying for the existing transitional measure on technical provisions (TMTP) to smooth the impact of the crisis, and other supervisors, notably the UK, have permitted the TMTP to be recalculated.

The TMTP is designed to allow insurers to recognise the impact of increased technical provisions calculated under the Solvency II regime compared to the previous Solvency I regime[6] on a gradually reducing basis over 16 years (from January 2016). This is designed to help smooth the capital impact of transitioning between the regimes.

In the UK specifically, the TMTP mitigates the impact of the risk margin, which significantly increases the technical provisions of insurers, relative to their Solvency I Pillar 2 liabilities. Further (and extensive) details on the TMTP were brought out in a working party report[7].

Whilst the TMTP is considered to be a long term measure, insurers which hold a TMTP are permitted to recalculate this in certain instances, such as severe market movements which lead to a material

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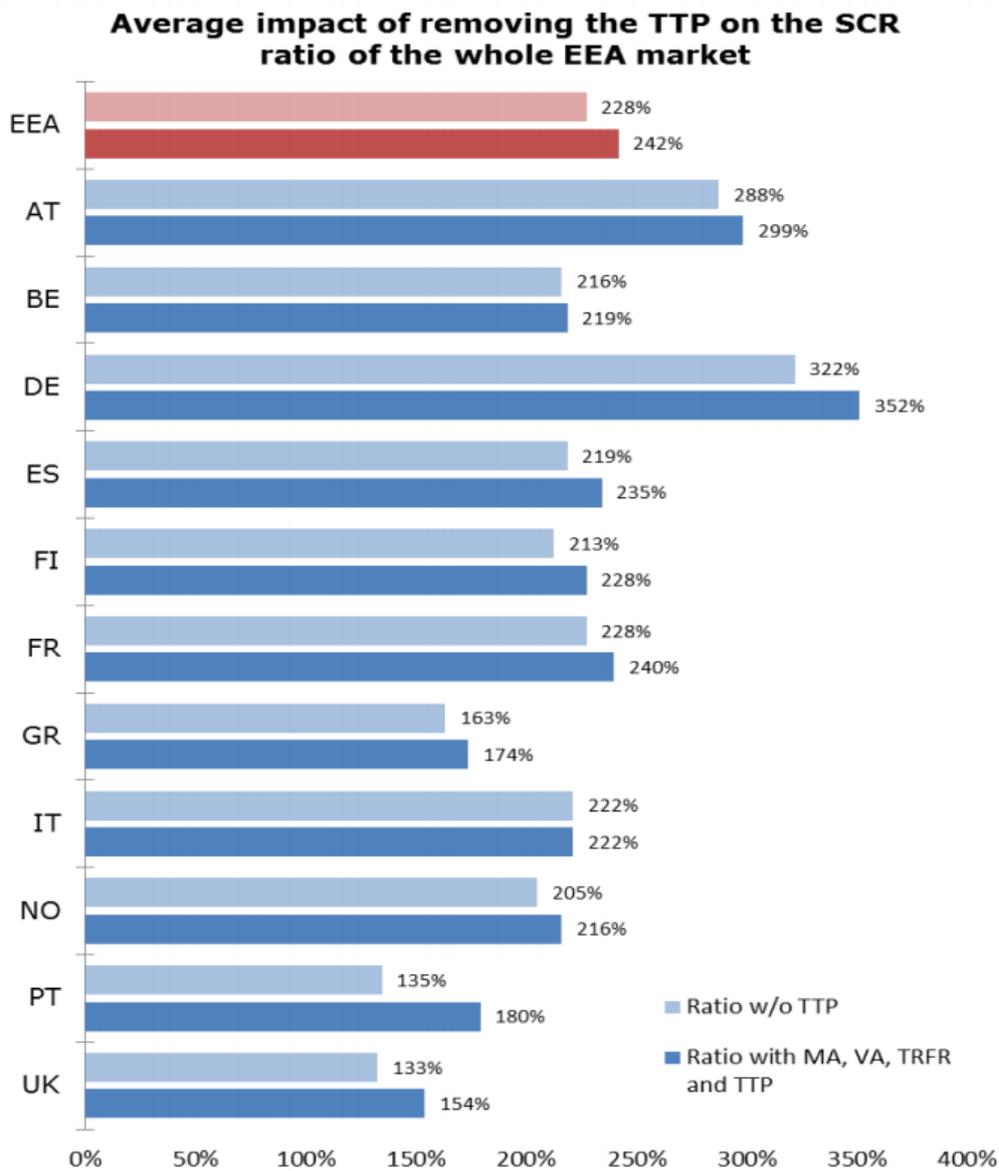[5] https://ie.milliman.com/en-GB/insight/the-alternative-design-of-the-volatility-adjustment
[6] In the UK, using the Pillar 2 Individual Capital Assessment basis
[7] https://www.cambridge.org/core/journals/british-actuarial-journal/article/recalculation-of-the-solvency-ii-transitional-measures-on-technical-provisions/F9C16C4FC7C7B7424A011F71736E37FA

change in the risk profile in the firm. It could therefore be seen as a mechanism to dampen or smooth, for example, the impact of falls in interest rates which lead to a significant increase of the risk margin.

The significance of the TMTP on the solvency across insurers in Europe is evidenced in the chart below (based on YE18 QRTs)[8].

Figure 2: Impact of removing Transitional Measure on Technical Provisions on Solvency Capital Requirement ratios across different countries

Source: EIOPA

8 https://www.eiopa.europa.eu/content/report-long-term-guarantees-measures-and-measures-equity-risk-2019 (page 135 - fig 3.66)

In context of the UK and the Covid-19 crisis, interest rates declined significantly in Q1 2020, leading to a PRA announcement on 11 March[9] that the movement in risk free rates represented a material change and thus they were willing to accept applications from insurers to recalculate their TMTP as at 31 March.

"Movements in risk free rates since 31 December 2019 meet the threshold for a material change in risk profile as set out in SS6/16, and the PRA's view is that the risks posed by the advent of coronavirus (Covid-19) are sufficient to meet a broad definition of a change in risk profile that for some firms may be material… The PRA is therefore willing to accept applications from firms to recalculate TMTP as at 31 March 2020. In any application, the PRA expects firms to be able to demonstrate that a material change in risk profile has occurred"

Despite this announcement, our research into firm's regulatory permissions suggests that most UK insurers chose not to recalculate the TMTP during 2020 to date[10].

Insurers who have applied TMTPs to their balance sheets are required to recalculate this on a biennial basis, with the latest recalculation for most being December 2019. Recalibrations are also driven by material changes in risk profile e.g. major sales or acquisitions of blocks of business or material changes to reinsurance arrangements. Some insurers will already have carried out a recalibration at end September 2019, due to the fall in risk-free rates in the summer, following a similar PRA announcement on 16 September 2019.

In addition, many insurers disclose their Solvency II position, e.g. in financial results, assuming a notional TMTP recalibration, and also manage their business accordingly. As such, we consider insurers may have been hesitant to go through the application and governance process for a recalibration in 2020 unless their solvency was actually under pressure.

The burden of calculation in context of recalculating the TMTP is notably considered by the PRA in their previous communication *'Maintenance of the 'transitional measure on technical provisions' under Solvency II'* on November 2019[11].

Ultimately, the TMTP was not intended as a mechanism to smooth the impact of a crisis, noting its inflexibility and the burden of governance surrounding a recalculation, whilst we remind the reader its core purpose is to act as a transition from the Solvency I. This is also addressed within the ESRB's October letter, where they suggest that countercyclical tools such as capital buffers are more appropriate for the purpose of managing systemic risk.

"In some jurisdictions, supervisors gave priority and favourable consideration to new requests for applying the volatility adjustment and the existing transitional measures on technical provisions to smooth the impact of the crisis. Such transitional measures, however, were not designed for that purpose and can apply over more than 10 years. Countercyclical tools such as of capital buffers built ex-ante to cover for the potential materialisation of systemic risk would be more appropriate, as they can be released against losses during crises and provide valuable breathing space for insurers."

Symmetrical Adjustment for Equity Risk (SAE)

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[9] https://www.bankofengland.co.uk/prudential-regulation/publication/2020/statement-by-the-pra-accompanying-measures-announced-by-the-fpc
[10] https://register.fca.org.uk/s/
[11] https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/supervisory-statement/2019/ss616update.pdf

The symmetrical adjustment for equity risk (SAE) is designed to reduce procylicality by reducing (increasing) the equity stress in the standard formula when equity market levels are low (high) compared to their 3-year historic average.

This essentially acts to dampen the impact of equity market falls, since if markets fall, the corresponding SCR stress is reduced.

The SAE, is calculated, based on a composite equity index determined by EIOPA. In 'raw' form it is calculated as:

$$SAE = \frac{1}{2} * [(CI - AI)/AI - 8\%]$$

Where:

CI denotes the current level of the equity index (a composite index determined by EIOPA)

AI denotes the average of the daily levels of the index over the last 36 months

So if the SAE is say -5%, this means the SCR stress for type 1 equities is reduced from the standard 39% to 34%.

In its raw form, an instant x% fall in equity markets would lead to a x%/2 reduction in the SCR stress.

However, the SAE is capped at 10% in absolute terms, i.e. a maximum of +10% and a minimum of -10%.

The graph below shows how the SAE, as published by EIOPA, behaved during the 15 months to end September 2020, including in the market stress in February – June 2020.

Figure 3: Symmetric Adjustment for Equity Risk since June 2019
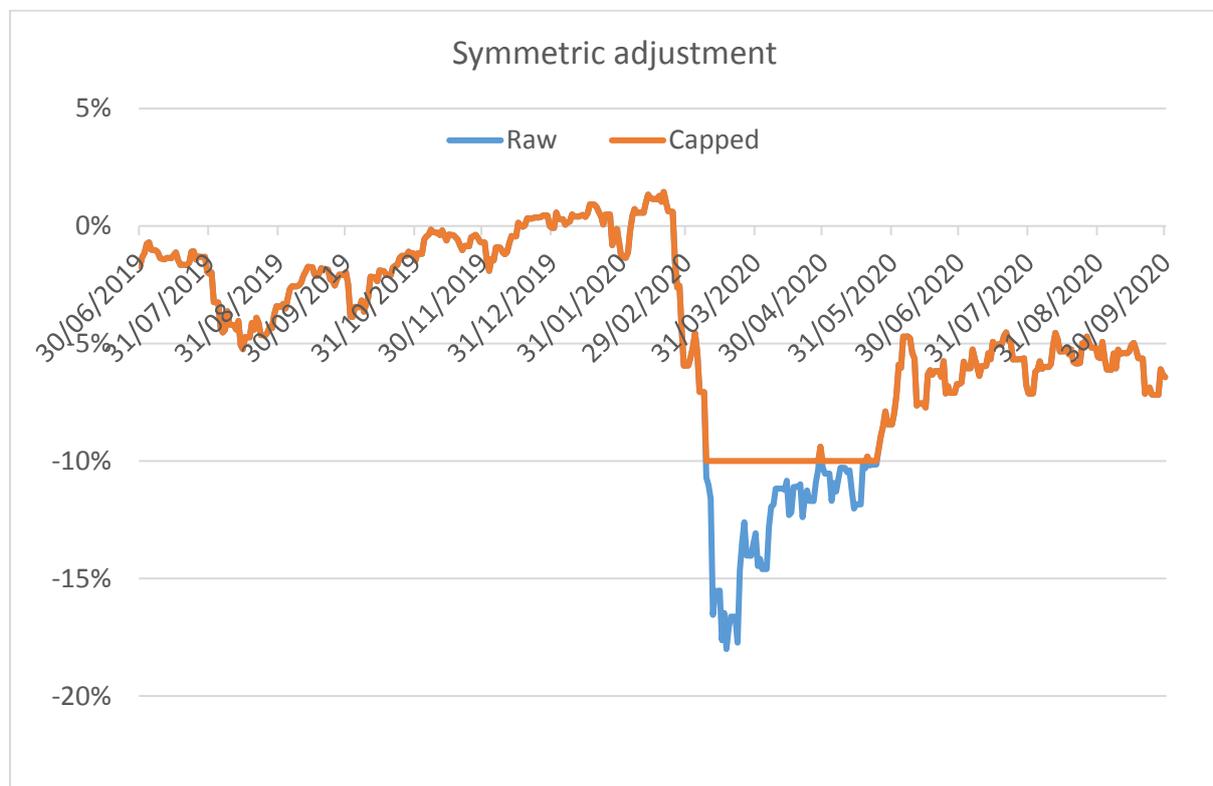
Source: EIOPA

We can see that in the early part of the market stress, the SAE mechanism acted as intended.

Equity markets (per EIOPA's index) fell by 17% from 19 February 2020 to 8 March 2020, and the SAE reduced from 1.5% to -7.1%. The SCR stress for equities fell from 40.5% to 31.9%, significantly offsetting the capital impact of the market fall.

But from 9 March 2020 the SAE hit its floor of -10%. Hence from 9 March to 18 March, when markets fell by a further 18%, the SAE remained at -10%, providing no further protection.

Similarly when markets are strong, the cap on the SAE limits the extent to which capital requirements are built up. For example, EIOPA's own backtesting shows that the SAE would have been capped at 10% during the March-July 2007 period, in the immediate run-up to the global financial crisis, which would have meant insurers would not have then built up greater capital buffers during the benign markets.

This flaw in the SAE has been known for some time and was for example noted by the IFoA Retrospective on Solvency II Working Party in their 2016 paper[12], but the recent crisis is the first time the floor has bitten since Solvency II came into effect.

The issue was also highlighted by the ESRB:

"In particular, during the large falls in equity markets in March 2020, insurers did not benefit as much from the capital relief of the SAE as they might have, because the SAE is capped at 10 basis points. This cap should be increased in a symmetric way, such that insurers automatically build up capital buffers during times when equity markets rise strongly and benefit from greater capital relief during times when equity markets fall sharply."

Extrapolation

Extrapolation is the mechanism used to determine the risk-free rate when the market rates (swaps) are not deemed to meet the deep, liquid and transparent criteria of the Solvency II Directive. As implemented in Solvency II, it essentially involves extrapolating market-observed forwards, from a last liquid point, to an ultimate forward rate.

Extrapolation began as a purely technical mechanism, to infer rates where they could not be observed, but in 2009 CEIOPS (the forerunner to EIOPA) highlighted the risk that sharp falls in long-term discount rates could lead to procyclical effects as insurers were forced to hedge to protect solvency.

Before Solvency II came into effect, Denmark and Netherlands were the two main Eurozone markets where insurers/pension funds were subject to market-consistent valuation of liabilities. In 2012, regulators in both countries were compelled to introduce extrapolation of the market curve in reaction to observed procyclical market falls in interest rates driven by hedging.

In the final version of Solvency II and the long-term guarantees package, preventing "artificial volatility" of technical provisions became a key requirement for determining the risk-free rate.

And in Euros, the last liquid point was set at 20 years, meaning all market information beyond that point is not taken into account, although there is arguably a liquid swap market to at least 30 years and some liquidity to 50 years.

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[12] https://www.actuaries.org.uk/system/files/field/document/Solvency%20II%20-%20has%20it%20met%20its%20objectives%20final%2025042017_0.pdf

For GBP, the last liquid point is set at 50 years, meaning extrapolation is more of a technical method to discount ultra-long dated liabilities, and has little countercyclical effect.

The extrapolation method for EUR does act to reduce procyclical effects after the 20y point on the curve, and acted to reduce, to an extent, the impact of Covid-19 on insurers' balance sheets in the Euro area. The graph below shows the market swap curve and the Solvency II risk-free rate for 31 December 2019 and 30 June 2020, showing the impact of extrapolation.

Figure 4: Solvency II Euro discount curve vs. swap curve as at end December 2019 and end June 2020
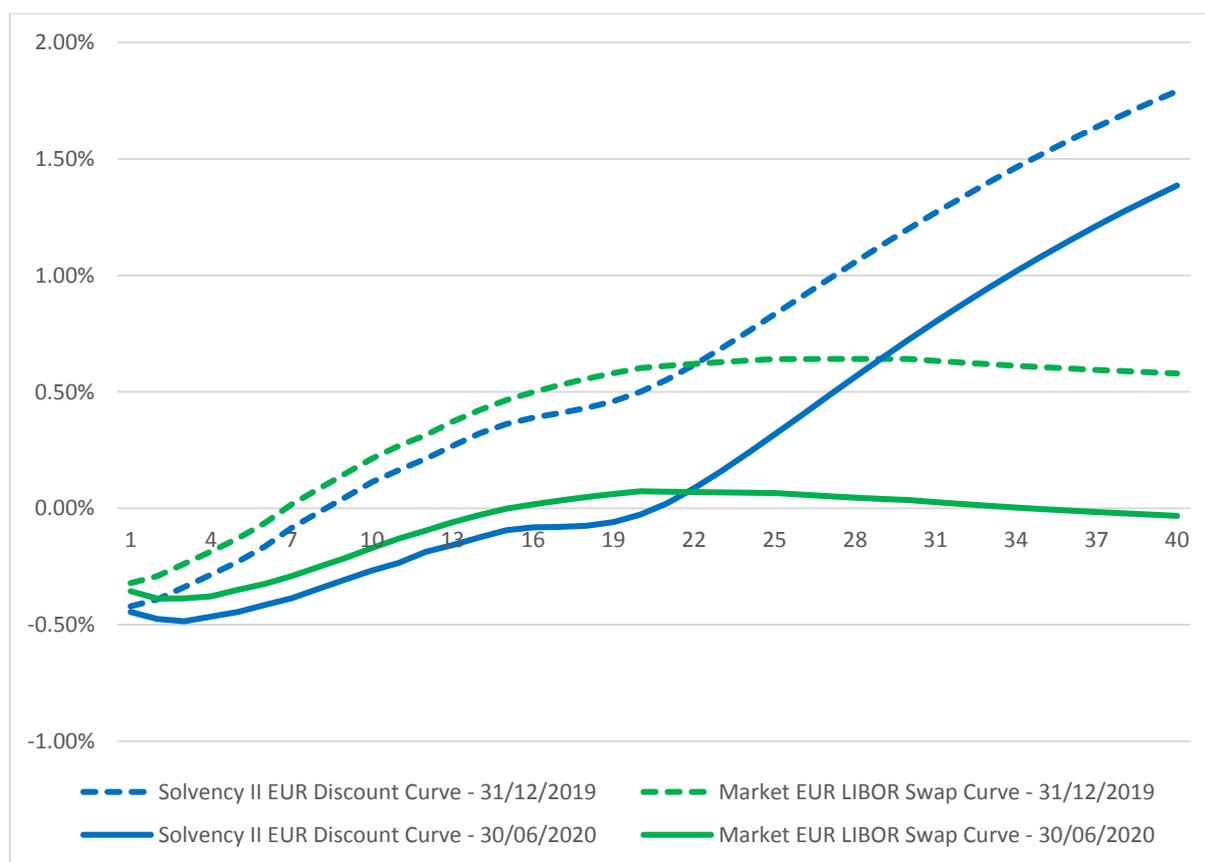
Source: EIOPA, Milliman

However extrapolation has a number of drawbacks, including arguably undervaluing liabilities (since, as can be seen from the graph, the extrapolated curve is so far in excess of the market curve) and creating rather artificial sensitivities to certain points on the swap curve.

The ESRB considered the operation of the extrapolation mechanism in a 2017 report[13] and their conclusions then were reiterated by them in October 2020, and also quoted by EIOPA in their consultation on the 2020 Solvency II review:

"*The ESRB sees the need to adjust the risk-free interest rate term structure, in particular given the persistent low interest rate environment. The last liquid point for the euro regulatory risk-free interest rate term structure should be moved to 30 years, the convergence period from the last liquid*

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[13]https://www.esrb.europa.eu/pub/pdf/reports/esrb.reports170817_regulatoryriskfreeyieltcurveproperties.en.pdf

point to the ultimate forward rate should be extended from 40 years to 100 years and the extrapolated part of the curve should be blended with market data in order to avoid creating a cliff effect at the last liquid point."

EIOPA have proposed changes[14] to the extrapolation method in the 2020 Solvency II review to address these points, although this is expected to be a contentious area given that the proposals would have an adverse impact on the solvency position of insurers (absent any transition mechanism).

Ladder of Intervention

The ladder of intervention is a tool used by regulators, and for when solvency levels are breached. It enables them to begin to take action when an insurer breaches their SCR, and to fully take over a insurer's operations when it breaches the Minimum Capital Requirement (MCR).

It also allows supervisory authorities to extend the maximum recovery period to re-establish compliance with the SCR to up to 7 years in exceptional circumstances, as determined by EIOPA, consulting where appropriate with the ESRB. These exceptional circumstances include falls in financial markets, persistent low interest-rates and severe catastrophic events.   This enables time for insurers to recover if exceptional circumstances prove temporary, and avoids disorderly sales of assets which could further destabilise markets.

Arguably the Covid-19 crisis had elements of all three of these exceptional circumstances, although as reported in the IFoA Covid-19 Action Taskforce blog "Using hindsight to gain foresight"[15], a combination of pre-existing capital buffers, management actions and the operation of the other countercyclical measures meant that relatively few insurers appear to have breached regulatory solvency levels during the crisis.

EIOPA noted in their December 2019 consultation on the Solvency II 2020 review that they had never been asked by a national supervisory authority to activate the mechanism, but nonetheless regarded this as an important back-stop tool.   They also propose involving the ESRB in any discussions to extend recovery period at an earlier point, which seems sensible given the ESRB's role in macroprudential oversight.

Conclusion

The different elements of the long-term guarantees measures each acted to potentially reduce volatility in insurers' solvency positions during the Covid-19 induced market turmoil in H1 2020.

However, as discussed in this blog the different measures each have certain issues in the ways they operated, which the recent experience confirmed. Further some measures, such as the Volatility Adjustment, are specifically designed to reduce procyclicality, while for others, such as the Transitional Measure on Technical Provisions, that is not really the main purpose.   And others, such as the Symmetrical Adjustment for Equity Risk prove ineffective just when they are most needed.

One common theme however, as highlighted by the European Risk Stability Board, is that few of these measures really act in a truly countercyclical way, in that they don't build up buffers during benign markets which insurers can release in times of stress.

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[14] https://us.milliman.com/-/media/milliman/pdfs/2020-articles/london-solvency-ii/10-5-20-solvency-ii-hedging-v1.ashx

[15] https://blog.actuaries.org.uk/blog/using-hindsight-gain-foresight

We plan to consider the topic of countercyclical buffers in another blog.