



**IAIS** 25  
YEARS

INTERNATIONAL ASSOCIATION OF  
INSURANCE SUPERVISORS

# Development of the Insurance Capital Standard (ICS)

13 May 2019

SAS Forum, Singapore



# Agenda

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- The case for a global Insurance Capital Standard (ICS)
- The Kuala Lumpur Agreement
- ICS Monitoring Period
- Identification of IAIGs
- ICS Development Principles
- ICS Design
- ICS Reference Method during the monitoring period
  - Market Adjusted Valuation (base yield curve, adjustments and MOCE)
  - Qualifying Capital Resources
  - Standard Method for Capital Requirement
- ICS Additional Reporting during the monitoring period
  - GAAP with adjustments valuation (GAAP+)
  - Other methods for the calculation of capital requirements (eg internal models)
- Key Dates
- Q&A Session

# Caveats

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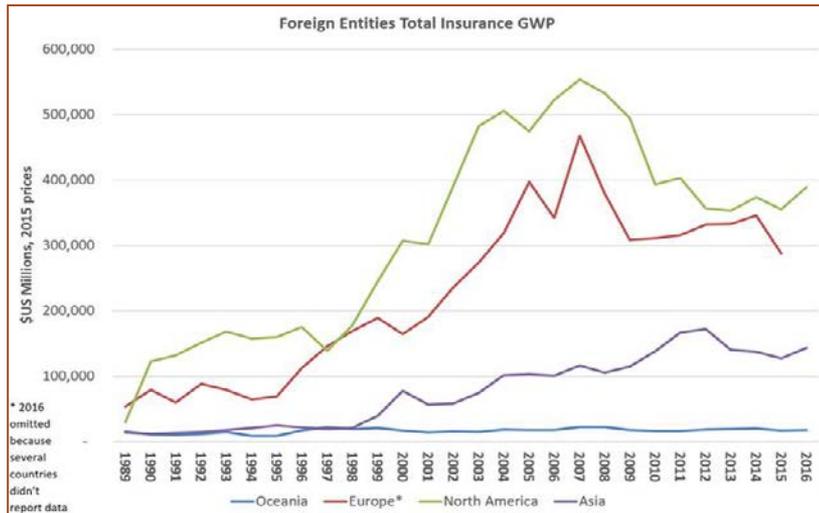
- This presentation provides an overview of the of the ICS, including changes and/or clarifications agreed for 2019 Field Testing.
- Decisions made for 2019 Field Testing do not prejudice the decisions that will be made for ICS Version 2.0 for the monitoring period.

# THE CASE FOR A GLOBAL ICS

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# The Case for a Global ICS

## Internationalisation of insurance groups



Source: OECD and Bank of England calculations

### Observations

- Increasing internationalisation over the last few decades
- For North America, the trends appear to have steadied after the financial crisis
- For Europe, the gross written premium by overseas insurers dipped from 2007 to 2009 but started to increase again from 2009

### Possibly Contributing Factors

- For wholesale general insurance and reinsurance, internationalization may be supported by the benefits from diversification
- Prolonged period of soft conditions in wholesale general insurance and reinsurance market led to mergers and acquisitions (M&As).
- Recent cross border M&As, and with talk of more to come, suggests the increase in the amount of business written by overseas companies might resume.

- Insurance markets have become more global over the past few decades
- However, no international standards exist for insurers and national frameworks remain highly divergent
- Banking regulators, in contrast, have been developing minimum banking capital standards for internationally-active banks since 1988

# The Case for a Global ICS

## Benefits of a global standard



### Industry & Policyholders

- Over time, **reduce multiple overlapping & conflicting local practices** in risk measurement
- **Reduce cost** for firms
- Promotes **better proposition** for policyholder



### Supervisors

- **Common language/ metric** for home & host supervisors to assess group solvency
- Enhance supervisory **cooperation**
- **Comparability of outcome** across jurisdictions
- Reduce **regulatory arbitrage**
- **Raise standards where they are weak**



### Investors & Rating Agencies

- Enables investors to assess and **compare solvency** of insurance firms competing internationally
- Enhance **market discipline**

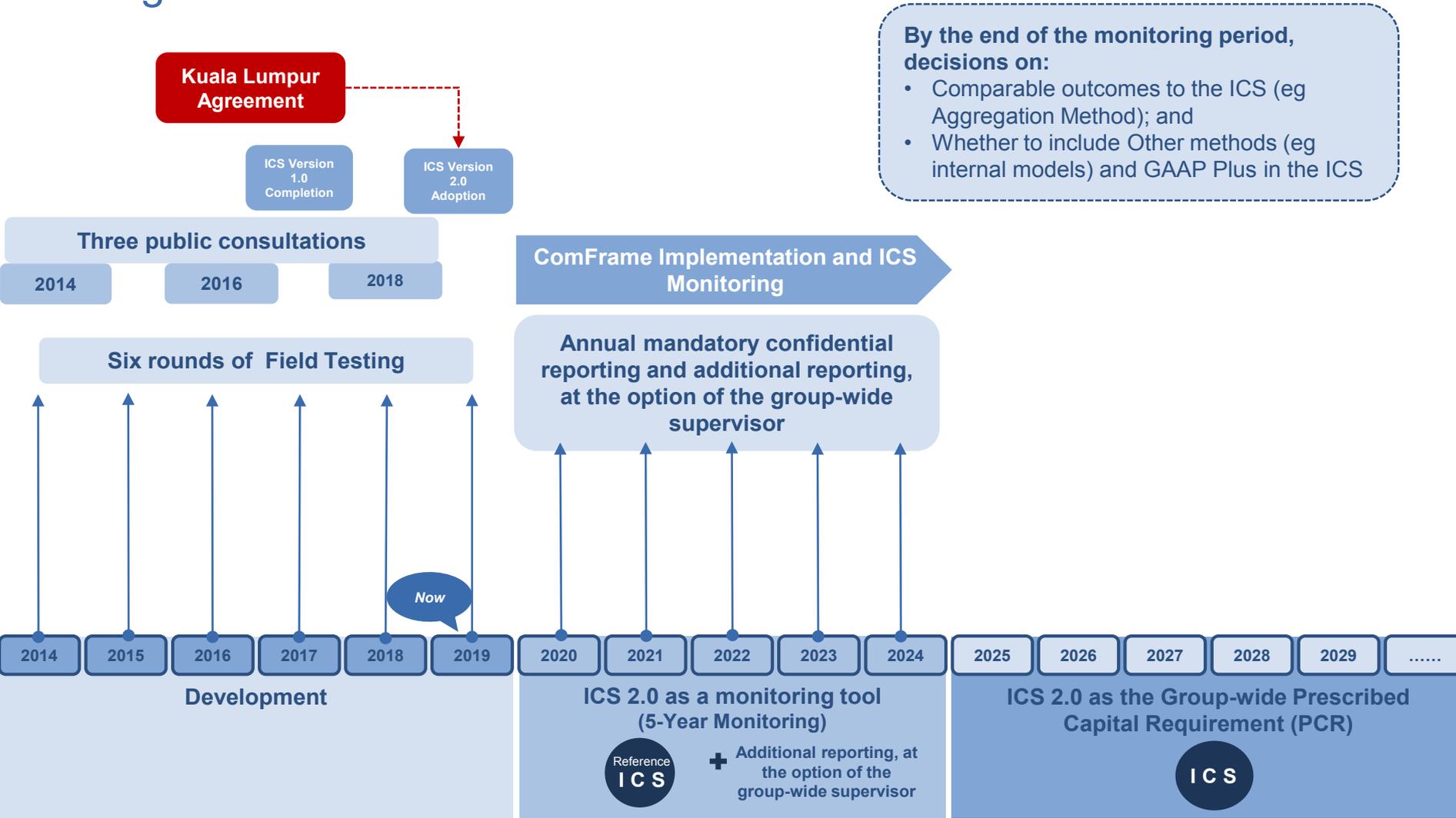


### Insurance Markets

- **Mitigate risk of spill over** of shocks in one part of the world threatening the safety and soundness and policyholder protection in other parts of the world

# ICS Timeline

## Big Picture



# KUALA LUMPUR AGREEMENT

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# Kuala Lumpur Agreement

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November 2017

- Implementation of ICS Version 2.0 will be conducted in two phases:
  - A five-year “monitoring period”, during which ICS Version 2.0 will be used for confidential reporting to the group-wide supervisors (GWS) and discussion in supervisory colleges.
  - The “implementation of the ICS as a group-wide PCR”.
- Implementation of ICS Version 2.0 will have two equally important components:
  - Mandatory\* confidential reporting by all IAIGs of a reference ICS; and
  - Additional reporting, at the option of the GWS, of ICS based on GAAP Plus valuation and/or other methods of calculation of the ICS capital requirement.

\* During the monitoring period, each group-wide supervisor will need to ensure the reporting of the reference ICS.

# Kuala Lumpur Agreement

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November 2017

- During the monitoring period, ICS will not be used as a prescribed capital requirement (PCR) (ie the ICS results will not be used as a basis to trigger supervisory action). This will allow GWSs and host supervisors to discuss and assess the ICS in comparison with existing group capital standards or calculations that are in development. The monitoring period will last for five years starting from 2020.
- Once implemented as a PCR at the end of the monitoring period, ICS Version 2.0 will be a measure of capital adequacy for IAIGs. It will constitute the minimum standard to be achieved and one which the supervisors represented in the IAIS will implement or propose to implement taking into account specific market circumstances in their respective jurisdictions.

# Kuala Lumpur Agreement

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November 2017

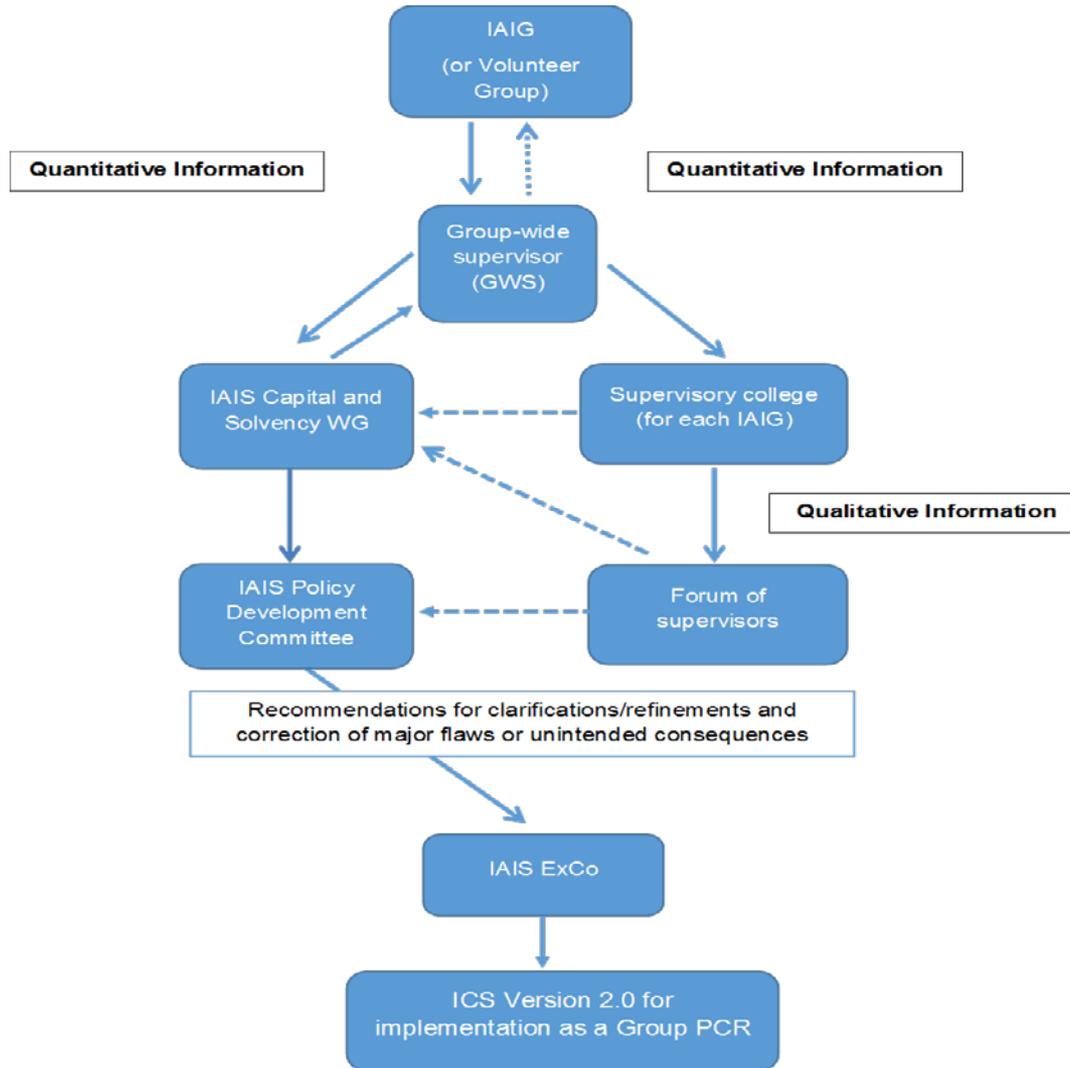
- The Kuala Lumpur Agreement acknowledged the development of the Aggregation Method within the United States. The Kuala Lumpur Agreement states that, *“The IAIS has agreed to collect data from interested jurisdictions relevant to the development of the aggregation method. Although this is not part of ICS Version 2.0, the IAIS appreciates the significance of this development, and so it will collect data from interested jurisdictions that will aid in the development of the aggregation method. Through this approach, the IAIS aims to be in a position by the end of the monitoring period to assess whether the aggregation method provides comparable, ie substantially the same (in the sense of the ultimate goal), outcomes to the ICS. If so, it will be considered an outcome-equivalent approach for implementation of ICS as a PCR.”*

# ICS MONITORING PERIOD

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# Monitoring Period

## Overview



# Monitoring Period

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## Possible changes during the monitoring period

- Feedback received on the consultation document indicates concerns that the ICS specifications may not change or evolve during the monitoring period based on the outcome of the data collection
- During the field testing period, changes were made each year and in some cases various options were tested. The monitoring period is intended to be a period of relative stability for the reference ICS and the additional reporting
- However, this **does not preclude** possible clarifications/refinements and correction of major flaws or unintended consequences identified during the monitoring period to improve the ongoing development of the ICS

# Monitoring Period

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## Confidentiality

- Feedback on the ICS Version 2.0 consultation documents indicates that stakeholders have concerns regarding:
  - Confidentiality of the data collection process during the monitoring period and the potential use of the confidential reporting by non-capital related IAIS working groups
  - The information supervisory colleges will receive (eg will colleges receive results regarding other IAIGs?). Some stated that access to results should be limited to the home supervisor rather than the supervisory college.
  - Public release of results by competitors (forcing others to disclose)
  - External pressures (rating agencies and analysts) to release results
- Throughout all Field Testing exercises, the IAIS has applied the highest standards to ensure the confidentiality of all collected data and will continue to do so in line with its commitment for confidentiality during the monitoring period
- The IAIS has engaged (and will continue to engage) with relevant parties to assess the concerns expressed and will develop supplemental confidentiality safeguards as needed

# Monitoring Period

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## Stakeholder engagement

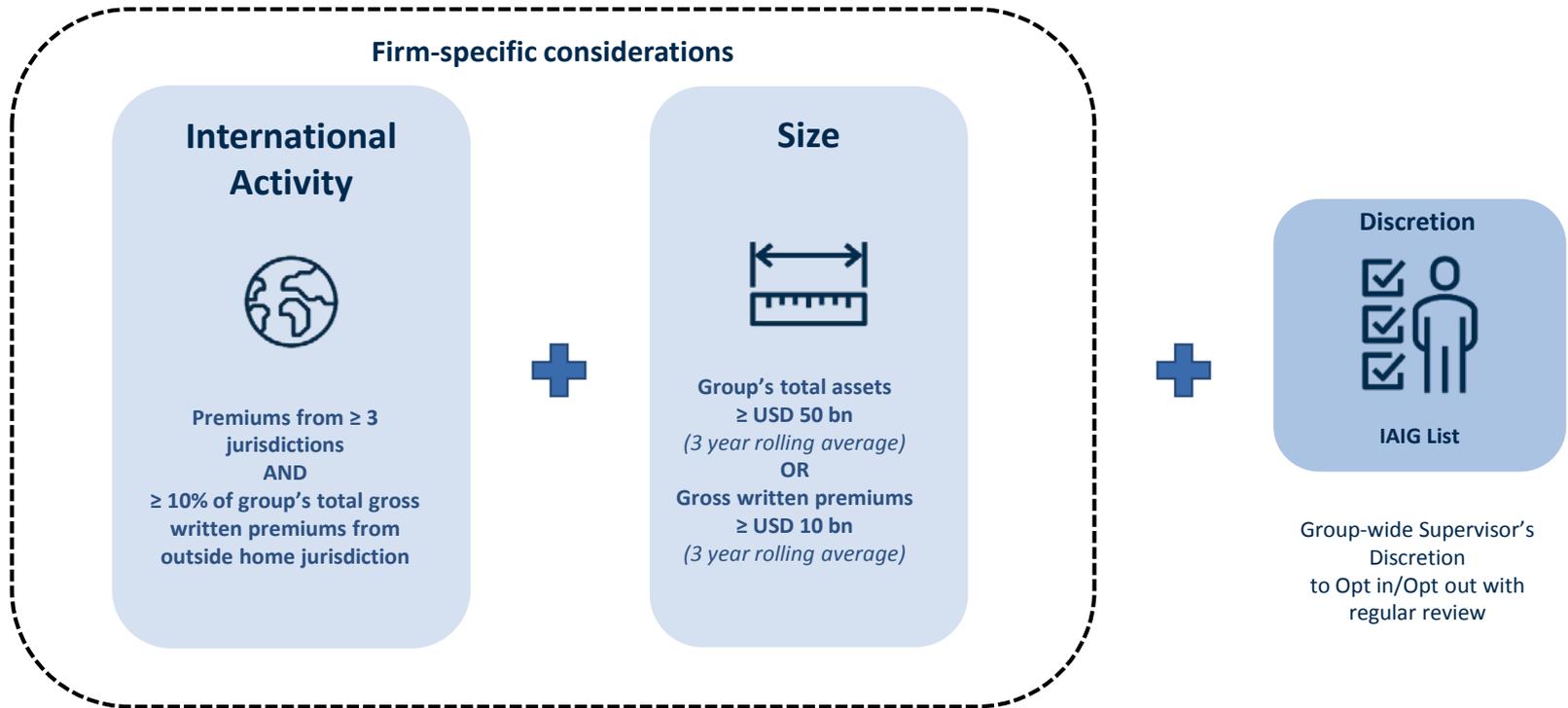
- Per the IAIS Stakeholder Engagement Plan, “*Effective stakeholder engagement should ensure that stakeholders are properly consulted in the development of IAIS policy and that the opportunity for timely, substantive and high quality contributions from stakeholders is maximised*”
- The IAIS is committed to maintain the same level of engagement with stakeholders during the monitoring period
- The timing of stakeholder events will be influenced by the timeline used by IAIS to gather both qualitative and quantitative feedback, which is still under discussion.
- Further details on the monitoring period are expected to be presented at the IAIS Global Seminar, 13-14 June

# ICS – IDENTIFICATION OF IAIGs

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# How are IAIGs identified?

## ComFrame Standard CF 23.0a



# Consequences of being classified as an IAIG

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- ComFrame is being designed as a framework for the supervision of IAIGs. ComFrame consists of both quantitative and qualitative supervisory requirements tailored to the complexity and international scope of IAIGs. The ICS is one of the components of ComFrame.

## **ComFrame (including ICS)**

- “Mandatory” confidential reporting of the reference ICS to group-wide supervisors (GWS) during the Monitoring Period.
- Additional reporting, at the discretion of the GWS (e.g. ICS on a GAAP+ basis and/or ICS with an other methods derived capital requirement, such as the use of Internal Models).
- Supervisory colleges (consisting of home and host supervisors) to assess and discuss the reference ICS as reported to the GWS during the monitoring period.

# ICS DEVELOPMENT PRINCIPLES

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# ICS Development

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## The challenge

- Developing global insurance capital standards is a complex matter.... especially if time is at a premium
- Our goal is to develop a truly global insurance capital standard for the largest internationally active insurers (IAIGs). We are striving to create something **unique** that works for different firms, markets and supervisors
- ... this does not mean copying any of the existing regulatory frameworks into the ICS (e.g. RBC, SST, S2 or APRA's)
- ...but using the experience of members participating in the Capital, Solvency & Field Testing Working Group to develop a standard that works globally

# ICS Development

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## The Process

- **Field testing:** annual field testing exercises beginning in 2014:
  - Volunteers insurance groups from across the world (c35)
  - Data collected through group supervisors
  - FT package (instructions and template) are made public
- **Public consultation:** three consultations on the ICS (2014, 2016 and 2018)
  - Allows engagement from broader stakeholders: industry participants, actuarial profession, trade bodies, etc.
- **Dedicated meetings**
  - Workshops restricted to Volunteer Groups
  - Public meetings with stakeholders

# ICS Principles

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## Principles 1-2

- **ICS Principle 1 – The ICS is a consolidated group-wide standard with a globally comparable risk-based measure of capital adequacy for IAIGs and G-SIIs.**
  - The standard incorporates consistent valuation principles for assets and liabilities, a definition of qualifying capital resources and a risk-based capital requirement. The amount of capital required to be held and the definition of capital resources are based on the characteristics of risks held by the IAIG irrespective of the location of its headquarters.
- **ICS Principle 2 - The main objectives of the ICS are protection of policyholders and to contribute to financial stability.**
  - The ICS is being developed in the context of the IAIS Mission, which is to promote effective and globally consistent supervision of the insurance industry in order to develop and maintain fair, safe and stable insurance markets for the benefit and protection of policyholders and to contribute to global financial stability.

# ICS Principles

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## Principles 3-5

- **ICS Principle 3 – One of the purpose of the ICS is the foundation for HLA for G-SIIs**
  - Initially, the BCR is the foundation for HLA for G-SIIs.
- **ICS Principle 4 – The ICS reflects all material risks to which an IAIG is exposed.**
  - The ICS reflects all material risks of IAIGs' portfolios of activities taking into account assets, liabilities, non-insurance risks and off-balance sheet activities.
  - To the extent that risks are not quantified in the ICS they are addressed in ComFrame.
- **ICS Principle 5 – The ICS aims at comparability of outcomes across jurisdictions and therefore provides increased mutual understanding and greater confidence in cross-border analysis of IAIGs among group-wide and host supervisors.**
  - Applying a common means to measure capital adequacy on a group-wide consolidated basis can contribute to a level playing field and reduce the possibility of capital arbitrage.

# ICS Principles

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## Principles 6-8

- **ICS Principle 6 – The ICS promotes sound risk management by IAIGs and G-SIIs.**
  - This includes an explicit recognition of appropriate and effective risk mitigation techniques
- **ICS Principle 7 – The ICS promotes prudentially sound behaviour while minimising inappropriate procyclical behaviour by supervisors and IAIGs.**
  - The ICS does not encourage IAIGs to take actions in a stress event that exacerbate the impact of that event.
  - Examples of procyclical behaviour are building up high sales of products that expose the IAIG to significant risks in a downturn or fire sales of assets during a crisis.
- **ICS Principle 8 – The ICS strikes an appropriate balance between risk sensitivity and simplicity.**
  - Underlying granularity and complexity are sufficient to reflect the wide variety of risks held by IAIGs. However, additional complexity that results in limited incremental benefit in risk sensitivity is avoided.

# ICS Principles

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## Principles 9-10

- **ICS Principle 9 – The ICS is transparent, particularly with regard to the disclosure of final results.**
- **ICS Principle 10 – The capital requirement in the ICS is based on appropriate target criteria which underlie the calibration.**
  - The level at which regulatory capital requirements are set reflects the level of solvency protection deemed appropriate by the IAIS.

# ICS DESIGN

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## Main components

# ICS Design

## ICS components

### Scope



- Minimum harmonisation regime
- All IAIS members should propose for adoption in respective jurisdictions
- Consolidated group-wide standard; **not** legal entity requirement
- Focus on insurance activities; non-insurance activities in the ICS will leverage on existing international framework (e.g. Basel III for banking activities)

### 3 Main Components



- Valuation
- Qualifying capital resources
- Capital requirement

### Risk Coverage



- Risks covered: insurance, market, credit, operational
- Not explicitly covered: group risks, liquidity risks

# ICS components

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## Monitoring period

- During the monitoring period, each group-wide supervisor will need to ensure the reporting of the **reference ICS** based on:
  - The Market-adjusted valuation (MAV);
  - Standard method for capital requirements; and
  - Converged criteria for qualifying capital resources.
- **Additional reporting**, at the option of the GWS includes:
  - ICS Valuation on a GAAP+ basis and/or
  - The ICS Capital Requirement calculated using other methods (eg the use of Internal Models)

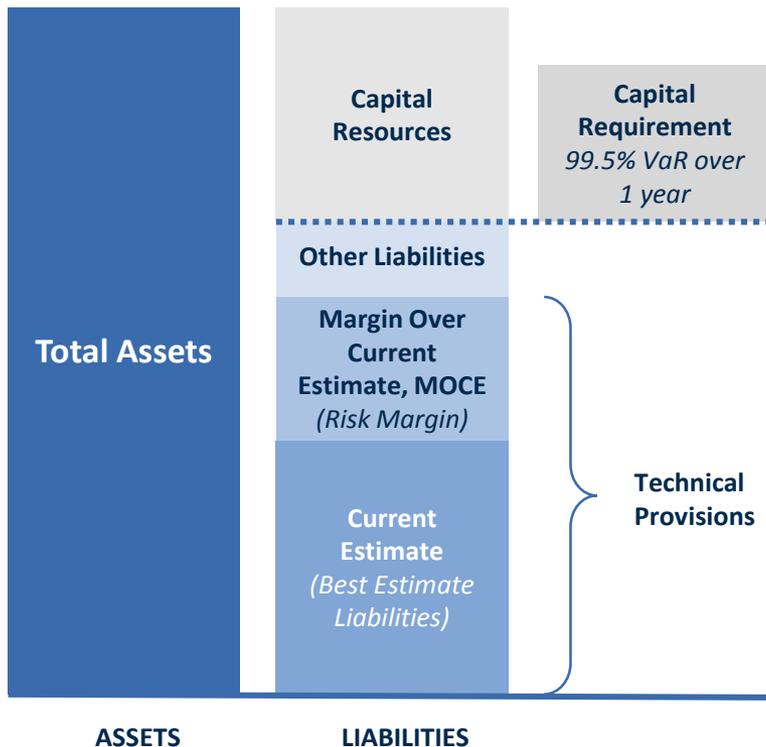
# ICS REFERENCE METHOD

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## Market-Adjusted Valuation

# ICS Reference Method

## Market Adjusted Valuation



## Total Balance Sheet Approach

*Assets and liabilities valued on a consistent basis*

- No global common approach (Diverse accounting approaches....and evolving; slow convergence of accounting principles for insurance)
- Lack of comparability of the valuation of insurance liabilities is the major issue. Two approaches being developed in parallel:

### Market-adjusted Valuation (MAV)

- Fair value of invested assets
- Reinsurance recoverables: consistent basis as insurance liabilities
- **Current estimate:** probability weighted average of present values of future cash-flows
- **MOCE:** to cover uncertainty over current estimate
- Other assets/liabilities: only revalue most material items, otherwise use applicable IFRS or GAAP standards as for reporting purposes.

# MAV Discounting of insurance liabilities

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- The main objective of providing IAIS specified discount curves is **comparability**.
- In line with the ICS Principles, it is of paramount importance that the valuation methodology provides an appropriate balance between **risk-sensitivity** and **stability**, as well as a consistent approach between assets and liabilities.
- The discounting methodology plays a crucial role in the achievement of these objectives.

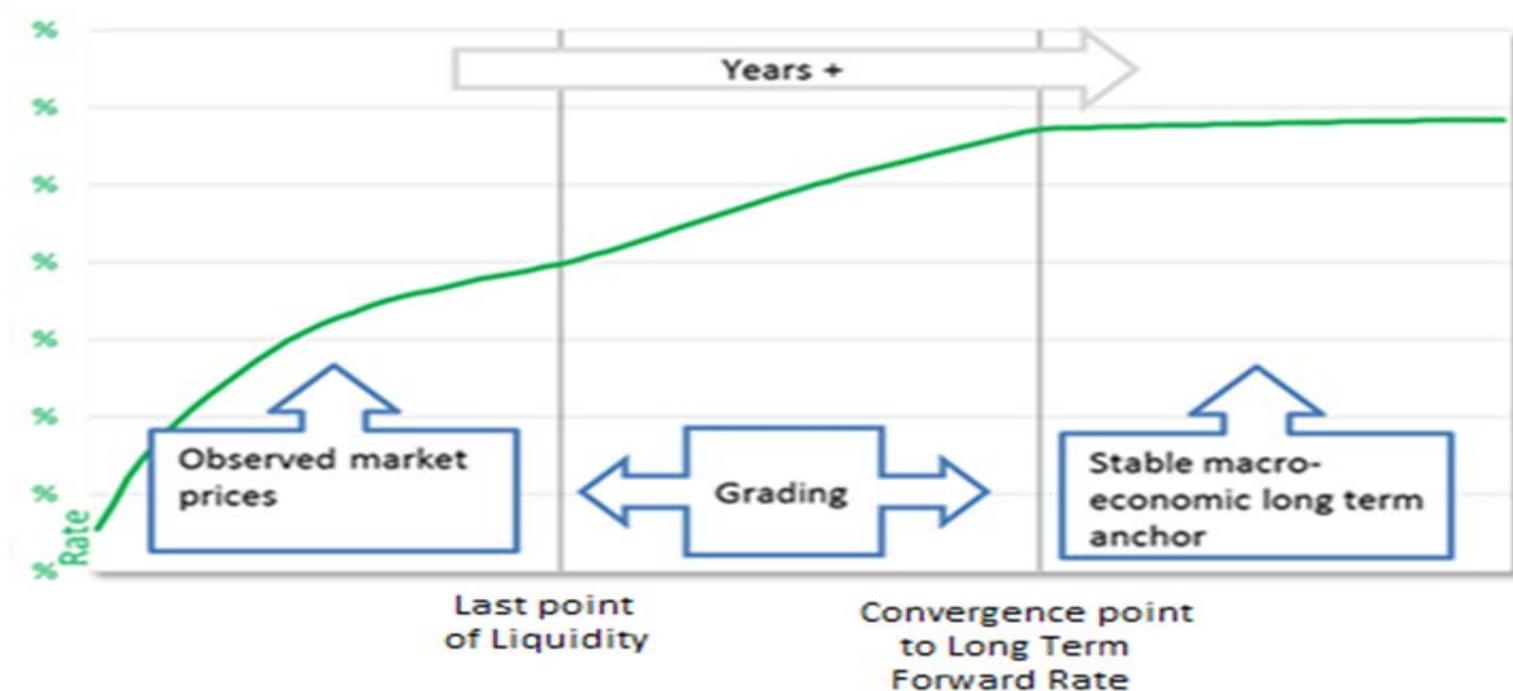
Discounting for MAV uses a yield curve constructed from two components:

- A **base yield curve** (risk-free) and
- An **adjustment to the base yield curve**

# The base yield curve

## Introduction

Insurance liabilities, particularly life insurance liabilities, are long-term so a base yield curve needs to extend beyond the observable risk-free instruments in the market...



# Adjustments to the base yield curve

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## Learning from past field testing exercises...

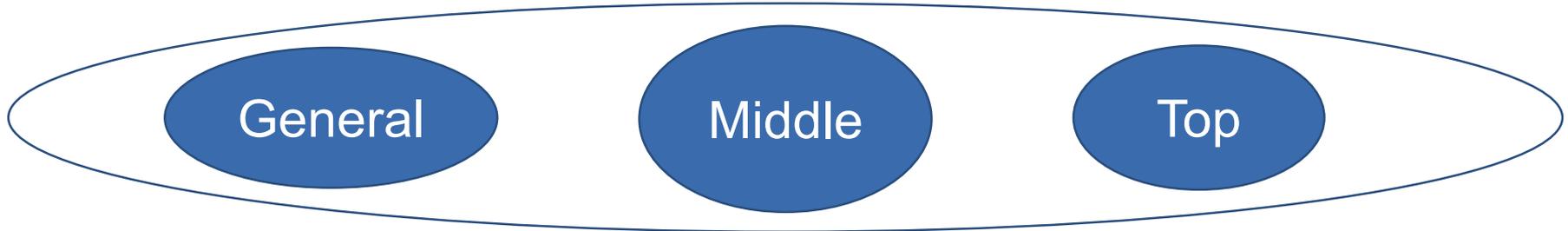
- Range of views on this topic, which have been reflected in the number of initial solutions proposed
- It is difficult to identify a single approach to discounting insurance liabilities that addresses all concerns and specificities of local markets
- However, past field testing exercises evidenced substantial convergence among several of the options tested, both conceptually and in terms of outcomes, despite the data quality issues encountered

# The Three-Bucket Approach

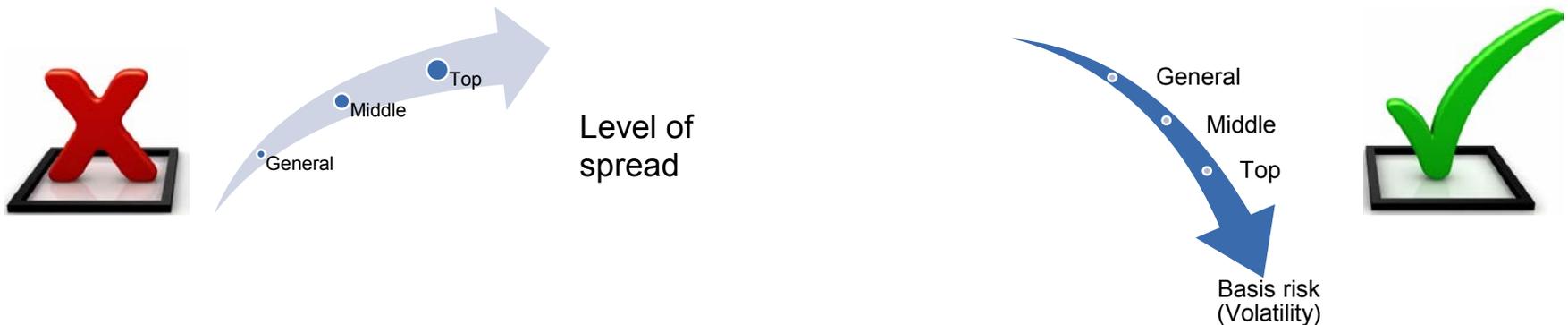
## Underlying rationale

- Field Testing results showed that a solution with three buckets is likely to be more balanced and more appropriately tailored for different types of insurance liabilities

## Market Adjusted Discounting



- The aim of the bucketing is to allow for a reduction of basis risk (ie lower volatility of capital resources due to fluctuations of market credit spreads), where justifiable



# Three-Bucket Approach

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## General Bucket

Aimed at liabilities with weak ALM and/or little to no relation between asset and liability values.

- Representative portfolio
- Broadly following the General Bucket approach (parallel adjustment, eligible assets concept, BBB cap, 80% application ratio)
- Identification of peer currencies to address data limitations (if alternative data sources cannot be found for index data covering additional currencies)
- Basis risk mitigation mechanisms retained



General

# Three-Bucket Approach

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## Middle Bucket

Aimed at liabilities that do not fulfil the Top Bucket criteria but where a strong ALM justifies a differentiated treatment

- Should be more inclusive than the Top Bucket, using softer criteria
- Weighted Average of Multiple Portfolios (WAMP) approach
- Parallel adjustment, eligible assets concept, BBB cap, 90% application ratio
- Spreads of foreign currencies allowed to enter the weighted average (only where exposures are hedged, cost of hedging deducted)



Middle

# Three-Bucket Approach

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## Top Bucket

Aimed at liabilities with very strong ALM that provides comfort that assets can be held to maturity (no material reinvestment risk).

- Approximation to the OAG methodology on certain key features (Own assets instead of WAMP; Adjustment extended beyond LOT until run-off of Assets/Liabilities)
- Parallel adjustment, eligible assets concept, BBB cap, 100% application ratio
- Spreads earned in other currencies' assets allowed to flow through to the adjustment (only where exposures are hedged, cost of hedging deducted)



Top

# ICS REFERENCE METHOD

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Margin Over Current Estimate (MOCE)

# MOCE

## Two issues

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- Two issues have been keeping us busy over the past few years:
  - **Issue 1** – MOCE Design and calculation
  - **Issue 2** – MOCE Interaction with capital requirements and capital resources
- Over the past years the IAIS has field tested several designs of MOCE, spanning from the Cost-of-Capital to the Prudence MOCE, and considered whether a partial or full amount of MOCE should be deducted from capital requirement and/or added back to capital resources
- This debate continues.....

# MOCE

## Approach for 2019 Field Testing

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- The single approach to MOCE included in 2019 Field Testing is the Percentile-MOCE with no deduction from the capital requirement
- The inclusion of the Percentile-MOCE in 2019 Field Testing does not prejudge its inclusion in ICS Version 2.0, nor does it mean that the C-MOCE (without deduction from the capital requirement) and the P-MOCE (with deduction from the capital requirement) are no longer under consideration
- Data for C-MOCE and P-MOCE will not be collected again in 2019 Field Testing to minimise burden on Volunteer Groups

# MOCE

## 2018 FT vs 2019 FT

Two families of approaches to MOCE tested in 2018 FT			Single approach to MOCE for 2019 FT								
Cost of Capital MOCE (C-MOCE)	Prudence MOCE (P-MOCE)	C-MOCE (default MOCE for 2018 FT)	Percentile-MOCE								
Variable cost of capital rate	n/a	Fixed cost of capital rate (5%)	Three calibrations of the percentile-MOCE with no deduction from the capital requirement will be tested: <table border="1" data-bbox="1031 721 1684 951"> <thead> <tr> <th>Life</th> <th>Non-Life</th> </tr> </thead> <tbody> <tr> <td>75%</td> <td>60%</td> </tr> <tr> <td>80%</td> <td>65%</td> </tr> <tr> <td>85%</td> <td>70%</td> </tr> </tbody> </table>	Life	Non-Life	75%	60%	80%	65%	85%	70%
Life	Non-Life										
75%	60%										
80%	65%										
85%	70%										
No deduction from capital requirement	Full deduction from capital requirement	No deduction from capital requirement	No deduction from capital requirement								

# ICS REFERENCE METHOD

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## Qualifying Capital Resources

# ICS Reference Method

## Qualifying Capital Resources

Capital resources comprise of:

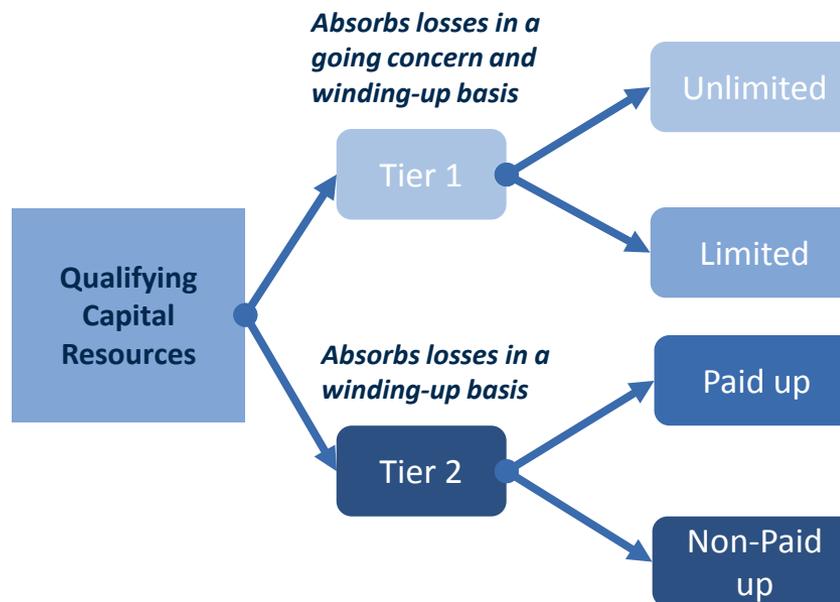
- Financial instruments (e.g. equity, bonds)
- Capital elements other than financial instruments (e.g. retained earnings, regulatory reserves etc.)

### Criteria for the Assessment of Capital Quality

- Loss absorbing capacity
- Level of subordination
- Availability to absorb losses
- Permanence
- Absence of encumbrances and mandatory servicing costs



*Capital resources are classified into different Tiers based on their quality*



Limits are expressed as a % of the ICS capital requirement. I.e. there is no limit to the amount high quality Tier 1 capital to meet capital requirement; but limits are imposed on the extent to which the ICS capital requirement can be met by lower quality capital.

# ICS REFERENCE METHOD

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## Standard Method

# ICS Reference Method

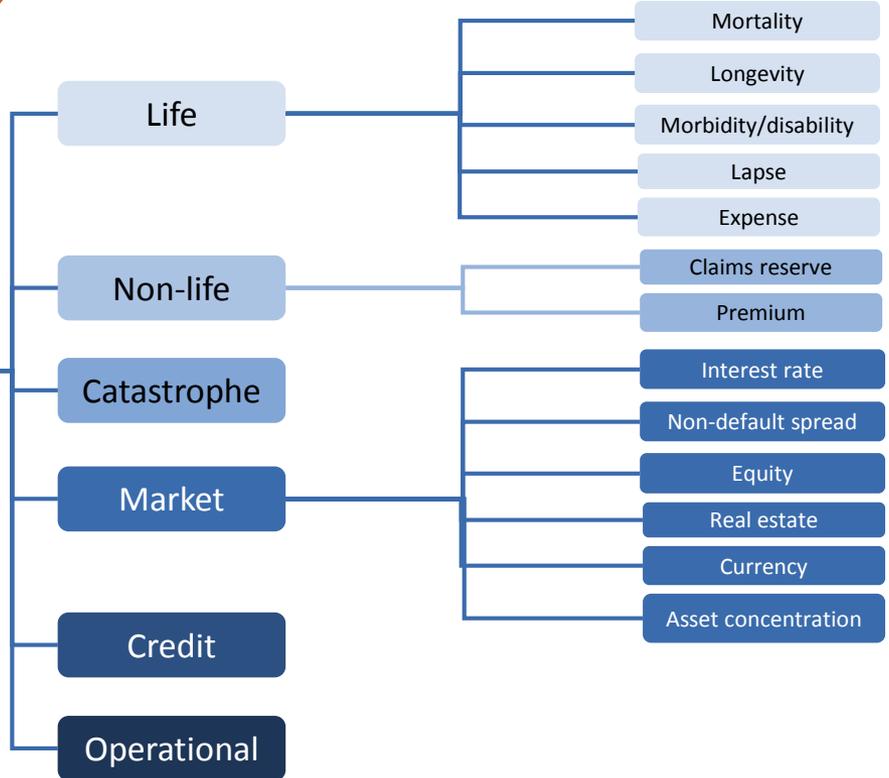
## Capital requirements by standard method

Calibration target = 99.5% 1-year VaR

Includes diversification

**ICS Capital Requirement**  
99.5% VaR over 1 year

- Field Testing**
- **2015:** interim calibration – more supervisory judgement
  - **2016:** refined calibration based on more data
  - **2017-19:** refine design and calibration based on data + volunteer feedback + improved methodology



*Decision to allow internal models for the calculation of capital requirement to be taken by end of monitoring period*

# Measuring risks

## Possible approaches

Capital Requirements			
Deterministic		Stochastic	
Factor based	Stress based	Stochastic modelling	Structural modelling

- **Factor Based approach:** factors are applied to specific exposure measures (cf. BCR)
- **Stress Based approach:** Capital requirement is determined as decrease between the amount of capital resources on the unstressed balance sheet and the amount of capital resources on the stressed balance sheet.
- The ICS Capital Requirement has been built using a combination of approaches

# Factor-based approach

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## Examples

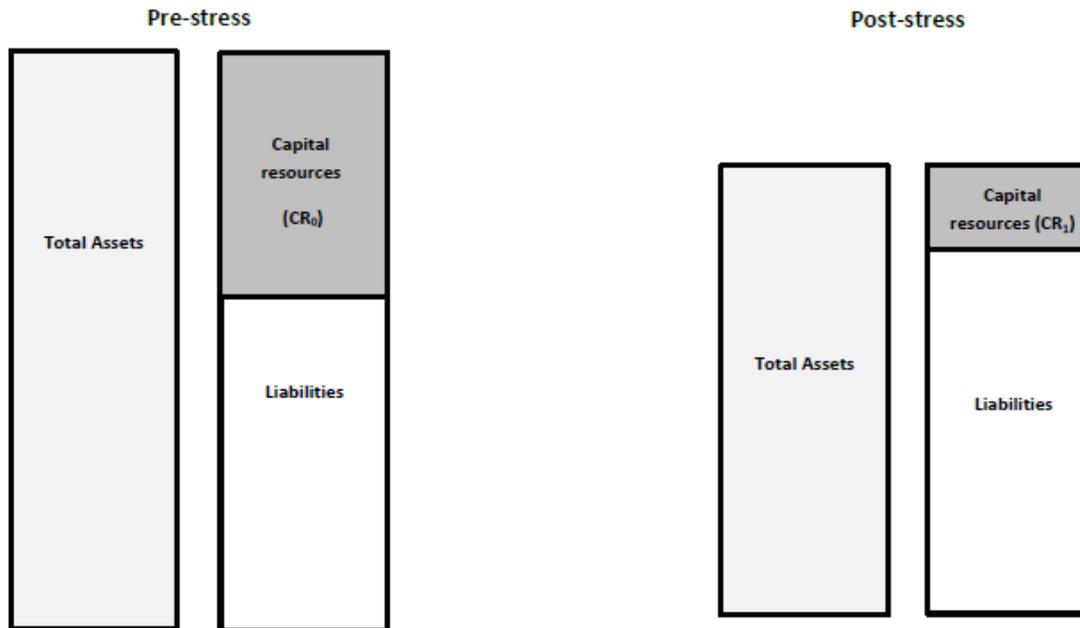
- Simple to perform
- Crude – difficult to appropriately capture the interactions affecting insurers without resorting to complexity (eg interest rate risk in the insurance balance sheet)
- One example: the BCR formula

$$\begin{aligned} & \text{BCR required capital} \\ &= \alpha \left[ \sum_{i=1}^4 a_i TL_i + \sum_{i=1}^4 b_i TNL_i + \sum_{i=1}^4 c_i NT_i + \sum_{i=1}^3 d_i A_i \right] + \sum_{i=1}^n NI_i \end{aligned}$$

# Stress-based approaches

## Examples

- More complex to perform, but easier to understand in an intuitive manner
- More appropriate reflection of risk - enable both firms and supervisors to assess the complex dynamics of the firm's balance sheet



The capital requirement is measured as the **difference in Net Asset Value** pre and post stress

(e.g. the difference between the current  $NAV_0$  and the post-stress scenario  $NAV_1$ ).

# Factor-based and Stress Approaches

## Examples

### Factor-Based

**Capital Requirement =  
Factor X Exposure Measure**

Risk	Calculation
Credit risk for highest rated corporate bonds	0.2% to 2.5% (depending on maturity) X net exposure
Operational risk: life (premium and liabilities) risk	Max (4% of latest gross written premium, 0.4% of gross current estimate)

### Stress

**Capital Requirement = capital resource pre-stress – capital resource post-stress**

Risk	Stress Level
Mortality	1.125 X base mortality assumption
Longevity	0.825% X base mortality assumption
Lapse	+/- 40% X option take-up rates
Equity – developed markets	35% X market price
Equity – emerging markets	48% X market price

# Overview of approach to measuring risk

Risk	Factor-based	Stress	Other
<b>Insurance risks</b>			
• Mortality and Longevity		✓	
• Morbidity/Disability		✓	
• Lapse		✓	
• Expense		✓	
• Premium and Claims Reserve	✓		
• Catastrophe			✓ (model)
<b>Market risks</b>			
• Interest rate		✓	
• Non-Default Spread risk		✓	
• Equity and Real estate		✓	
• Currency/FX		✓	
• Asset concentration	✓		
<b>Credit risk</b>	✓		
<b>Operational risk</b>	✓		

# LIFE INSURANCE RISKS

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# Mortality and Longevity risks

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- Two sides of a single risk driver (mortality rates)
- No offsetting of risk:
  - Mortality stress applied only to policies subject to mortality risk
  - Longevity stress applied only to policies subject to longevity risk
- Allows for the impact of management actions defined as changes in future bonuses and discretionary benefits
- Catastrophe mortality addressed as part of the catastrophe component (pandemic scenario)
- Issues being investigated/tested:
  - Calibration of stress levels (additional data collection) to support potential geographic differentiation

# Morbidity/Disability risk

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- A complex risk, across life and non-life business, covering:
  - Heterogeneous products across jurisdictions whose features may depend on public health systems in place
- Current approach is a combination of an increase in inception rates and a decrease in recovery rates
- Allows for the impact of management actions defined as changes in future bonuses and discretionary benefits
- Issues being investigated/tested:
  - Calibration of stress levels (additional data collection) to support potential geographic differentiation

# Lapse risk

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## Contractual option risk

- Lapse risk charge is the maximum between:
  - A level and trend component
    - Higher than expected take up of options
    - Lower than expected take up of options / persistency
  - And a mass lapse component that differentiates between retail and non-retail policies
- Applies only to life business
- Allows for the impact of management actions defined as changes in future bonuses and discretionary benefits
- Issues being investigated/tested:
  - Calibration of stress levels (additional data collection) to support potential geographic differentiation

# Expense risk

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- Current design:
  - Increase in unit expense level plus
  - Increase in expense inflation
- Applies only to life business
- Allows for the impact of management actions defined as changes in future bonuses and discretionary benefits

# NON-LIFE INSURANCE RISKS

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# Premium and Claims Reserve risks

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- Distinguishing between future insured events (premium risk) and already incurred events (Claims Reserve risk)
- Exposure volume measures reported based on jurisdictional lines of business
- Relatively complex aggregation structure to reflect diversification inherent to non-life business
  - For each reporting line: Premium and Claims Reserve
  - For each category: aggregation of segments within each category
  - For each geographical area: aggregation between lines/categories
  - Aggregation between geographical areas
- Try to ensure consistency through a limited set of factors

# Catastrophe risk based on specified perils

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- Natural catastrophes (Cyclone, Windstorm, Earthquake): allow the use of catastrophe models
- Man-made perils, with a reference list of predefined large perils (Terrorist attack, Marine collision, Aviation collision, Latent liability scenario, Credit/surety scenario and Pandemic).
- Potentially supplemented with IAIG specific other events for material other perils
- Explicit recognition of risk mitigation (eg reinsurance) subject to recognition of contingent credit risk

# Non-Life risk

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## Approach for 2019 Field Testing

- A factor based approach is used for insurance liabilities. Catastrophe risk is based on insurer models
- Revised calibration for a limited number of lines of business.
- Introduction of correlations within ICS segments
- Exposures for non-life claims reserves for U.S. GAAP Plus will be adjusted to address undiscounted liability exposures

# MARKET RISKS

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# Interest rate risk

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- After a few years of field testing, a model has been identified (Dynamic Nelson-Siegel) that is robust both under a normal and negative interest rate environment
- Calculated as the aggregation of gains or losses under a set of scenarios arising from independent sources, stressing the shape of the yield curve:
  - Mean reversion
  - Level up/down
  - Twist stress from up to down (down to up)
- The scenarios affect both assets and liabilities.
- The aggregation of IRR across currencies has been refined for 2019 Field Testing in order to appropriately calculate the risk charge when individual currency portfolios are non-linear

# Non-default spread risk

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## Background

- During the initial stages of the ICS development, it was agreed to combine “Spread Risk” and “Credit Risk” into a single ICS risk module (Credit Risk)
- However, the current design of the Credit Risk module incorporated only parts of Spread Risk.
- Therefore work on the design and calibration of Non-Default Spread Risk (NDSR), which aims to capture the remaining components of Spread Risk started only in late 2017
- Only eligible assets are stressed on the Asset side (consistency with the design of MAV spread adjustments – Compromise/Blended option)
- Sovereign assets excluded (consistency with Credit risk)

# Non-default spread risk

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## Approach for 2019 Field Testing

- NDSR is a bi-directional shock (up/down) to the balance sheet (affecting both assets and liabilities)
- The results of 2018 Field Testing indicated that there were inconsistencies between currencies, in particular for the up shock. This was driven by the relative limit. The impact of NDSR was much higher for currencies with high spreads, compared to currencies with low spreads
- A revised design and calibration will be included in 2019 Field Testing
- The revised design and calibration attempt to resolve the inconsistencies by removing the relative limit on the up shock and halving the magnitude of the shock
- The inclusion of NDSR in 2019 Field Testing does not prejudge its inclusion on ICS Version 2.0

# Non-default spread risk

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## 2019 Field Testing

- Down shock: absolute shock, with a relative limit (prevents a positive spread from becoming negative after application of the shock)
- Up shock: absolute shock only

$$\text{NDSR} = \text{MAX} (\text{Up shock}; \text{Down shock}; 0)$$

# Equity risk

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- Broad class of assets, including: listed equities, preference shares/hybrid debt, infrastructure investment, commodities, private equities,.....
- Price movement segmentation: listed developed equity, listed emerging equity, hybrid debt/preference shares, other equity
- Volatility shock (to which options and guarantees could be exposed)
- Stress scenario is prices down, volatility up
- Issues being investigated/tested in 2019:
  - Equity volatility stress was revised to address feedback from consultation document and field testing results to raise the short-term, and lower the long-term implied volatility.
  - Additional data is requested to run the level and volatility shocks separately and together.

# Real estate risk

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- Covers both real estate for investment and for own use
- Considers both direct and indirect exposures
- The stress is a simultaneous decrease of 25% in the value of all property exposures

# Currency risk

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- Currency risk is the risk associated with changes in the level or volatility of currency exchange rates, both increase or decrease of the exchange rates
- Currency risk is assessed against a reference currency: official currency of the jurisdiction in which the IAIG is located or domiciled or the currency in which the financial statements are produced
- Individual stresses for each currency pair (IAIS provides a stress matrix for 35 currencies plus a world bucket)
- For 2019 Field Testing, the pair-wise Currency risk stresses have been recalibrated based on 20 years of data (as the Euro was introduced 20 years ago)

# Asset Concentration Risk

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## Approach for 2019 Field Testing

- A granularity adjustment will be incorporated to calculate the Asset Concentration risk charge.
  - a granularity adjustment links the calculation to the level of Credit risk underlying the investments
- Continue to collect data on the approach from 2018 Field Testing, which is a factor-based approach that considers assets concentration above specified thresholds
- If field testing results shows that the granularity adjustment is volatile and not credible, then the 2018 Field Testing approach could still be used for the monitoring period

# CREDIT RISK

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# Credit risk

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- Defined as unexpected changes in actual defaults, as well as deterioration of an obligor's creditworthiness short of default, including migration risk and spread risk due to defaults
- Factor-based approach with risk factors that vary by rating category and maturity
- Credit exposures to national governments, multi-lateral development banks and supranational organisations are not subject to the Credit risk charge

# Credit risk

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## Issues being investigated/tested in 2019

- Supervisory-owned and controlled credit assessment processes (SOCCA) (eg NAIC Designations) will be included in the calculation of ICS coverage ratios, this does not preclude how (i.e. national discretion in reference ICS or other method) these will be considered for ICS Version 2.0 for the monitoring period.
- Haircut approach will be used to determine Credit risk for collateralised non-life reinsurance exposures
- Granular information collected on agent/broker's balances and commercial mortgage loan portfolios of Volunteer Groups
  - Information will be used to review the current Credit risk factors for these items

# OPERATIONAL RISK

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# Operational risk

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- Operational events including inadequate or failed internal processes, people and systems, or from external events. Operational risk includes legal risk, but excludes strategic and reputational risk.
- Factor-based approach based on premium volume, growth (subject to a threshold) and liabilities (ie current estimate)
- Updates for 2019 Field Testing: The Life (Risk) factor applied to liabilities increased from 0.4% to 0.45% and the Life (Non-Risk) factor decreased from 0.45% to 0.4% to better reflect expected risk of the exposures

# AGGREGATION/DIVERSIFICATION

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# Aggregation of standard method risk charges

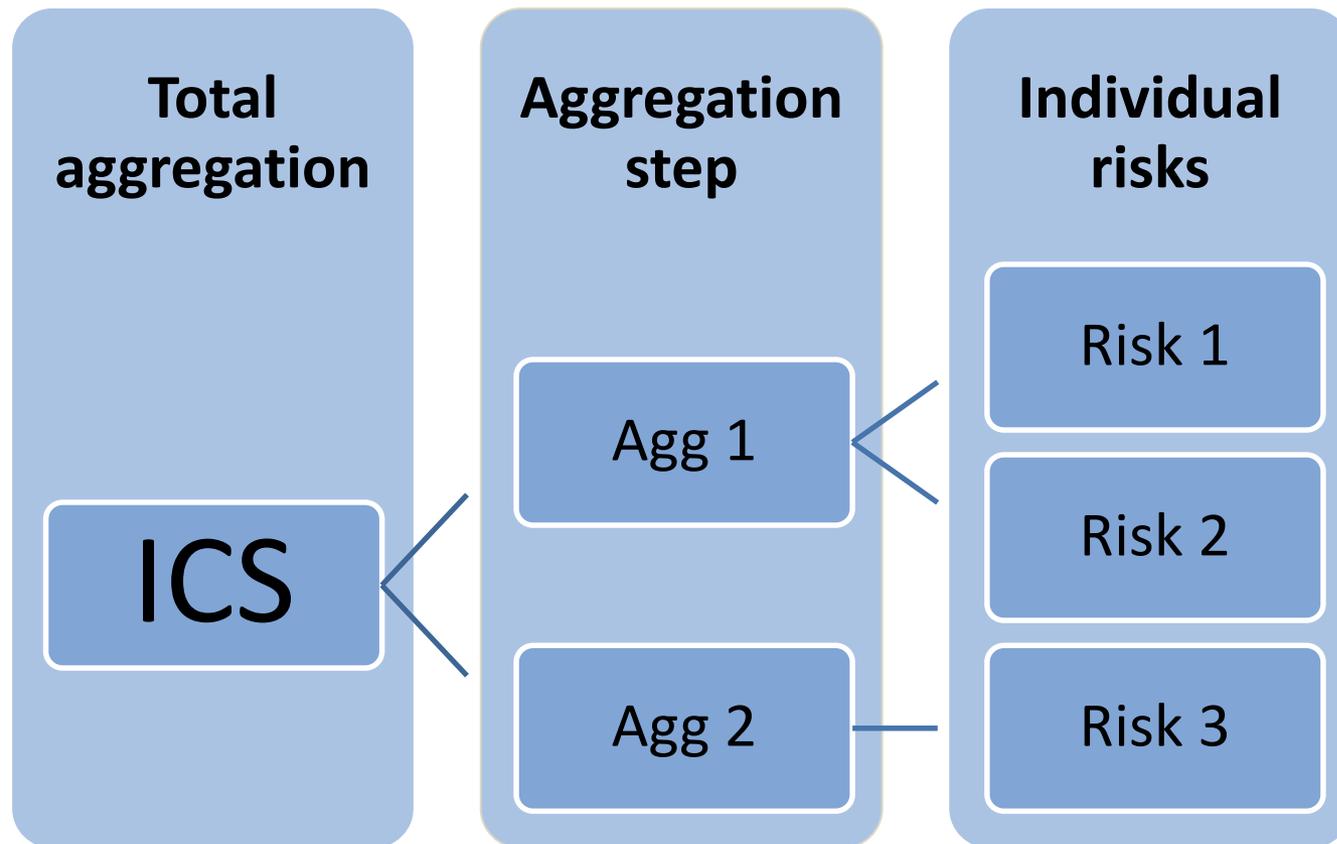
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## Diversification effects

- Standard method uses correlation matrices
- Multi-steps aggregation process using a series of relatively small matrices
  - Within risk components (e.g. within market risks, i.e. between interest rate, equity, real estate....)
  - Between risk components (e.g. between market and life risks)
- Non-life component relatively complex structure
  - Includes multiple levels of aggregation
  - Non-life lines of business may justify a relatively high level of diversification
- Calibration currently being tested
  - Calibration should reflect the correlation in the tail
  - Based on supervisory judgement (avoiding spurious accuracy)

# Aggregation of standard method risk charges

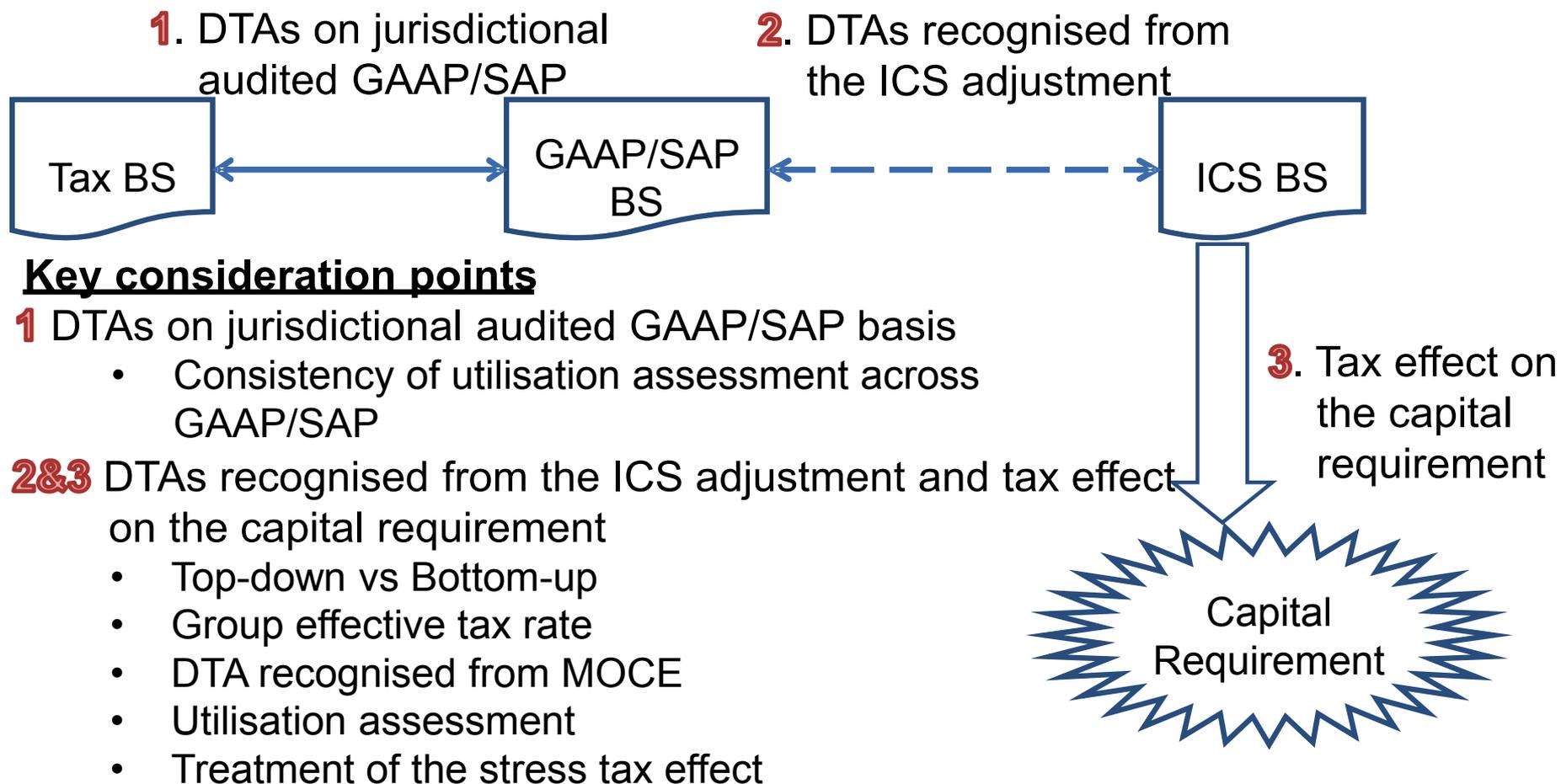
Multiple-step: through different sets of variance/covariance matrices



# TAX TREATMENT IN THE ICS

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# Overview of tax treatment in the ICS



# ICS ADDITIONAL REPORTING

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GAAP with Adjustments (GAAP Plus)

# ICS Additional Reporting

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## GAAP Plus

- GAAP Plus starts from the audited, consolidated, general-purpose balance sheet (e.g. IFRS, US GAAP).
- Adjustments are made to the most significant and material items on the balance sheet (e.g. insurance related liabilities and invested assets):
  - To the extent possible, adjustments should be based on amounts from the underlying GAAP financial reports, or which emanate from **processes and/or systems that are subject to independent external audit.**
  - The intent is to derive the necessary adjustments in a manner that is both practicable and with a level of **independent assurance** given each firm's existing GAAP basis, process of reporting, related internal controls as well as its audit function

# ICS Additional Reporting

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## GAAP Plus guidelines and general considerations

- Insurance assets and liabilities should be treated consistently such that non-economic volatility is minimised.
- To achieve a level of comparability across firms, this may require an adjustment to capital resources for some GAAPs (e.g. adjustment to the AOCI), or an adjustment to the discount curve for some other GAAPs.
- Insurance liabilities (and any reinsurance assets) should be adjusted as necessary to approximate the current estimate as defined under ICP 14
- For some jurisdictions, certain GAAP+ figures are cost-based rather than market-based, and will react differently to stress, compared with stresses applied to MAV data.

# ICS Additional Reporting

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## GAAP Plus and 2019 Field Testing

- **Japanese GAAP:** Technical Specifications consistent with 2018 Field Testing. Japanese Volunteer Groups reporting IFRS will follow the IFRS GAAP Plus approach.
- **U.S. GAAP:** Testing a GAAP Plus method for the U.S. that incorporates new U.S. GAAP rules.
- **IFRS:** New 2019 Field Testing Technical Specifications for IFRS GAAP Plus. EU Volunteer Groups will continue to provide adjusted Solvency II balance sheet under GAAP Plus.
- **Chinese C-ROSS:** New 2019 GAAP Plus Field Testing Technical Specifications for Volunteer Groups reporting Chinese C-ROSS.

# ICS ADDITIONAL REPORTING

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## Internal models

# Internal Models

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## Background

- As stated in the 2018 ICS CD, the main goal of internal models is to calculate capital requirements (at the risk level or at the aggregated level) closer to the risks borne by the IAIG
- ICP 17 set the foundation for the ten prerequisites for the reporting of internal model results during the monitoring period

# Internal Models

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## Pre-requisites for the submission of data during the monitoring period

To be able to submit internal model data as part of the additional reporting during the monitoring period, IAIGs and other interested Volunteer Groups will be required to complete a self-assessment with respect to 10 pre-requisites

- **Pre-requisite 1** - Description of the scope of application of the internal model (e.g. partial or full internal model);
- **Pre-requisite 2** – Independent validation
- **Pre-requisite 3** - Sign-off by the IAIG's Board of Directors of the IAIG;
- **Pre-requisite 4** - Statistical quality test;
- **Pre-requisite 5** - Calibration test;
- **Pre-requisite 6** - Use test and governance; and
- **Prerequisite 7** - Documentation standards.

# Internal Models

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## Pre-requisites for the submission of data during the monitoring period

For partial internal models the IAIG also needs to complete the self-assessment template with respect to pre-requisites 8 to 10, i.e. they need to:

- **Pre-requisite 8** – justify the reason for the limited scope of the internal model (i.e. absence of cherry-picking);
- **Pre-requisite 9** – provide evidence that the resulting ICS capital requirement reflects more appropriately the risk profile of the IAIG;
- **Pre-requisite 10** - explain how the partial internal model and standard method's results can be integrated.

# Internal Models

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## Pre-requisites for the submission of data during the monitoring period

- During the monitoring period, the IAIS will provide IAIGs and other interested Volunteer Groups with a self-assessment template to be used to assess the degree of compliance with the prerequisites. This self-assessment template will accompany the submission of internal model results during the monitoring period.
- Where the prerequisites are not met, but the IAIG would like to submit internal model results during the monitoring period, then the IAIG should explain and justify this conclusion to their group-wide supervisor. Moreover, the IAIG should indicate the reasons for this decision in their self-assessment template along with details of how the internal model does not meet the prerequisites.
- Supervisory approval of the internal model for data submission is not a requirement during the monitoring period.

# ICS Additional Reporting

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## Internal Models and 2019 Field Testing

- Continue to collect Baseline Supplementary Internal Model data
- Dry run (pilot) of the Internal Models Self-Assessment Template
  - Volunteer Groups will assess their compliance with the pre-requisites for reporting Internal Model results during the monitoring period
  - Feedback from Volunteer Groups will be used to refine the Self-Assessment Template for the monitoring period

# KEY DATES IN 2019

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# 2019 Key Dates

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- Launch of 2019 Field Testing: 30 April
- IAIS Global Seminar: 13-14 June
- Data Due: 31 July
- Public release of 2019 Field Testing Package: August
- Adoption of ICS Version 2.0 for the monitoring period: 11-14 November (IAIS Parent Committee Meetings and AGM)

# Q&A SESSION

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# ANNEX

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# The base yield curve

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## Segment 1

- The **choice of the instrument** to determine Segment 1 (either swaps or government bonds) should be made on the basis of the instrument that allows for a segment that is more representative of a currency market conditions, based on a deep, liquid and transparent (DLT) assessment
- Following the DLT assessment and the choice of the instrument underlying Segment 1 of the yield curve, the **last observed term** (LOT) should be set as the longest maturity that is deemed to fulfil the DLT criteria for the chosen instrument
- Where the instrument used for the determination of the base yield curve is not government bonds, the **credit risk adjustment** (CRA) is set at 10 basis points for all currencies - the purpose of the CRA is to get to a risk-free rate when instruments other than government bonds are used as reference instruments for the base yield curve.

# The base yield curve

## Segment 1

Ticker	Currency	Observed Instrument	Cut-off for extrapolation in years
AUD	Australian Dollar	Government Bonds	30
BRL	Brazilian Real	Government Bonds	10
CAD	Canadian Dollar	Government Bonds	30
CHF	Swiss Franc	Swaps	20
CLP	Chilean Peso	Swaps	10
CNY	Yuan Renminbi	Government Bonds	10
COP	Colombian Peso	Swaps	10
CZK	Czech Koruna	Swaps	15
DKK	Danish Krone	Swaps	20
EUR	Euro	Swaps	20
GBP	Pound Sterling	Swaps	50
HKD	Hong Kong Dollar	Swaps	15
HUF	Forint	Government Bonds	15
IDR	Rupiah	Swaps	10
ILS	New Israeli Sheqel	Swaps	20
INR	Indian Rupee	Swaps	10
JPY	Yen	Government Bonds	30
KRW	Won	Government Bonds	20
MXN	Mexican Peso	Government Bonds	20
MYR	Malaysian Ringgit	Government Bonds	15
NOK	Norwegian Krone	Swaps	10
MZD	New Zealand Dollar	Swaps	20
PEN	Sol	Swaps	10
PHP	Philippine Peso	Swaps	10
PLN	Zloty	Government Bonds	10
RON	Romanian Leu	Government Bonds	10
RUB	Russian Ruble	Swaps	10
SAR	Saudi Riyal	Swaps	15
SEK	Swedish Krona	Swaps	10
SGD	Singapore Dollar	Government Bonds	20
THB	Baht	Government Bonds	10
TRY	Turkish Lira	Government Bonds	10
TWD	New Taiwan Dollar	Government Bonds	10
USD	US Dollar	Government Bonds	30
ZAR	Rand	Government Bonds	30

# The base yield curve

## Segment 2 and interpolation/extrapolation

**The length of Segment 2 should be calculated as:**

$$Length_{segment\ 2} = Max (convergence\ point - LOT, consistent\ convergeminimumnce\ time)$$

Where: minimum convergence point = 60 years

consistent convergence time = 30 years

- This approach is meant to achieve an appropriate balance between ensuring a sufficiently long convergence period which avoids a steep convergence to the LTFR (for currencies with long Segment 1) and ensuring that the LTFR is not reached very early in the base yield curve

### Interpolation/extrapolation

- Both the interpolation between Segment 1 maturities and the extrapolation beyond the LOT continue to be based on the Smith-Wilson methodology
- The recommendation to use the Smith-Wilson method is because of its favourable properties of incorporating the LTFR as well as exact replications of the observed liquid market data

# The base yield curve

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## Long-term forward rate (LTFR)

The LTFR is calculated as:

$$LTFR = \textit{Expected Real Interest Rate} + \textit{Expected Inflation Rate}$$

- The expected real interest rate has been estimated (from the long term simple arithmetic mean of annual real rates – subject to a minimum period of historical data) for the following groups:
  - **Developed markets: 1.8%**
  - **Other developed markets: 2.4%**
  - **Emerging markets: 3.0%**
- The Expected Inflation rate is based on Central Bank inflation targets (if not available, historic inflation data is used – this was the case for 5 currencies)
- To manage volatility in valuation on long-term liabilities if a change to one of the parameters for the LTFR occurs (most likely the central bank inflation target), LTFR changes are limited to 15 bps in one year

# The base yield curve

## LTFR by currency

Ticker	Currency	LTFR
AUD	Australian Dollar	3.80%
BRL	Brazilian Real	7.00%
CAD	Canadian Dollar	3.80%
CHF	Swiss Franc	2.80%
CLP	Chilean Peso	5.00%
CNY	Yuan Renminbi	6.00%
COP	Colombian Peso	6.00%
CZK	Czech Koruna	3.80%
DKK	Danish Krone	3.80%
EUR	Euro	3.80%
GBP	Pound Sterling	3.80%
HKD	Hong Kong Dollar	4.40%
HUF	Forint	6.00%
IDR	Rupiah	8.00%
ILS	New Israeli Sheqel	4.40%
INR	Indian Rupee	7.00%
JPY	Yen	3.80%
KRW	Won	4.40%
MXN	Mexican Peso	5.00%
MYR	Malaysian Ringgit	5.00%
NOK	Norwegian Krone	5.00%
MZD	New Zealand Dollar	4.80%
PEN	Sol	6.00%
PHP	Philippine Peso	7.00%
PLN	Zloty	5.00%
RON	Romanian Leu	5.00%
RUB	Russian Ruble	7.00%
SAR	Saudi Riyal	6.00%
SEK	Swedish Krona	3.80%
SGD	Singapore Dollar	3.80%
THB	Baht	5.00%
TRY	Turkish Lira	7.00%
TWD	New Taiwan Dollar	4.40%
USD	US Dollar	3.80%
ZAR	Rand	7.00%

# Market-adjusted valuation (MAV)

## Three-Bucket Approach and 2019 Field Testing

- Focus on refining the Middle Bucket to address concerns that it is too restrictive
- Three MAV scenarios will be tested with a full ICS capital requirement calculation on the central scenario only
- An additional table will be provided for Volunteer Groups to report risk charges for those risks that change materially under the two additional scenarios
- Top Bucket: clarify criterion that legal ring fencing is not required
- General Bucket: no changes

Main changes	Central Scenario	Additional 1	Additional 2
Middle Bucket criterion c – carry forward ratio	LOT/200 if LOT < 20; 10% otherwise	10%	LOT/200 if LOT < 20; 10% otherwise
Middle Bucket criterion c – widening of matching bands	5 years	3 years	5 years
Middle Bucket – spread by duration (where data allows)	Yes	No	Yes
Increased granularity for the real interest rate component of the LTFR	Yes	No	Yes
Spread over the LTFR	15 bps	5 bps	25 bps

# Market-adjusted valuation

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## Three-Bucket Approach and 2019 Field Testing

- Similar to last year, the MAV scenarios will be complemented by additional calculations:
  - Balance sheet based on the risk free rate, but not a full ICS calculation, to inform future refinements to the Three-Bucket Approach
  - Stressed economic conditions balance sheet
- To assess the impact of potential further refinements to the Middle Bucket qualifying criteria ahead of November's decision, the IAIS will also collect information through an **additional table**
- Revised scenario for the stressed balance sheet based on feedback from Volunteer Groups
  - Anchor the stress to a specific historical scenario (eg Financial Crisis, European Sovereign Debt Crisis )
  - Reflect economic realities
  - Single stressed scenario with three components:
    1. Increased spreads
    2. Downward parallel interest rate shift
    3. Increase in credit defaults

# Summary of Tax Treatment for 2019 Field Testing

Item	FT2018 approach	Refine	Refined FT2019 approach
DTAs on jurisdictional audited GAAP/SAP basis	Use DTAs on jurisdictional audited GAAP/SAP basis for ICS BS	Partially	Keep the FT2018 approach, but allow USSAP volunteers to use USGAAP DTA for the ICS BS.
Top-down vs Bottom-up approach	Use Top-down approach	No	-
Group effective tax rate	Use jurisdictional audited GAAP consolidated financial statements	Yes	Use weighted average statutory effective tax rate, weighted using the three year average of GAAP earnings before tax on a sub-group/entity level basis.
DTA recognised from MOCE	DTA on MOCE was not recognised.	Yes	Considering impact of DTA recognised from MOCE subject to whether MOCE is determined to be a temporary or permanent difference for assessment purposes. A midpoint is used for FT2019.
Utilisation assessment of DTA on ICS BS	Cap by DTL on ICS BS	No	-
Utilisation assessment of tax effect on capital requirement	Cap by DTL on ICS BS	Yes	Incorporate tax loss carry backs, and future taxable income projections stemming from insurance business for the utilisation assessment, while applying DTL limitations.
Treatment of DTA on ICS BS as capital resource	Classify net DTA on ICS BS as tier 2 basket item	No	-
Treatment of tax effect on the capital requirement	Net the tax effect on the capital requirement with the capital requirement	No	-