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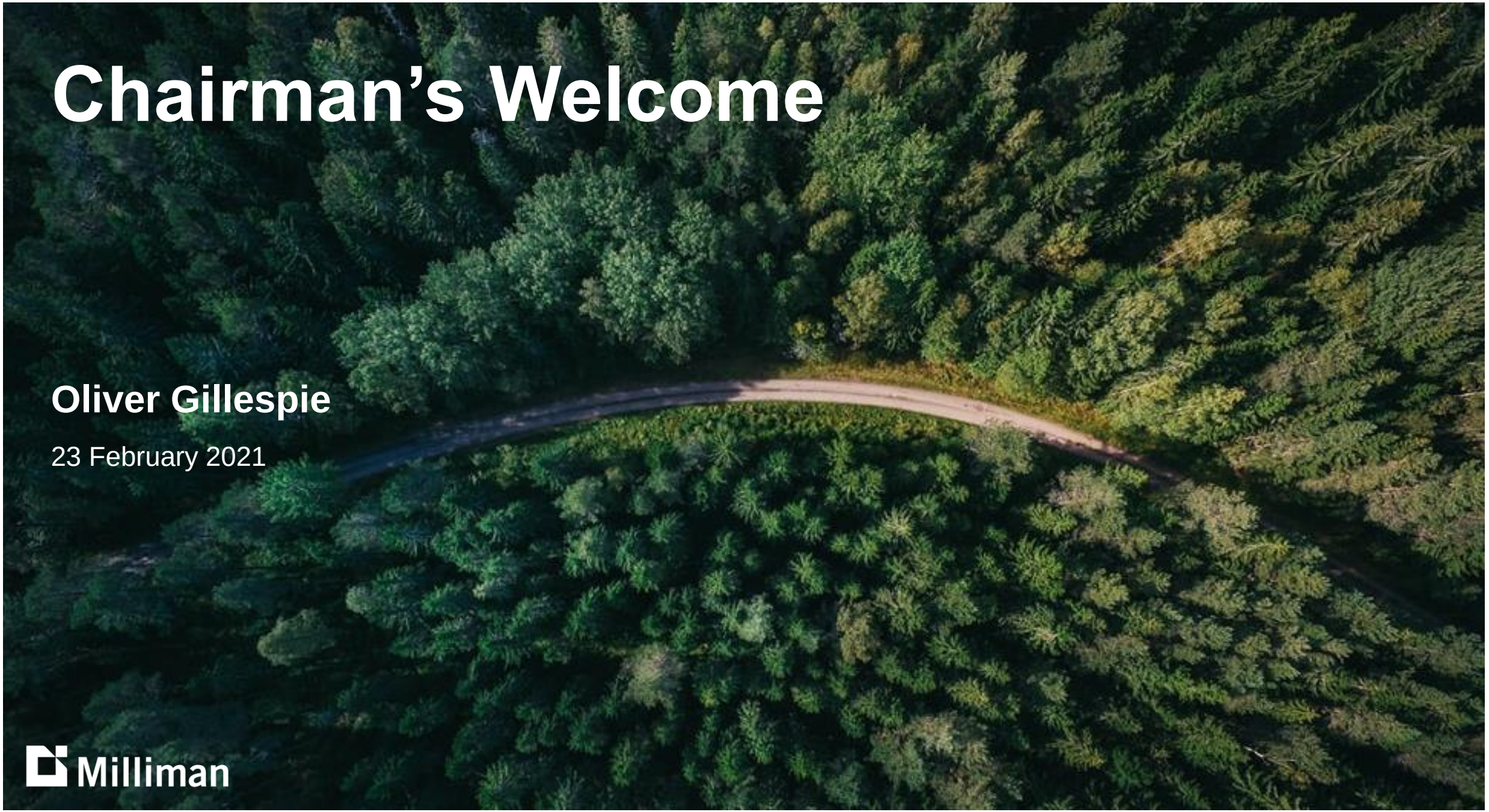
EIOPA Solvency II Review and Shareholder Value Reporting

23 February 2021

Chairman’s Welcome



Oliver Gillespie

23 February 2021

Milliman

Agenda

14:00 – 14:05

Chairman's Welcome

Oliver Gillespie

14:05 – 14.45

EIOPA Solvency II Review

David Burston & Neil Christy

14:45 – 14.55

Questions

14:55 – 15.25

Shareholder Value Reporting in Europe - Solvency II Based Metrics

Stuart Reynolds

15:25 – 15:30

Questions

15:30 – 15:35

Wrap up

Oliver Gillespie

EIOPA Solvency II Review

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Agenda

Introduction

Risk Free Rate

Volatility Adjustment

Risk Margin

Interest Rate Stress

Other Changes

Q & A

Introduction

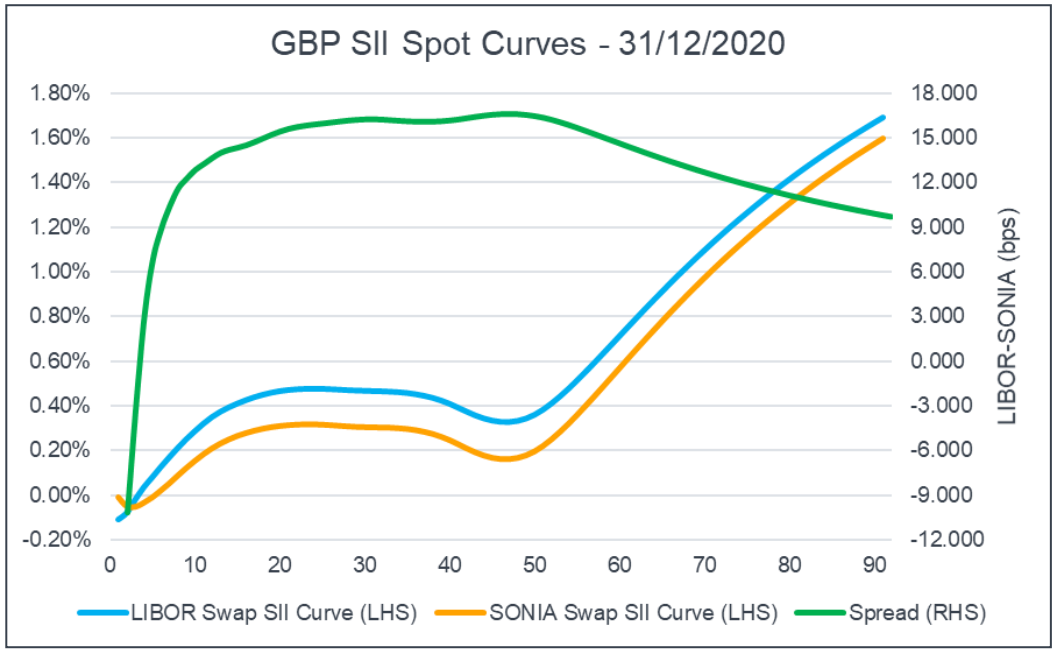
- The review carried out by EIOPA is **extensive**, and covers both the quantitative and qualitative aspects of Solvency II.
- The EIOPA changes are due to be **implemented by c2025**.
- It remains to be seen whether and to what extent the **UK PRA** decides to follow these EU proposals or whether the UK PRA seeks to develop UK Solvency II in a different or modified way to the EU. The PRA and UK Treasury are carrying out its own review of (for example) the Risk Margin, and has expressed interest in international Insurance Capital Standards.
- We note that in CP1/21, the PRA is proposing to make its first change to the UK solvency rules with the intended introduction, likely from 31 July 2021, of a SONIA based risk free discount curve.

Key areas of EU Solvency II change for life insurers:

- Extrapolation of Risk Free Rates
- Volatility Adjustment
- Risk Margin
- Interest Rate Stress

UK PRA CP 1/21 – Transition to SONIA

- The PRA has issued CP1/21 which proposes a change from a LIBOR based discount curve to a SONIA based discount curve sometime during 2021 – we believe from 31 July subject to PRA testing.
- The PRA is proposing:
  1. **No CRA adjustment**, either positive or negative, to the SONIA based curve.
  2. **No phasing in of the change**, due to the reducing relevance and accuracy of LIBOR.
  3. **No retrospective change to increase the historic Long Term Average Spread**, which would affect the derivation of both VA and MA. An increase would have reduced the VA and MA, so no change here will be seen as positive by the UK industry.
  4. **The change to SONIA will be eligible for transitional relief** and that a mandatory recalculation of TMTP is due at 31 December 2021.



Based on the 31 Dec 2020 position, and the discount terms applicable to most UK life insurers, the discount rate will reduce by about 15bps.

Extrapolation of the risk-free rates

EIOPA’s smoothed introduction to the alternative methodology

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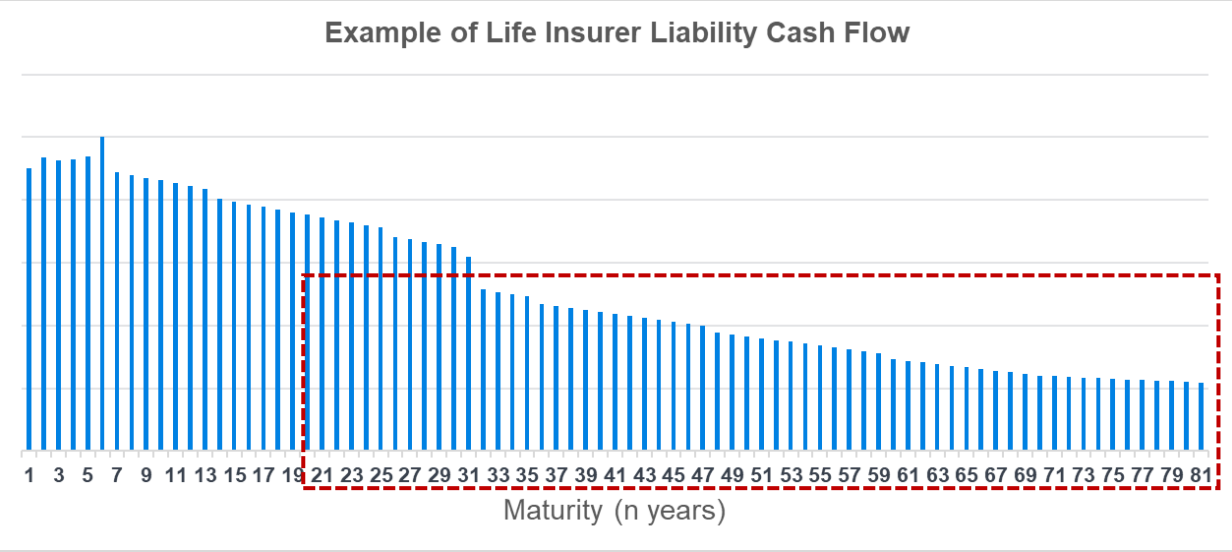
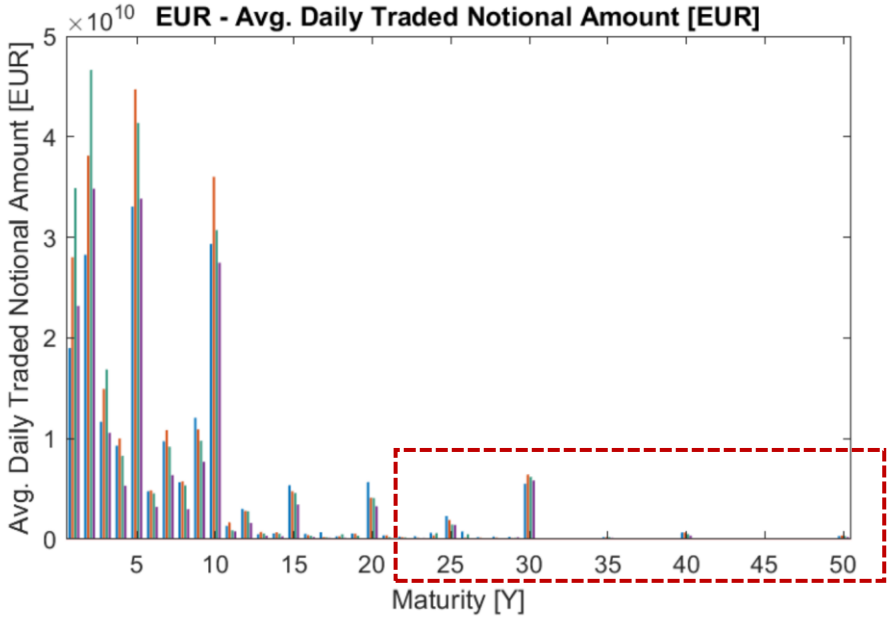
Extrapolation of risk-free rates

Current rule - background

- Life insurance companies have liabilities which result in payments which are only due far into the future.
- To calculate the present value of these future cash flows a discount rate is required for these long maturities.
- For some currencies (e.g. EUR) the market is not deemed to be deep, liquid and transparent after a certain point, after which an extrapolation technique is needed to derive risk-free rates.



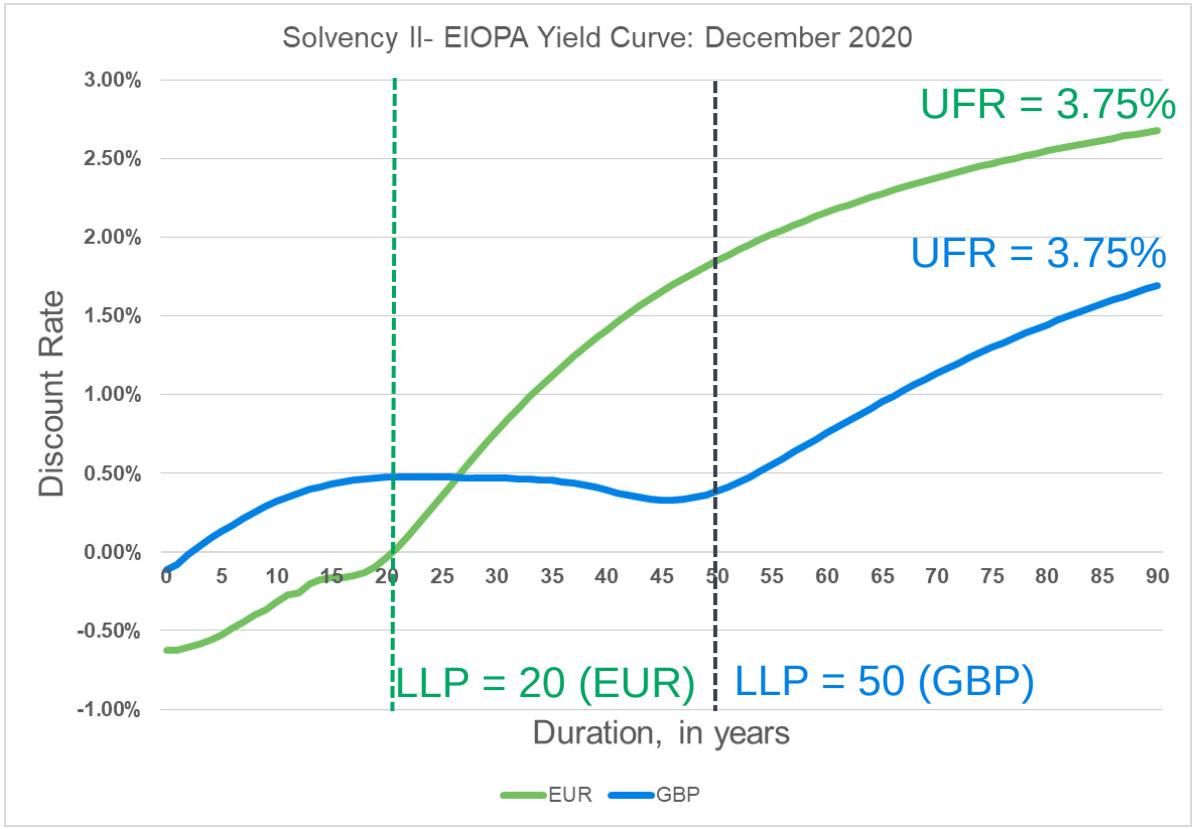


Source: EIOPA Background Analysis on 2020 review

Extrapolation of risk-free rates

Current rules on extrapolation

- 3 main components of current extrapolation technique:
  - Last-liquid point (**LLP**)
  - An Ultimate Forward Rate (**UFR**)
  - Speed of convergence to UFR
- Smith-Wilson technique



Extrapolation of risk-free rates

New rules – the “alternative extrapolation” methodology

- LLP → First Smoothing Point (**FSP**)
- Market data beyond the current LLP considered beyond the FSP
- Weights towards market data beyond the FSP correspond to their reliability measured in an assessment by EIOPA into how **deep, liquid and transparent markets are for relevant assets**

- In addition to the FSP, the method determines interest rates after the FSP using 3 main components:
- **Long-term forward rate (LTFR)** – calculated and used in the extrapolation of forward rates
- **An Ultimate Forward Rate (UFR)** – no change
- **Speed of convergence parameter (α)** – speed of convergence from LTFR to UFR determined by an input parameter (rather than a solved value).

  EIOPA want this parameter to be set at 10%.

Extrapolation of risk-free rates

The speed of convergence parameter α – a "smoothed" introduction

- EIOPA proposes a **mechanism to allow for a smoothed introduction of the new methodology -** to dampen the impact of the change in methodology on balance sheets
- New methodology will be phased in until 2032 after which α = 10% fixed
- α will vary for each valuation and depend on the interest rate at the first smoothing point (formerly the LLP)

Interest rates at the FSP	Interest rate at FSP	α
'Negative'	Less than - 0.5%	X%
Low	Between -0.5% and 0.5%	Between 10%-X%
'Positive'	Higher than 0.5%	10%

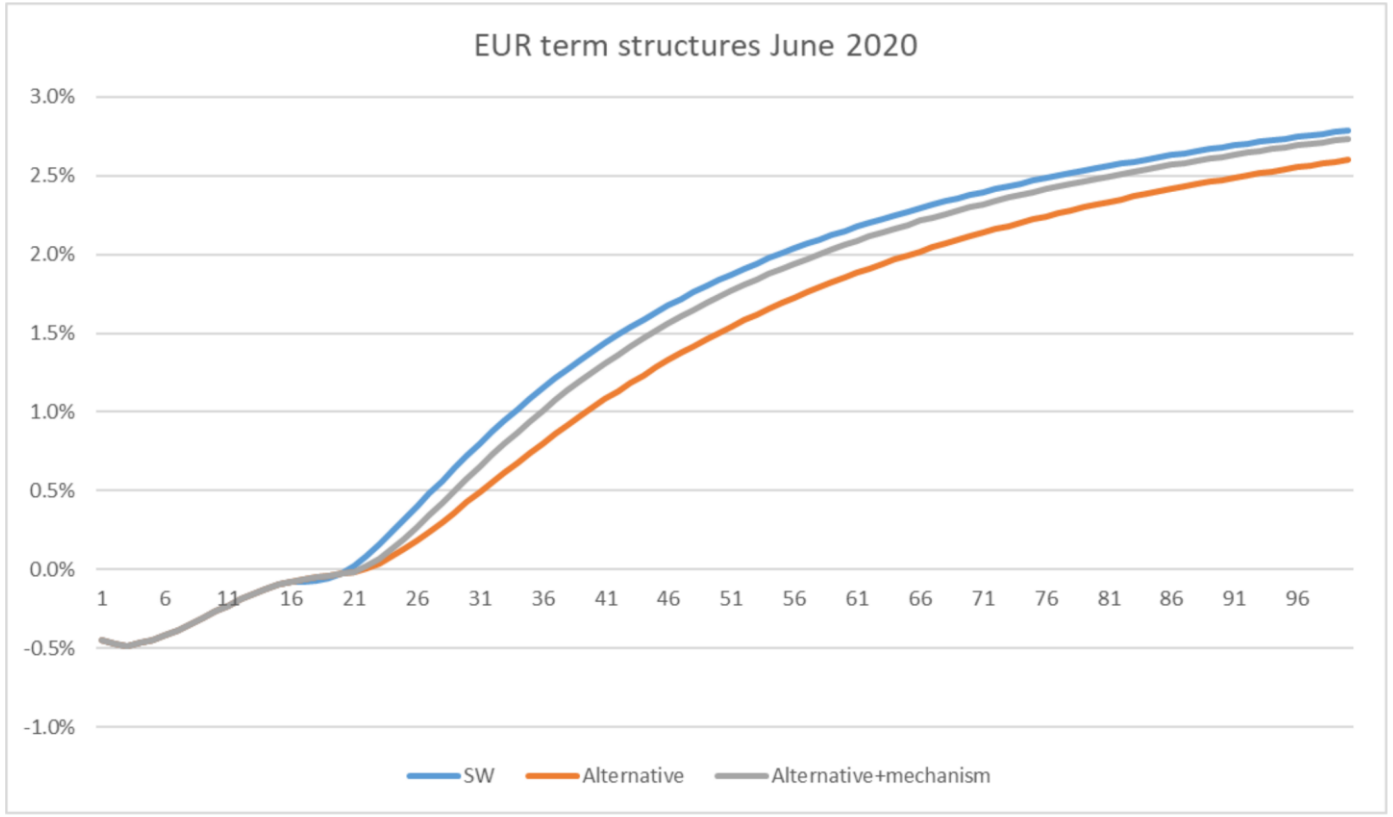
Lower α will give a closer fit to market data: as EIOPA wants

Higher α will give a closer fit to current EIOPA curve: and so lessen the impact of the change in methodology

- X is 20% in the first year of implementation.
- Decreases to 10% by 2032 which would see end of this mechanism.

Extrapolation of risk-free rates

The speed of convergence parameter α – a "smoothed" introduction

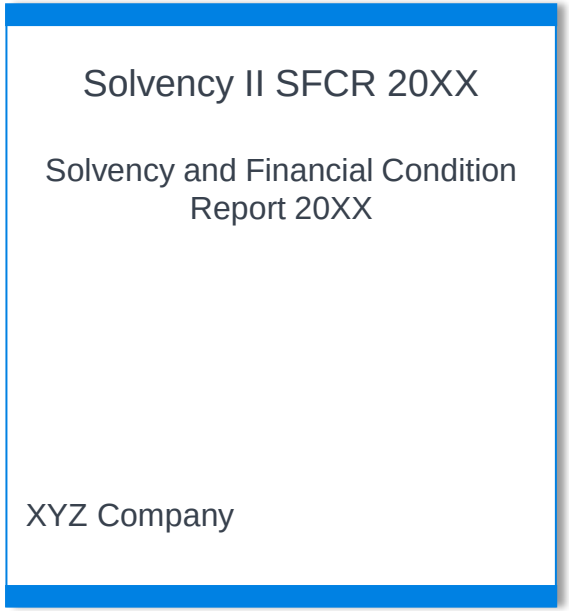


- Evidence of this new smoothing mechanism at work
- With it in place – impact of change of methodology from the current Smith-Wilson (**SW**) to the alternative methodology with α = 10% is dampened

Extrapolation of risk-free rates

The speed of convergence parameter α – a new steering tool for regulators?

- Additional public and private disclosure requirements for firms with **long-term liabilities** (>10% of its total cash flows after the point where extrapolation begins).
- Impact on Technical Provisions, SCR, MCR and Own Funds (i.e. the balance sheet)
- **Public and private disclosures in the SFCR and RSR:**
  - Speed of convergence parameter (α = 5%)
  - Speed of convergence parameter (α = 10% in periods where the parameter is greater than this (i.e. periods of low and negative interest rates).



If a firm cannot comply with the SCR when α = 10% then it cannot distribute capital for the Own Funds by having it set at this value.

Extrapolation of risk-free rates

Rationale for the change

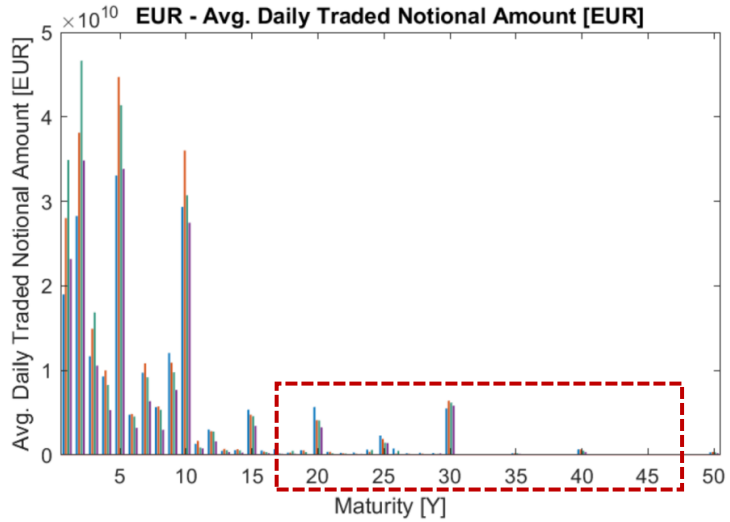
Why make this change?

1. DLT assessment evidence suggests certain markets have some reliability after the last liquid point

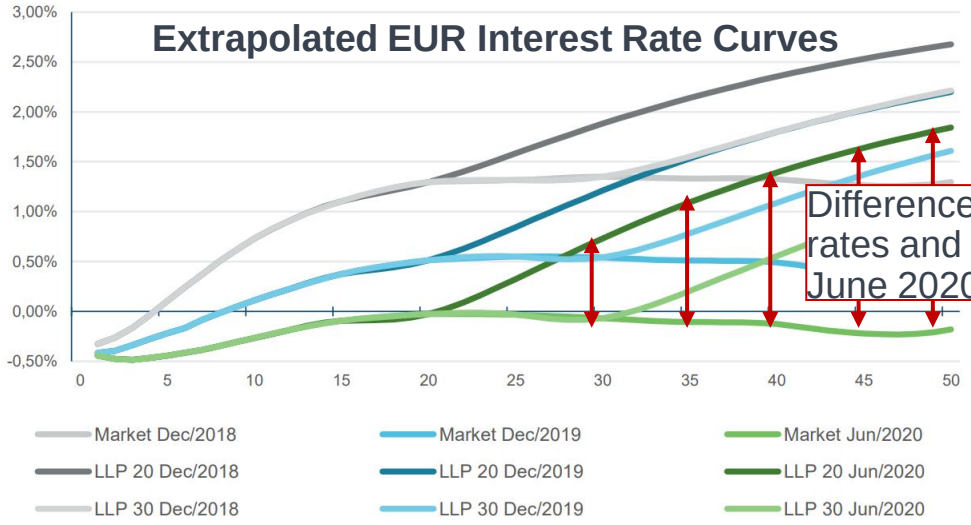
2. Concerns that current methodology results in the underestimation of Technical Provisions

3. To promote better interest rate risk management

But, to ensure some stability.



Source: EIOPA Background Analysis on 2020 review



Difference between market rates and EIOPA rates – June 2020

Source: Milliman Briefing Note:

[The impact of alternative extrapolation methods and assumptions in times of decreasing rates]

Extrapolation of risk-free rates

Impacts of the change in methodology

- Will predominantly impact EU-domiciled life insurance companies with long-term liabilities denominated in euros
- Solvency - most material change of all of those proposed by EIOPA:

Balance Sheet Item	Impact
Technical Provisions	
SCR	
Own Funds	
Excess Own Funds over the SCR	

Approximate impact on capital surplus (€)		
	December 2019	June 2020
Extrapolation	-34bn	-61bn
Volatility Adjustment	+16bn	+13bn
Risk margin	+16bn	+18bn
Interest Rate Risk	-21bn	-20bn

Source: EIOPA Impact Assessment on 2020 review

- Increase in Best Estimate of Liabilities in the Technical Provisions will be significant:
  - +€38.2bn increase in BEL is approximated as at June 2020 according to EIOPA Impact Assessment.
- This change will particularly impact insurers in markets where there are long-term liabilities (especially those with high guarantees) such as Germany and the Netherlands.

Extrapolation of risk-free rates

Impacts of the change in methodology

- Extra volatility in Own Funds will arise from the new mechanism that causes α to change from one valuation to the next:
  - To address in analysis of change and projections
  - Should this volatility be hedged (i.e. hedge the EIOPA curve with the mechanism in place) or not?
- May impact the ability to write long-term life insurance products with guarantees
- May promote investment in longer term investments to ensure better asset/liability matching at later durations

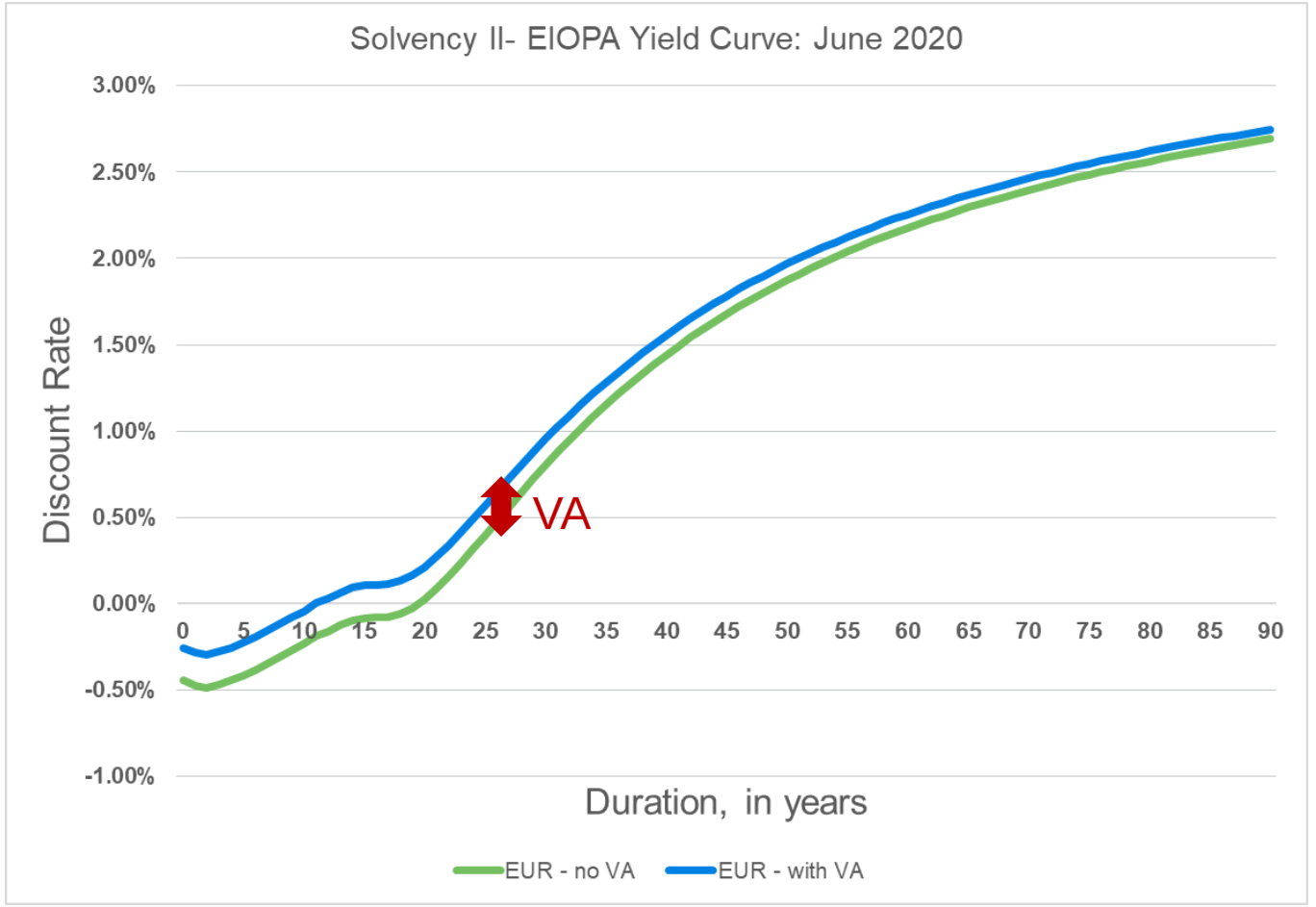
Volatility Adjustment

Addressing the VA’s deficiencies

Volatility Adjustment ("VA")

Current rules

- VA is an adjustment to the risk-free interest rate curve used to value insurance liabilities designed to:
  - Offsets impact of exaggerations of bond spreads on Own Funds
  - Prevent pro-cyclical investment behaviour
  - Recognise illiquidity characteristics of liabilities
- Supervisory approval is **not required by EIOPA** but is required by certain national regulators
- Calculated for each currency.
- Under certain conditions, a country-specific increase to the VA will apply. Particularly relevant for the Eurozone.

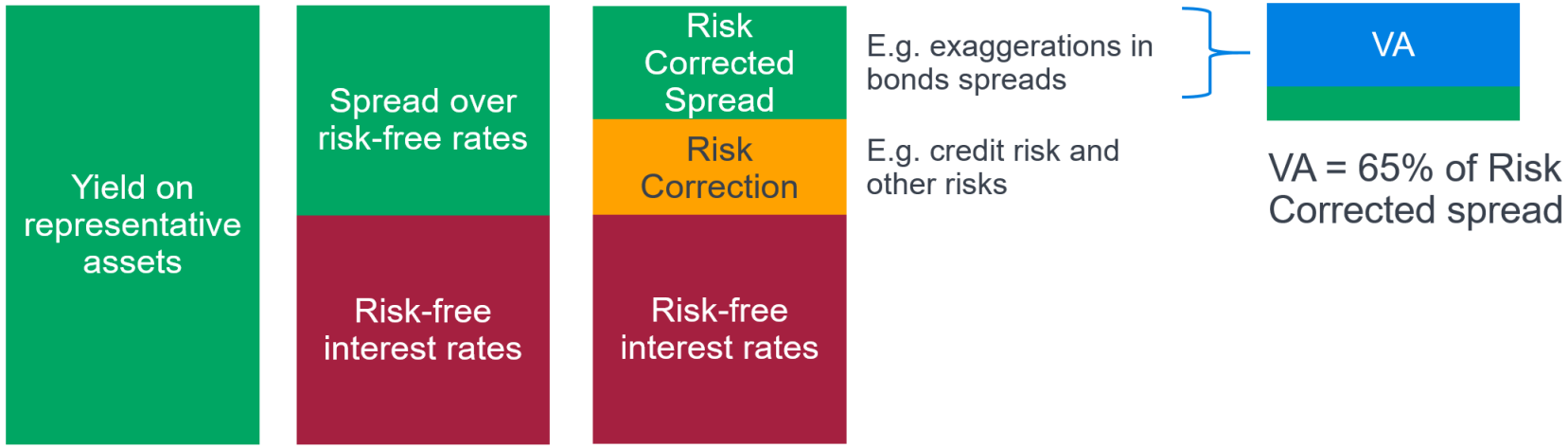


Volatility Adjustment ("VA")

Current rules

- **65% of the risk-corrected spread** between the interest rates earned on a **reference portfolio of assets** for a currency (e.g. bonds, loans, equity, property) and the risk-free rates

- **Reference portfolio** is aimed at being representative for the assets which (re)insurance companies are investing in to cover their (re)insurance obligations

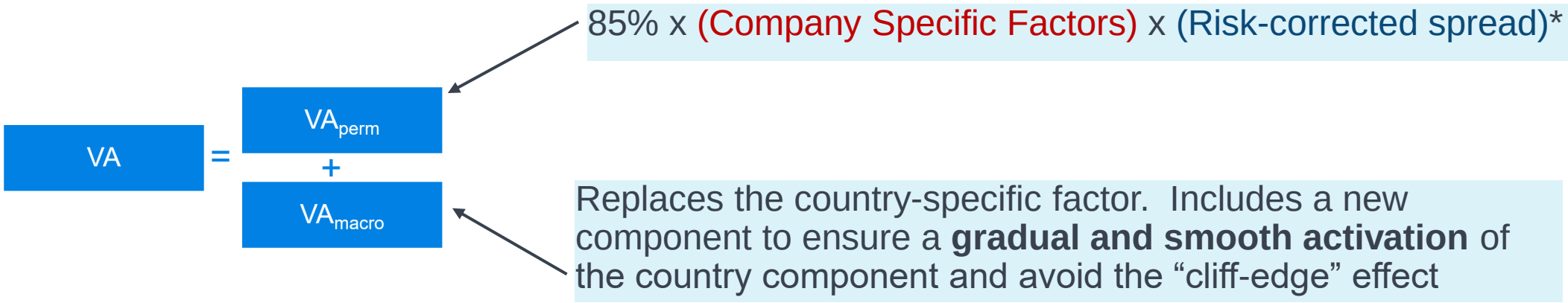


- **Risk-corrections** are fixed relative to the observed long-term average spread ("**LTAS**").

Volatility Adjustment ("VA")

New rules

- Requires supervisory approval in **all countries** and supervisors should have the power to request a company stops using the VA
- Volatility adjustment application ratio of 65% replaced by **a series of company specific ratios**, with non-company specific ratio increased from 65% to 85%
- Split the VA into two parts, a permanent part (VA_{perm}) and a macroeconomic part (VA_{macro}):



- Risk-corrected spread still based on representative portfolio of assets but risk corrections will not remain fixed.

*And also a scaling factor of the representative portfolio aimed to get the weight of fixed income instruments to 1.

Volatility Adjustment (“VA”)

New rules – introduction of company specific ratios in the VA

- **Spread duration ratio – between 0% – 100%:**
  - Measures the duration and volume mismatch between the fixed income investments and insurance liabilities of an insurer

Better asset/liability matching by duration → higher VA

- **Illiquidity ratio – between 60% -100%:**
  - Measures the degree of illiquidity of the (re)insurers liabilities and provide an explicit illiquidity premium in the VA

Illiquidity category of liabilities	Criteria	Ratio
1 – High	No surrender options or where the take up surrender option can never lead to a loss in funds for the insurer. Low best estimate impact mortality risk.	100%
2 – Medium	Low best estimate impact of permanent increase in lapse rates. Low best estimate impact of mortality risk.	75%
3 – Low	All other products	60%

Volatility Adjustment ("VA")

New rules – change to the calculation of the risk-correction

- Risk corrections are to be based on a combination of the **long-term average spread** (i.e. as current) and the **actual current spread levels**

- **When current spreads are high and exceeding the long-term average spread**, a 10 basis point spread increase will lead to an increase of:
  - **Current methodology:** no change to risk-correction.
  - **New methodology:** 2 or 4 basis points in the risk correction for government and corporate bonds respectively

Thus a lower VA under new methodology (all else kept equal)

- In cases where current spreads are lower than the long-term average spread, a % of the current spread will be used, rather than the long-term average spread.

Higher VA under new methodology (all else kept equal)

The change is deemed to make the risk correction and thus the risk corrected spread and VA more accurate.

Volatility Adjustment ("VA")

Impacts of the change in methodology

- Will predominantly impact EU-domiciled life insurance companies with long-term liabilities denominated in euros

- Solvency – one-off impact favourable on aggregate – but there will be some 'winners' and 'losers'

Balance Sheet Item	Impact
Technical Provisions	
SCR	
Own Funds	
Excess Own Funds over the SCR	

Approximate impact on capital surplus (€)		
	December 2019	June 2020
Extrapolation	-34bn	-61bn
Volatility Adjustment	+16bn	+13bn
Risk margin	+16bn	+18bn
Interest Rate Risk	-21bn	-20bn

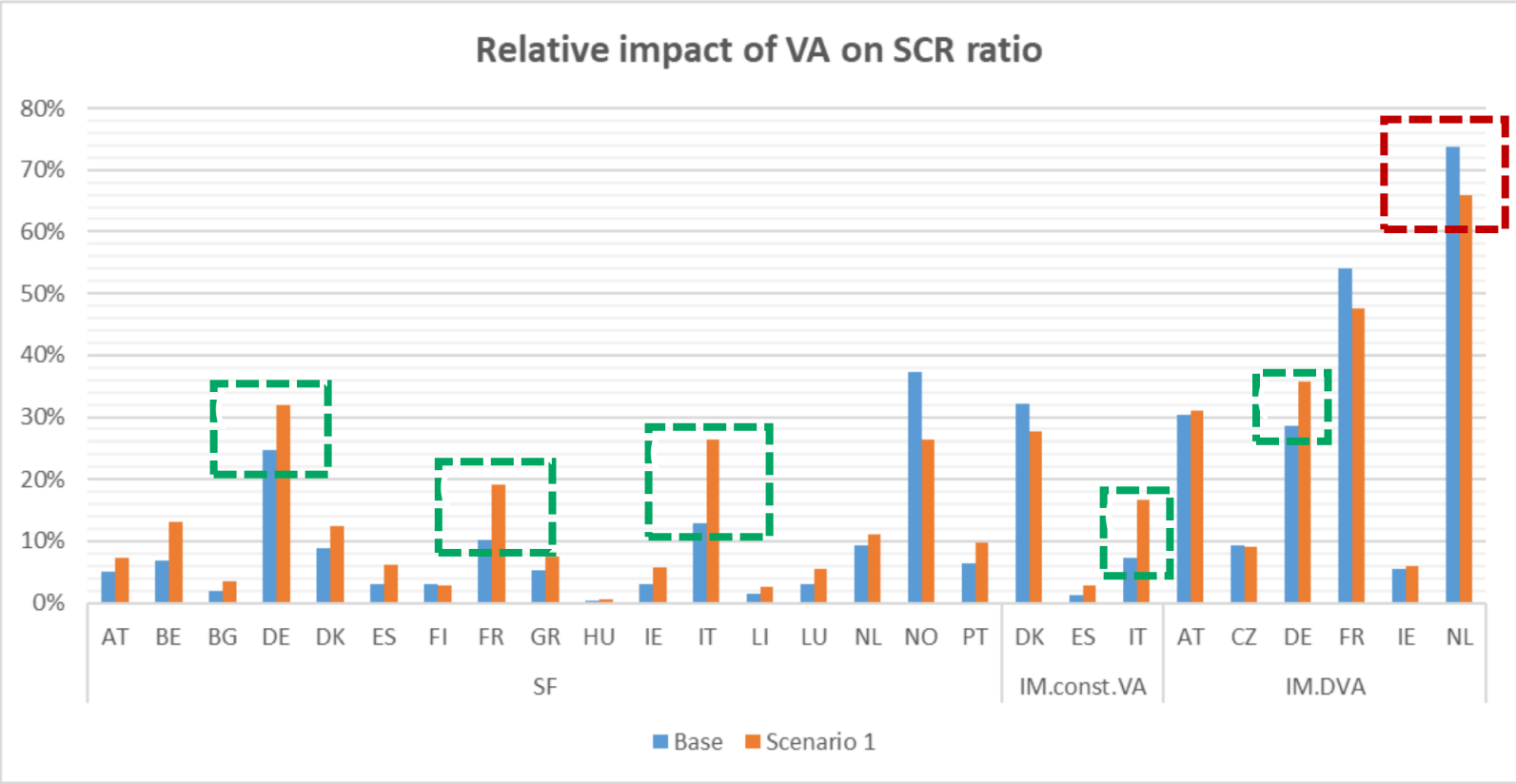
Source: EIOPA Impact Assessment on 2020 review

- Those who may be adversely impacted will be insurers where there is a large duration mismatch between assets and liabilities "the duration gap" - the correction for overshooting will result in a material increase in Technical Provisions and SCR (i.e. Netherlands).

Volatility Adjustment ("VA")

Impacts of the change in methodology

- VA will 'reward' those firms with better asset/liability matching by duration since illiquidity ratio is roughly similar for all markets by design (~73-76%).



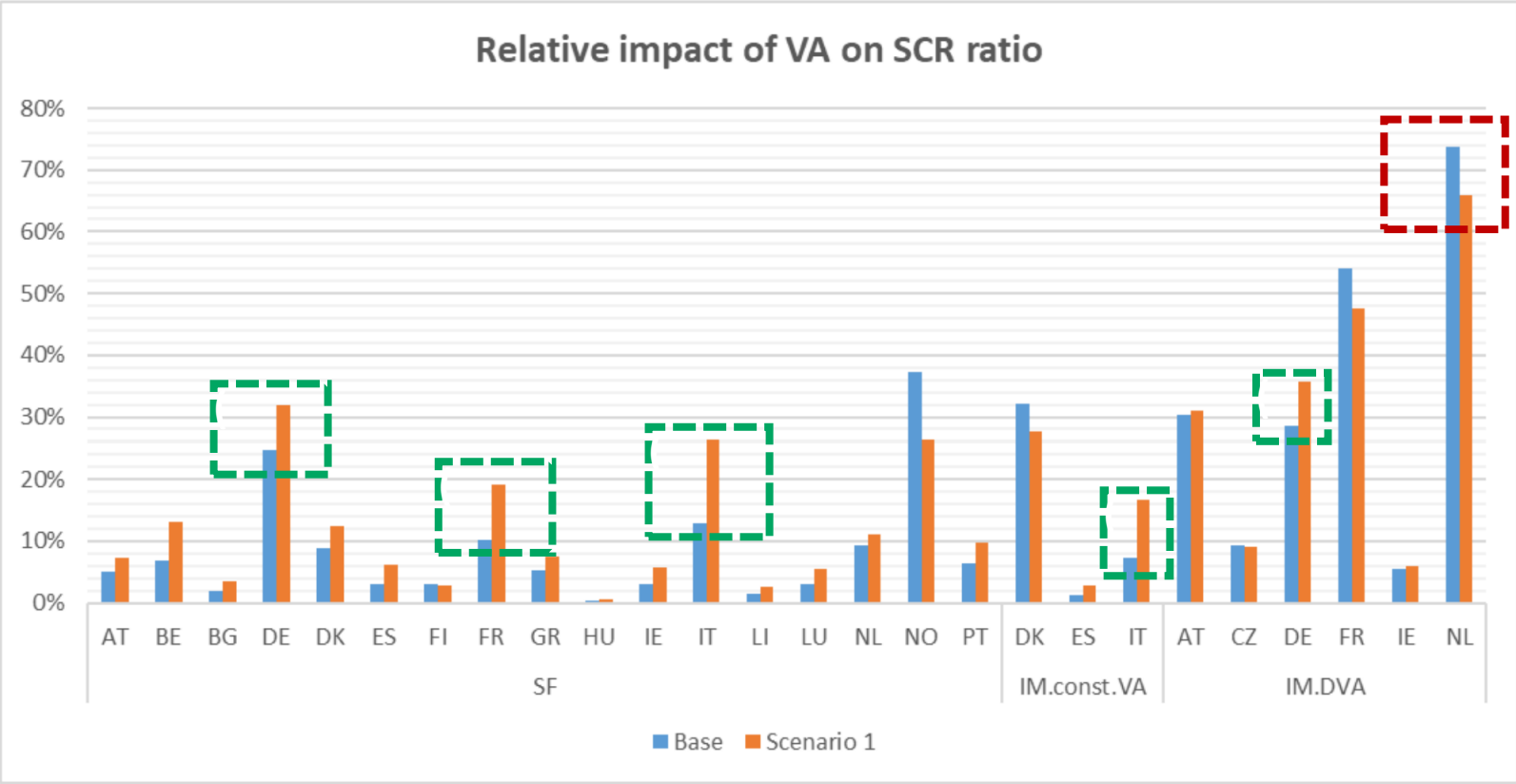
Country	Average Company Specific Ratio – max 100% (Approx.)
Netherlands	44%
Germany	72%
France	75%
Italy	72%
Average	**76%**

Source: EIOPA Impact Assessment on 2020 review (based on December 2019)

Volatility Adjustment ("VA")

Impacts of the change in methodology

- In particular will 'reward' those firms with better asset/liability matching by duration



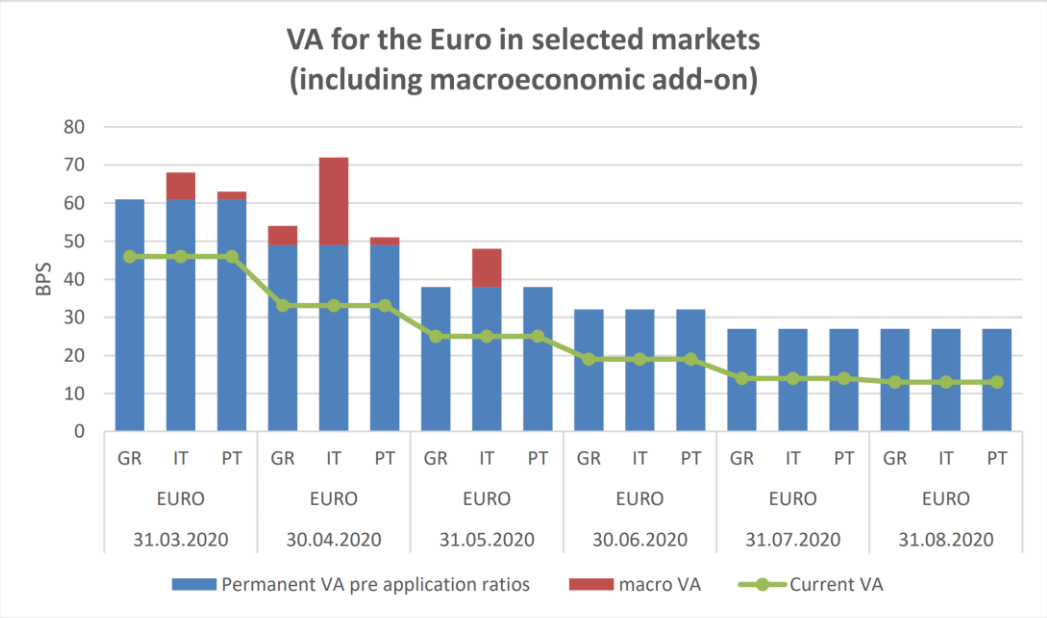
Country	Average Spread Duration Ratio – max 100% (Approx.)
Netherlands	57%
Germany	98%
France	98%
Italy	98%
Average	**91%**

Source: EIOPA Impact Assessment on 2020 review (based on December 2019)

Volatility Adjustment ("VA")

Impacts of the change in methodology

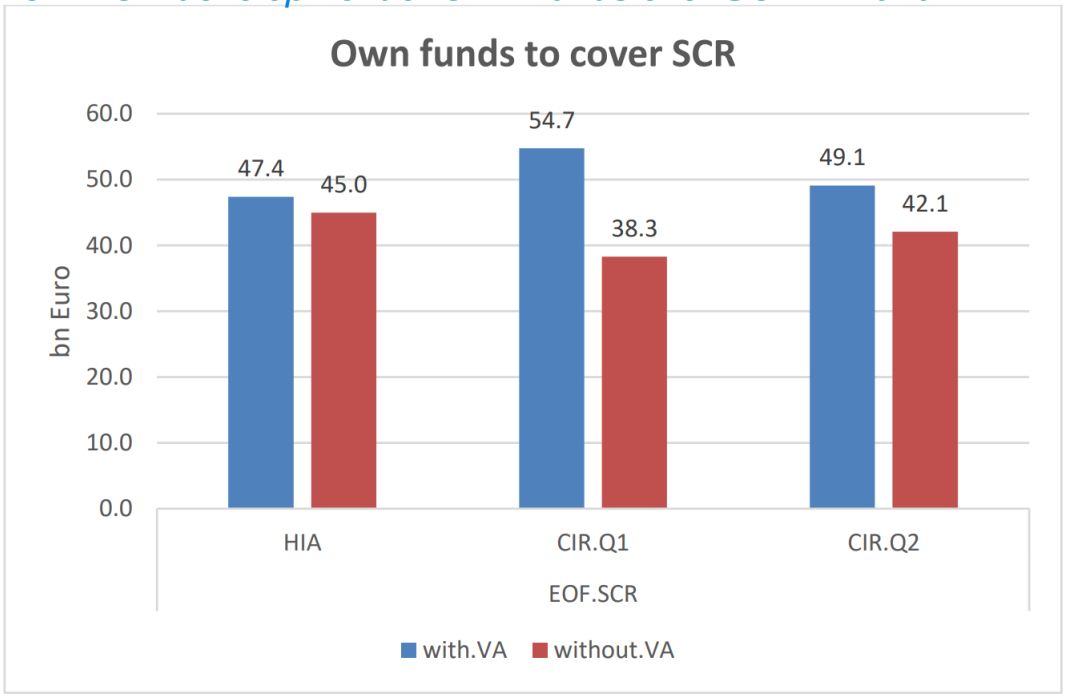
More responsive VA in countries experiencing a crisis



Source: EIOPA Background Analysis on 2020 review

Less volatility in Own Funds by preventing the "overshooting effect"

15 firms – development of Own Funds over SCR in 2020

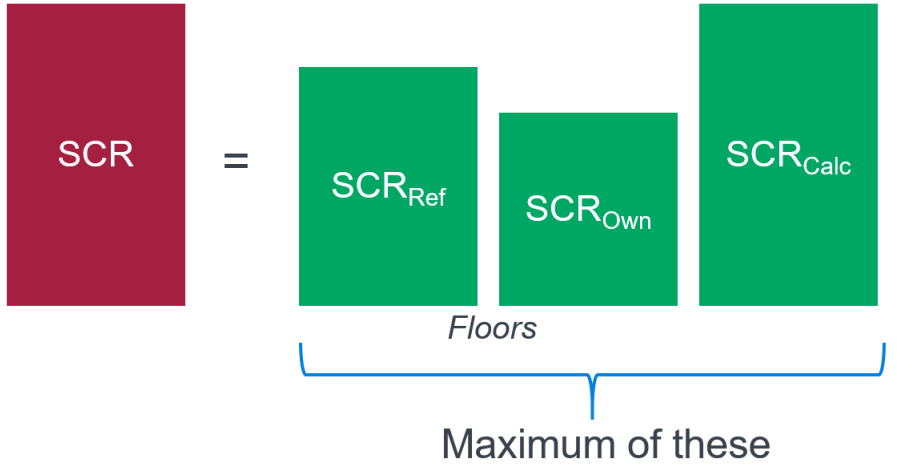


Source: EIOPA Background Analysis on 2020 review

Other points on the Volatility Adjustment - DVA

- Standard formula SCR should not change to allow for a **Dynamic Volatility Adjustment** (“DVA”)
- DVA to be maintained for Internal Model SCR firms, subject to an **enhanced prudency principle,** whereby firms must evidence that the SCR calculated is at least as high as the maximum of:
  - SCR if firms use the VA methodology based on the relevant VA currency **reference portfolios**
  - SCR if firms use the VA methodology based on its **own asset portfolio**

  } New
- **Aim of the enhanced prudency principle is:**
  - **Prevent quality overshooting –** where credit spreads and credit spread risk in the undertaking’s own portfolio is lower than the relevant VA reference portfolio (i.e. taking too much VA)



Summary

Extrapolation of Risk Free Rates

- New methodology will take into account market data past the last liquid point.
- New methodology will have a “smoothed introduction” by way of the speed of convergence parameter (α) and will be fully in effect from 2032 after the transition period.
- The change is the most material of all of the proposed changes to the Long Term Guarantee measures and will reduce the SCR coverage ratio of Eurozone insurers with euro-denominated long-term liabilities.
- It is unclear at this stage whether the PRA will adopt this methodology to derive its EUR or GBP risk free rates.

Volatility Adjustment

- Changes to include company specific factors in the calculation of the volatility adjustment should reduce VA over-or undershooting effect.
- “Cliff-effect” of country-specific increase where the activation mechanism not working as expected to be resolved by a new parameter allowing a gradual and smooth activation.
- Changes to the calculation of the risk correction of the VA should ensure it is more accurate.
- Firms will be “rewarded” or adversely impacted depending on the duration mismatch between assets and liabilities “the duration gap”.

Risk Margin

Reducing the sensitivity of the risk margin to interest rates

Risk Margin

- EIOPA is proposing to reduce the Risk Margin calculation through the inclusion of a new time dependent λ factor.
- The λ factor will reduce the projected non-hedgeable SCR by applying a factor of 97.5% in year 1, which reduces to a floor of 50% by year 28.
- The rationale for this is to account for the time dependency of risks in the non-hedgeable SCR.
- The proposal is also likely to reduce the Risk Margin's sensitivity to long-term interest rates.
- Other components of the calculation including the 6% cost of capital (CoC)
- The Cost of Capital Approach itself has not been reviewed by EIOPA at this time

Current Approach

$$RM = CoC * \sum_{t \geq 0} \frac{SCR_t}{(1 + r_{t+1})^{t+1}}$$

Proposed Approach

$$RM = CoC * \sum_{t \geq 0} \frac{\mathbf{max}(\boldsymbol{\lambda^t}, \mathbf{50\%}) * SCR_t}{(1 + r_{t+1})^{t+1}}$$

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Risk Margin

- The chart shows the effect of the additional parameter in the risk margin (scenario 1) versus the current approach (base).
- The Risk Margin is expected to reduce for all types of business with the most significant reduction being seen amongst life insurers.
- At the individual country levels the relative reduction is in the range from 3% to 22%.
- Please note that scenario 1 shown on the slide includes a number of EIOPA's proposal and not just the inclusion of the λ factor in the Risk Margin.

Source: EIOPA Impact Assessment on 2020 review (based on December 2019)

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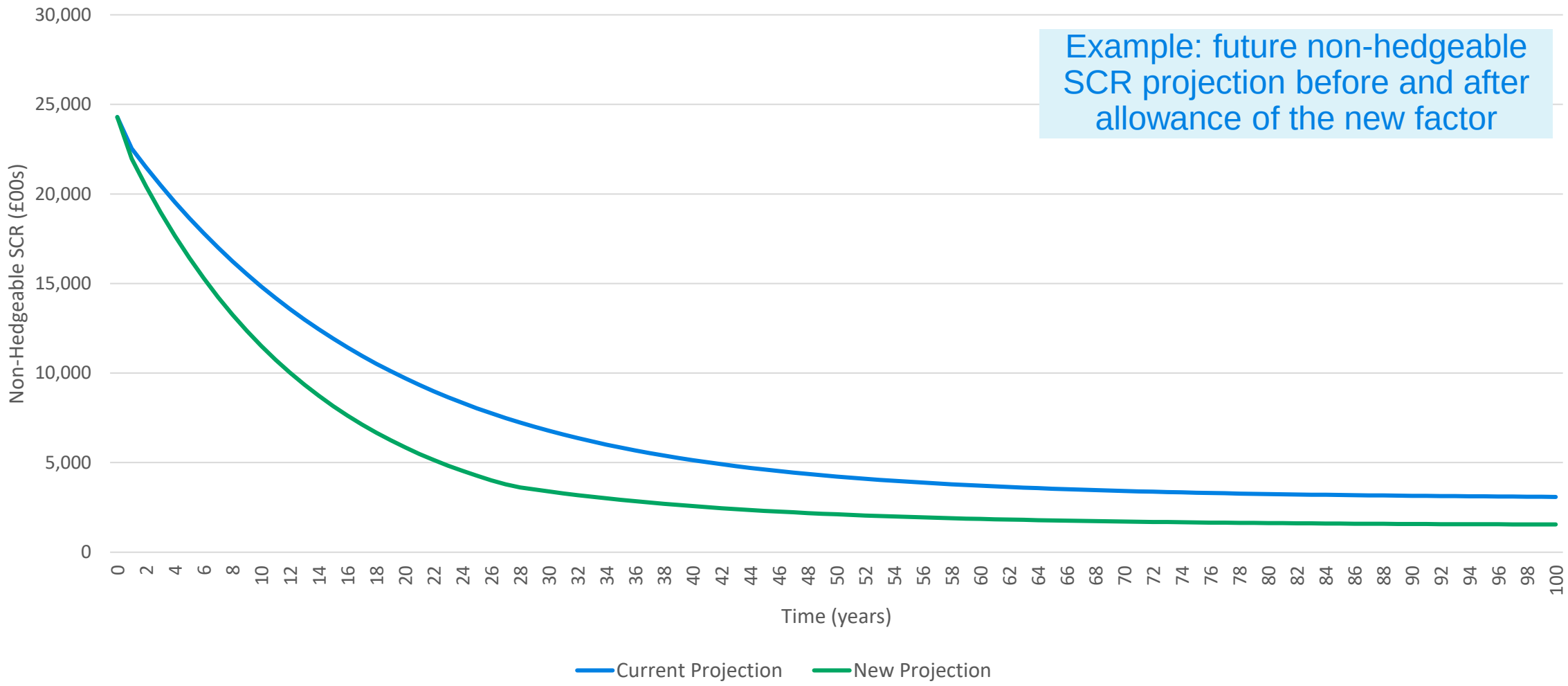
Risk Margin



Source: Milliman calculation based on a Risk Margin projection under Level 2 of the Hierarchy of Simplifications

Risk Margin

Impacts of the change in stress calculation

- Will impact all firms in all markets.
- Overall this change is expected to reduce the Risk Margin for all firms and consequently improve Solvency Coverage.
- There will be no impact from this change on the SCR as the Risk Margin is not included in the SCR stresses

Balance Sheet Item	Impact
Technical Provisions	
SCR	
Own Funds	
Excess Own Funds over the SCR	

Approximate impact on capital surplus (€)		
	December 2019	June 2020
Extrapolation	-34bn	-61bn
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Risk margin	+16bn	+18bn
Interest Rate Risk	-21bn	-20bn

Source: EIOPA Impact Assessment on 2020 review

Interest Rate Stress

Addressing the deficiencies of the standard formula SCR interest rate stresses

Interest Rate Stresses – Standard Formula

- **Current approach:**
  - Instantaneous increase/decrease to the base curve using multiplicative factors that vary by maturity.
  - The interest rate up stress will be at least 1% higher than the base curve at all maturities
  - For negative base curves the interest rate down stress will be zero when the base curve is negative

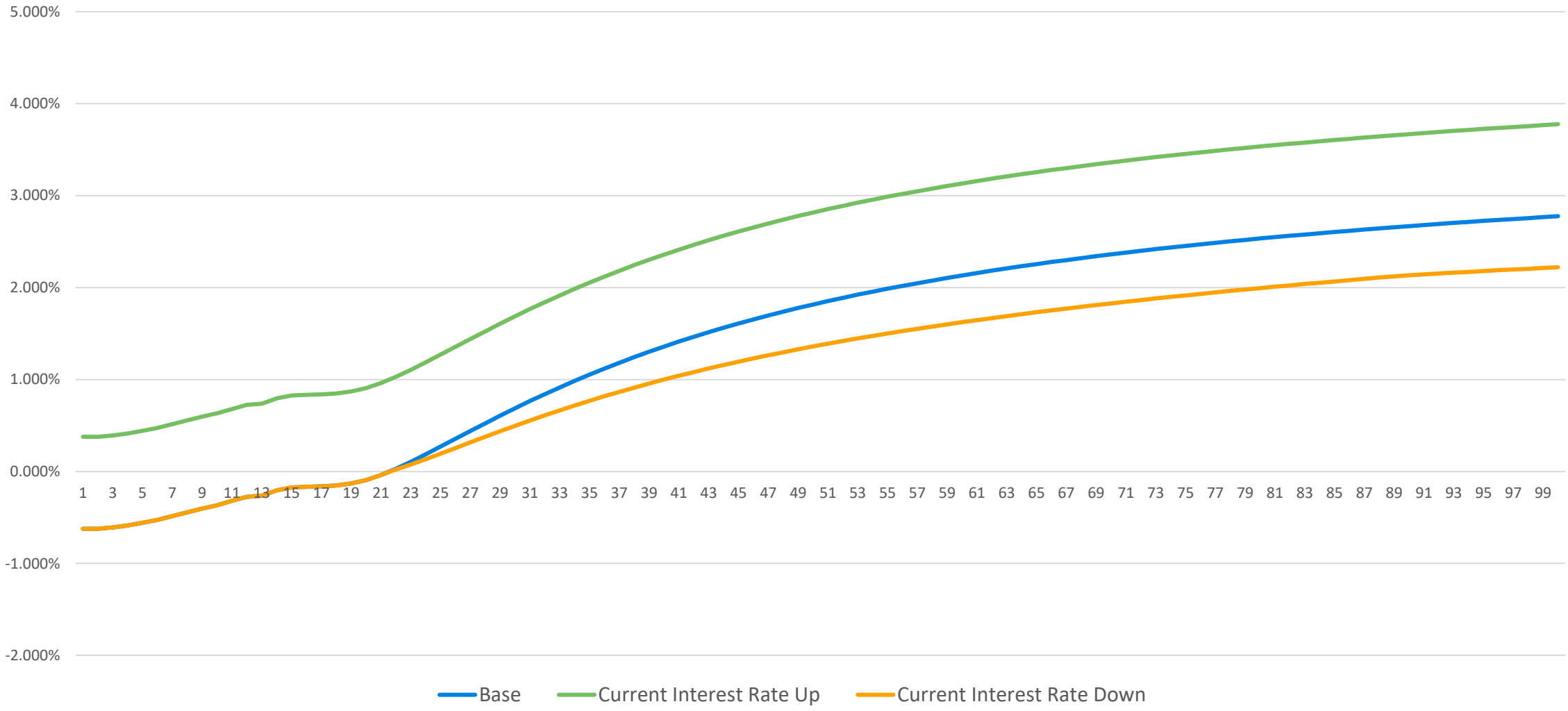
- **Proposed approach:**
  - Relative shift approach using two parameters which vary as functions of maturity:
    - The *s* parameters are relative factors
    - The *b* parameters are additive factors

$$r_t^{up}(m) = r_t(m) \cdot \left(1 + s_m^{up}(\theta_m)\right) + b_m^{up}$$

$$r_t^{down}(m) = r_t(m) \cdot \left(1 - s_m^{down}(\theta_m)\right) - b_m^{down}$$

  - The interest rate down stress will contain a floor of -1.25%
  - The change to the interest rate risk calibration will be phased in over five years

Interest Rate Stresses – 31 December 2020 EUR Curves



Source: EIOPA December 2020 Term Structure of Interest Rates and Milliman calculations

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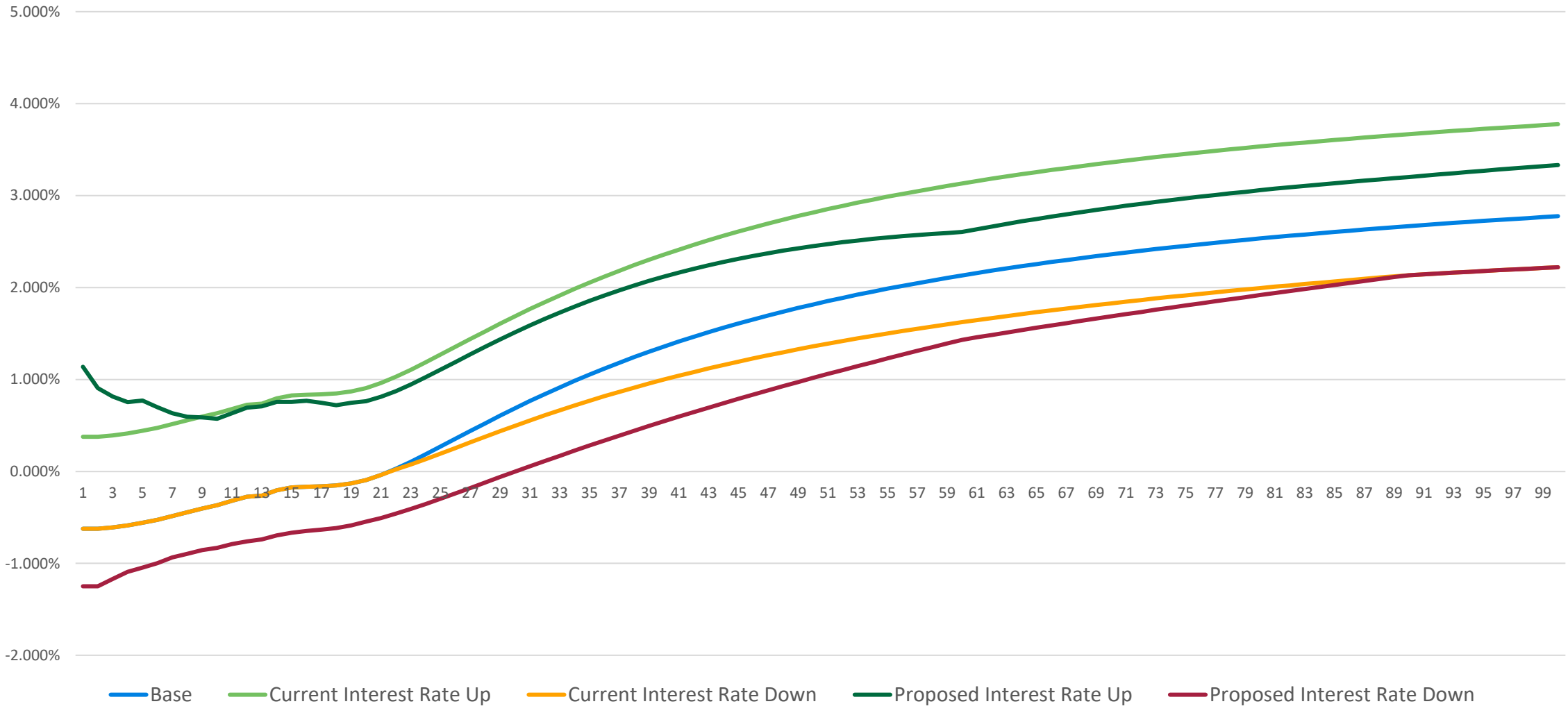
Interest Rate Stresses – 31 December 2020 EUR Curves



Source: EIOPA December 2020 Term Structure of Interest Rates and Milliman calculations

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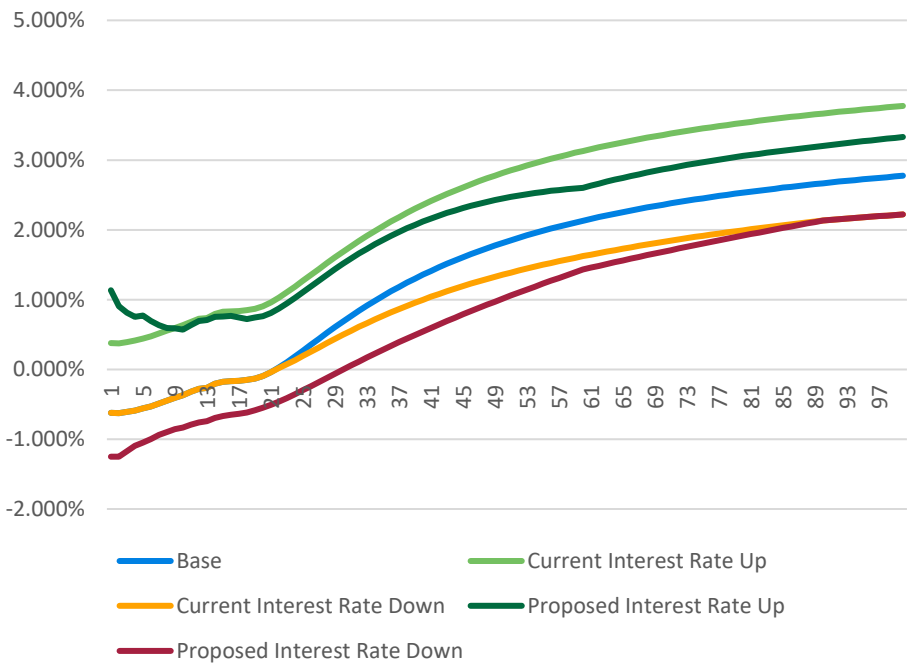
Interest Rate Stresses – Standard Formula

- The evidence gathered by EIOPA suggests that overall the current approach leads to an under-estimation of the risks associated to interest rates, in particular:
  - Real interest rate movements have been more severe than those tested under the current stresses
  - The current approach does not adequately stress negative interest rates
  - The way internal model users stress interest rates deviates significantly from the current standard formula stresses
  - The impact assessment carried out by EIOPA has shown that the risk is material and that current capital requirements are not adequate to cover this risk
  - General industry consensus that the current approach is flawed

- The current proposal to update the interest rate risk sub-module was previously proposed under the 2018 interim review of Solvency II, however the European Commission chose not to implement the change at that time.



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Interest Rate Stresses – Standard Formula

Impacts of the change in stress calculation

- Will impact all firms in all markets. Firms will need to consider the impact on any interest rate hedging arrangements.
- Overall this change is expected to reduce Solvency Coverage, however should better align the capital with the actual risk exposure

Balance Sheet Item	Impact
Technical Provisions	=
SCR	↑
Own Funds	=
Excess Own Funds over the SCR	↓

Approximate impact on capital surplus (€)		
	December 2019	June 2020
Extrapolation	-34bn	-61bn
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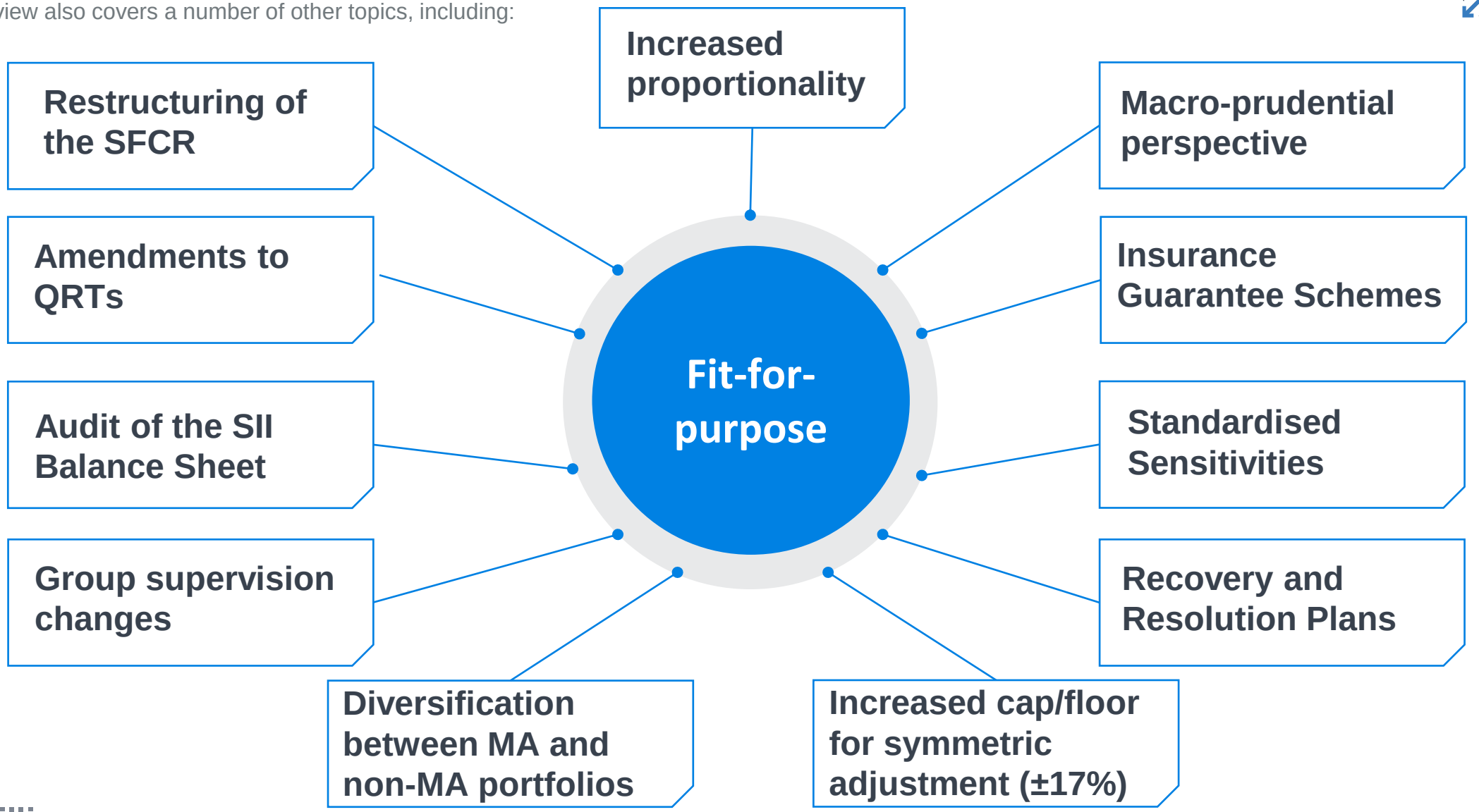
Source: EIOPA Impact Assessment on 2020 review

Other Changes

The review also covers a number of other topics, including:



Thoughts from across Europe

U.K.

- More exposed to what approach the PRA will adopt in its review of the future regulatory framework
- EIOPA's proposals would be generally positive: risk margin the big benefit, VA has little impact and MA diversification a plus for SF firms. Interest rate stress changes okay as GBP rates are not too negative.

Ireland

- Balance sheet benefit from the risk margin seen as positive but offset by increase in interest rate risk capital.
- Less impact from VA/ extrapolation changes vs other countries (i.e. handful of companies use the VA but that is it, a lot of unit-linked business).
- Extra work will likely be due to Pillar 2 requirements (liquidity risk management plans, systematic risk management plans).

France

- **Duration gap (between assets and liabilities) leaves French insurers exposed to changes in interest rates.**
- **Extrapolation –** least worst option proposed by EIOPA but unwelcome additional workload around disclosure of the impact of the change of the speed of convergence parameter to $\alpha = 5\%$.
- **Risk margin -** 3% CoC convergence after 28 years in new method, improves SCR ratio but would prefer using 3% directly.
- **VA –** general ratio increase from 65% to 85% in line with expectations. Spread duration ratio is globally high and when combined with illiquidity ratio gives a more favourable VA and benefit to the Solvency ratio. New enhanced prudency principle constraint on the DVA will reduce the DVA effect for IM firms.
- **Interest rate down SCR** - leads to strong decrease of the Solvency ratio (between -30 pts and -50 pts according to the market players). Insurers may review /change policy conditions to reduce long-term guarantees offered.

Thoughts from across Europe

Germany

- **Duration gap (between assets and liabilities) leaves German insurers exposed to changes in interest rates.**
- **Extrapolation & Interest rate down SCR biggest concerns** – changes were largely expected by the industry as national regulator are in support of prolongation of last liquid point and interest rate risk correction.
- Insurers may consider lengthening the term of assets they hold to reduce impact of these changes. May result in a hit on the new VA from spread duration ratio.
- Changes will put further pressure on insurers' balance sheets given the extensive in-force business with long-term guarantees (~3-4% on certain products in German market)

Netherlands

- **Duration gap (between assets and liabilities) leaves Dutch insurers exposed to changes in interest rates.**
- **Extrapolation** – the change is good from an economic sense, but moving across to a more 'accurate' yield curve is really damaging to the Dutch industry due to its long-term liabilities. The least worst option proposed by EIOPA has been chosen which is positive.
- **Risk margin** - lots of longevity risk and long-term liabilities in the Dutch market, so the change is expected to be quite material for Dutch life insurers.
- **VA**
  - Fixes the overshooting/undershooting issue in the Dutch market (in particular correcting the odd dynamics from the VA seen in the Dutch market during 2020).
  - Could encourage more long-term investments in credit investments to avoid penalisation on balance sheet from holding short-term assets (to address the v. low spread duration ratios seen in the Dutch market vs other European markets).
  - New enhanced prudency principle constraint on the DVA will reduce the DVA effect for IM firms.
- **Interest rate down SCR** - change is long overdue although will result in a balance sheet hit. Better aligns economics with the standard formula so from a risk management perspective it works well. Intrigue around the -1.25% floor on negative interest rates – rates could go lower than this.

Q&A

For further information:
https://uk.milliman.com/en-gb/insight/solvency-ii-2020-review

Shareholder Value Reporting in Europe – Solvency II Based Metrics

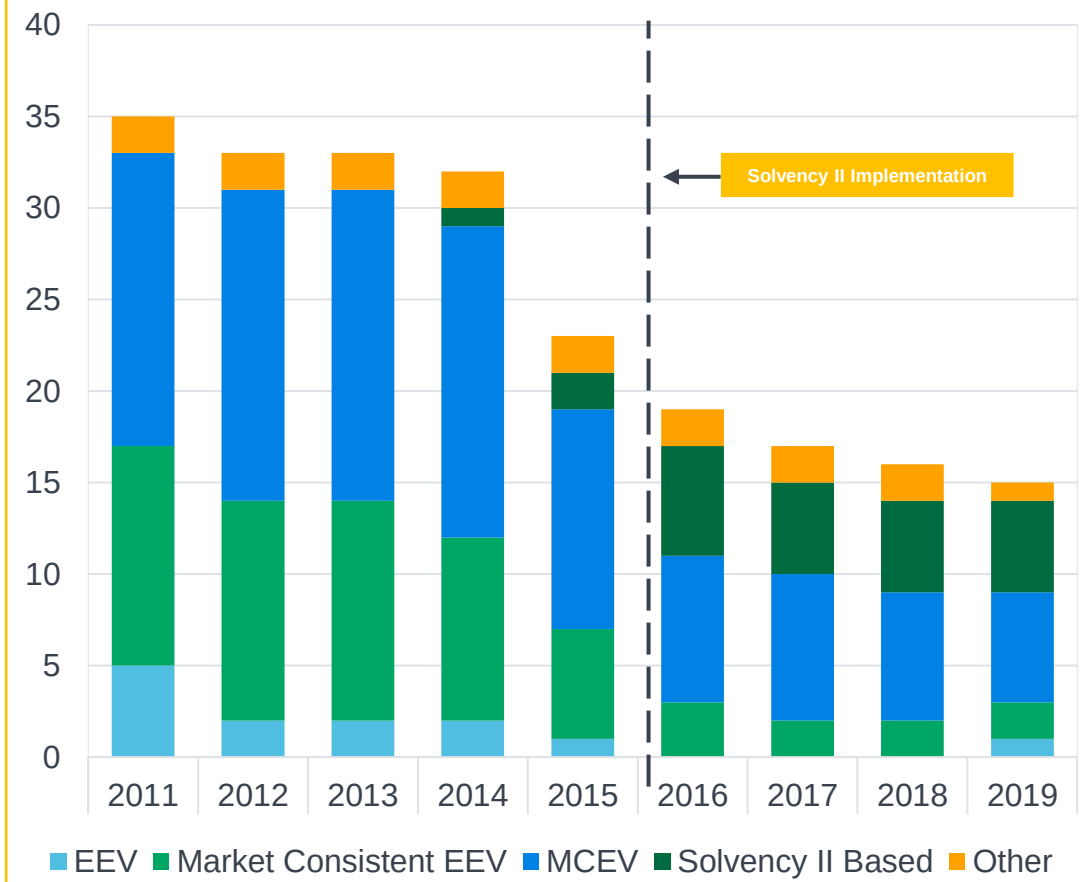
Milliman

Brief (recent) history of Value Reporting in Europe

Development of Principles

2001	ABI issues guidance on Achieved Profits Method
2004	CFO Forum issues EEV Principles
2008	CFO Forum issues MCEV Principles
2009	Liquidity premium guidance issued for MCEV Principles
2011	Delays in the need to allow for Solvency II under EEV/MCEV
2012	
2016	Solvency II Implementation EEV/MCEV update to allow for Solvency II

Companies disclosing Embedded Value



Milliman Research Reports: European Value Reporting

Embedded Value Metrics

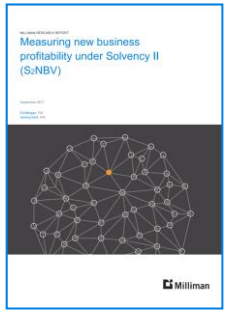
Change in focus of research to include some Solvency II metrics

Change in focus of research focus only on Solvency II metrics

2012 2013 2014 2015 2016 2017 2018 2019 2020

Solvency II Based Metrics

Solvency II Implementation

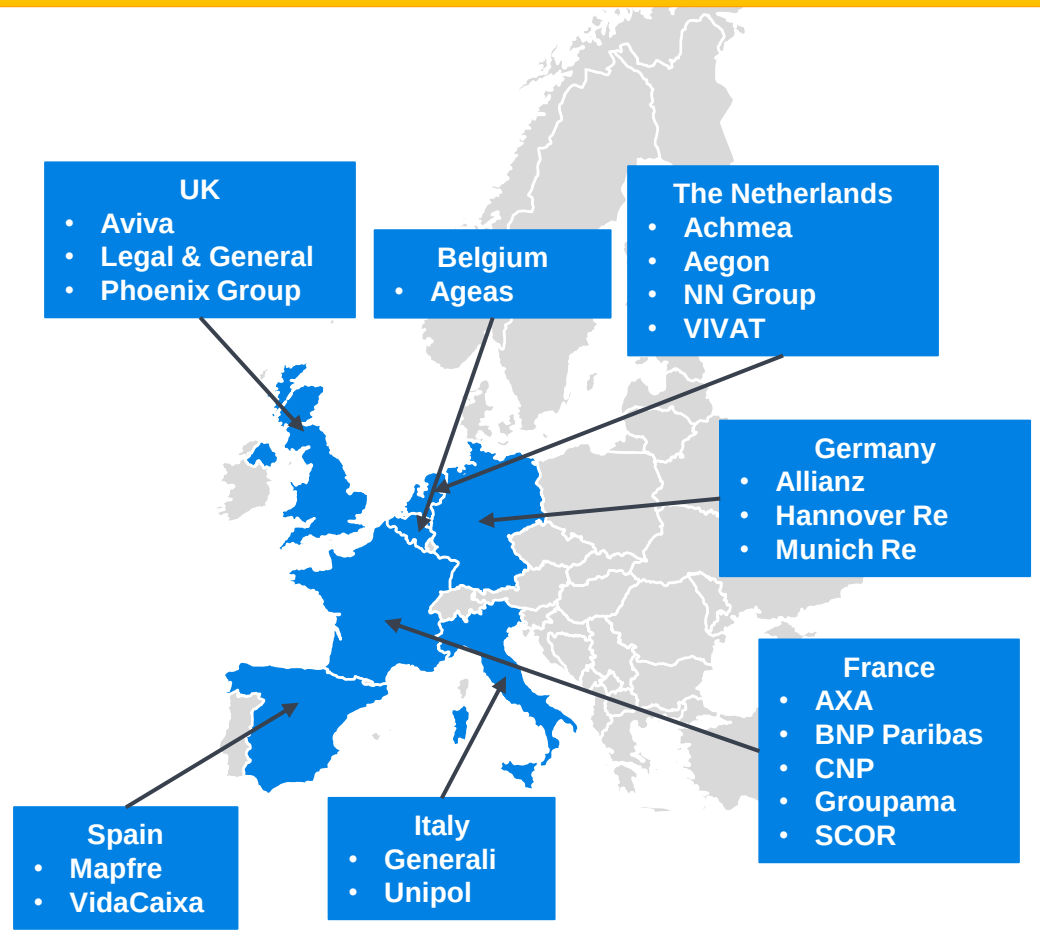


What does the Report cover?

Report Sections

- Solvency II based value disclosures
- Solvency II based value metrics in transaction pricing
- Alternative Solvency II based value metrics

Firms included in the Report



Solvency II based value disclosures

What are companies disclosing?

What metrics are companies disclosing?

Earnings metrics not value metrics

Capital Generation Metrics	Full Movement of Own Funds	Part Movement of Own Funds
No Allowance for SCR	Own Funds Generation	Normalised Capital Generation
Allowance for SCR	Free Capital Generation	Operating Capital Generation

- 11 out of the 20 sample companies disclosed a “Solvency II Capital Generation” metric

Different naming conventions and calculations

- **Operating Capital Generation (8 companies)**

COMPANY	REPORTED METRIC	SCR LEVEL
Aegon	Normalised Capital Generation	100% SCR
Ageas	Operational Free Capital Generation	175% SCR
Allianz	Pre-tax Operating Capital Generation/Organic Capital Generation	100% SCR
Aviva	Operating Capital Generation	100% SCR
CNP	Operating Free Cashflow	100% SCR
Generali	Operating Capital Generation	100% SCR
L&G	Operational Surplus Generation	100% SCR
NN Group	Operating Capital Generation	100% SCR

- **Normalised Capital Generation (5 companies)**

COMPANY	CHOSEN NAME FOR METRIC
Allianz	Operating SII Earnings
Aviva	Operating Own Funds Generation
Generali	Normalised Own Funds Generation
SCOR	Operating Capital Generation
VIVAT	(Organic) Capital Generation*

- **Free Capital Generation (2 companies)**

COMPANY	CHOSEN NAME FOR METRIC	SCR LEVEL
Achmea	Free Capital Generation	100% SCR
Ageas	Free Capital Generation	175% SCR

What are the drivers of Solvency II earnings?

How is this presented?

- (Now) Optional disclosures under the EEV and MCEV Principles
- Solvency II 2020 Review
- PRA speech in 2018
- Formats currently being used by companies

Suggested template

1.	Opening adjustments
2.	Existing business contribution, split into:
	a. The expected real-world return on assets in excess of the BEL
	b. The expected real-world spread on assets backing the BEL (including the impact on the BEL)
	c. The impact of the unwinding of the UFR/UFR drag
	d. The release of the Risk Margin (on existing business)
	e. The impact of run-off of the Solvency II transitionals (on EB)
3.	New business contribution
4.	Impact of management actions
5.	Financing costs
6.	Changes to operating/non-economic assumptions
7.	Operating/non-economic experience variances (where the variances are with reference to the expected return/spread levels in 2a and 2b)
8.	Changes to non-operating/economic assumptions inc UFR, VA etc.
9.	Non-operating/economic experience variances
10.	Other items
11.	Capital Management
12.	Closing adjustments

Projecting the drivers of Solvency II earnings

‘Anticipated’ drivers	
2.	Existing business contribution, split into:
	a. The expected real-world return on assets in excess of the BEL
	b. The expected real-world spread on assets backing the BEL (including the impact on the BEL)
	c. The impact of the unwinding of the UFR/UFR drag
	d. The release of the Risk Margin (on existing business)
	e. The impact of run-off of the Solvency II transitionals (on EB)
3.	New business contribution
4.	Impact of management actions
5.	Financing costs
6.	Changes to operating/non-economic assumptions
7.	Operating/non-economic experience variances (where the variances are with reference to the expected return/spread levels in 2a and 2b)

‘Unanticipated’ drivers	
1.	Opening adjustments
8.	Changes to non-operating/economic assumptions inc UFR, VA etc.
9.	Non-operating/economic experience variances
10.	Other items
11.	Capital Management
12.	Closing adjustments

Solvency II based metrics in transaction pricing

What is disclosed in relation to deals?

Recent Life Insurance Business Transactions

CTY	TARGET	BUYER	NB?	DATE	PRICE (P)	P / OF
RATIO CALCULATED						
UK	Rothesay Life plc (36% stake)	GIC and Mass Mutual	Yes	09/2020	£2,100m	0.95
UK	Quilter UK Heritage book	ReAssure	No	08/2019	£425m	1.10
Ireland	AXA Life Europe	Cinven	No	08/2018*	€925m	0.81
UK	ReAssure (10% stake)	MS&AD	No	01/2018	£315m	0.85
Denmark	Nordea Liv & Pension (45% share)	Norliv	Yes	12/2017	DKK 3.52 bn	0.56
Ireland	Generali PanEurope DAC	Utmost Ltd	Yes	12/2017	€286m	1.01
Italy	Popolare Vita SpA (50% stake)	Banco BPM SpA	Yes	11/2017	€535.5m	2.17
Ireland	Friends First Life	Aviva Ireland Ltd	Yes	11/2017	€146m	0.58
Ireland	AEGON Ireland plc	AGER Bermuda Holding Ltd	No	08/2017	€195m	0.81
Ireland	Laguna Life DAC	Monument Assurance DAC	No	08/2017	€25.6m	0.67
France	Antarius S.A. (remaining 50% stake)	Sogecap SA	Yes	02/2017	€500m	1.15
Denmark	Nordea Liv & Pension (25% share)	Foreningen NLP	Yes	11/2016	DKK 2.16 bn	0.62
Ireland	Union Heritage Life	Harcourt Life Assurance	No	08/2016	€3m	0.58
Italy	Old Mutual Wealth Italy SpA	Phlavia Investimenti S.r.l.	Yes	08/ 2016	€278m	1.16
RATIO DISCLOSED						
UK	LV=	Bain Capital Credit	Yes	12/2020	£530m	0.87
Italy	Aviva Vita	UBI Banca	Yes	11/2020	€400m	1.00
UK	Reassure Group	Phoenix	No	12/2019	£3,200m	0.91
UK	Standard Life Assurance	Phoenix	Yes	02/2018	£2,930m	0.84
UK	L&G (Heritage business)	ReAssure	No	12/2017	£650m	0.99
UK	Abbey Life Assurance	Phoenix	No	09/2016	£935m	0.89
UK	AXA Wealth Pensions	Phoenix	Yes	05/2016	£375m	0.85

* This transaction was terminated in H2 2020

Recent Life Insurance Business Transactions

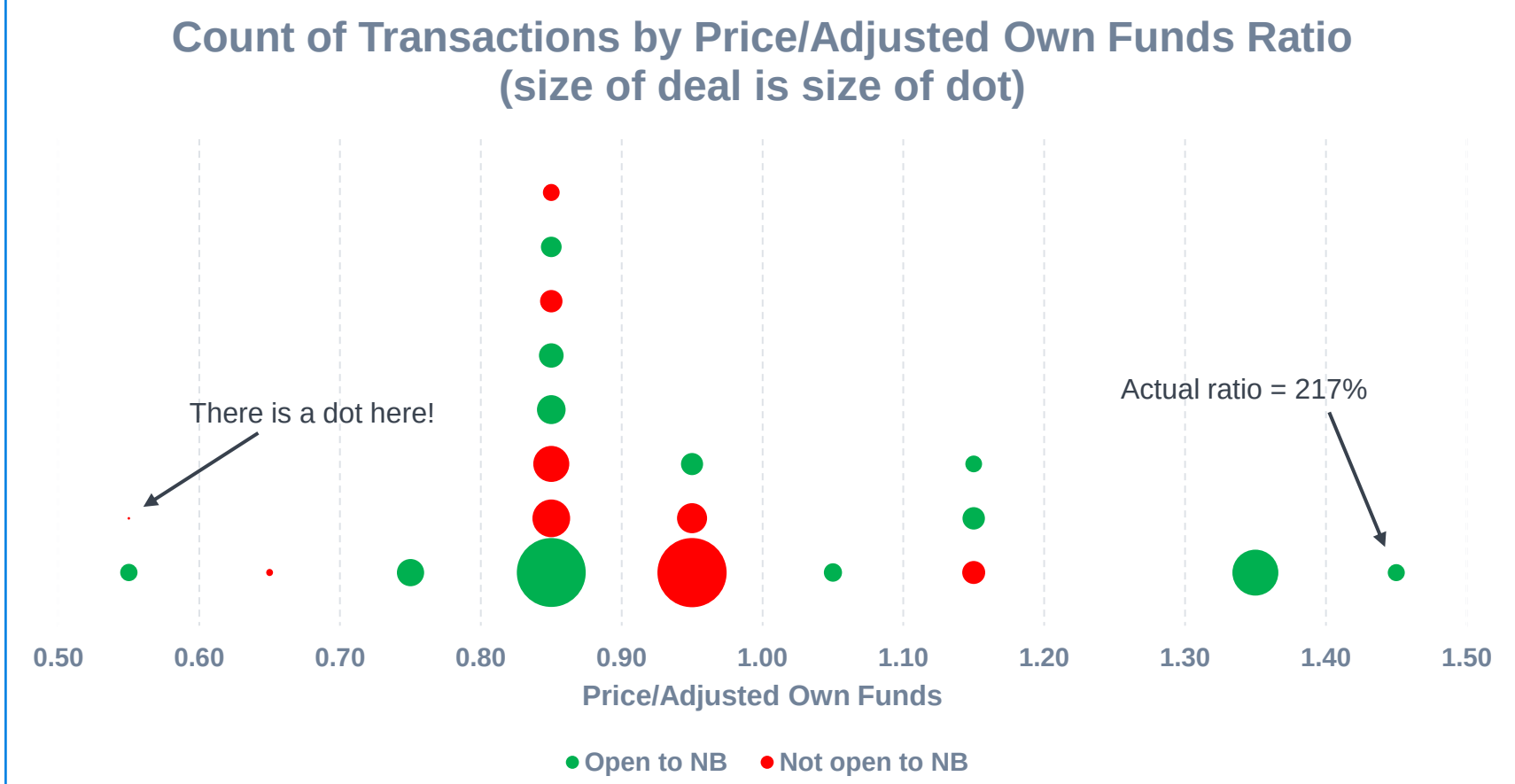
CTY	TARGET	BUYER	NB?	DATE	PRICE (P)	P / OF	P / OF'
RATIO CALCULATED							
UK	Rothesay Life plc (36% stake)	GIC and Mass Mutual	Yes	09/2020	£2,100m	0.95	1.36
UK	Quilter UK Heritage book	ReAssure	No	08/2019	£425m	1.10	1.10
Ireland	AXA Life Europe	Cinven	No	08/2018*	€925m	0.81	0.87
UK	ReAssure (10% stake)	MS&AD	No	01/2018	£315m	0.85	0.85
Denmark	Nordea Liv & Pension (45% share)	Norliv	Yes	12/2017	DKK 3.52 bn	0.56	0.74
Ireland	Generali PanEurope DAC	Utmost Ltd	Yes	12/2017	€286m	1.01	1.01
Italy	Popolare Vita SpA (50% stake)	Banco BPM SpA	Yes	11/2017	€535.5m	2.17	2.17
Ireland	Friends First Life	Aviva Ireland Ltd	Yes	11/2017	€146m	0.58	0.58
Ireland	AEGON Ireland plc	AGER Bermuda Holding Ltd	No	08/2017	€195m	0.81	0.81
Ireland	Laguna Life DAC	Monument Assurance DAC	No	08/2017	€25.6m	0.67	0.67
France	Antarius S.A. (remaining 50% stake)	Sogecap SA	Yes	02/2017	€500m	1.15	1.15
Denmark	Nordea Liv & Pension (25% share)	Foreningen NLP	Yes	11/2016	DKK 2.16 bn	0.62	0.81
Ireland	Union Heritage Life	Harcourt Life Assurance	No	08/2016	€3m	0.58	0.58
Italy	Old Mutual Wealth Italy SpA	Phlavia Investimenti S.r.l.	Yes	08/ 2016	€278m	1.16	1.16
RATIO DISCLOSED							
UK	LV=	Bain Capital Credit	Yes	12/2020	£530m	N/A	0.87
Italy	Aviva Vita	UBI Banca	Yes	11/2020	€400m	N/A	1.00
UK	Reassure Group	Phoenix	No	12/2019	£3,200m	N/A	0.91
UK	Standard Life Assurance	Phoenix	Yes	02/2018	£2,930m	N/A	0.84
UK	L&G (Heritage business)	ReAssure	No	12/2017	£650m	N/A	0.99
UK	Abbey Life Assurance	Phoenix	No	09/2016	£935m	N/A	0.89
UK	AXA Wealth Pensions	Phoenix	Yes	05/2016	£375m	N/A	0.85

OF' = UT1 + DTA

* This transaction was terminated in H2 2020

Recent Life Insurance Business Transactions

Count of Transactions by Price/Adjusted Own Funds Ratio



Size of dot is size of deal by value of 'Price times Ratio'

Observations

- 80% to 90% ratio seem most common.
- Ratios bigger than 1 tend to be open to NB
- Smaller deals tend to result in deviate further from a ratio of 1.

Alternative Solvency II based value metrics

Are there more suitable metrics?

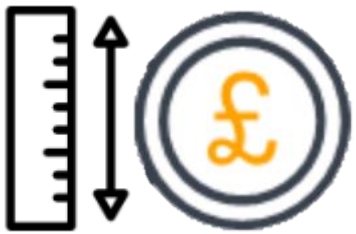
Alternative Solvency II Based Value Metrics

UT1 + DTA

- Market Consistent
- Sourced directly from the QRTs
- Excludes certain types of capital repayable before ordinary shareholders

Solvency II Adjusted Own Funds (S2AOF)

- Similar to UT1 + DTA
- Requires some extra assumptions compared to UT1 + DTA
- No allowance for value of future NB



Solvency II Embedded Value (S2EV*)

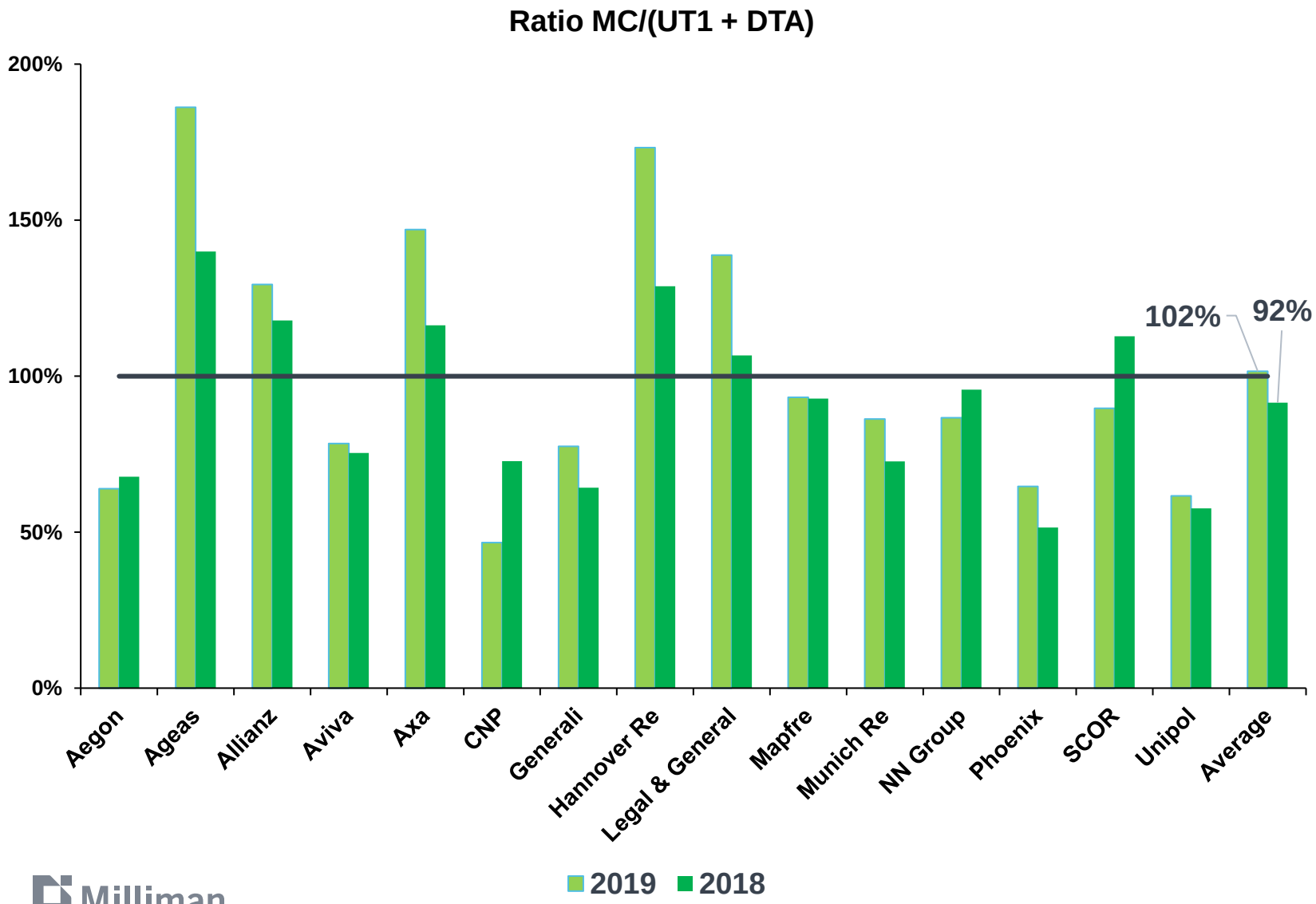
- Real-world
- Requires some extra assumptions compared to S2AOF
- No allowance for value of future NB

Solvency II Appraisal Value (S2AV*)

- Similar to S2EV*
- Requires some extra assumptions compared to S2EV*
- Allowance for value of future NB

S2EV* and S2AV* are used to reflect the fact that these metrics have been calculated mainly using public data and hence approximations are necessary

Comparison to Market Capitalisation: UT1 + DTA

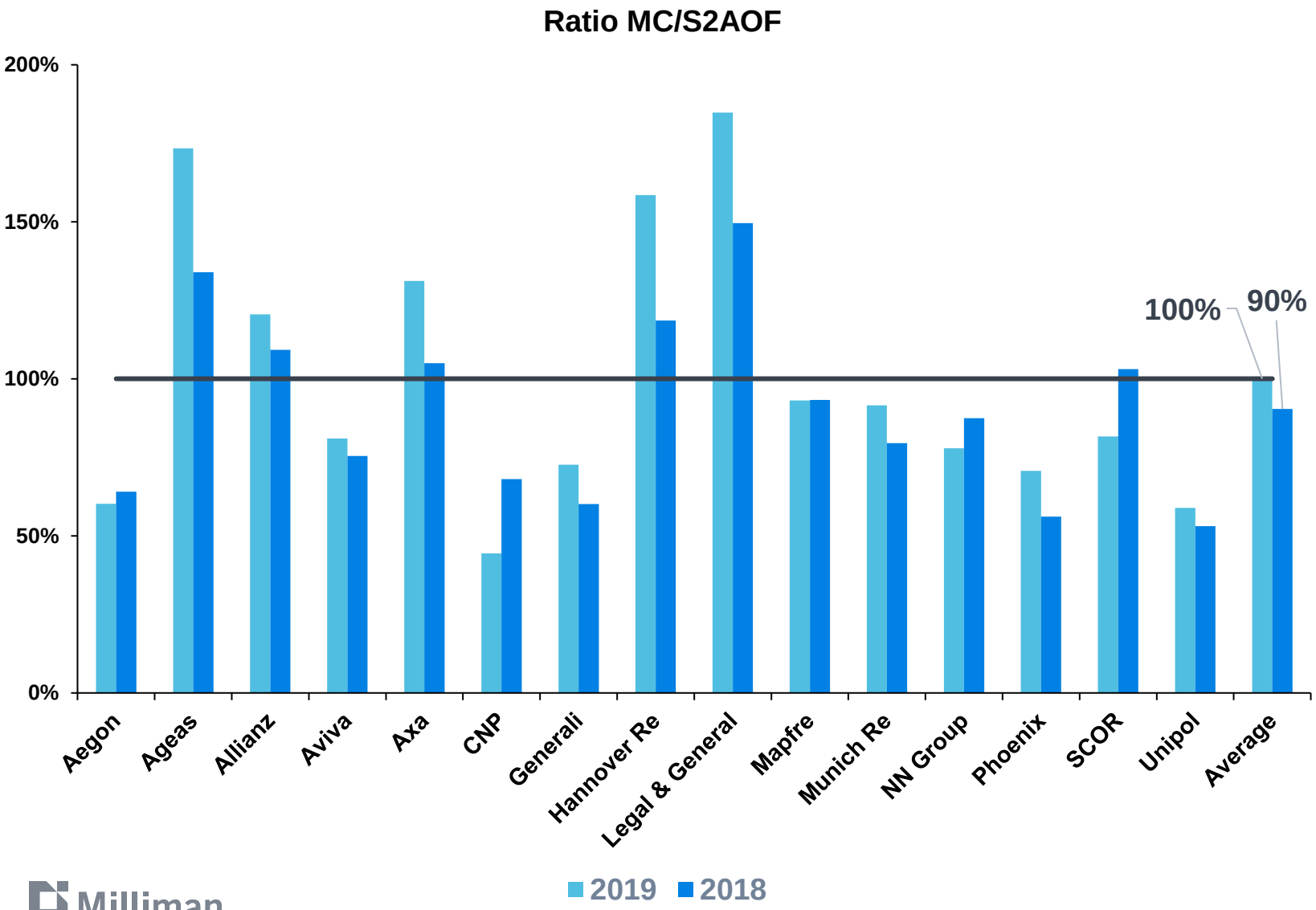


Formula

- UT1 + DTA reported in SFCR

Statistic	2019	2018
Simple Av.	102%	92%
Min	47%	51%
Max	186%	140%
IQR	71%-134% (63%)	70%-115% (44%)

Comparison to Market Capitalisation: S2AOF

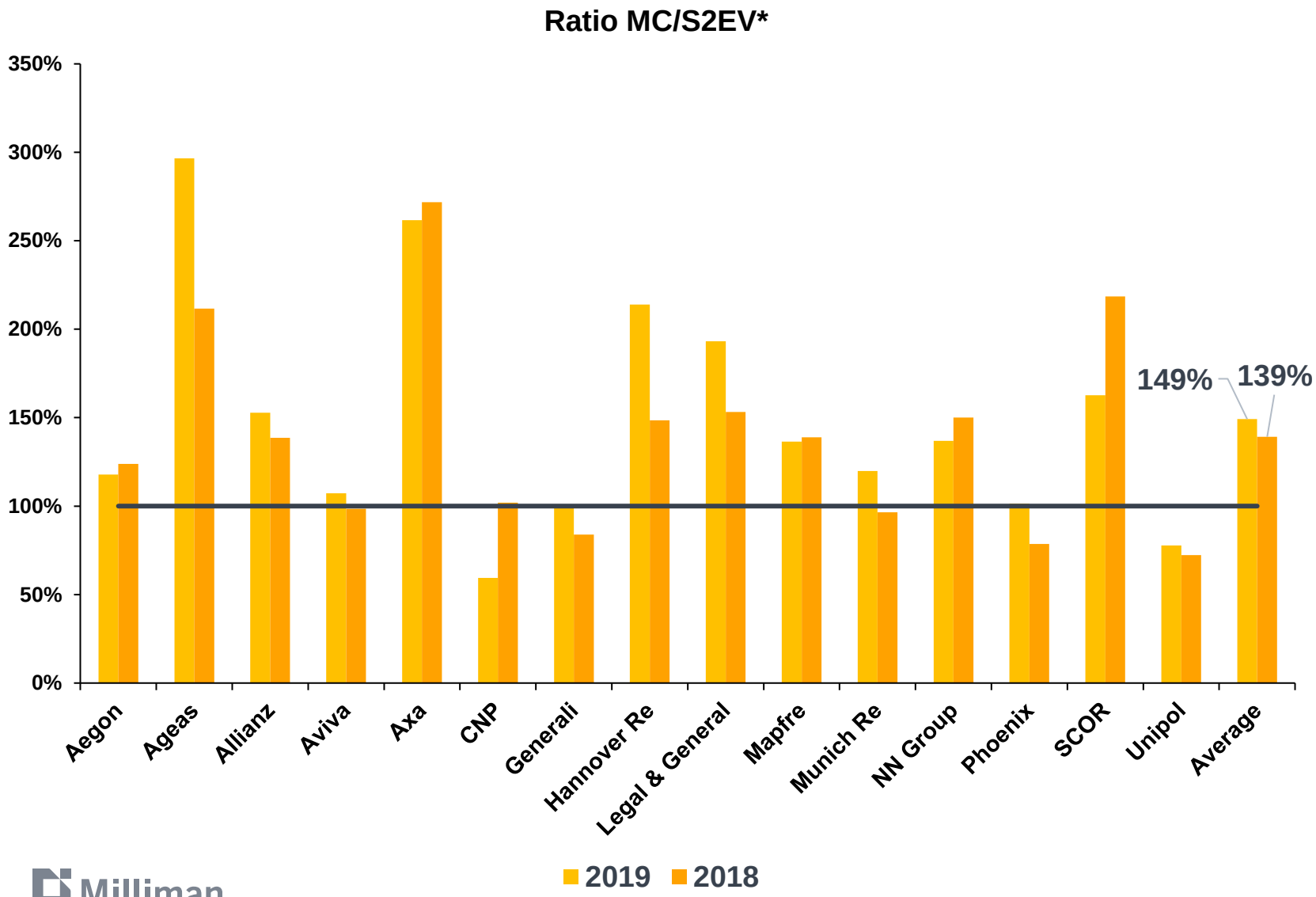


Formula

- UT1 + DTA
  + Foreseeable dividends
  + RFF Restriction
  + RM less TMTP (net of tax)
  - Ratioed (Gross) RM

Statistic	2019	2018
Simple Av.	100%	90%
Min	44%	53%
Max	185%	150%
IQR	72%-126% (54%)	66%-107% (41%)

Comparison to Market Capitalisation: S2EV*

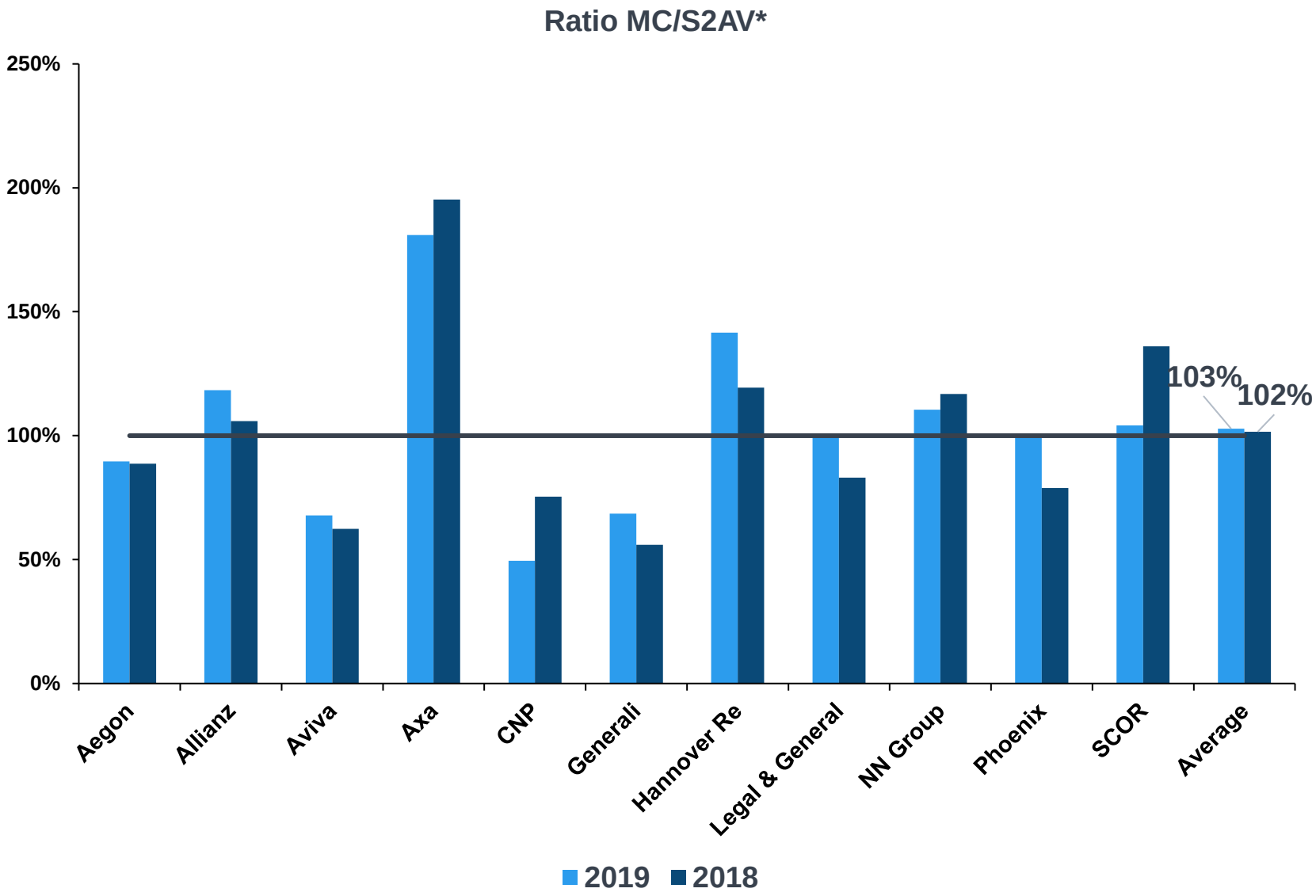


Formula
▪ UT1 + DTA
+ Foreseeable dividends
+ RFF Restriction
+ RM less TMTP (net of tax)
+ SH return on risk assets (net of tax)
- Cost of Capital*

Statistic	2019	2018
Simple Av.	149%	139%
Min	59%	72%
Max	297%	272%
IQR	104%-178% (74%)	98%-152% (54%)

* Cost of capital includes cost of holding the SCR (including target capital buffer), and RM less TMTP

Comparison to Market Capitalisation: S2AV*

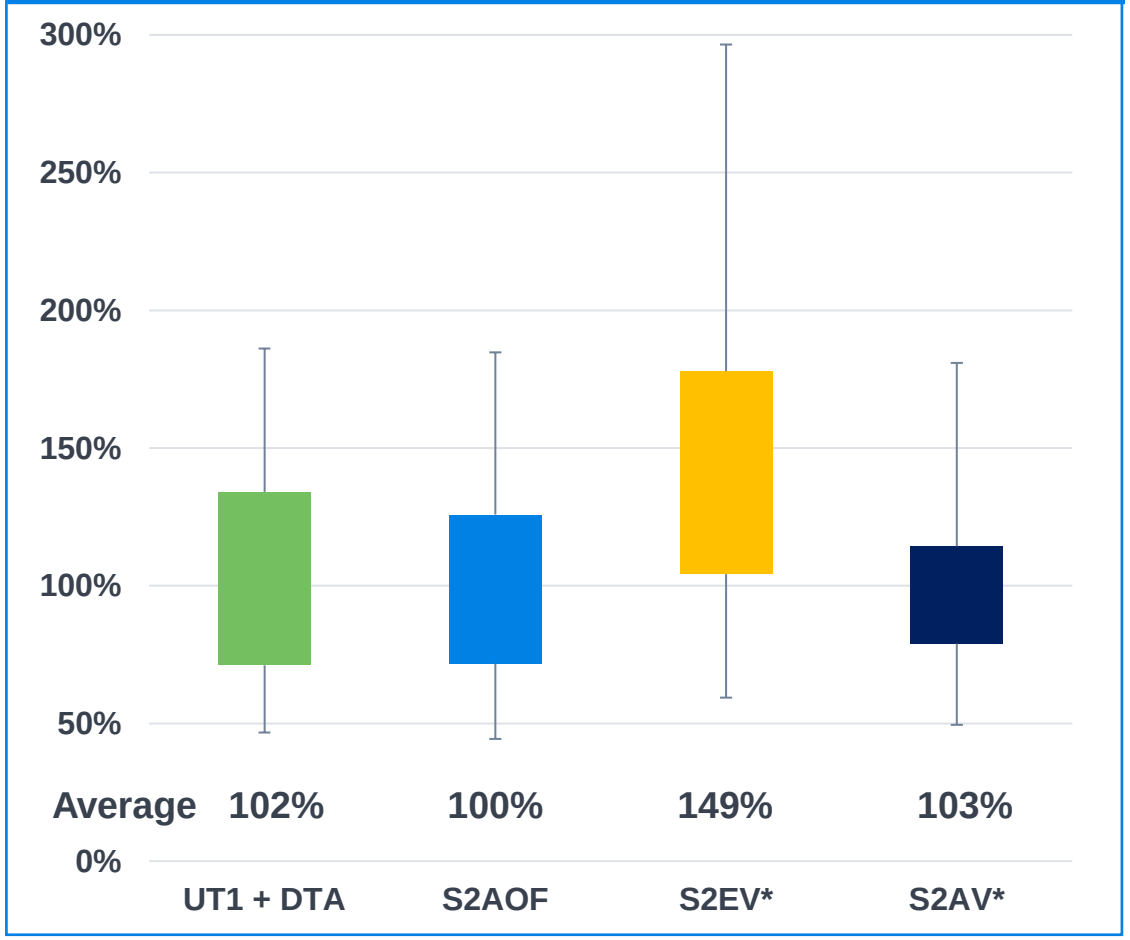


Formula
▪ S2EV* + one year VNB x 10

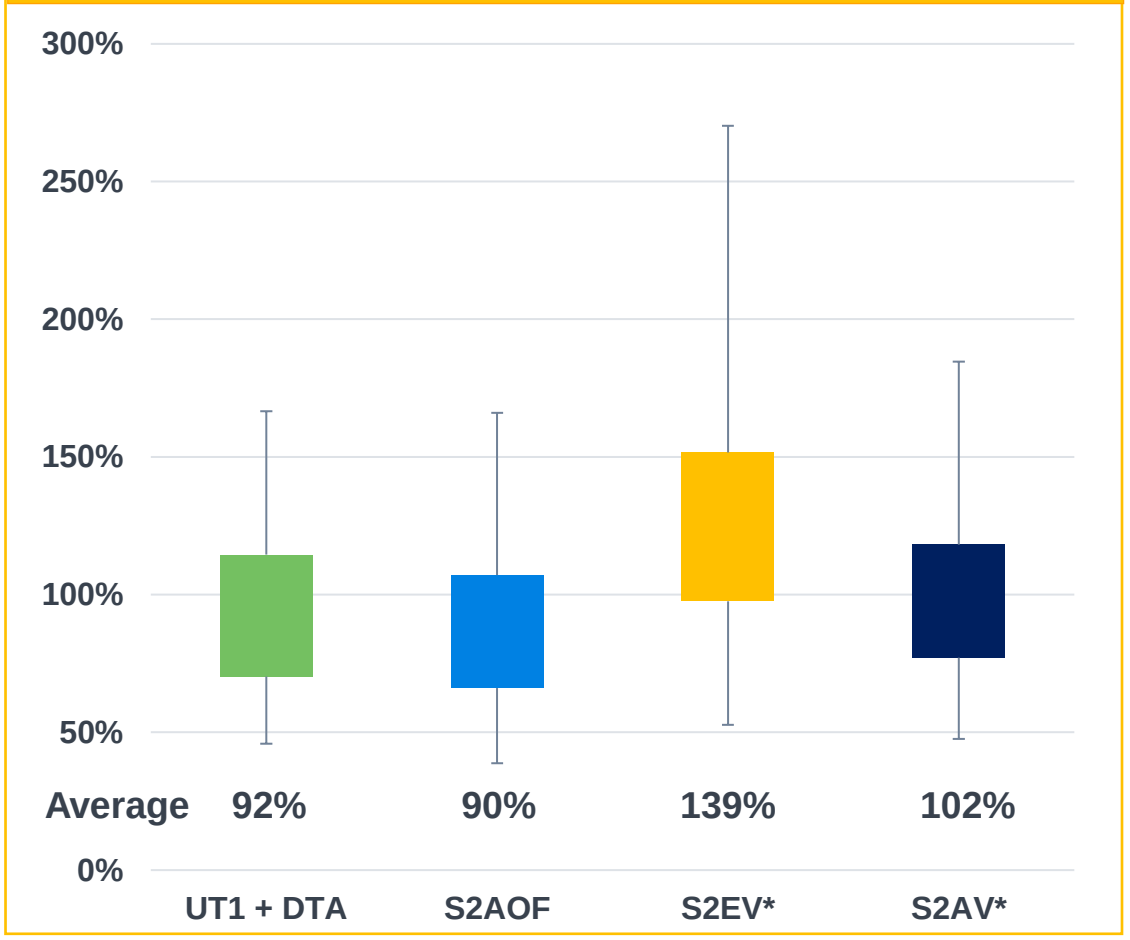
Statistic	2019	2018
Simple Av.	103%	102%
Min	50%	56%
Max	181%	195%
IQR	79%-114% (35%)	77%-118% (41%)

Summary of Metrics

Year-end 2019 Market Cap Ratios



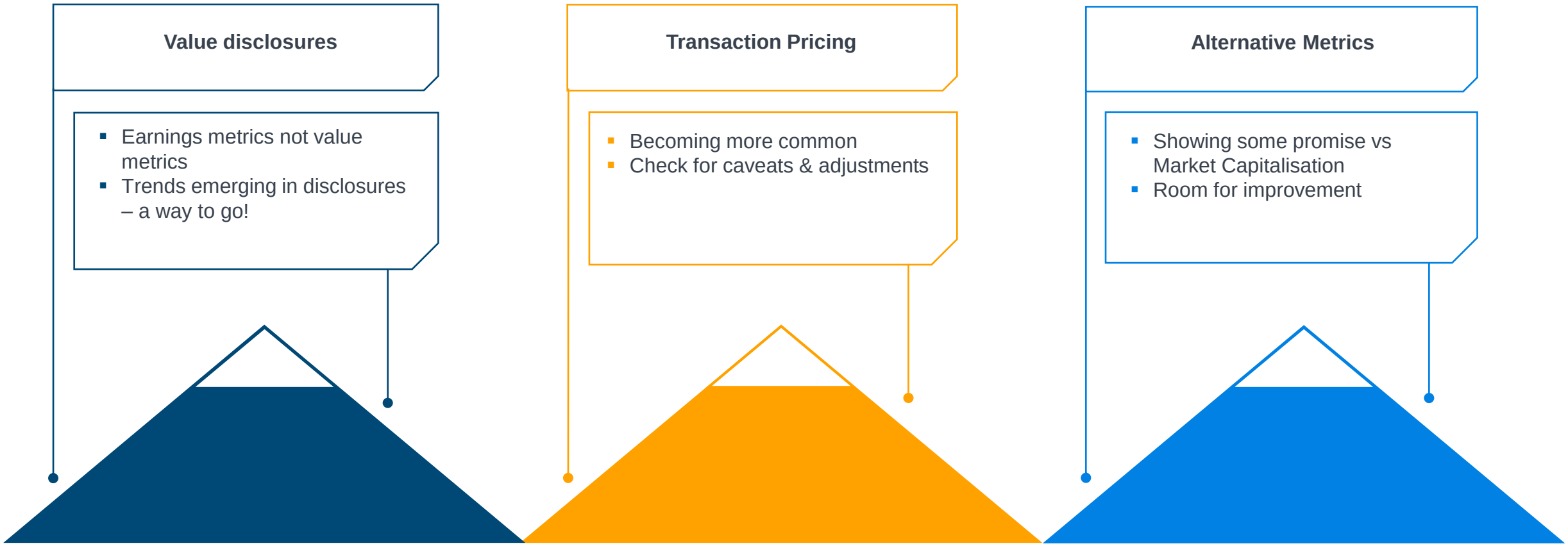
Year-end 2018 Market Cap Ratios



Summary

What are the key takeaways?

Key Takeaways



Q&A

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