# Welcome to Milliman's IFRS 17 Webinar

- The webinar will begin in a few minutes.

26th November 2020

# Virtual Meeting Best Practices

- Mute: As an attendee, you will be on mute automatically for the duration of the briefing.
- Video: Only presenters will be on video. Video is turned off for attendees.
- Q&A: Use the chat function within the meeting for questions.

# Agenda

| Topic | Presenter |
|---|---|
| Welcome and recent IFRS 17 Developments | Andrew Kay |
| Discount Rates | Freek Zandbergen |
| Risk Adjustment | Cormac Gleeson |
| Q&A session | All presenters |

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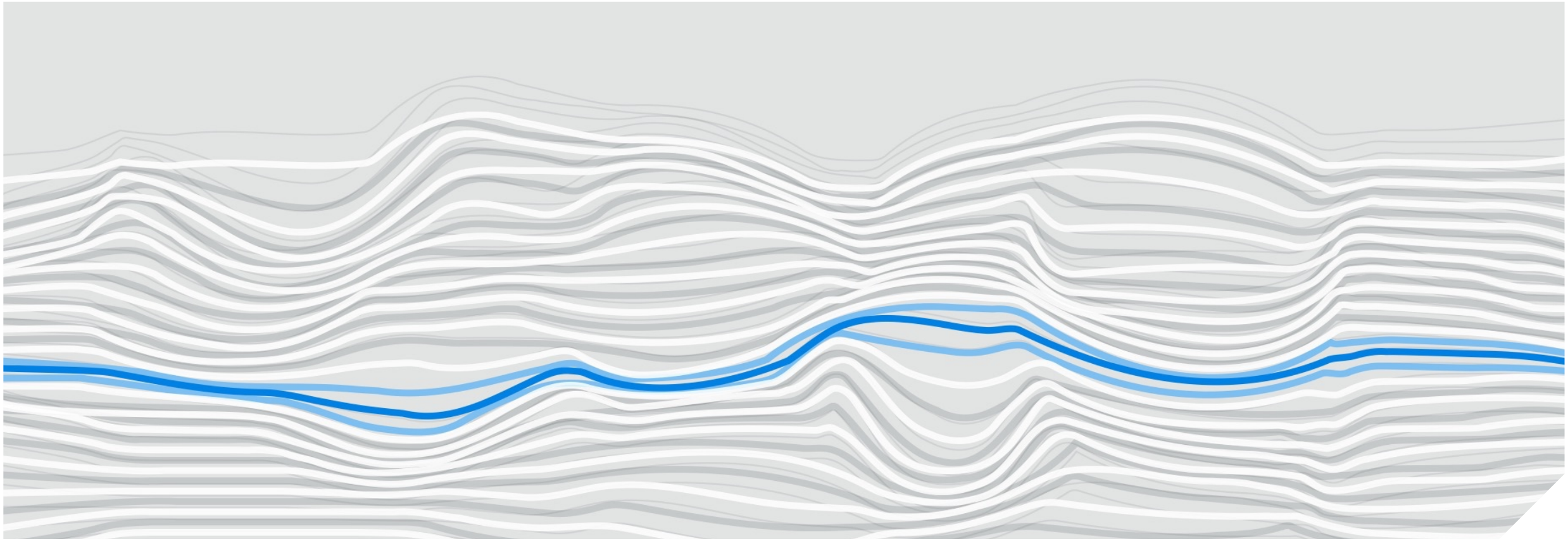
# IFRS 17 Recent Developments

Andrew Kay

26 NOVEMBER 2020



# Recent Developments

**IASB**

- Amended Standard – June 2020
- Addressed industry feedback

**EFRAG**

- Draft Endorsement Advice (‘DEA’)
- Open for comment until 29 Jan. 2021

**Industry**

- Implementation!

# EFRAG Draft Endorsement Advice

1. **Does IFRS 17 meet the IAS Regulation technical endorsement criteria?**
   - **Yes**…except for "the requirement to apply annual cohorts to intergenerationally-mutualised and cashflow matched contracts"
   - All other requirements of IFRS 17, on balance…characteristics of **relevance, reliability, comparability** and **understandability**
   - …raise no issues regarding **prudent accounting**, and …are not contrary to the **true and fair** view principle; and

2. **Is IFRS 17 conducive to the European public good?**
   - IFRS 17 would **improve financial reporting** and would reach an acceptable cost-benefit trade-off
   - No major adverse effect on the European economy or financial stability
   - **…Yes**

# Intergenerationally-mutualised and cashflow matched contracts – 7-9

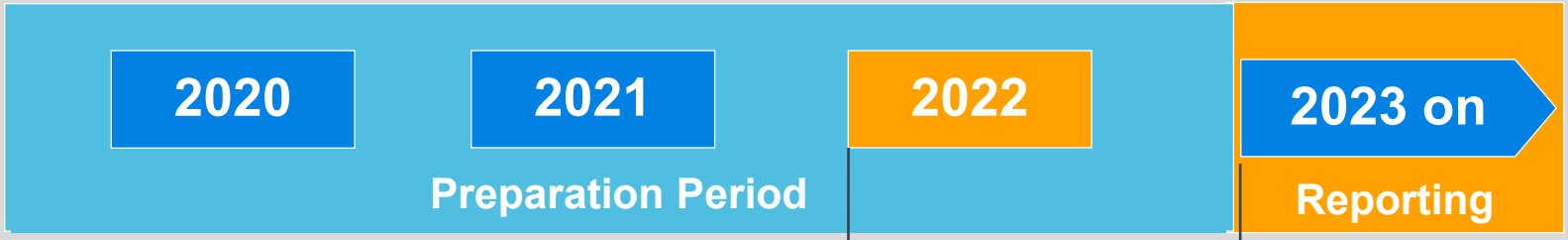
- The annual cohorts requirement will result in information that is **neither relevant nor reliable**

- Artificial allocation of cash flows…not reflective of **contractual terms** and **economic reality**

- Not conducive to the European public good because it:
  - (i) **adds complexity and cost** and **does not bring benefits** in terms of the resulting information,
  - (ii) may lead to **unintended incentives** to change the way insurers cover insurance risks and
  - (iii) may produce **pro-cyclical** reporting effects.

# Timeline

| | |
|---|---|
| **Effective date** | Deferred until 1/1/2023. Allows additional time for implementation. Early adoption possible. |
| **IFRS 9** | Can defer until 1/1/2023. Allows consistency of asset and liability treatment and reduce mismatches. |

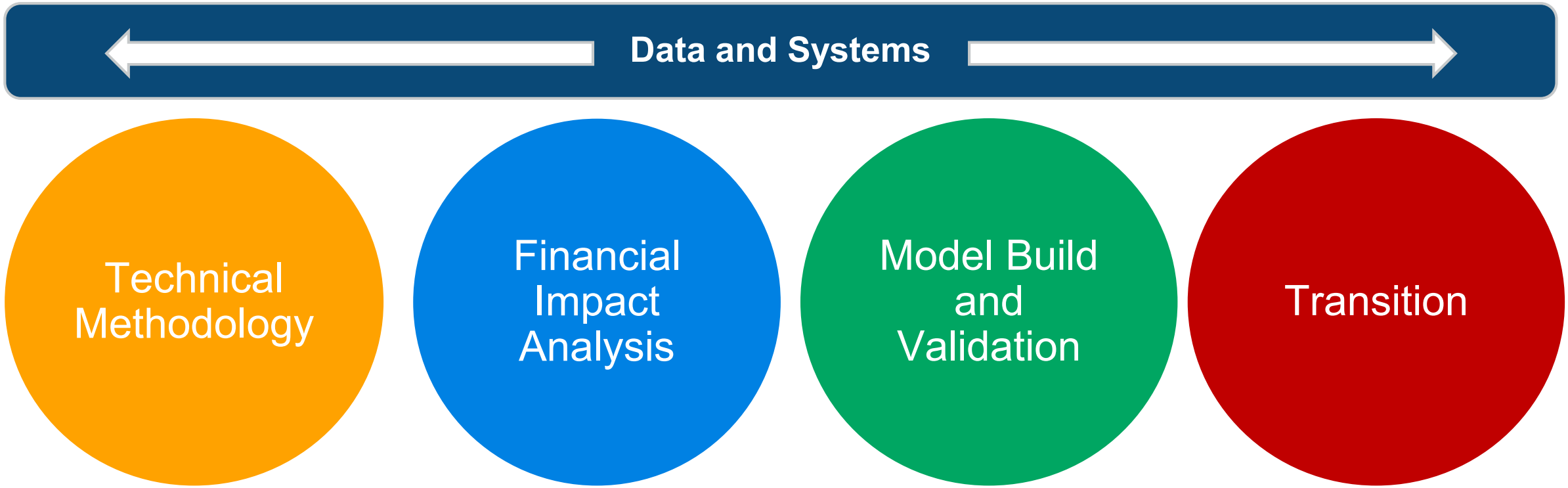



**Next steps**
Assess the impact of the amendments on your IFRS 17 implementation!

**Transition date**
Start of the comparative period

**Effective date**
IFRS 17 is effective from 1/1/2023

# Hot topics




- Discount rates
- Risk adjustment
- Contract classification
- Stochastic modelling

- P&L and Balance sheet impact
- Explaining the results
- Strategy

- Model accuracy?
- Analysis of movement

- Full Retrospective – impracticability?
- Fair Value
- Modified Retrospective

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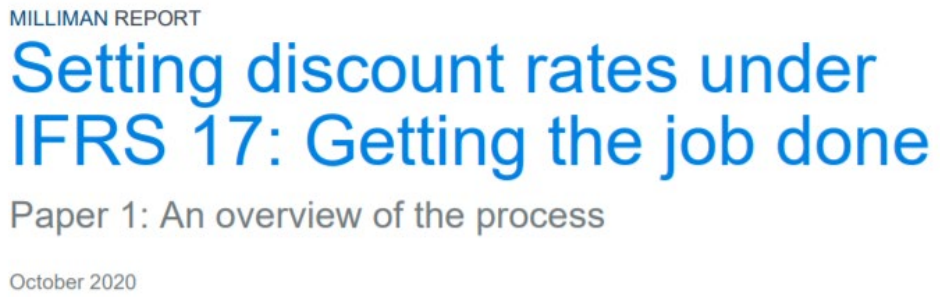
# IFRS 17 Discount Rates

Freek Zandbergen

26 NOVEMBER 2020

# Focus of today's session

- Introduction to the building blocks of the IFRS 17 discount curve
  - Bottom-up versus top-down approach
  - Risk-free rate and the extrapolation
  - Illiquidity premium
- More details around the options to calculate the illiquidity premium
  - Calculation of the illiquidity premium
  - Use of a theoretical reference portfolio versus own portfolio
  - How to reflect liability liquidity characteristics?
- Potential issues on ALM


MILLIMAN REPORT

Setting discount rates under IFRS 17: Getting the job done

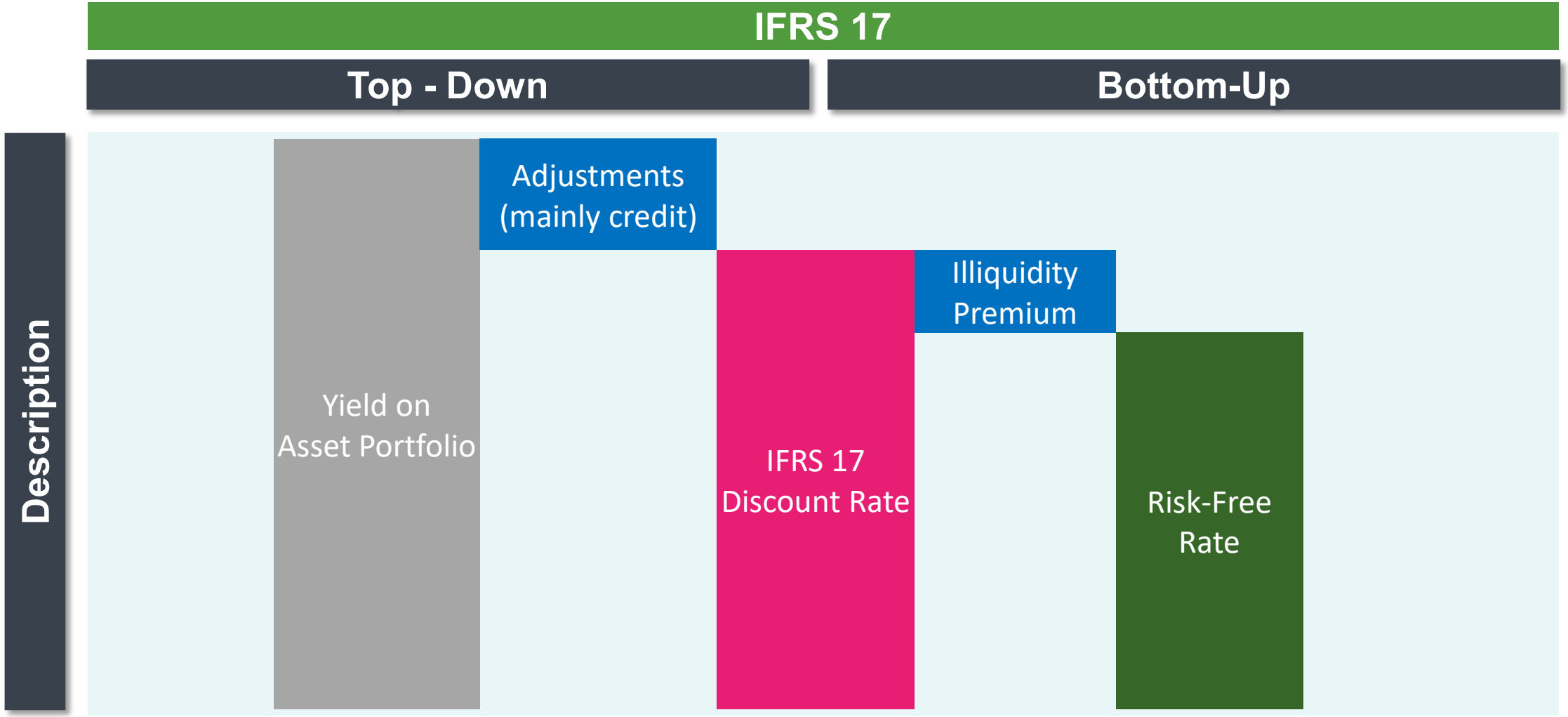
Paper 1: An overview of the process

October 2020

https://www.milliman.com/-/media/milliman/pdfs/2020-articles/articles/10-13-20-setting-discount-rates-under-ifrs17-v1.ashx

# Top-down versus Bottom-up approach

**Question 1**
What approach are you taking?



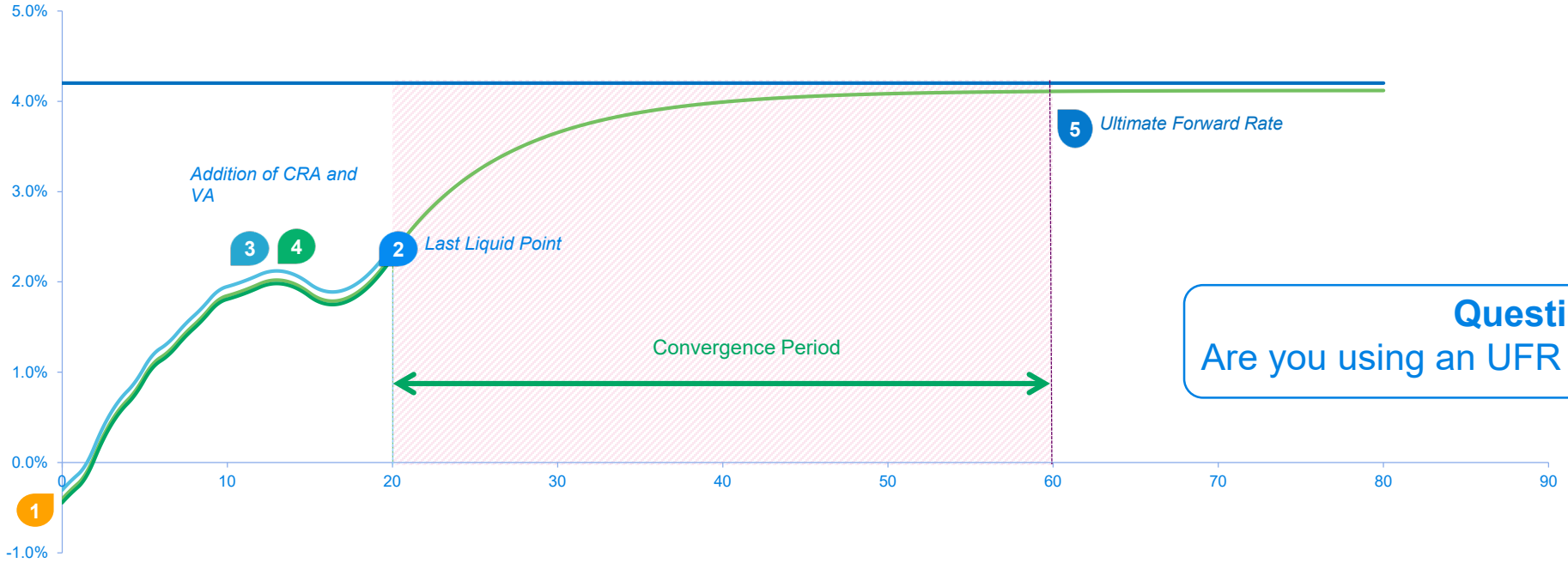
# Bridging from the bottom-up approach in Solvency II

## Construction of the yield curve

1. Risk-Free Rates
2. **Last Liquid Point**
3. Credit Risk Adjustment
4. Volatility Adjustment
5. Extrapolation : **UFR , convergence period : 4**0 years

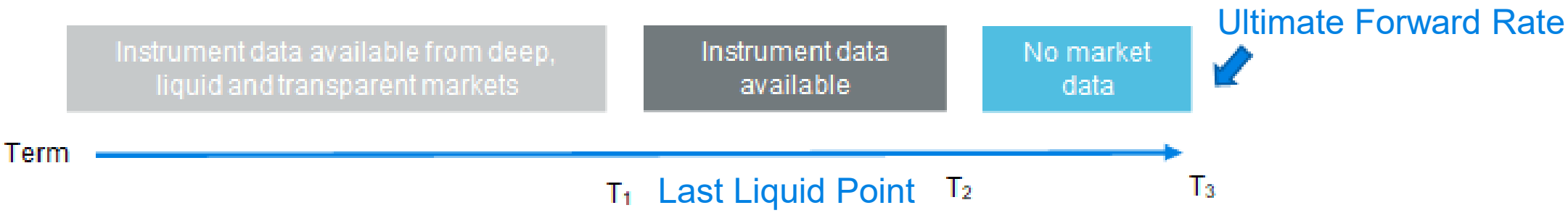
***Adapt Solvency II methods to IFRS 17***

2. Changes of the LLP
3. Remove the floor of 10 bps
4. Review of calculation assumptions and economic data
5. Long term vision of the rates

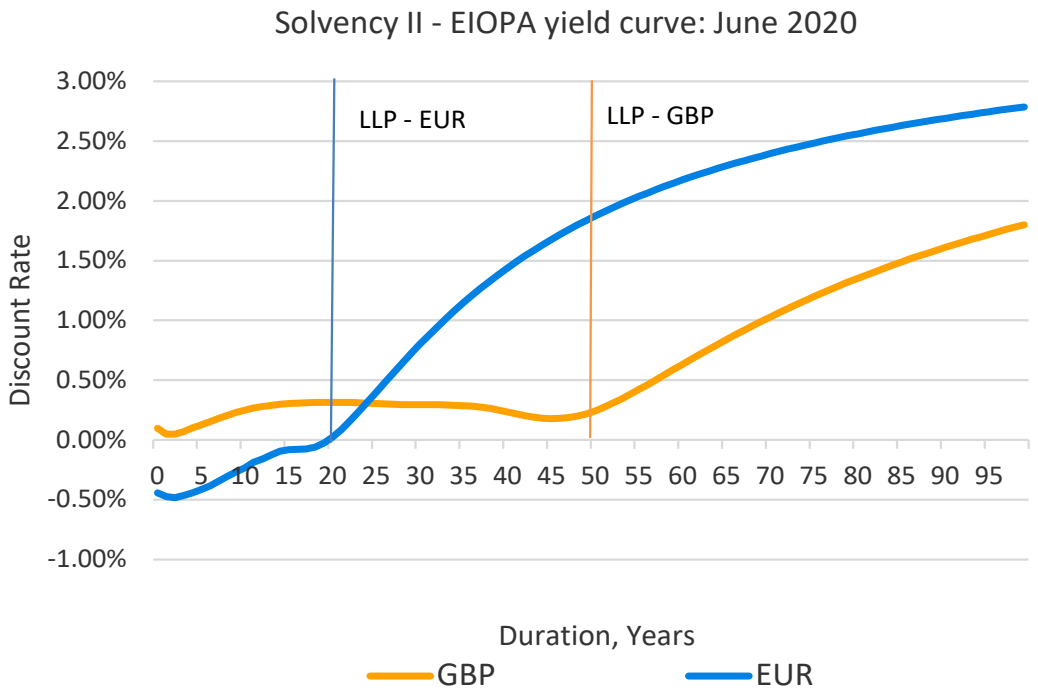



**Question 2**
Are you using an UFR in your IFRS curve?

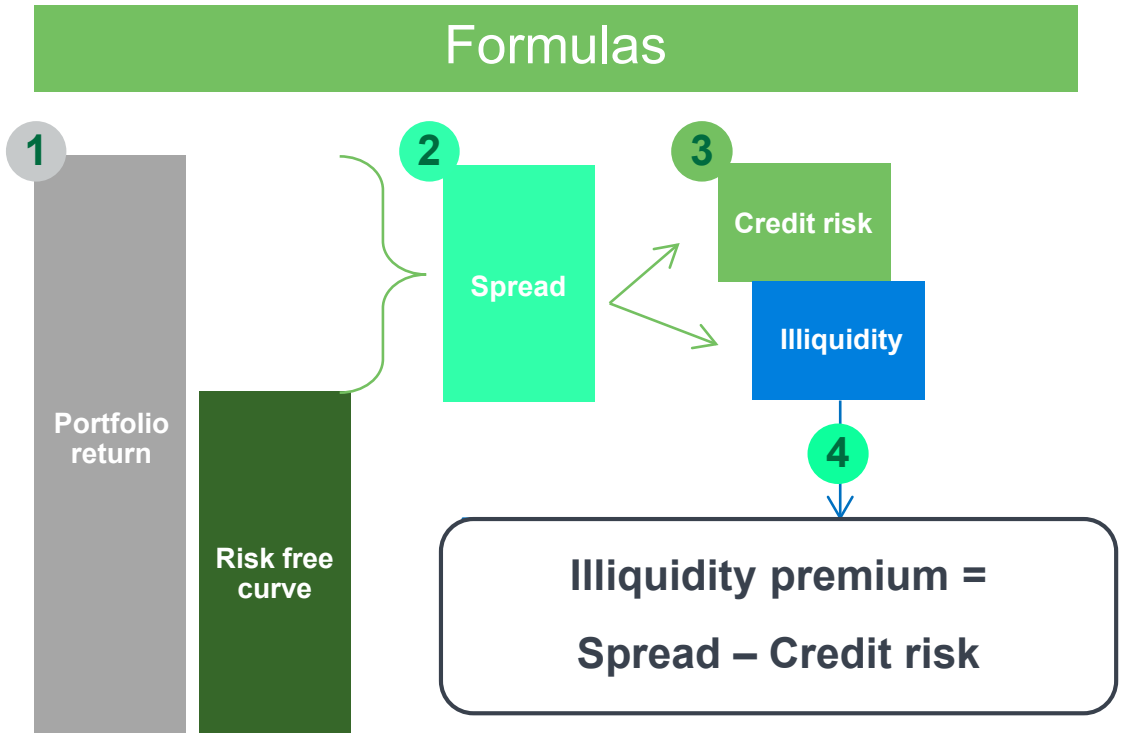
# Relevant items to determine the risk-free rates




- Available market data
- Assessment of last liquid point
- Assessment of the Ultimate Forward Rate
- Interpolation and extrapolation techniques



# Example on how to calculate the liquidity premium?




**The computation of the illiquidity premium relies on the following steps:**

1. Determination of a reference portfolio
2. Computation of the spread portfolio
3. Computation of the credit risk

# How to select a reference portfolio?

- In general, there are two main approaches to select an asset reference portfolio
  - Use of the own portfolio of the insurer's assets which back the liabilities on the balance sheet

    *(similar to the matching adjustment approach under Solvency II)*
  - Use of a theoretical reference portfolio, selected to provide a close match to the liabilities but unrelated to the actual assets held.

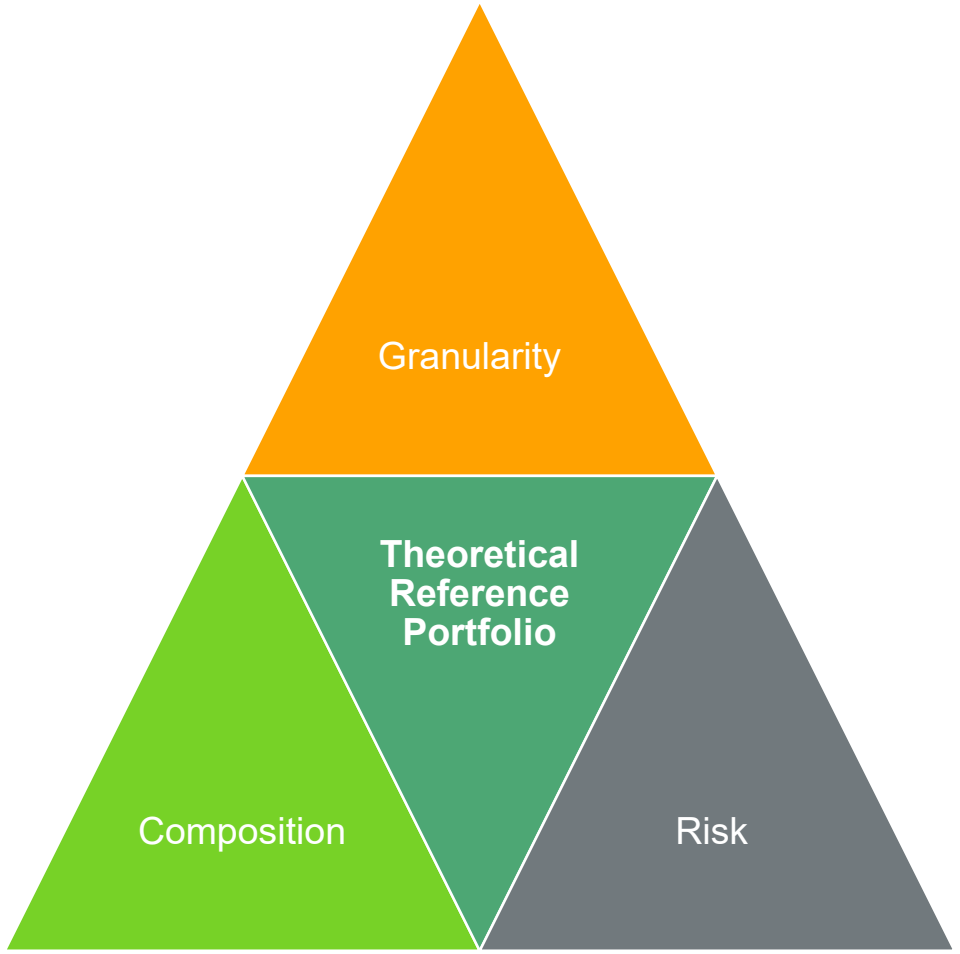
    *(similar to the volatility adjustment approach under Solvency II)*

**Question 3**
What assets are you using in your calculations?

# Use of own or a theoretical portfolio

High-level pro-con analysis

| Own Portfolio | Theoretical Reference Portfolio |
| --- | --- |
| • Data available | • More control |
| • Less volatility | • Operationally easier |
| • Asset-Liability matching | |
| • Reinvestment risk | • Liability matching |
| • Less objective | • Larger volatility |
| • Operationally onerous | • Potential negative investment spreads |
| • Special Assets | |



# How to reflect liability liquidity characteristics?

- Liquidity of liabilities is driven by contract characteristics, in particular around the termination or exit value (including tax constraints)

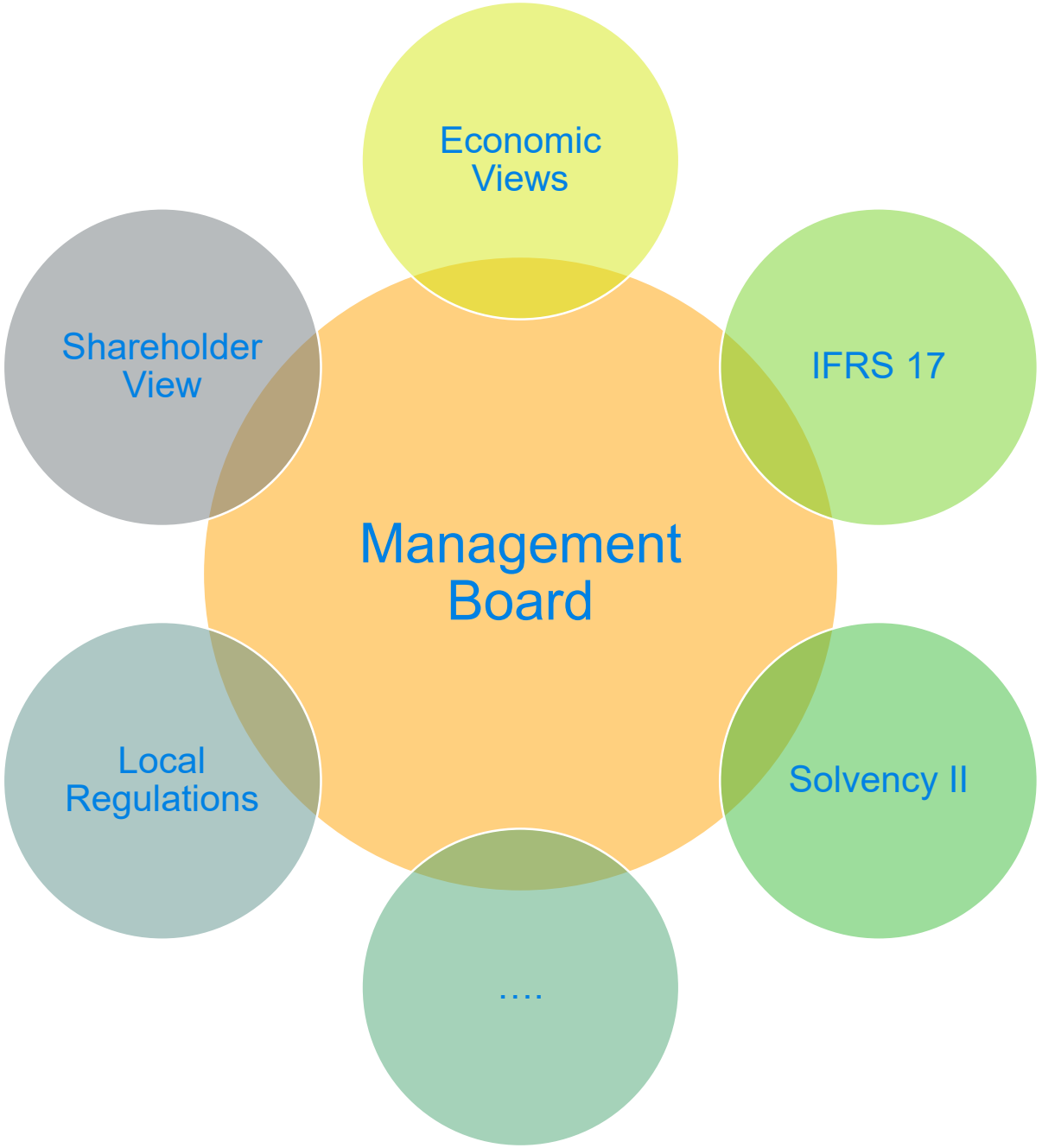
- When using the ‘own portfolio’
  - One should test and demonstrate that the own portfolio is reflecting the right level of illiquidity
  - Applying additional haircuts might result in a double haircut on the liquidity premium
  - Milliman has developed a liquidity management framework in response to this growing need

- When using a theoretical reference portfolio
  - At what granularity is the liquidity premium calculated?
  - When there is no explicit link between the liability characteristics, an application ratio is required
  - This can be a single or multiple ratios, depending on the diversity of the liabilities

# Potential ALM issues

- Importance of stable IFRS 17 income and equity
- (In)consistency with other frameworks
- Management incentives

**Question 4**
Worries around complexity due to different frameworks



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# IFRS 17 Risk Adjustment

## Deriving the Confidence Level

Cormac Gleeson

26 NOVEMBER 2020

# IFRS 17 Risk Adjustment

## Definition

- Reflects the compensation that the entity requires for bearing the uncertainty associated with the amount and timing of the cash flows that arises from non-financial risk
- Does not reflect risks that do not arise from the insurance contracts, such as operational risk.

## Familiarity

- Similar to Solvency II Risk Margin however:
- It is defined from the perspective of the entity's own view of risk, whereas the Risk Margin is based on the market's view of risk.
- The calculation methodology is not prescribed.

## Disclosure

- The Standard requires that: "An entity shall disclose the confidence level used to determine the risk adjustment for non-financial risk."

# IFRS 17 Risk Adjustment Characteristics

- IFRS 17 does not specify the estimation technique(s) used to determine the risk adjustment for non-financial risk
- However, The IFRS 17 Standard (Paragraph B91) outlines five key characteristics that any RA calculation approach should possess:

Risks with **low frequency and high severity** will result in higher risk adjustments for non-financial risk than risks with high frequency and low severity

For similar risks, contracts with a **longer duration** will result in higher risk adjustments for non-financial risk than contracts with a shorter duration

Risks with a **wider probability distribution** will result in higher risk adjustments for non-financial risk than risks with a narrower distribution

The **less that is known** about the current estimate and its trend, the higher will be the risk adjustments for non-financial risk

To the extent that **emerging experience** reduces uncertainty about the amount and timing of cash-flows, risk adjustments for non-financial risk will decrease and vice versa.

# Update to Milliman 2018 IFRS 17 preparedness survey

- Which methodology are you using to calculate the Risk Adjustment for IFRS 17?

a) Cost of Capital

b) Value-at-Risk

c) Conditional Tail Expectancy

d) Other

# Milliman 2018 IFRS 17 preparedness survey

- Based on 115 companies mostly in Asia and Europe

37% had already defined the methodology to calculate the Risk Adjustment

86% of the respondents do not have a solution to determine the confidence level of the Risk Adjustment

More than half rely on approaches which do not involve a confidence level as an input

41% expect the confidence level to be between 70%-80%, whereas 33% expect a range 90%-99%

# Overview of the Risk Adjustment calculation techniques

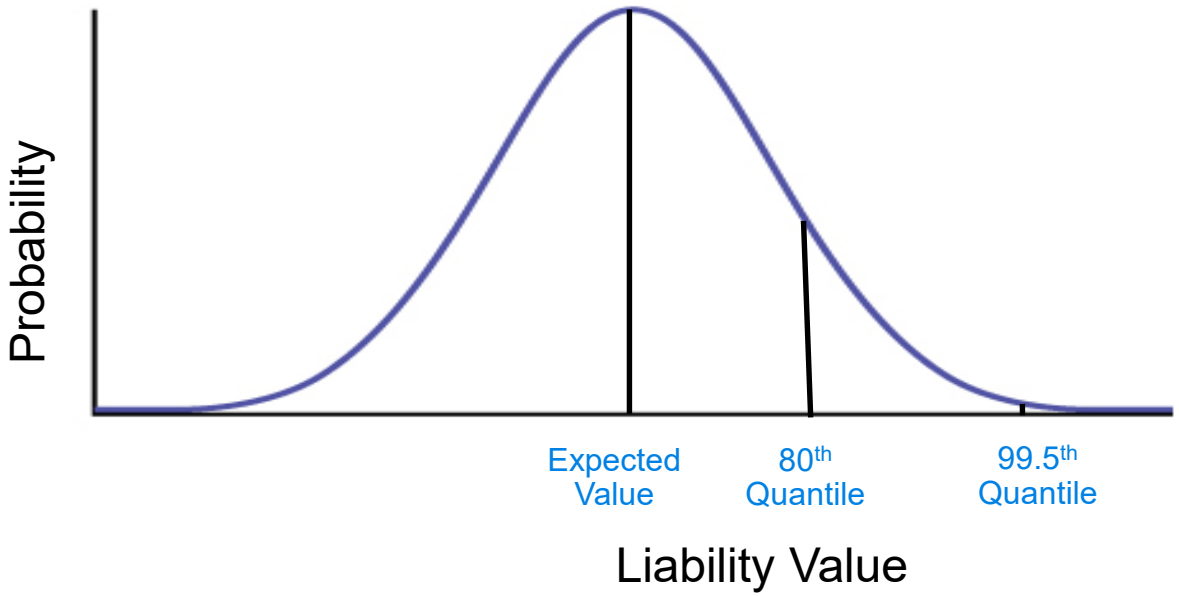
## Techniques: Cost of Capital

- Unless simulating a full distribution of profits, a company will require a dedicated approach to determine the confidence level associated with a given Risk Adjustment amount
  - eg. The Cost of Capital technique
- Risk Adjustment = Present value of future capital amounts multiplied by cost of capital rate
- Similar to Solvency II Risk Margin but there are key differences
  - Capital amounts and risks are not defined based on regulatory capital adequacy requirements
  - Cost of capital rate is not specified
  - Discount rates are not specified

# Overview of the Risk Adjustment calculation techniques

## Other Techniques

- Other techniques which produce a distribution of cashflows and so the confidence level of the Risk Adjustment can be calculated directly
  - eg. VaR, Conditional Tail Expectancy
- There are still several additional considerations, for example
  - Time horizon (one-year, multi-year, or lifetime)
  - Risk calibration
  - Difference in IFRS 17 Best Estimate cashflows to modelled cashflows
  - Additional model developments and governance

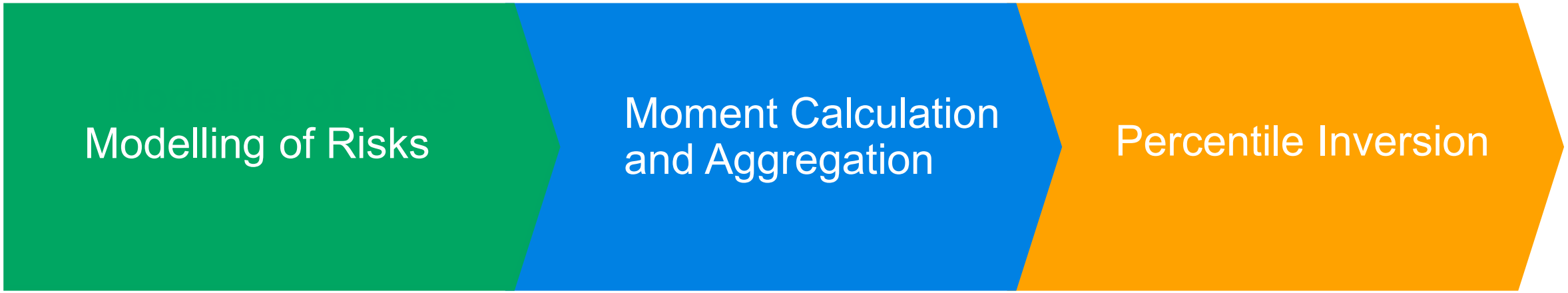


# Deriving the Confidence Level

# Closed-form solution approach

## Overview

- Full solution detailed in research paper
- The closed-form solution approach process is detailed below:



# Closed-form solution approach

## Modelling of Risks

- To illustrate our approach, we focus on mortality and longevity risks and describe a possible approach for modelling four main sources of risk:

**Mortality Level Risk**
Uncertainty in the initial mortality estimate

**Mortality Catastrophic Risk**
External event, that creates a one-off temporary increase in the mortality assumption

**Mortality Volatility Risk**
Sampling risk arising from the random outcomes of claims during each projection year

**Mortality Trend Risk**
The potential adverse development of the risk trend over time

- The risk taxonomy and modelling may differ in different entities' views and contexts

# Closed-form solution approach

## Moment Calculation and Aggregation

- Based on the specific risk modeling framework, the aim is to derive closed-form formulas for the calculation of the liability cash-flows variation $X$:
  - The moments estimated are
    - Order 1: expectancy $\mathbb{E}[X]$
    - Order 2: variance $Var(X) = \mathbb{E}[(X - \mathbb{E}[X])^2]$
    - Order 3: skewness $Skew(X) = \frac{\mathbb{E}[(X-\mathbb{E}[X])^3]}{Var(X)^{3/2}}$ allows one to measure the asymmetry of the risk distribution
- The derivation of the moments is split into two steps:

**1. Consider each risk separately**

Compute the moments of the total liability cash flows distribution subject to each risk

**2. Aggregation of those risks**

Derive the moments of the aggregate distribution in a closed-form manner, allowing for risk dependencies

# Closed-form solution approach

## Percentile Inversion

- The Value-At-Risk at ***confidence level $\alpha$*** can be approximated using the **Cornish-Fisher formula** as:

$$VaR_\alpha(X) \approx \mathbb{E}[X] + \sqrt{Var(X)}\left(\boldsymbol{z_\alpha} + \frac{1}{6}\left(\boldsymbol{z_\alpha^2} - 1\right)Skew(X)\right)$$

  - where
    - $z_\alpha$ is the $\alpha$-percentile of a standardized normal variable.
    - $Skew(X) = \frac{\mathbb{E}\left[(X-\mathbb{E}[X])^3\right]}{Var(X)^{3/2}}$ is the skewness

***Computation of the Value-At-Risk**, knowing the moments and the **confidence level**.*

  - *This expansion has been introduced by Fisher & Cornish (1960) ; an improved derivation is presented in Lee, Y. S., & Lee, M. C. (1992).*

# Life Company Case Study

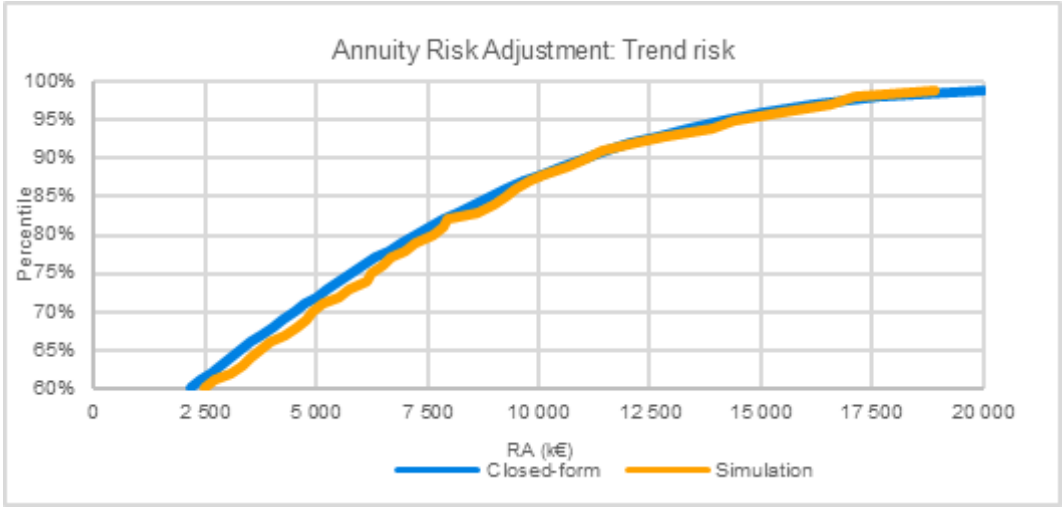
## Overview

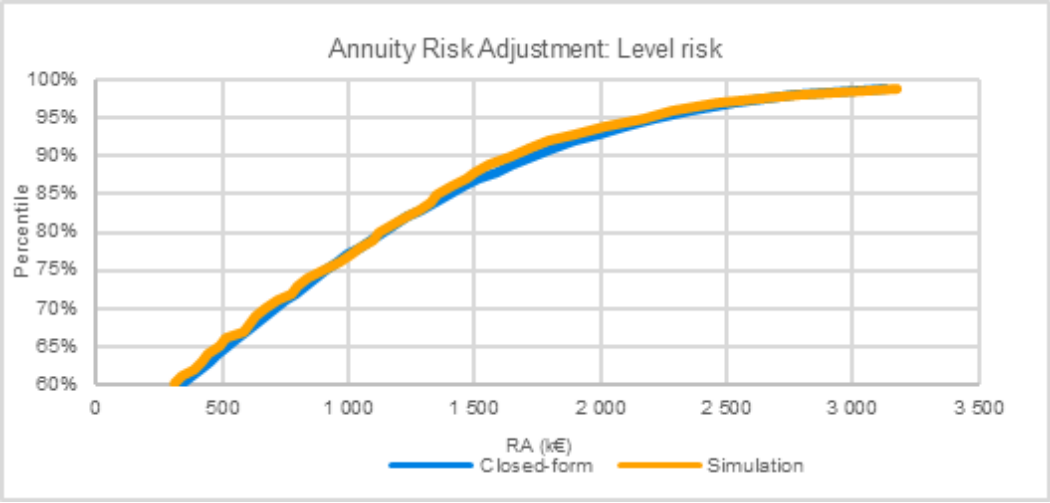
- The derivation of the percentile level is illustrated for three types of products:
  - Annuities in payment
  - Term Assurance (regular and single premium)
  - Savings
- For each product, the derivation of the Risk Adjustment using the closed-form methodology is compared to a full simulation approach.
- This allows an assessment of the accuracy of the closed-form approach and to identify its range of validity in terms of both percentile level and type of risk.
- For the purpose of illustration, we consider a multi-year approach with a 5-year risk horizon.

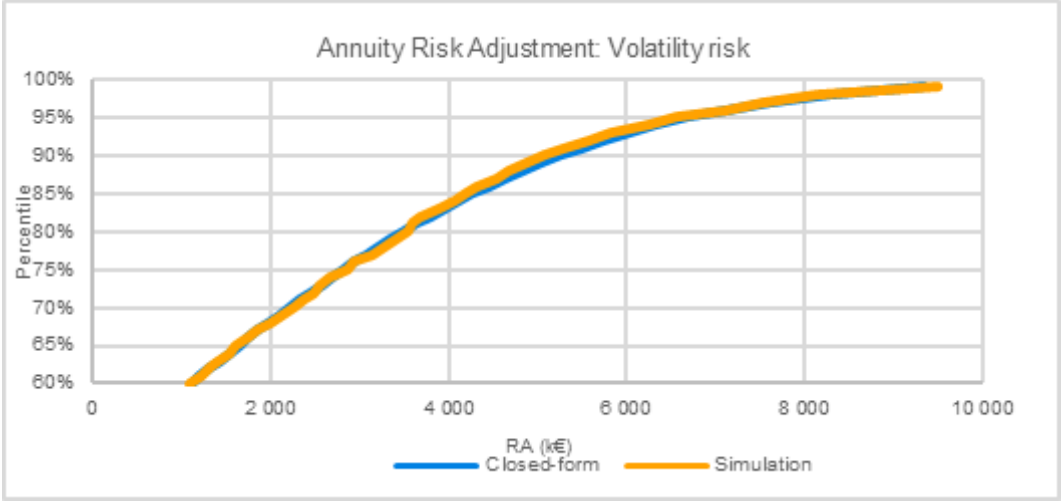
# Life Company Case Study

## Annuity product

- The closed-form approach provides the confidence level with good accuracy.



# Life Company Case Study

- What time horizon are you using to calculate the Risk Adjustment for IFRS 17?

a) One-year time horizon

b) Multi-year time horizon

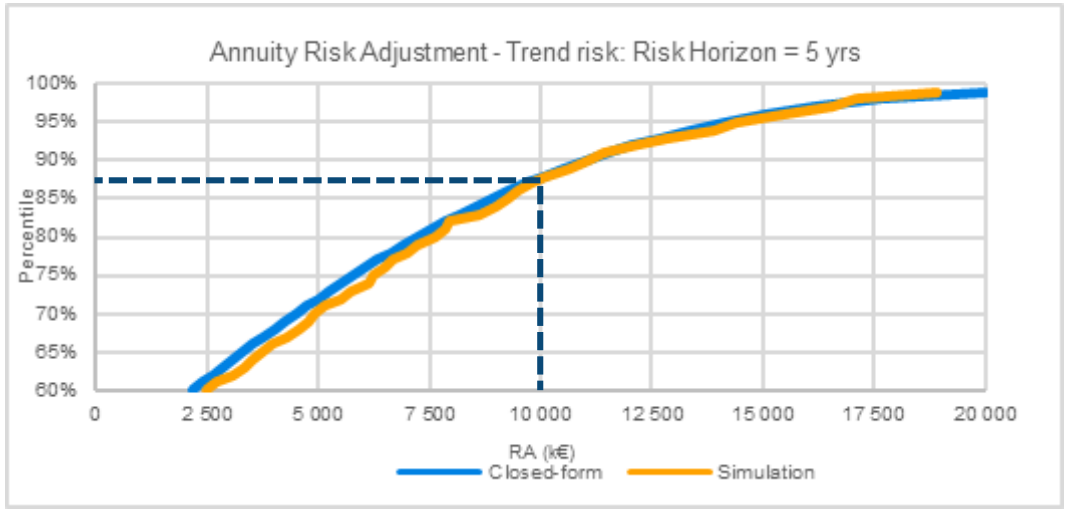
c) Long-term time horizon (eg. 15-years, 20-years)

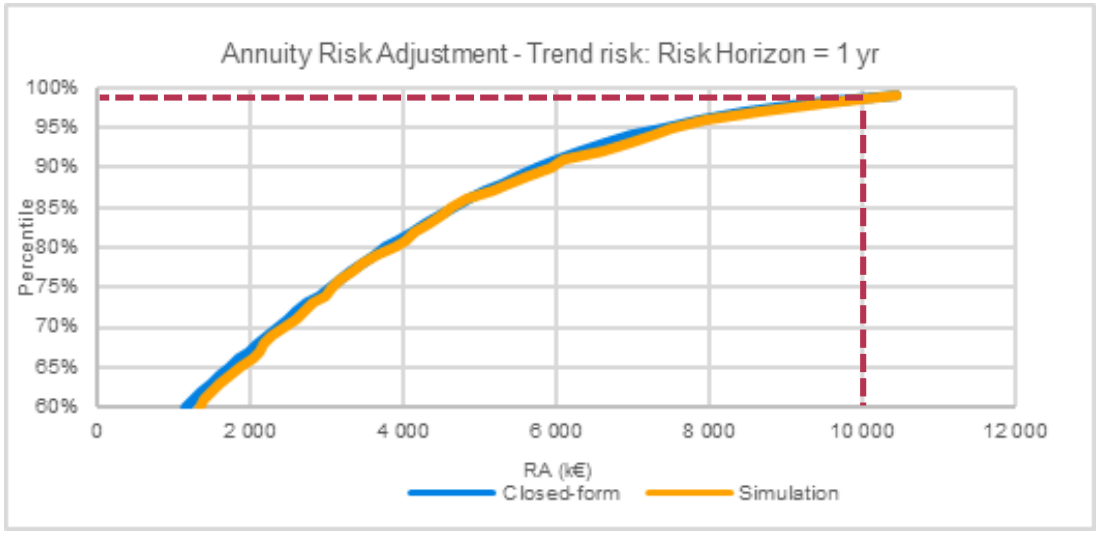
d) Ultimate time horizon

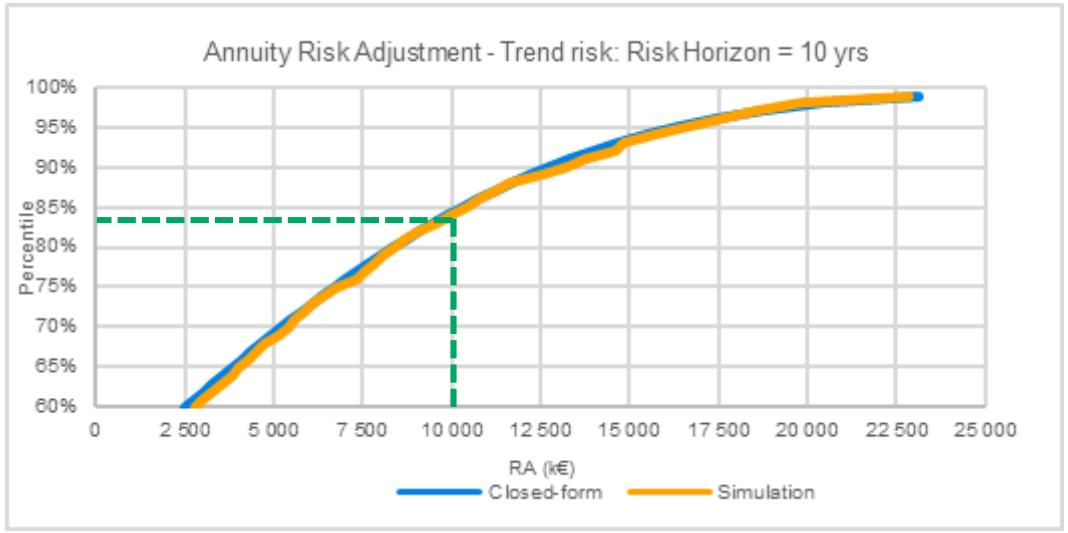
# Life Company Case Study

## Sensitivity to the risk horizon

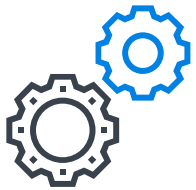
- A sensitivity analysis is performed with respect to the risk horizon.
- A good fit is observed compared to the simulated results, with some differences for the higher percentiles.



# Conclusions



Calculating the Risk Adjustment confidence level remains a **challenge** when a full distribution of cashflows is not available

**Pragmatic and scientific** methodologies can be utilised in order to derive the confidence level of the Risk Adjustment

Intrinsic link between the **confidence level and the time horizon** chosen for the Risk Adjustment

As part of this research, we have developed a **solution** in Milliman Mind

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# For more information:

**https://ie.milliman.com/en-gb/insurance/ifrs-17**

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# Q&A session