IAIS

INTERNATIONAL ASSOCIATION OF INSURANCE SUPERVISORS

IAIS Capital-Related Stakeholder Meeting

IAIS Capital, Solvency and Field Testing Working Group

Basel, 7 April 2016

Agenda (before lunch)

1. **Welcome and Introduction (60 minutes)**
2. **Market Adjusted Valuation (30 minutes)**
3. **MOCE (30 minutes)**
4. **Life Risks (45 minutes)**
5. **Catastrophe Risk (15 minutes)**

Agenda (after lunch up to coffee break)

6. **Premium and Claims Reserve Risk (20 minutes)**

7. **Market Risks (45 minutes)**

8. **Credit Risk (15 minutes)**

Agenda (last session)

9. **Asset Concentration Risk (5 minutes)**

10. **Operational Risk (5 minutes)**

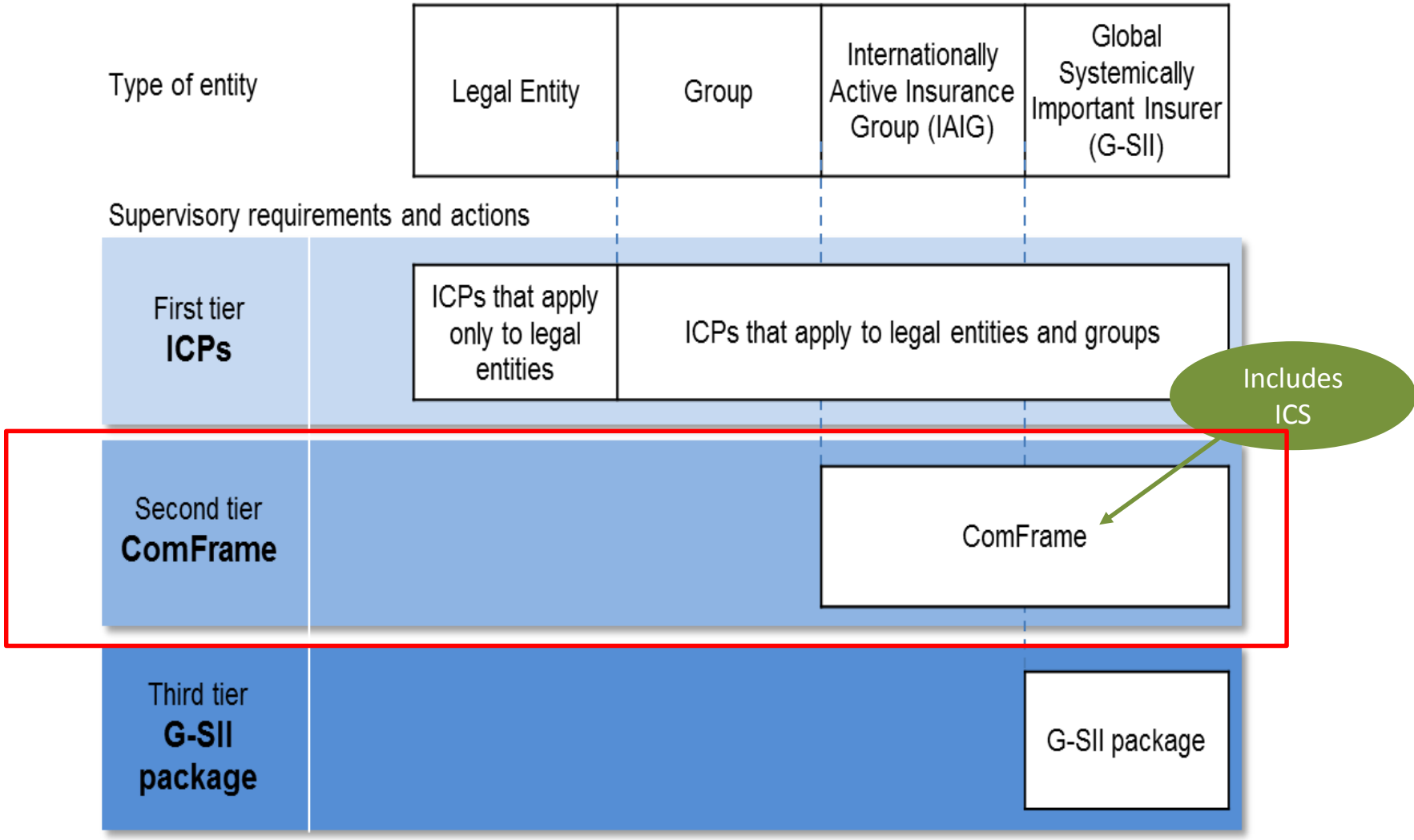
11. **Aggregation and Diversification (5 minutes)**

12. **Open question time for Stakeholders (1 hour)**

13. **Wrap up and next meetings (10 minutes)**

1. WELCOME AND INTRODUCTION

Architecture of IAIS international supervisory requirements



ComFrame for IAIGs

- **Common Framework for the Supervision of IAIGs**

- **Rationale:**
  - Increasingly globalised insurance markets need a global solution

- **Objectives:**
  - Establish a comprehensive framework for group-wide supervision that builds upon ICPs
    - Capital requirements for IAIGs
    - Qualitative requirements for IAIGs
    - Scope of group-wide supervision
    - Requirements for supervisors
    - Crisis Management and Resolution

  - Foster global convergence of regulatory and supervisory requirements for insurance groups

ComFrame – Scope of application

ComFrame (including ICS) will apply to **all IAIGs including G-SIIs** ('Global Systemically Important Insurers')

IAIGs to be identified by supervisory colleges based on two criteria (both need to be satisfied):

1. International activity

- Premiums are written in three or more jurisdictions, and
- Percentage of gross premiums written outsider the home jurisdiction is at least 10% of the group's total gross written premium

2. Size (average on 3 years)

- Total assets are at least USD 50 billion or
- Gross written premiums are at least USD 10 billion

Supervisors have discretion in applying the criteria

ComFrame – Structure

Module 1 - Scope

- Identification of IAIGs
- Process of identifying IAIGs
- Scope of supervision
- Identification of GWS (group-wide supervisor)

Module 2 – the IAIG

- IAIG's legal and management structures
- Governance
- ERM
- ERM Policies
- Capital adequacy assessment: development of Insurance Capital Standard (ICS)

Module 3 – The Supervisor

- Group-wide supervisory process
- Supervisory colleges, cooperation and coordination
- Crisis management and resolution measures among supervisors

Insurance Capital Standard (ICS)

The ICS is being developed in the context of the IAIS Mission:

- maintain fair, safe and stable insurance markets
- for the benefit and **protection of policyholders**
- and to contribute to **financial stability**

- The ICS aims at **comparability of outcomes across jurisdictions**
  - increased mutual understanding
  - greater confidence in cross-border analysis of IAIGs among group-wide and host supervisors

ICS - key points

- The ICS is a **group-wide, consolidated insurance capital standard** applicable to IAIGs
- The ICS is part of ComFrame, which addresses qualitative AND quantitative requirements for IAIGs
- The ICS is not intended as a legal entity requirement
- Once finalised and agreed, the ICS will be a measure of capital adequacy for IAIGs
- The ICS will constitute the **minimum standard** to be achieved and one which the supervisors represented in the IAIS are expected to implement in their respective jurisdictions (implementation issues are still under discussion)
- Supervisors will be free to adopt additional arrangements that set higher standards or higher levels of minimum capital.
- Moreover, they are free to put in place supplementary measures of capital adequacy for the IAIGs in their jurisdiction

Goals for the ICS – version 1.0

Goal for ICS Version 1.0 (for confidential reporting): The goal for this milestone is the delivery of an ICS for confidential reporting purposes based on:

- the identified two valuation approaches
- a standard method for calculating the ICS capital requirement

Upon completion of ICS Version 1.0, there will also be a plan to consider other methods of calculation of the ICS capital requirement including:

- the use of internal models (partial or full)
- external models
- variations of the standard method.

To be adopted by May/June 2017 for confidential reporting

Goals for the ICS – version 2.0

Goal for ICS Version 2.0 (for adoption within ComFrame): The goal for this milestone is the delivery of an ICS that is fit for implementation by supervisors:

- that will achieve an improved level of comparability compared to ICS Version 1.0 but possibly not the level of comparability envisaged by the ultimate goal
- may still include the two valuation approaches but aspires to reduce differences in valuation
- may allow for both the standard method for calculating the ICS capital requirement and other methods of calculation including:
  - the use of internal models (partial or full)
  - external models
  - variations of the standard method.

To be consulted on beginning May/June 2018, and adopted (together with ComFrame) in 2019

Goals for the ICS – Ultimate Goal

The ICS Ultimate Goal
(no final date attached):

- A single ICS that includes a common methodology by which one ICS achieves comparable, i.e. substantially the same, outcomes across jurisdictions.
- Ongoing work is intended to lead to improved convergence over time on the key elements of the ICS towards the ultimate goal.
- Not prejudging the substance, the key elements include valuation, capital resources and capital requirements.

Insurance capital standard

- 3 Main components of ICS:
  - Valuation
  - Qualifying capital resources
  - ICS capital requirement

ICS Ratio = qualifying capital resources / ICS capital requirement

- ICS applies to all IAIGs including G-SIIs
  - Definition of 'IAIGs' and 'Group' to be taken from ComFrame

- First Consultation Document (Dec 2014 – Feb 2015) focused on Insurance activities
  - Treatment of Non-Insurance activities in ICS will be addressed in future consultation

ICS development

- Developing a global capital standard for IAIGs is no easy task, given the different starting points and regulatory capital regimes in place across different jurisdictions

- This is why the IAIS has decided to deliver the ICS in stages with identified key milestones: version 1, version 2 and an ultimate goal

- It is a multi-annual process with field testing, consultation, stakeholders' meetings providing inputs to its development/amendments over the years

- **Important to recognise that not all issues may be addressed in a year, but the learning from field testing and general feedback is helping us to improve on the approaches/design/calibrations over the years…**

ICS development and field testing (1)

- **2015 Field testing** - Focus was on **testing design options (**e.g. practicality, complexity, robustness, ability to capture risks written in different jurisdictions) with initial notional calibrations (proxies for VaR 99.5% over a year)
  - On one hand, for some ICS risk charges, field testing results and feedback suggest we are on the right track – no change in design foreseen
  - On the other hand, for some other ICS risk charges field testing results and feedback suggest that design may not be appropriate – considering design changes

- **2016 Field testing** - **now need to focus on calibration -** need to ensure calibration level is more appropriate for 2016. To this end, we need to consider access to data for:
  - Global calibration
  - Justification of regional differences of calibration
  - Other granularity requested – is there calibration data?
  - A part of the next field testing exercise will also be used to collect data from volunteers to assist the calibration of insurance risk (life, non-life and health)
  - The 2016 ICS Consultation Document will seek feedback on design, methodologies and data to calibrate ICS risks

ICS development and field testing (2)

- Other issues we are trying to improve with respect to last year include:
  - **Valuation** – identifying an approach to deal with inappropriate volatility in capital resources – part 1 of the 2016 field testing will focus mainly on this including an assessment under a stress scenario
  - **Capital resources** – we have a better understanding of what is causing financial instruments not to qualify, including materiality – we made a few changes and we are collecting further data this year to identify appropriate solutions
  - **Management actions** - Interpretation and application needs more work – potentially broader scope, but need to avoid double counting
  - **Tax** – aim is for a consistent approach across all ICS
  - **Interest rate risk** – calibration methodology that also works in a negative and low interest rate environment
  - **Currency risk** – more appropriate granularity of calibration, consideration of requirements to hold capital locally
  - **Equity risk –** more appropriate calibration of equity volatility
  - **Credit risk** – more granular risk-based approach to commercial mortgages

Quantitative Field Testing for 2016

- 2+ phases
- Material for both phases to be released at the same time – 20 May
- **Phase 1**
  - Set of discounting options for the calculation of Current Estimate
  - Discounting options to be assessed also with respect to a "2007-08" type of scenario
  - BCR and HLA based on a default discounting option for 2016
  - Data due by 21 July to allow analysis over northern hemisphere summer
- **Phase 2**
  - ICS capital charges for each risk
  - Based on default discounting option for 2016 – we cannot ask volunteers to calculate the ICS on the basis of all discounting options
  - Non-life supplementary data to assist refinement of future calibrations – voluntary basis only
  - Data due by 15 September to allow analysis in northern hemisphere Autumn/Winter 2016/2017
  - Provides time to revise for June 2017 ICS Version 1.0
- **Phase 2+**
  - Life supplementary data to assist refinement of future calibrations – voluntary basis only
  - Data due by 31 October

2016 timeline: ICS development

Date	Action
Feb 25	Volunteer workshop on Phase 1 Draft Package, Basel
March 11	Stakeholders' meeting in Singapore
March 24	Beta testing began on full package with volunteers
April 7	Stakeholders' meeting in Basel
April 8	Volunteer workshop for beta testing, Basel
April 15	Beta testing comments due
May 20	Launch Field testing package Begin Field testing period
June 17 – 24	3 volunteer workshops – 17 June Budapest, 21 June New York, 24 June Hong Kong
June 20	Stakeholders' meeting in New York
Mid-July	Publish ICS Consultation Document (CD) (3-month consultation period) and 2016 Field Testing Technical Package
July 21	Phase 1 Field testing data due (Discounting, BCR and HLA confidential reporting)
Sept 15	Phase 2 data due (including non-life supplementary data for future calibrations)
Oct 31	Phase 2+ Life risks supplementary data (for future calibrations)

2. MARKET ADJUSTED VALUATION

MAV Discounting (1)

- Volunteers/Stakeholders remained concerned about **the volatility that the methodology used for the 2014 and 2015 Field Testing could introduce on Capital Resources**
  - For example, the methodology to adjust the basis (risk-free) yield curve may not adequately reflect the behaviour observed on the asset side of the balance sheet, regarding credit spreads

- **To this end, Volunteers have been advocating for a change to the adjustment methodology, to better align the behaviour on the two sides of the balance sheet**

- As a response, the IAIS has committed in 2016 to explore possible refinements to the adjustments to the basic curves, including their appropriateness during a stress scenario

- This approach will allow the IAIS to assess the effectiveness of the different approaches in the mitigation of excessive volatility of Capital Resources in the MAV balance sheet

MAV Discounting (2)

- Provides an overview of the options and reference points under consideration for the 2016 field testing, including changes to the discounting options for MAV in the light of the beta testing feedback

- Further feedback welcomed on details but nature of options now unlikely to change

MARKET ADJUSTED VALUATION – DISCOUNTING OPTIONS

MAV Glossary

- **Option** – refers to the policy choices for testing (e.g. # of buckets, approach for allocation to buckets, method for spread adjustment, etc.)
- **Scenario** – refers to the combination of testing options and the particular economic scenario (e.g. end of 2015 scenario, 2008-type stressed scenario)
- **Single reference portfolio (SRP)** – refers to a single portfolio, per currency, for determining aggregate spreads, as was used in the 2014 field-testing
- **SRP linked to typical jurisdictional assets holdings** – refers to a reference portfolio of assets, per currency, that is selected to be representative of the aggregate asset holdings of insurers in that market
- **Weighted average of multiple portfolios (WAMP) linked to the assets held by the firm** – refers to multiple reference portfolios that are combined as a weighted average by firms, using their own asset composition as weights

Before Beta Testing - MAV Discounting Options proposed to volunteers

		Reference method Risk-free	Reference method SRP 2015 methodology	Option 1: SRP linked to typical jurisdictional assets holdings	Option 2: WAMP 100%	Option 3: WAMP High buckets	Option 4: WAMP Low buckets	Option 5: Stress testing
Liability segmentation (buckets)		**N/A**	**1**	**1**	**1**	**3**	**3**	**Continuous**
Portfolio Composition		**N/A**	**Reference portfolio per currency**	**Represent-ative portfolio per currency**	**Weighted average based on firm's assets**	**Weighted average based on firm's assets**	**Weighted average based on firm's assets**	**Weighted average based on firm's assets**
Default Deduction		**N/A**	**Included in 60% deduction of spread**	**Risk correction specified by IAIS**	**Risk correction specified by IAIS**	**Risk correction specified by IAIS**	**Risk correction specified by IAIS**	**Risk correction specified by IAIS**
Application ratio								
Liquidity buckets	1	**0%**	**100%**	**100%**	**100%**	**90%**	**60%**	**Liability liquidity assessed through stress testing**
	2					**70%**	**40%**	
	3					**50%**	**20%**	

After Beta Testing - MAV Discounting Options after volunteer feedback

	Reference method Risk-free	Reference method 2015 methodology	Reference method Volunteer asset earning rate	Option 1: SRP linked to typical jurisdictional assets holdings	Option 2: WAMP 100%	Option 3: WAMP Buckets
Liability segmentation (buckets)	N/A	1	3	1	1	3
Portfolio Composition – limit to BBB	N/A	Reference portfolio per currency	Volunteer's own portfolio – own view of earning rate	Representative portfolio per currency	Weighted average based on volunteer's assets	Weighted average based on volunteer's assets
Default Deduction	N/A	Included in 60% deduction of spread	Risk correction	Risk correction	Risk correction	Risk correction
Application ratio						
Liquidity buckets	0%	100%	80%	100%	100%	80%
			60%			60%
			40%			40%

MAV Discounting – basis of options and reference methods

Reduced options

- Majority view from volunteers who responded to beta testing - reduction of options plus addition of one reference method (the volunteer's own asset earning rate). After discussion in CSFWG:
  - **Drop Former Option 5** (stress-testing approach) and **Former Option 6** (risk-free discounting and adjustment to assets to reflect 5-year average)
  - **Combine Former Options 3 and 4** (WAMP bucketing methods) – decision to go with bucketing at 80%, 60% and 40% - broadly higher application ratios are for licenced life insurers and lowest ratio is for licenced non-life insurers
  - **Add Volunteer's own asset earning rate** as a reference method – not a candidate approach but a useful reference point to assess accuracy of the reference portfolio

Projected cash flows

- Should be consistent with the curve used for discounting including the Adjustments

Greater granularity requested for asset portfolios

- Feedback from volunteers – further granularity is necessary particularly life/non-life split as assets held for those liabilities are fundamentally different. CSFWG decided:
  - **Option 1 (SRP)** – no change, but collect information on different life/non-life asset portfolios through WAMP approach
  - **Option 2 and 3 (WAMP approaches)** – collect non-life/life split, for option 3 lower bucket is based on non-life assets only (including all reinsurance), 2 higher buckets based on life assets only

MAV Discounting – basis of options and reference methods

Assets to be included in WAMP driven by asset side or liability side

- WAMP approach will be driven by liability side – i.e. currency of the liability determines the currency of the assets allowed to be used to determine the spread

WAMP Specific issues

- Surrenderable products (including all participating business) will not go in top bucket for Option 2 for 2016 field testing – to be further explored for ICS version 1.0

Other issues for all discounting options and reference methods

- Assets held by holding companies are ignored in the WAMP approach – only assets held by licenced insurers included
- Flat application of the spread which is calculated at all maturities up to the entry point of extrapolation
- 10 bps added long-term forward rate to notionally reflect spread adjustment across the unobservable part of the curve

Stress scenario

- Not emphasising 2008 as a basis as other periods are more stressful for some markets

Change to base curves

- Remove 10 bps credit risk adjustment for risk-free rate curves based on government bonds (not for those based on swaps)

Potential implication on ICS capital requirement

- Potential spread risk introduced by the discounting proposals to be considered for future development of the ICS

3. MOCE

Agenda - MOCE

- T MOCE: proposed refinements for the 2016 FT
  - Cost of capital
  - Projected capital requirement: treatment of market risks
  - Allocation of projected capital to patterns
  - Projections patterns (life)
  - Projection patterns (health)
  - Projections patterns (non-life)
- P MOCE: proposed refinements for the 2016 FT
  - Non-life unearned premium
- Other issues relevant for the 2016 FT
  - Tax treatment
  - MOCE for Morbidity/disability liabilities
- MOCE in the 2016 ICS consultation

T MOCE – Cost of capital

- 2015 FT approach
  - A fixed 6% for all

- Approach being taken in 2016 FT
  - Apply a revised fixed cost of capital (based on observed equity risk premium)
  - Collect volunteer individual cost of capital

- Post 2016 FT
  - Investigate linking the cost of capital with the economic environment (e.g. interest rate level, spread level)
    - the data collected during the FT will allow IAIS to assess the impact

T MOCE – Treatment of market risk

- 2015 FT approach and feedback:
  - Interest rate was included as part of the projected capital
  - It is material for life firms, very material for some firms
  - Feedback received that it is (mostly) hedgeable

- Approach being taken in 2016 FT
  - Remove interest rate risk from the projected capital requirement
    - Interest rate risk is hedgeable for short maturities for which financial instruments are traded, less so for long maturities. It will not be practical to split between the part arguably hedgeable and the part arguably non-hedgeable.

T MOCE – Allocation of projected capital to the patterns

- 2015 FT approach and feedback:
  - Feedback received that allocation of projected capital should be based on the diversified amount
  - The entire amount of CAT risk should not be allocated as premium and reserve risk as cat risk follow a shorter pattern

- Approach being taken in 2016 FT
  - Changes to the allocation process
    - Based on diversified amounts
    - More embedded in the template
    - Some allocation (e.g. cat) should be more accurate

T MOCE – Projection pattern - life

- 2015 FT approach and feedback:
  - Firm provided one projection pattern (for life)

- Approach being taken in 2016 FT
  - Allow volunteers to provide differentiated patterns for the different life risks and health risk and 4 currencies.
    - If consider too burdensome and/or not material, a volunteer could provide a single pattern
    - This will allow analysis of differences and better inform decision for ICS 1.0
    - **This will not prejudge the choice for ICS 1.0**

T MOCE – Projection pattern – non-life

- 2015 FT approach and feedback:
  - IAIS provided 3 projection patterns and allocated projected capital

- Approach being taken in 2016 FT
  - Revised (longer) patterns based on supervisory data

P MOCE – refinement for 2016 FT

- 2015 FT approach and feedback:
  - Non-life: unearned premium reported for the MOCE purpose
  - Lessons from analysis: unearned premium seems in some cases inconsistent with pre-claim current estimate

- Approach being taken in 2016 FT
  - Improve the specification/definition of unearned premium
  - The template will allow for a more accurate capture of the data relevant for the non-life part of the P MOCE calculation

MOCE – Other topics relevant for the 2016 FT

- Tax treatment
  - 2015 FT: no tax impact was reflected in the MOCE
  - For 2016 FT: remains pre-tax. Tax impact will be considered going forwards consistent with the holistic review of tax issues across the ICS

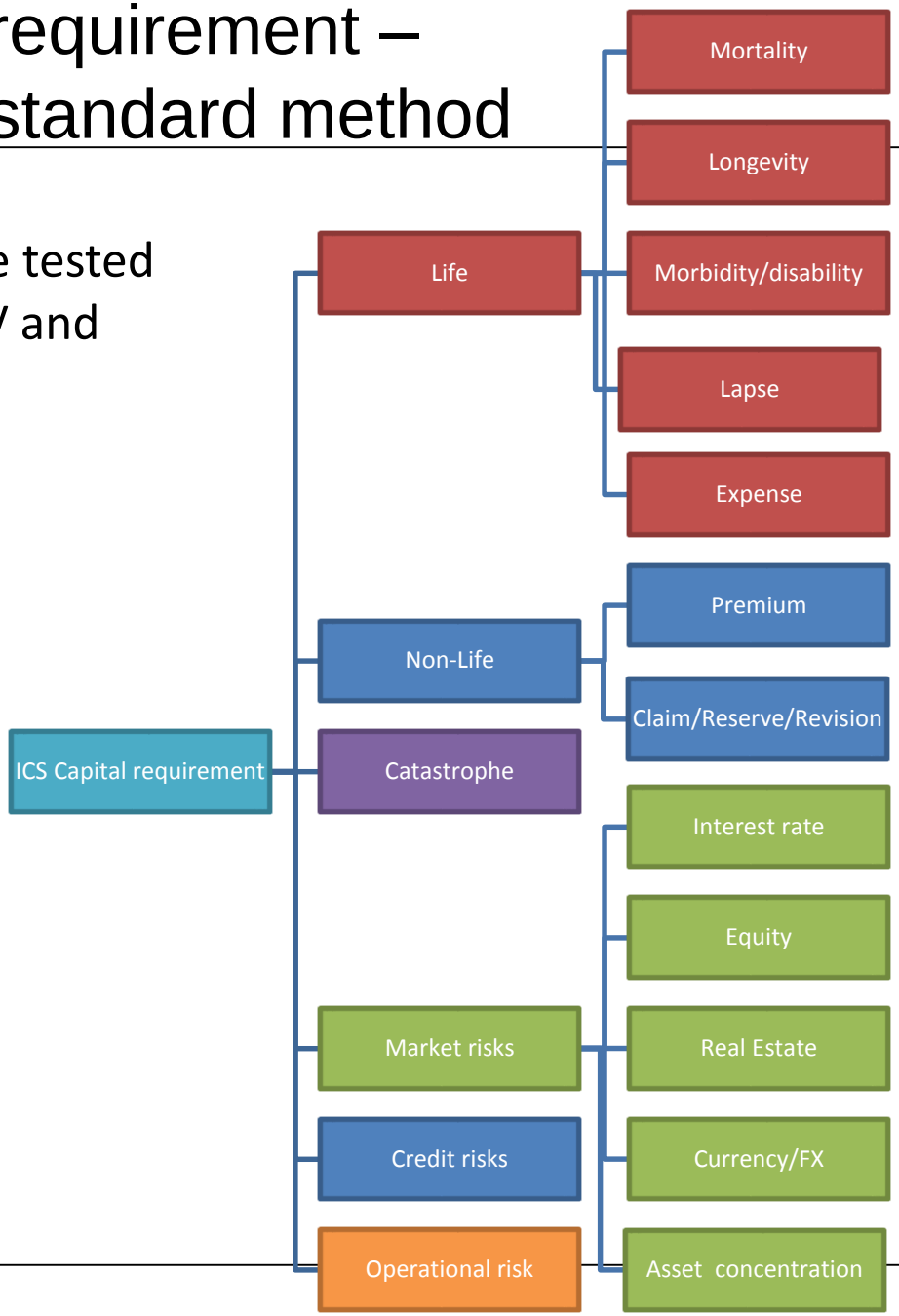
- Treatment of morbidity/disability
  - For 2016 FT: Two options presented for Health and Morbidity/disability calculations, with the former being the default calculation that flows through into other ICS components. MOCE will be calculated on the basis of the default.

MOCE – in the 2016 ICS consultation

- The next consultation will cover
  - Rationale for the inclusion of a MOCE
  - How the MOCE should interact with the other components of the ICS (e.g. required capital, capital resources)

ICS Capital requirement – overview of standard method

- All risks to be tested on both MAV and GAAP+ basis



4. LIFE RISKS

4. LIFE RISKS - MORTALITY AND LONGEVITY RISK

Mortality / Longevity Risk – 2016 Field Testing

- Shock both the trend and level components
  - Trend shock first, then level shock; Volunteers will be asked to report the amount of the trend shock and then the combined shock
  - Trend shock is an additive shock to base mortality improvement assumptions (i.e. trend shock + base mortality improvement assumptions)
  - Level shock is a multiplicative shock to base mortality assumptions (i.e. (1 + level shock) x base mortality assumptions

	Trend Shock	Level Shock
Mortality	-1%	+10%
Longevity	+1%	-15%

4. LIFE RISKS - MORBIDITY AND DISABILITY RISK

Morbidity and disability risk – 2016 field testing

- Two proposals will be included for 2016 field testing

- ***Proposal 1:*** create a new health module, thereby removing the distinction between "similar to life" and "similar to non-life"
  - stress approach is employed, based on a segmentation by Health lines of business
  - proportional shock factor (by health line of business) will be specified and applied directly to the claim amounts and expenses

- ***Proposal 2***: address the key risk drivers of two very distinct classes of (similar to life) health products:
  - Products that provide medical treatment due to illness, accident, disability or infirmity or financial compensation that is directly linked to the cost of such treatment
  - Products that provide a financial compensation arising from illness, accident, disability or infirmity that is not directly linked to the cost of medical treatment

PROPOSAL 1 – HEALTH RISK

Health risks

Following the results and feedback from the 2015 Field Testing Exercise, proposal of a new design for Health risks:

➔ Revised structure

- All Health business brought together in a dedicated risk module
- Deletion of the Life “morbidity-disability” risk
- Move some Non Life lines of business into the health module

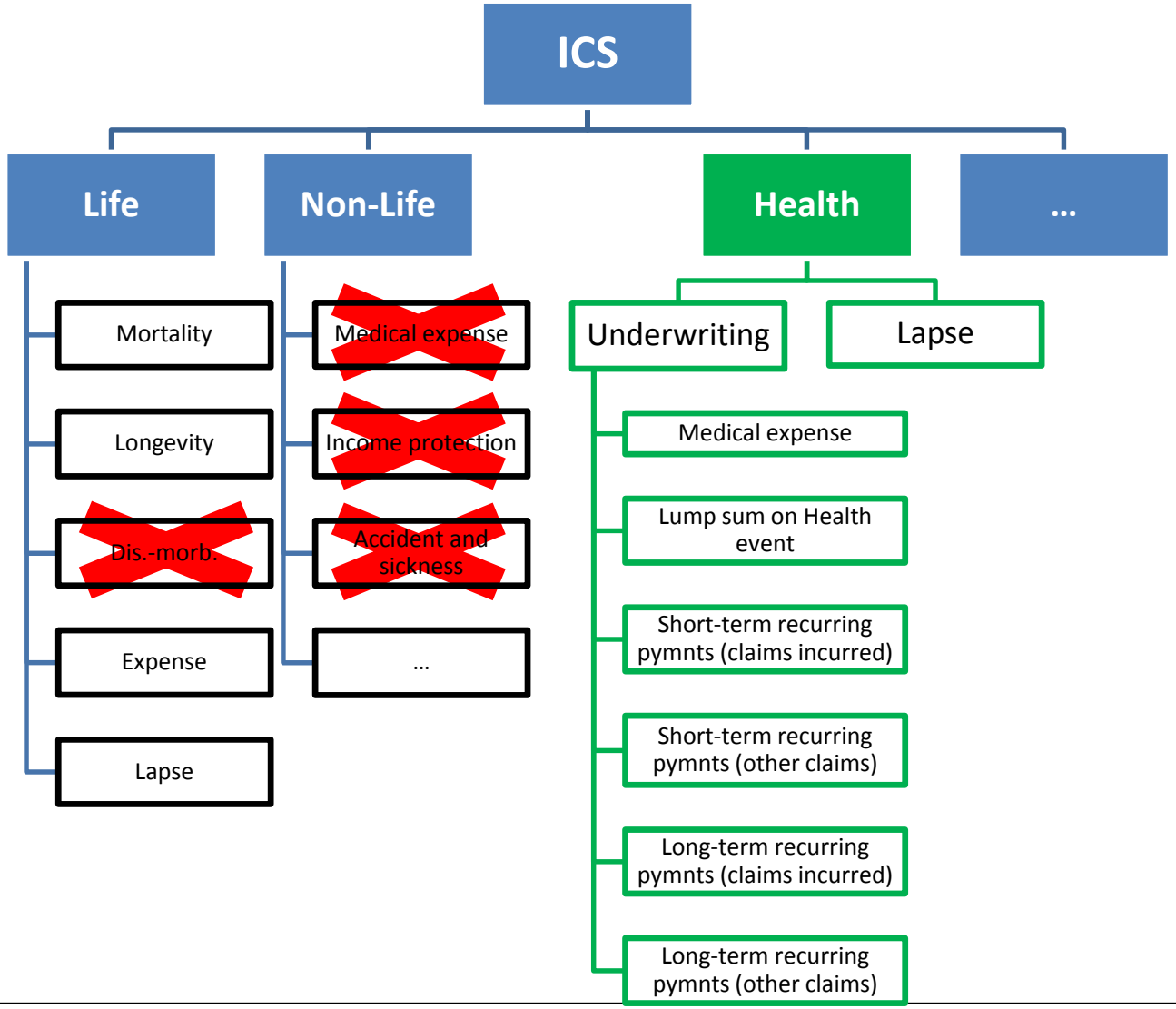
➔ Revised calculation

- Based on the uplift of all future claim and expense payments included in the Current Estimate (CE) calculation

➔ Revised calibration

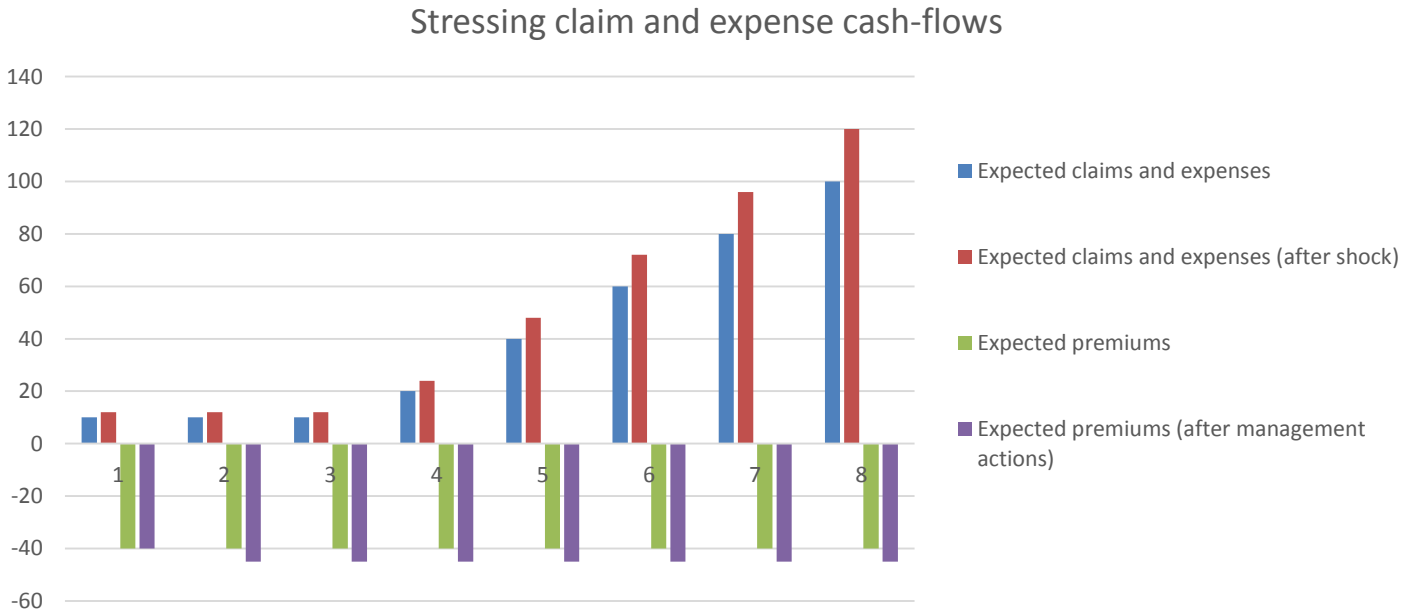
- Based on a data collection from Volunteers

Health module - structure



Health underwriting risk - calculation

- For each Health risk group, specification of a proportional shock factor…
- … to be applied directly to claims and expenses in the CE calculation



- CE before shock = 330 – 320 = 10
- CE after shock = 396 – 320 = 76 ➔ gross capital charge = 66
- Allowance for management actions ➔ net capital charge = 31

Health underwriting risk - calibration

Data collection: historical series of incurred claim cost per accident year, for the following segments:

- Medical expenses
- Lump sum in case of health event
- Short-term recurring payments (fixed / variable)
- Long-term recurring payments (fixed / variable)

Observation of the yearly volatility (standard deviation) of claim costs by accident year, per unit exposure

Health underwriting risk - main findings from data collection

No evidence of a difference in calibration between fixed and variable guarantees, for recurring payments

➔ *Proposal to remove the distinction fixed / variable*

No evidence of geographical differences in volatility factors between North America, Japan and Other developed countries (no workable data received for other regions of the world)

➔ *No geographical differentiation proposed at this stage*

Health underwriting risk - adjustments to be made

For recurring benefits guarantees: necessary distinction between claims incurred and claims expected

➔ *Lower factor needed for claims already incurred, compared to claims expected*

For multi-annual business:

- Applying a 1-year 99.5% VaR upward stress to the full value of future claim payments may overshoot
- Applying this same uplift factor only to 1 accident year may undershoot

➔ *Determination of a scaling factor = haircut to the gross uplift factor, based on the weight of next accident year claims in the total Current Estimate of claims. The scaling factor should be subject to a floor*

Health lapse risk

- Essentially protection business: lapse risk is different compared to Life business
- However, the risk of massive lapsation exists (e.g. due to reputational issues)

➔ *Proposal to include Health (mass) lapse risk*

Tentative calibration: proposal of a 40% lapse of policies contractually exposed to lapse.

PROPOSAL 2 - MORBIDITY AND DISABILITY ALTERNATIVE APPROACH

Morbidity and disability - 2015 field testing

In 2015, the Life Morbidity/Disability risk was defined as the simultaneous occurrence of the following stresses:

i. For all regions, an increase of the inception rate of 30%;

ii. For all regions, a decrease of the recovery rate of 20%

iii. For claim payments increase :

a. For EEA and Switzerland, US and Canada, Japan and Other developed countries, an increase in the amount of medical payments of 5% and an increase in the annual inflation of 1%

b. For emerging markets, an increase in the amount of medical payments of 5% and an increase in the annual inflation of 3%

Morbidity and disability - feedback from volunteers

From the 2015 Field Testing exercise

- Approach is complex and difficult to implement
- High calibration
- Different interpretations and implementations of the capital charges

Morbidity and disability alternative approach

- Proposed design changes:
  - Separate the application of 4 simultaneous stresses across the board into two components, which separately address the key risk drivers of two very distinct classes of (similar to life) health products:

1) Products that provide medical treatment due to illness, accident, disability or infirmity or financial compensation that is directly linked to the cost of such treatment
2) Products that provide a financial compensation arising from illness, accident, disability or infirmity that is not directly linked to the cost of medical treatment

Morbidity and disability alternative approach

- Component 1: “Medical Treatment”
  - Subject to Medical Payments and Inflation stresses

- Component 2: “Financial Compensation”
  - Subject to Inception Rates and Recovery Rates stresses
  - To address the issue of long term business, a different calibration will be used for longer time horizons (i.e. the inception rate stress will be lower after the first year)
  - To address the concern of double counting, but at the same time keep an approach that appropriately captures the risk of products exposed to only one of the two risk drivers, remove the simultaneous application of the Inception Rate and Recovery Rate stresses, capturing the maximum of the two charges instead.

Morbidity and disability alternative approach

The Life Morbidity/Disability risk is defined as the sum of two components (mutually exclusive in terms of scope):

- "Medical Treatment" insurance:

  i. Claim payments increase:

  a) For EEA and Switzerland, US and Canada, Japan and Other developed countries, an increase in the amount of medical payments of 5% and an increase in the annual inflation of 1%

  b) For emerging markets, an increase in the amount of medical payments of 5% and an increase in the annual inflation of 3%

- "Financial Compensation" insurance:

  MAX (Inception Rate Stress; Recovery Rate Stress), where

  i. Inception Rate Stress = For all regions, an increase in the inception rate used to calculate the Current Estimate:

  a) 25%, in the first year

  b) 15%, in each subsequent year

  ii. Recovery Rate Stress = For all regions, a decrease in the recovery rate of 20%

Morbidity and disability risk – 2016 field testing

- Proposal 1 (Health module) will be the default option in the ICS, meaning the results of this approach will be aggregated with the other risks to determine the ICS capital requirement

- Implications of proposal 1 on other aspects of ICS
  - MOCE: define run-off pattern for health module
  - Non-life: certain lines of business will be transferred from non-life to the health module
  - Operational risk: include health module in the calculation of operational risk
  - Aggregation and diversification: include health in the correlation matrix

4. LIFE RISKS- LAPSE RISK

Lapse risk – shocks for 2016 field testing

- Level and Trend
  - Design – No change
  - Level Component:

2015 FT	2016 Stress	2016 Sensitivity
+/- 40% to base lapse assumptions	+/- 40% to base lapse assumptions	+/- 50% to base lapse assumptions

  - Information on sensitivity analysis to be requested to assess impact of alternative calibration

Lapse risk – shocks for 2016 field testing

- Mass Lapse
  - Design – Do not differentiate between policies/products with positive or negative surrender strain. Continue to have different charges for retail and non-retail policies/products
  - Level Component:

2015 FT	2016 Stress	2016 Sensitivity
(a) 30% instant lapse for retail policies with +ve surrender strain (b) 50% instant lapse for non-retail policies with +ve surrender strain	(a) 30% instant lapse for retail policies (b) 50% instant lapse for non-retail policies	(a) 20% instant lapse for retail policies (b) 40% instant lapse for non-retail policies

  - Information on sensitivity analysis to be requested to assess impact of alternative calibration

4. LIFE RISKS - EXPENSE RISK

Expense risk – 2015 field testing

- Expense Risk Factors in 2015 FT:

	Unit Expense	Inflation
US/Canada	6%	1%
EEA/Switzerland	6%	1%
Japan	6%	1%
Other developed markets	8%	2%
China	8%	3%
Emerging markets	8%	3%

- Feedback received so far indicates:
  - design is appropriate
  - the level of stresses for unit expense may be high
  - that level of stresses for inflation may be high especially for emerging markets which have a higher stress factor, and given the compounding effect of inflation over time

Expense risk – 2016 field testing

- Maintain the same stress levels as 2015

- However, main feedback for this risk is that inflation stresses are high especially, the compounding effect over time and the fact that it is unlikely that insurers would allow expenses to keep increasing without taking action.

- Going forward: IAIS will ask Volunteer IAIGs to provide evidence to justify a different level of stresses for the inflation component or how can the inflation component be refined

- IAIS will continue to explore other data sources, such as whether inflation data specific to insurance expenses is available (rather than general inflation)

4. LIFE RISKS - CALIBRATION OF LIFE RISKS

Calibration of life risks – 2016 Field Testing

- Supplementary data collection
  - Voluntary, although Volunteers are encouraged to provide comprehensive data to enable an objective and sound calibration of stresses by geographic regions / segmentation
  - In the absence of sufficient and reliable data, calibration will be based mostly on supervisory judgment with an element of prudence
  - Regions where more data is provided will benefit from more credible calibration
  - Regions where less data is provided will rely on data from other regions and this will require the use of a global bucket with a more prudent calibration

Calibration of life risks – 2016 Field Testing

- Supplementary data collection – deadline 31 October
  - Mortality and longevity risk:
    - Data on policies inforce and expected and actual deaths by (1) sum insured and (2) the number of policies.
    - Annual data for at least the last 20 years by the geographical segmentation defined in the ICS.
    - Data is requested for two product segments: Protection Life and Annuities.
  - Lapse risk (level and trend)
    - Data on policies inforce and expected and actual lapses by (1) sum insured and (2) the number of policies.
    - Annual data for at least the last 20 years by the geographical segmentation defined in the ICS.
    - Data is requested for Protection Products, Savings Products and group policies.
  - Lapse risk (mass lapse)
    - Data on policies inforce and expected and actual lapses by (1) sum insured and (2) the number of policies.
    - Monthly data for calendar years 2008 and 2009 by the geographical segmentation defined in the ICS.
    - Monthly data for calendar years 1997 and 1998 for business written in Asia only (i.e. during the Asian Financial Crisis)
    - Data is requested for Protection Products, Savings Products and group policies.
  - Morbidity/disability risk:
    - We are also working to propose a template for data collection regarding the alternative approach to Morbidity/Disability risk

5. CATASTROPHE RISK

Catastrophe Risk

- 2015 Field Testing approach and general feedback
  - Double counting with premium and reserve risks could be avoided by adjusting factors
  - Material push back regarding the liability scenario in particular regarding its calibration and absence of diversification
  - Some scenarios were not provided (e.g. terrorism, marine)

- Major Changes for 2016
  - Capital charge for natural catastrophe to be calculated as
    - [99.5th percentile – mean loss] (net of protections)
    - Rather than only the 99.5th percentile loss
  - Material revisions to Liability scenario (see next slide)

Catastrophe Risk – Latent Liability

- In the 2015 Field Testing, we tested a scenario for "liability catastrophe"
  - Calculated by applying prescribed factors to premiums in the granularity of region + LOB + direct/prop or non-proportional

- Based on the external and internal feedback, the following amendments have been made to the scenario in 2016 Field Testing:
  - Name: liability catastrophe → latent liability risks
  - Scope: clearer definition of the specific scenario: "mass tort" affecting product liability, general commercial liability and workers compensation/ employers liability
  - Issue of double counting with reserve risk addressed through clearer definition of the scope
  - No diversification assumed and statutes of limitation considered
  - The scenario allocates a large market loss (e.g. 99.5% VaR)
  - Exposure takes into account current and prior years (seeking a practical way to do so), and takes into account statutes of limitations where applicable

6. PREMIUM AND CLAIMS RESERVE RISK

Premium and Claims Reserve Risk

- General approach in 2015 Field Testing:
  - Premium & Reserve Risks to be reported based on their location
  - 12 geographical areas, 241 jurisdictional lines of business
  - Consistency and “manageability” ensure through using a limited set of factors (8 for premium, 8 for reserve)
  - Multi-steps aggregation

- Approach in 2016 Field Testing:
  - Overall approach unchanged
  - Minor improvements to segmentation
  - *Calibration & allocation of segments to factors has changed based on preliminary calibration work (see next slide)*

Premium and Claims Reserve Risk Calibration

- Some jurisdictional data provided by supervisors for calibration
- Data was put into common format and run through series of “modules” that produce indicated premium and reserve risk factors.

- Where data was not available, mappings were used to produce factors that are consistent.
  - Jurisdictional input sought on the reasonability of these mappings.

- While not part of factor work, empirical correlations between premium and reserve risk were considered

- 2016 Field Testing factors were provisionally amended from 2015 based on initial calibration work
  - For this provisional adjustment, a change of no more than 2 buckets from 2015 Field Testing was allowed.
  - Adjustments are provisional for 2016 Field Testing; claims triangle data will be requested from volunteers in 2016 to aid further calibration work for ICS v1.0

Premium and Claims Reserve Risk - Post 2016 FT

- As part of the 2016 FT data will be collected to perform a more thorough calibration
  - In the absence of sufficient and reliable data, calibration will be based mostly on supervisory judgment with an element of prudence
  - The preliminary calibration done pre-FT help define data, process and method

- As part of the calibration exercise, several features will be reviewed:
  - the number of factors;
  - the level of the factors;
  - the correlation factors.

- The 2016 ICS consultation will ask for technical input on the actuarial methods for the calibration
  - For both premium and reserve risk
  - Considering the structure and data collected as part of the field testing
  - Multiple methods will be applied to data

7. MARKET RISKS

7. MARKET RISKS - INTEREST RATE RISK

Interest rate risk in 2015 FT

- FT 2015
  - Three shock scenarios: (1) up, (2) down, (3) flattening
    - 2 data points used for historical data to determine the shocks: 90 days and 30 years.
    - The length of historical data observation term depends on the availability of data for each currency
    - Up scenario: $r_i' = r_i + a_i\sqrt{\max(r_i, 0.5\%)} + b_i$
    - Down scenario: $r_i' = r_i - a_i\sqrt{\max(r_i, 0.5\%)} + b_i$
    - Flattening scenario: $r_i' = r_i + c_i\sqrt{\max(r_i, 0.5\%)} + d_i$
  - In each scenario, factor a and c (volatility), and b and d (adjustment to convert weekly data to annual), are predetermined based on historical data, listed in separate tables in Field Testing technical specifications

FT 2015 approach and negative and low rates

- This methodology created some anomalous stressed curves in 2015 field testing
- For 2016 applying the 0.5% floor and the square root formula causes issues with existing base yield curves that have low or negative yields

Negative yields and low yields prevalent

Sovereign Bond Yield Curves

Jan 29 2016

	1Y	2Y	3Y	4Y	5Y	6Y	7Y	8Y	9Y	10Y	11Y	12Y	13Y	14Y	15Y	20Y	30Y
Switzerland	-0.90	-1.00	-0.95	-0.85	-0.77	-0.65	-0.57	-0.45	-0.35	-0.29	-0.22	-0.16	-0.11	-0.06	-0.01	0.14	0.31
Japan	-0.07	-0.08	-0.07	-0.07	-0.07	-0.08	-0.05	-0.01	0.04	0.10	0.15	0.21	0.27	0.33	0.39	0.81	1.07
Germany	-0.46	-0.48	-0.45	-0.41	-0.30	-0.19	-0.07	0.05	0.21	0.34	0.38	0.43	0.47	0.52	0.56	0.81	1.05
Netherland	-0.45	-0.46	-0.42	-0.35	-0.26	-0.14	-0.02	0.14	0.28	0.45	0.49	0.53	0.57	0.61	0.65	1.05	1.20
Australia	-0.43	-0.44	-0.39	-0.30	-0.23	-0.10	0.10	0.24	0.41	0.58	0.61	0.64	0.68	0.71	0.74	1.23	1.42
Finland	-0.42	-0.42	-0.38	-0.32	-0.20	-0.14	0.05	0.17	0.35	0.60	0.70	0.80	0.90	1.01	1.11	1.16	1.26
Denmark	-0.28	-0.28	-0.18	-0.08	0.02	0.11	0.20	0.30	0.46	0.61	0.64	0.66	0.69	0.71	0.74	0.87	1.13
France	-0.41	-0.41	-0.34	-0.24	-0.13	-0.01	0.14	0.26	0.47	0.65	0.76	0.87	0.98	1.09	1.21	1.35	1.66
Belgium	-0.40	-0.41	-0.34	-0.28	-0.18	-0.04	0.11	0.43	0.62	0.78	0.87	0.97	1.06	1.15	1.25	1.35	1.64
Ireland		-0.35	-0.24	-0.08	0.03	0.24	0.43	0.68	0.76	0.85	0.87	0.89	0.92	0.94	0.96	1.09	1.35
Sweden	-0.56	-0.37	-0.21	-0.04	0.23	0.33	0.43	0.61	0.73	0.86	1.37	1.40	1.43	1.47	1.50	1.67	
Canada	0.43	0.39	0.41	0.46	0.63	0.65	0.81	0.95	1.06	1.17	1.25	1.33	1.41	1.48	1.56	1.96	1.99
Norway	0.54	0.58	0.58	0.58	0.73	0.88	1.01	1.14	1.22	1.32							
Italia	-0.07	-0.01	0.04	0.24	0.45	0.72	0.88	1.03	1.29	1.44	1.52	1.61	1.69	1.78	1.86	2.16	2.59
Spain	-0.08	-0.01	0.06	0.22	0.47	0.79	1.05	1.20	1.43	1.54	1.65	1.76	1.86	1.97	2.08	2.51	2.73
UK	0.35	0.34	0.51	0.67	0.91	1.04	1.23	1.37	1.49	1.58	1.65	1.72	1.79	1.86	1.94	2.16	2.35
US	0.43	0.78	0.99	1.17	1.35	1.52	1.69	1.77	1.85	1.93	1.97	2.01	2.05	2.09	2.13	2.34	2.74
Israel	0.07	0.25	0.33	0.59	0.75	1.22	1.34	1.47	1.70	1.96	2.01	2.06	2.12	2.17	2.22	2.48	3.00
Portugal	-0.01	0.38	0.86	1.29	1.58	2.12	2.49	2.68	2.78	2.88	2.96	3.05	3.13	3.22	3.30	3.66	3.83
Greece		12.95	12.21	11.46	11.12	10.78	10.43	10.09	9.75	9.40	9.35	9.30	9.25	9.20	9.15	8.95	

i < 0%
0%≦ i <0.5%
0.5%≦ i <1.0%
1.0%≦ i

(Source: Bloomberg)

Interest rate risk - Redesign issues

- Field Testing evidence suggests that the calibration was high for some currencies and volunteers in 2015
- The shape of stressed curves need to be refined by adding more calibration points along the curves
- Review if all three scenarios (up, down and flattening) are necessary
- How to extrapolate curves beyond the last observable data point? If stress curves need to converge to a long-term rate?

Proposed 2016 Field Testing – Interest rate risk

Provisionally:

- Calibrated using Principal Component Analysis(PCA)
- Calibration for each currency based on currency specific volatility (last year single volatility applied across all currencies)
- PCA calibration based on 12 observable maturities – Years 1 to 10, 20, 30
- Each maturity evaluated using 20 years of data, unfiltered

We will seek input on appropriate calibration methods in the 2016 ICS Consultation Document

Proposed 2016 Field Testing – Interest rate risk (2)

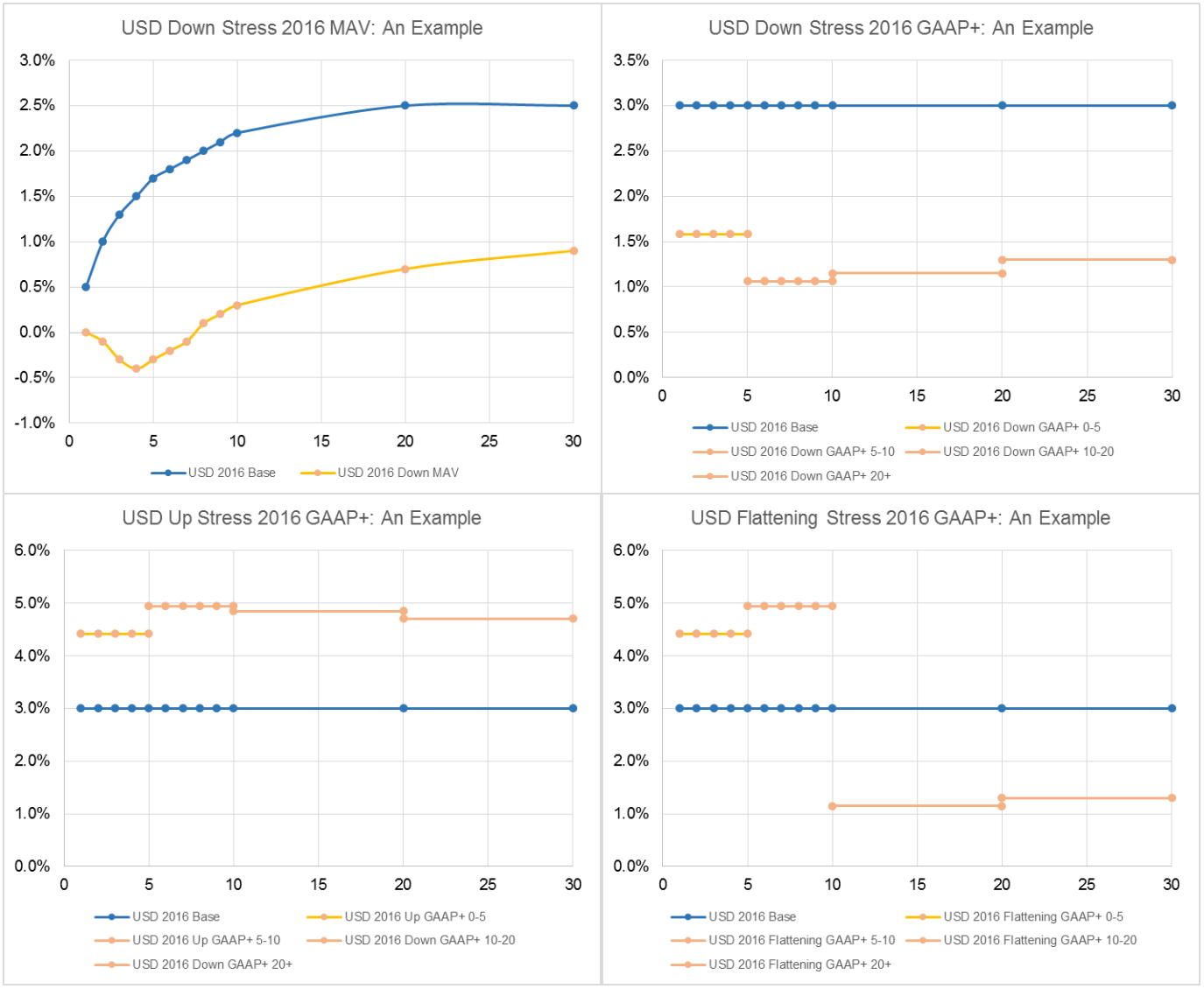
- PCA only applied to observable component of the curve
- Stress the long-term forward rate (LTFR) by 15% before notional spread adjustment – interpolate from last point on the observable curve to LTFR stressed by 15%
- Stress scenarios: Maximum of up and down stress calibrated according to the 1st Principal Component and combine with flattening stress calibrated according to the 2nd Principal Component to reflect the first two principal components.
- Note steepening scenario will not be required because it is not expected to produce a stress for insurance groups – this could be an additional stress derived from the 2nd Principal Component
- Change aggregation method from last year: use square root method compared to taking the maximum of the up, down and flattening stress

$$\sqrt{\left(\text{Risk amount from } 1^{st} \text{ principal component}\right)^2 + \left(\text{Risk amount from } 2^{nd} \text{ principal component}\right)^2}$$

GAAP+ Interest Rate Stress Approach

- Asset stress would be consistent with the standard method under MAV. The majority of assets under GAAP Plus for all jurisdictions are valued at fair value. In a few jurisdictions, there may be a portion of assets (bonds classified as held to maturity, loans) that are measured at cost and these would not be impacted by the stress scenario
- For insurance liabilities where a discount curve is applied, the stress would be consistent with the standard method under MAV. For example, under GAAP Plus, guarantees and options are generally calculated using a discount curve and would apply the standard shock
- For insurance liabilities where a single discount rate is applied:
  - Stresses (in bps) would be developed for five duration segments: 0-5 years, 5-10 years, 10-20 years, 20-30 years, and 30+ years for each currency (30+ years bucket is a new bucket for 2016 FT)
  - Stress for each segment is the volunteer's average of the difference between the MAV base and stress curves for each tenor
  - GAAP+ stress for liabilities is the change in value of liabilities when using the base and stressed GAAP+ discount rate
  - This methodology is applied to up and down stress. The flattening stress is subject to an up stress for the 0-5 years and 5-10 years duration buckets, and down stress for 10-20 year, 20-30 year, and 30+ years buckets
  - If a volunteer cannot separate its liabilities into duration buckets, volunteers should apply the maximum stress from the MAV curves to all contracts. There would be only up and down stresses in this case

MAV vs. GAAP+ Single Rate – Hypothetical Example



7. MARKET RISKS - EQUITY RISK

Equity Risk - key changes for 2016 field testing

- One scenario (prices down, volatility up)
- Use of implied volatility shocks for different tenors
- Use of FTSE Index instead of MSCI index for segmentation, resulting in slight change in calibration

7. MARKET RISKS – REAL ESTATE RISK

Real Estate Risk - key changes for 2016 field testing

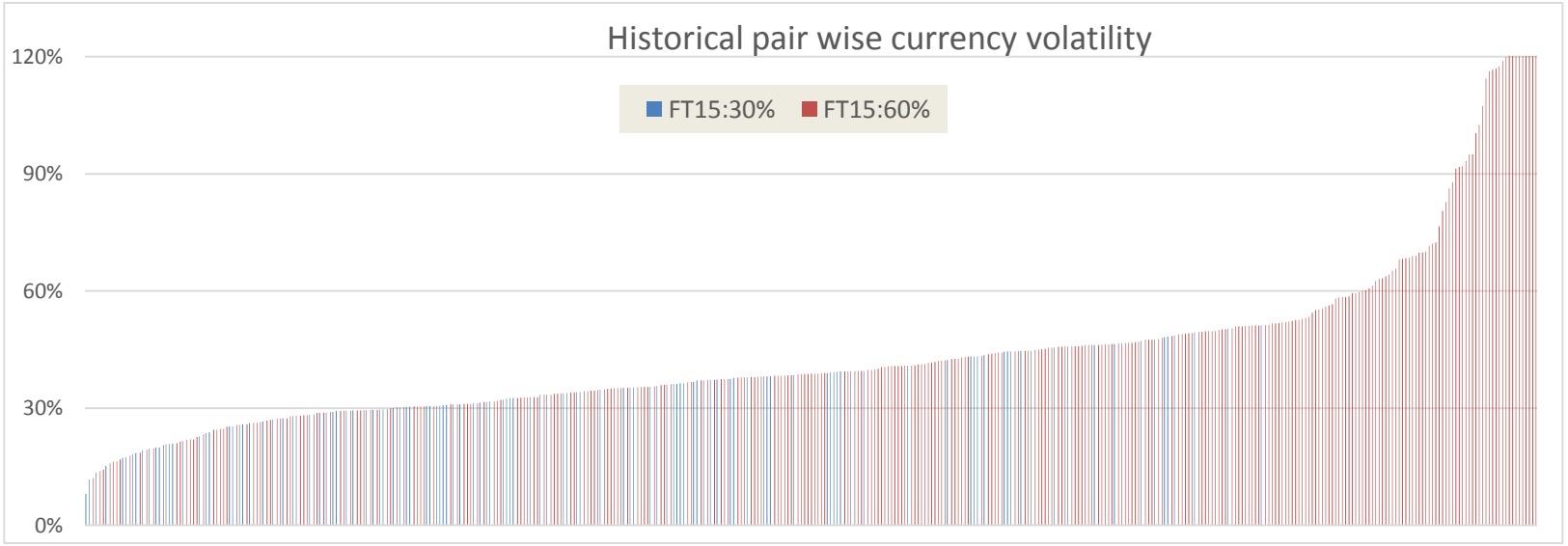
- For the market adjusted approach (MAV):
  - ➢ All property to be valued at fair value

- Real estate risk will also be tested under the GAAP with adjustments approach
  - Required capital is calculated as the difference, if positive, of the balance sheet value at the reporting date less 70% of the property's fair value at the reporting date.
  - If the fair value of such a property is not available then required capital is 30% of the property's book value.
  - Required capital is determined on a property-by-property basis.

7. MARKET RISKS – CURRENCY RISK

Currency risk - calibration of stresses 2015 field testing

1. 2015 field testing used two stresses:
   A. 30% if both currencies in pair are from developed markets
   B. 60% if either currency in pair is from an emerging market
2. This is not an appropriate fit compared to historical volatility for the majority of currency pairs and lead to a substantial overestimate for many currency pairs.



Currency risk - 2016 field testing

- Calibration of stresses:
  - Slot currency pairs in buckets based on pairwise currency volatility since 1 January 1999 (launch of the Euro)
  - No special treatment for currency pegs
  - Round historic pairwise currency volatility for each currency pair to the nearest 5%, starting with a low bucket of 5%
  - Cap the stress at 75%

- Treatment of investments in foreign subsidiaries
  - Net open position defined as (Assets – Liabilities) – up to a 10% deduction of the net insurance liabilities in that currency from the net open (long) position in that currency. A limit would ensure that no net open position becomes a short position due to the deduction.
  - 10% of liabilities is meant to serve as a proxy for the subsidiary's capital requirement (i.e. the subsidiary's contribution to the ICS)
  - 2015 field testing revealed that the ICS is approximately 11% of total assets
  - Information on subsidiary capital requirements will be collected in this year's Baseline

Calibration of stresses (reference currency USD)

	Since 1.1.1999	Bucket
CAD	25.3%	25%
CHF	35.4%	35%
CNY	4.1%	5%
DKK	30.1%	30%
EUR	30.2%	30%
GBP	26.6%	25%
HKD	1.2%	5%
JPY	30.6%	30%
KRW	27.5%	30%
SGD	14.0%	15%
TWD	11.8%	10%

Calibration of stresses (reference currency EUR)

	Since 1.1.1999	Bucket
CAD	30.1%	30%
CHF	22.1%	20%
CNY	29.8%	30%
DKK	2.0%	5%
GBP	23.9%	25%
HKD	30.1%	30%
JPY	38.4%	40%
KRW	33.9%	35%
SGD	23.9%	25%
TWD	27.8%	30%
USD	30.3%	30%

8. CREDIT RISK

Credit Risk – key changes for 2016 field testing

- Credit for management actions
- Expanded use of external credit ratings/ designations
- More granularity for commercial and residential mortgage factors
- Multilateral development bank / Supranational obligations will be given 0% stress factor as per exposures to national governments
- Supplementary data collection for exposures to national governments

9. ASSET CONCENTRATION RISK

Asset Concentration Risk – key changes for 2016 field testing

- To be based upon the total assets (insurance business) threshold only compared to 2015 Field Testing where this threshold plus one based on capital resources was tested

10. OPERATIONAL RISK

Operational risk

- 2015 Field testing assessed three factor-based options. The options were based on the following exposure measure/s:
  a) **other risk charges** - e.g. the sum of the other charges after any diversification credit
  b) **the business of the IAIG** – e.g. premiums or liabilities or account balance or
  c) a combination of (a) and (b)

- Default approach for the 2015 ICS calculation was based on (b):
  - Exposures are maximum of factors applied to written premiums and current estimates; both are gross of reinsurance
  - Also Factor based charge for growth above 20% in written premiums

- Considering a minimum or maximum contribution of the operational risk charge to the overall ICS capital requirement

Operational risk - way forward

- 2016 Field testing on the same basis as 2015

- Longer term strategic focus
  - Clarify and document rationale for IAIS positions/calibrations
  - Sensitivity analysis
  - Increased awareness of external knowledge about operational risk

11. AGGREGATION AND DIVERSIFICATION

Diversification – some background

- Diversification fundamental to insurance. When managing a portfolio of risks diversification between risks is expected. This is expected at multiple levels, both within risks of the same nature and between risks of differing nature.
- Risks are measured individually in the ICS. To calculate the ICS, volunteers apply a defined list of shocks/factors to the balance sheet. The impact of diversification within a risk is reflected in the assessment of those risks
- Diversification benefits also come into play in a second stage of the calculations of the ICS, when the results are aggregated between risks using correlation parameters set in a matrix prescribed by the IAIS.
- The overall ICS calculation (post diversification) should set a level of capital for the IAIG necessary to withstand losses at a 99.5% confidence level.
- ICS is being built for international groups so diversification benefits are expected to be significant

ICS Diversification - approach

- 2015 Field Testing and consultation supported the use of
  - A Variance / Covariance approach, and
  - The use of multiple steps in this approach

- In 2016 the IAIS will continue to explore the use of Variance / Covariance approach with multiple steps
  - Specifics vary by the nature of the risks being addressed

- The approach will be extended to include the new Health Risk

- Work on calibration will also continue
  - Between risks
  - In aggregate

Diversification in the ICS

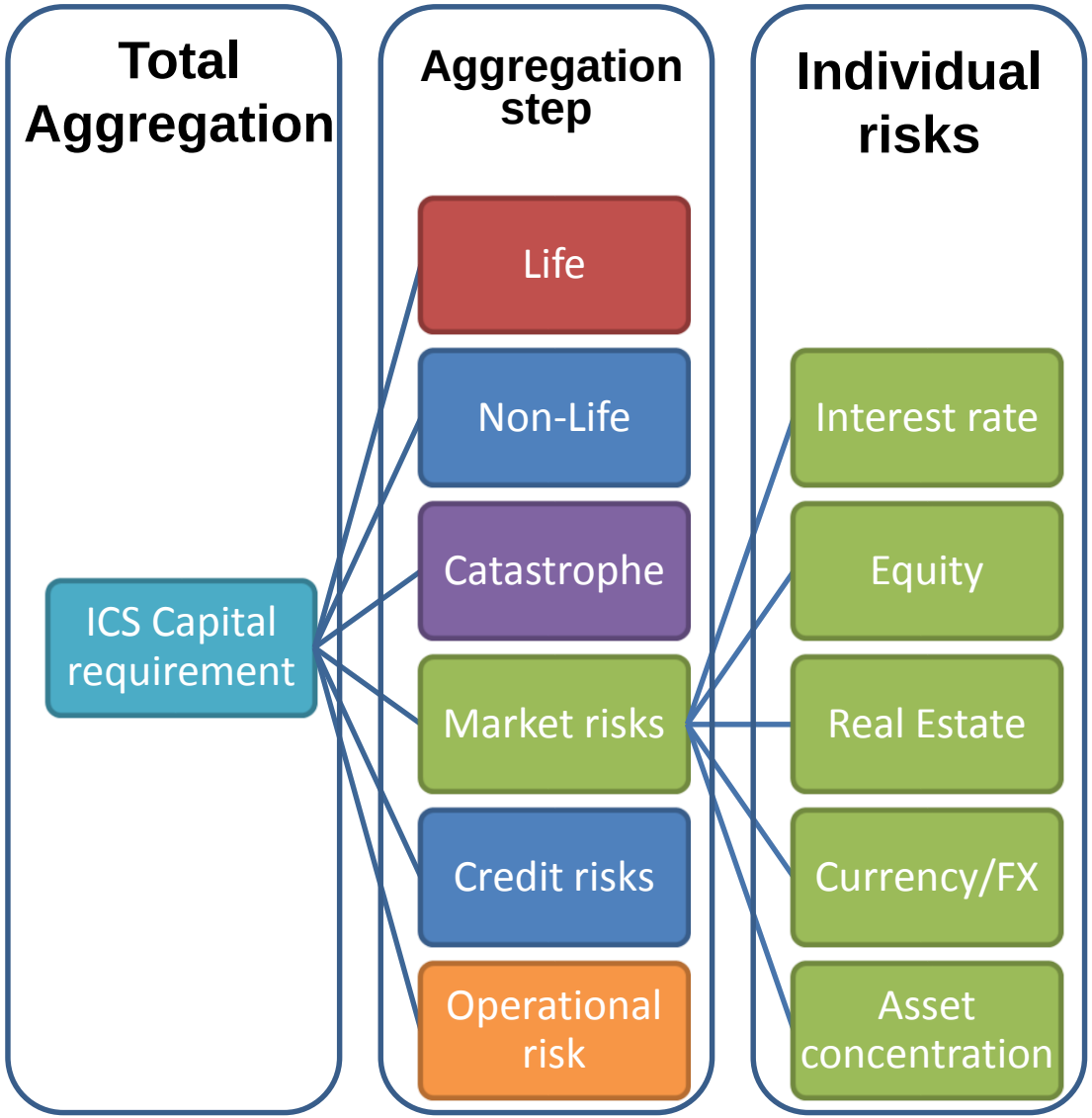
- Multistep approach (two-step)
  - Diversification within ICS risk
  - Diversification between ICS risks

- Different approaches to diversification within risks
  - Not all include geographic diversification – with reasons
  - Some are more complex than others – e.g. 3 step diversification within non-life

- Diversification structure and factors for the ICS standard method are:
  - prescribed by the IAIS: it is a component of a standard method
  - their initial calibration is based on supervisory judgement
  - To avoid spurious accuracy – only 25% increments used in correlation matrices

ICS Diversification: Variance/Covariance tiered matrix approach

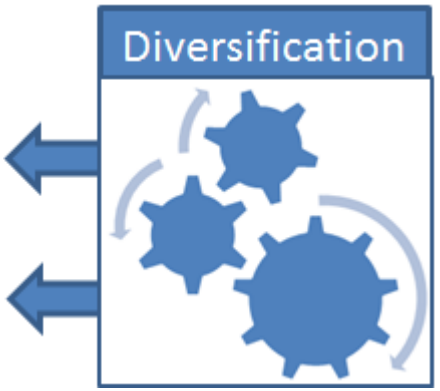
Multiple-step



Diversification in the ICS

- A granular approach to risks
  - 850 individual risks components modelled (calibrated individually at a notional VaR 99.5%)

- Combined using various techniques
  - Simple sum
    - e.g.: life risks in different geographic areas
  - Using linear (tail) correlation assumptions
    - e.g.: 50% correlation between Equity and Real estate
    - e.g.: -25% between Mortality and Longevity
  - Maximum of multiple results
    - e.g.: upward or downward change in exchange rates



- With an allowance for risk sharing
  - with policyholders (participating products)
  - with tax authorities (loss event impact on deferred taxes)

- To produce the final ICS

12. OPEN QUESTION TIME FOR STAKEHOLDERS

13. WRAP UP AND NEXT MEETINGS

Key Dates for Stakeholders

- 16-17 June 2016 Global Seminar in Budapest
- 20 June 2016 in New York (capital-related)
- Mid-July 2016
  - Launch of 2016 ICS Consultation with responses **due 3 months later**
  - Publishing of 2016 Field Testing package

For a comprehensive overview of planned IAIS stakeholder meetings, please check the IAIS Events Calendar webpage for details and updates.

(http://www.iaisweb.org/page/events/calendar//file/59827/draft-schedule-of-iais-stakeholder-meetings-2016-march-update-for-public)