INTERNATIONAL ASSOCIATION OF INSURANCE SUPERVISORS

Public

Risk-based Global Insurance Capital Standard Version 1.0 for Extended Field Testing

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About the IAIS

The International Association of Insurance Supervisors (IAIS) is a voluntary membership organisation of insurance supervisors and regulators from more than 200 jurisdictions. The mission of the IAIS 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.

Established in 1994, the IAIS is the international standard setting body responsible for developing principles, standards and other supporting material for the supervision of the insurance sector and assisting in their implementation. The IAIS also provides a forum for Members to share their experiences and understanding of insurance supervision and insurance markets.

The IAIS coordinates its work with other international financial policymakers and associations of supervisors or regulators, and assists in shaping financial systems globally. In particular, the IAIS is a member of the Financial Stability Board (FSB), member of the Standards Advisory Council of the International Accounting Standards Board (IASB) and partner in the Access to Insurance Initiative (A2ii). In recognition of its collective expertise, the IAIS also is routinely called upon by the G20 leaders and other international standard setting bodies for input on insurance issues as well as on issues related to the regulation and supervision of the global financial sector.

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1 Introduction

1. On 9 October 2013, the IAIS announced its plan to develop a risk-based global insurance capital standard (ICS). This was in response to the request by the Financial Stability Board (FSB) that the IAIS produce a work plan to create "a comprehensive group-wide supervisory and regulatory framework for Internationally Active Insurance Groups (IAIGs)."[1] In its statement of 18 July 2013 the FSB stated that "a sound capital and supervisory framework for the insurance sector more broadly is essential for supporting financial stability." The FSB further reinforced its support for the development of the ICS in its statement of 6 November 2014.[2]

2. Since its announcement in October 2013, the IAIS has been undertaking a multi-year quantitative Field Testing process with Volunteer Insurance Groups (Volunteer Groups) including potential IAIGs and current Global Systemically Important Insurers (G-SIIs).

3. The IAIS has conducted two quantitative Field Testing exercises in the development of the ICS - one in 2015 and another in 2016. IAIS development of subsequent quantitative ICS Field Testing exercises was informed by IAIS analysis of the submitted data as well as additional feedback and comments provided by Volunteer Groups as part of their submissions or through dedicated workshops. Currently, the IAIS is conducting its third quantitative ICS Field Testing exercise, with data to be submitted in September 2017. In addition to the Field Testing process, the IAIS has reached out to the broader group of stakeholders during dedicated physical stakeholder meetings and by engaging in public consultation on ICS matters.

4. The development of this document benefitted from the feedback received on two Consultation Documents (CDs). The first CD was issued on 17 December 2014 (2014 ICS CD) and the second one on 19 July 2016 (2016 ICS CD). The volume of responses to the 2014 and 2016 ICS CDs was unprecedented in IAIS history. The IAIS diligently worked through the valuable comments received.

5. In 2017, in relation to the ICS — a key part of the ComFrame project — the IAIS agreed to maintain the target dates of 2017 for Version 1.0, which is intended for extended field testing and 2019 for Version 2.0, which is intended for implementation. Once ComFrame (including the ICS) has been implemented by jurisdictions, there is an expectation of appropriate supervisory consequences for IAIGs that do not meet the ICS requirements. As it prepares ICS Version 2.0, the IAIS and its Members have committed to extend field testing to all IAIGs and other interested firms. The IAIS will also clarify what is expected from IAIGs and their supervisors during the period of annual field testing from 2017 to 2019.

6. The purpose of this document is to describe the background and rationale for different components of ICS Version 1.0 for extended field testing, which will be an important input into the future development of the ICS. Extended field testing means:

- The field testing exercise is extended to all potential IAIGs and other interested groups (Volunteer Groups). There are a number of new Volunteer Groups in 2017 Field Testing.

[1] http://www.financialstabilityboard.org/publications/r_130718.pdf
[2] http://www.financialstabilityboard.org/wp-content/uploads/pr_141106a.pdf

- The exercise contains extended data requests on technical and policy issues that the IAIS will be seeking to resolve for ICS Version 2.0. The design and calibration of ICS Version 1.0 for extended field testing, including options provided, is not necessarily indicative of decisions that will be made for ICS Version 2.0. The options that are being explored in ICS Version 1.0 for extended field testing are not necessarily the only options that will be explored for ICS Version 2.0. Rather, 2017 Field Testing is designed to gather sufficient data to inform a future direction without limiting the IAIS to choosing from only the options specified in field testing.

7. While field testing remains a voluntary exercise, the IAIS aims for all potential IAIGs to be involved in field testing as the ICS project further develops towards ICS Version 2.0. Those that are familiar with previous years of field testing will note a change in terminology to 'Volunteer Groups'. This change in terminology is intended to acknowledge that some firms already participating in Field Testing or who have expressed interest in joining Field Testing do not meet the definition of an IAIG. The change in terminology does not reflect a change in the application of the ICS, which is intended to apply to IAIGs and G-SIIs.

1.1 Features of ICS Version 1.0 for extended field testing

8. The content of ICS Version 1.0 for extended field testing demonstrates progress in narrowing the options in field testing for valuation and capital requirements. This progress reflects lessons learned from 2016 Field Testing, responses to the 2016 ICS CD and the valuable input and contributions from Volunteers Groups.

9. With respect to valuation, the data collected and the analyses carried out following last year's field testing exercise enhanced knowledge of the impacts of different approaches to discounting. This enabled the IAIS to narrow the number of options to three under the market adjusted valuation approach (MAV) and two under GAAP[3] with adjustments valuation approach (GAAP Plus). The 2017 Field Testing exercise will test the High Quality Asset (HQA) approach in both the MAV and GAAP Plus valuation approaches. This will enable detailed comparability analysis between the two valuation approaches, which is expected to assist in creating greater convergence in valuation for ICS purposes.

10. With respect to capital requirements, the IAIS has been able to narrow down to a single approach for Morbidity/Disability risk rather than the two options tested in 2016 Field Testing. On Interest Rate risk, the optionality within GAAP Plus has been clarified so that an approach to Interest Rate risk consistent with the jurisdictional GAAP Plus design can be applied.

11. On capital resources, further exploration of open issues based on feedback from field testing and the 2016 ICS CD will occur in 2017 Field Testing. This should enable a more informed assessment of the outcomes of different design options.

12. For ICS Version 1.0 for extended field testing, Volunteer Groups will be able to assess the impact of different design options through the impact on ICS ratios.

1.2 Issues Covered in this Document

13. Compared to the field testing package, which includes the Technical Specifications, Template, Questionnaire and yield curve spreadsheets, this ICS Version 1.0 for extended field

[3] Generally Accepted Accounting Principles

testing document has as its intended audience all stakeholders. To this end, it is a milestone document that describes issues in a less technical way than the Technical Specifications. It also explains the rationale for the design and calibration of the ICS components and, where relevant, the various options being considered. This document contains some high-level results from 2016 Field Testing; however, it should be noted that these results will evolve in 2017 due to changes in the population of Volunteer Groups as well as changes in the design and calibration of the ICS Standard Method. It also references the responses to the 2016 ICS CD as part of the explanation for the design and calibration of the ICS and attempts to set out future steps towards ICS Version 2.0 including future field testing exercises and consultations.

14. This document covers important aspects of the ICS construction focusing on the development of ICS Version 1.0 for extended field testing, namely:

- ICS valuation covering the two valuation approaches, MAV and GAAP Plus;
- ICS capital resources;
- ICS capital requirement based on the standard method; and
- Scope of application: perimeter of the calculation of the ICS.

1.3 Issues Not Covered in this Document

15. This document does not address matters that will be dealt with in the development of ICS Version 2.0. The IAIS is aware that stakeholders have a number of questions related to the implementation of the ICS and its long-term development. In particular, the future process of implementation of ICS Version 2.0 and the potential incremental costs and benefits to Volunteer Groups and Supervisors. It is important to acknowledge that the IAIS cannot deal with all ICS-related issues simultaneously and further technical development will help frame many of the implementation questions so that these issues can be included in the 2018 Consultation Document.

1.3.1 Integration of the ICS into ComFrame

16. 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 this comprehensive framework. ComFrame will have an integrated structure covering all elements of the framework, in order to ensure its consistency and comprehensiveness. For this reason, as a next step, the IAIS will consider how to integrate the ICS into this framework.

17. In particular, the IAIS will consider how the ICS, which is being developed as a Prescribed Capital Requirement (PCR) for IAIGs, should be addressed in other parts of ComFrame, particularly those relating to Enterprise Risk Management (ERM) - including the Own Risk and Solvency Assessment (ORSA) - the supervisory process and reporting.

18. The IAIS acknowledges comments from stakeholders that there needs to be a balance between qualitative and quantitative requirements for IAIGs. It will explore this issue further as part of its consideration of how the ICS integrates with other parts of ComFrame.

1.4 Providing Feedback

19. While this is not a formal consultation document, stakeholders may provide feedback to the IAIS on ICS Version 1.0 for extended field testing by sending comments to iais@bis.org with the subject "Feedback on ICS Version 1.0 for extended field testing". Any feedback received will be considered in the development of ICS Version 2.0.

1.5 Next Steps

20. The broad timetable is summarised in Table 1 as follows:

Table 1. ICS and Field Testing Timetable

DATE	MILESTONE
September 2017	Data due for 2017 field testing process Discussion of ICS Version 2.0 begins
2nd Quarter 2018	Launch of 2018 field testing process
Mid-2018	Publication of comprehensive ComFrame consultation including ICS Version 2.0
3rd Quarter 2018	Data due for 2018 field testing process
Late 2018	Comments due on ICS Version 2.0 and ComFrame consultation
Late 1st / early 2nd Quarter 2019	Launch of 2019 field testing process
Early 3rd Quarter 2019	Data due for 2019 field testing process
IAIS 2019 General Meeting	Adoption of ComFrame, including ICS Version 2.0

2 Insurance Capital Standard

2.1 Context and Overview

21. This document focuses on the insurance component of the ICS.[4] This document is structured in a way that sets out all of the components of the ICS. As a necessary preliminary step, the scope of application defining the perimeter of the ICS calculation is described in section 3.

22. The valuation basis of assets and liabilities is an integral component of the ICS. ICS Version 1.0 for extended field testing is being developed based on the two valuation approaches set out in section 4.

23. The definition of qualifying capital resources sets out criteria and specifications that consider policyholder protection and loss absorbency; the criteria and options under consideration are set out in section 5. All potential capital resources are assessed against these definitions to determine whether they are qualifying capital resources.

24. The ICS capital requirement, calculated using a risk-based method, is the amount of capital resources needed to cover loss(es) at the specified target criteria of 99.5% Value at Risk (VaR) over a one-year time horizon.

25. The ICS Ratio (a capital adequacy measure) is determined by comparing the amount of qualifying capital resources to the ICS capital requirement using the following ratio:

ICS Ratio = qualifying capital resources/ICS capital requirement

26. As explained in the introduction, this year's field testing template will allow Volunteer Groups to assess the impact of various options contained within field testing through the use of a simulation tool. Different from 2016 Field Testing where the template calculated four ICS ratios,[5] there will not be a single ICS ratio calculation that should be considered as indicative of the future direction of the ICS. For 2017 Field Testing, the simulation tool included in the template will allow the calculation of ICS ratios, taking into account the options under consideration in valuation, capital resources and capital requirements. For the purpose of ICS Version 1.0 for extended field testing, two such options have been designated as a "benchmark," which means the valuation option (one each for MAV and for GAAP Plus) for which the full set of ICS risk charges should be calculated.

27. The capital requirement part of ICS Version 1.0 for extended field testing has been developed as a standard method specifying the appropriate treatment of risk, the treatment of risk mitigation techniques and aggregation/diversification. Section 6 sets out the general architecture of the ICS capital requirement and approaches for the risks.

[4] Non-insurance aspects are mentioned briefly in section 3.1.
[5] Namely, two ratios on a MAV basis and two ratios on a GAAP Plus basis allowing for the effect of the Cost of Capital Margin Over Current Estimate (C-MOCE) and Prudence MOCE (P-MOCE) to be observed for each valuation basis.

28. Section 7 provides preliminary considerations about the tax treatment across the different elements of the ICS.

2.2 ICS, ComFrame and the Insurance Core Principles (ICPs)

29. The ICS is part of ComFrame,[6] a comprehensive framework being developed to address qualitative as well as quantitative requirements for IAIGs. This framework will evolve and be refined over time.

30. The ICS must necessarily achieve a greater degree of comparability than achieved through implementation of the ICPs. The ICPs are general in nature and are designed to be implemented in a wide variety of contexts in a proportionate manner. This intent is best described in the Assessment Methodology set out in the ICPs:

> *Paragraph 12 of the ICPs updated November 2015[7]:*
>
> *The framework described by the ICPs is general. Supervisors have flexibility in determining the specific methods for implementation which are tailored to their domestic context (eg legal and market structure). The standards set requirements that are fundamental to the implementation of each ICP. They also facilitate assessments that are comprehensive, precise and consistent. While the results of the assessments may not always be made public, it is still important for their credibility that they are conducted in a broadly uniform manner from jurisdiction to jurisdiction.*

31. Once finalised and agreed, the ICS will establish minimum standards for setting levels of capital for IAIGs, including methods of calculating the ICS capital requirement and ICS capital resources. Supervisors may adopt additional arrangements that set higher standards or higher levels of minimum capital. Moreover, they may put in place supplementary measures of capital adequacy for the IAIGs in their jurisdiction. Supervisors may use additional capital measures to address, for example, potential inaccuracies in measuring levels of risk which is inherently uncertain in any capital requirement or determination of capital resources. Where a jurisdiction employs a supplementary capital measure in conjunction with the ICS, the capital required under the supplementary measure may, in some instances, be higher. Details of how the ICS will be implemented as a minimum standard will be set out in a subsequent consultation on the ICS.

32. Taking into consideration comments received on the 2014 ICS CD, the IAIS determined that the ICS should be implemented as a PCR. Insurance Core Principle (ICP) 17.4 defines a PCR as a solvency control level above which the supervisor does not intervene on capital adequacy grounds. The PCR treatment provides the most flexibility as supervisors are able to initiate discussions with the IAIG in order to restore its PCR without invoking their strongest consequences.

33. Given that the ICS is a group-wide, consolidated insurance capital standard applicable to IAIGs and G-SIIs, the domestic context of the jurisdiction in which the IAIG or G-SII is located or domiciled is much less relevant. All IAIGs and G-SIIs will be shaped by the

[6] See http://www.iaisweb.org/page/supervisory-material/common-framework/file/58726/revised-comframe-draft-2014

[7] See http://www.iaisweb.org/page/supervisory-material/insurance-core-principles

jurisdiction in which they are headquartered but by their very nature they are multi-national entities with stakeholders outside of the domestic location or domicile context.

34. Because the ICS is a group-wide, consolidated insurance capital standard, it is intended as neither a legal entity requirement nor to affect or replace existing arrangements or capital standards for legal entity supervision in any jurisdiction. Any jurisdiction choosing to reference the ICS in the development of its domestic solvency framework for insurance legal entities does so at its sole discretion.

35. Once finalised, the ICS will be a measure of capital adequacy for IAIGs and G-SIIs. The ICS is one component of ComFrame that should be used by group wide supervisors to assess the financial condition of an IAIG. Please refer to ComFrame and the ICPs for more information about other proposed expectations in the assessment of IAIGs' capital adequacy and with respect to the setting of IAIG-specific internal capital targets and capital management policies (eg ORSA and ERM).

2.3 Principles for ICS Development

36. The IAIS published a first version of the principles set forth in Table 2 in September 2014. Principles 3 and 6 were subsequently amended following the 2014 ICS CD. These principles will be followed in the ICS development.

Table 2. The ICS Principles

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 Principle 3: One of the purposes of the ICS is the foundation for Higher Loss Absorbency (HLA) for G-SIIs. Initially, the Basic Capital Requirements (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 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 pro-cyclical 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 pro-cyclical 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 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.

37. On 25 June 2015, the IAIS announced a series of goals related to the development of the ICS. These goals clarify the delivery process for the ICS. The series of goals provide for the following milestones:

- Mid-2017 – ICS Version 1.0 for extended field testing
- End-2019 – ICS Version 2.0 (for adoption within ComFrame)
- No particular date attached – ICS Ultimate Goal

2.4 Goal for ICS Version 1.0 for extended field testing

38. The goal for this milestone is the delivery of an ICS for extended field testing purposes based on:

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

39. Upon completion of ICS Version 1.0 for extended field testing, 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; and
- variations of the standard method.

40. For 2016 and 2017 Field Testing, Volunteer Groups have been asked to reconcile reported GAAP insurance liability amounts to both MAV and GAAP Plus amounts. This data is being collected to understand the significant adjustments applied to reported GAAP to produce a current estimate per the specifications for the MAV and GAAP Plus approaches.

2.5 Goal for ICS Version 2.0 (for adoption within ComFrame)

41. 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:
  (1) the use of internal models (partial or full);
  (2) external models; and
  (3) variations of the standard method.

42. After ICS Version 2.0 is adopted there will be an implementation period. According to IAIS By-Laws, Members commit to implement IAIS supervisory material taking into account specific market circumstances and undergo periodic self-assessments and peer reviews. The IAIS will create an implementation monitoring process during which lessons will undoubtedly be learned and used as progress is made along the path of convergence to future milestones beyond ICS Version 2.0.

2.6 Ultimate Goal

43. The IAIS' ultimate goal, by a date yet to be determined, is a single ICS that includes a common methodology by which one ICS achieves comparable, ie 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.

44. ICS Principle 1 is also relevant to the issue of comparability and provides a practical way to consider that issue. In the explanation to that principle, it states: "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."

2.7 Extended Field Testing

45. Extended field testing of the ICS is a natural extension of the existing voluntary field testing process. The exercise contains extended data requests on technical and policy issues that the IAIS will be seeking to resolve for ICS Version 2.0. The design and calibration of 2017 Field Testing, including options provided, is not necessarily indicative of decisions that will be made for ICS Version 2.0.

46. During the extended field testing, the IAIS aspires to have 100% of likely IAIGs participating in Field Testing, plus any other Volunteer Group that is interested in participating in the exercise.

47. The criteria to qualify as an IAIG are set out in ComFrame and are summarised as follows:

i) at least US$50b insurance assets or US$10b premiums; and

ii) active in 3 or more jurisdictions; and

iii) at least 10% premiums written outside home jurisdiction.

48. There were 41 Volunteer Groups participating in 2016 Field Testing. This achieved a good balance of business models across the population of firms which are, or may soon become, IAIGs. The sample of 2016 Volunteer Groups achieved a broad and balanced coverage of geographical insurance markets and insurance products. However, it is always important to test current options under consideration in ICS Version 1.0 for extended field testing with a more complete set of likely IAIGs to assess the appropriateness of the ICS for different risk profiles. This will enable the further development and field testing of an appropriate ICS Version 2.0 before its adoption by the IAIS and its implementation by the IAIS members.

3 Scope of Application: Perimeter of the ICS Calculation

3.1 Scope of Application

49. There is no change from what was set out in the 2016 ICS CD with respect to Scope of Application. Scope of application refers to the entities within a group that are included in the calculation of ICS capital resources and the ICS capital requirement. A related term is the Scope of the Group which has a wider meaning in the context of ComFrame and application of other ComFrame requirements (eg Governance and ERM).

3.1.1 2016 Field Testing Approach to Scope of Application

50. The starting point for the scope of application is the consolidated balance sheet of the insurance holding company of an insurance group or financial holding company of an insurance-led financial conglomerate (see ICP 23) subject to the adjustments set out below.

51. The scope of application used for MAV and GAAP Plus should be the same to ensure comparability of results.

52. The scope of application should include all related entities within a group that may be a potential source of risk to the insurance operations, including all entities with exposures to Systemic Risk from Insurance Product Features (SRIPF)[8] and non-insurance risks. Non-insurance financial entities are included in the consolidation.

53. There are two components to the balance sheet of an IAIG: the consolidated insurance group to which the valuation approaches set out in Section 4 apply and then the aggregation of that with the non-insurance components of the group with the valuation approach applicable for the relevant sectors.

54. Capital resources are to be assessed on a consolidated basis at the group-wide level. Non-insurance entities are included in the consolidated balance sheet for the purpose of calculating the ICS capital resources.

55. Capital requirements for non-insurance financial entities subject to separate specific prudential supervision are calculated according to the sectoral requirements and these non-insurance financial entities are therefore excluded from the consolidated balance sheet used to calculate the insurance ICS. The overall ICS capital requirement is the addition of the insurance and the non-insurance components.

56. For regulated banking business, the capital requirement to be included is the maximum of the Basel III capital ratio requirements of 8% of Risk-Weighted Assets or the 3% Leverage ratio. For non-regulated banking business, the capital requirement to be included would be an adaption of the Basel III capital ratio applying a 4% Leverage Ratio. For assets under management, the ICS uses the standard indicator method for addressing Operational risk of asset management activities in Basel II,[9] but with an uplift as per 2015 BCR so that the calculation is 16% of gross income (averaged over three years).

[8] See http://www.iaisweb.org/page/supervisory-material/financial-stability-and-macroprudential-policy-and-surveillance

[9] Paragraph 654 of the Basel II Comprehensive Version (http://www.bis.org/publ/bcbs128.pdf).

57. The overall ICS capital requirement is the addition of the insurance and the non-insurance components.

58. Entities in the group can be excluded from the scope of application only if they are immaterial from a risk perspective; that is, when they do not significantly contribute to the total group risks. It is important to note that materiality in this case relates to the materiality of the risks posed to the financial entities in the group, not the size of the operations.

59. Non-financial entities may be excluded from the consolidation if they are completely separate from the financial businesses in the group. This means no linkage to the holding company in terms of:

- guarantees or other financial links (save for the holding company's investment in them)
- application of credit rating methodologies
- shared treasury operations or
- shared resources such as IT platforms and buildings.

60. The value of equity and debt owned by the IAIG in entities that are excluded from the scope of application should not be included in the ICS capital resources of the group.[10]

3.1.2 Observations from 2016 Field Testing and Feedback on the 2016 ICS CD

61. 2016 Field Testing included an investigation of the possibility of different approaches to consolidation depending on accounting standards or interpretation of accounting standards. The results were inconclusive in that there were some indications that different results can occur with similar fact patterns about ownership and control but the materiality of the issue is not entirely clear as the data was not sufficient to draw conclusions. As such, the data request is being repeated and focuses on the main issue, which is entities where the ownership by the IAIG is between 20% and 50% or where the entity is a Special Purpose Entity (SPE).

62. From the comments received on the 2016 ICS CD, there was much support for the IAIS to further define the concept of an insurance-led financial conglomerate to give greater certainty to supervisors and IAIGs as to how the head of an IAIG will be identified in a complex conglomerate structure. However, there was also support for the IAIS to set out principles-based standards and to leave some discretion for local supervisors. Many of those commenting noted that it is desirable to have comparability of results between IAIGs while also acknowledging the need to consider unique circumstances.

63. Comments received on the 2016 ICS CD acknowledged that in some complex group structures there is difficulty in establishing the entity that is the Head of the Insurance Group. Some comments called for a need to find a consistent means of establishing where the decisions emanate to determine the head of the group. These comments are balanced by other views where there is concern about greater specificity leading to outcomes that might not be suitable in some situations, leading to a call for more principles and reliance on supervisory judgment.

[10] The assets and liabilities of entities excluded from the scope of application are not considered in the calculation of risk charges.

64. While a number of stakeholders expressed caution about possible further prescription, there was enough support from the comments received on the 2016 ICS CD for further research into the issue.

65. One repeated theme is that ideally the ICS should align to other existing standards such as IFRS, and existing group capital standards. There was concern that in some instances the discretion given, particularly in relation to non-insurance entities, is much wider than in existing group capital standards.

3.1.3 ICS Version 1.0 for extended field testing

66. As a result of considering the 2016 Field Testing results and feedback on the 2016 ICS CD, 2017 Field Testing includes a further request for data to enable the IAIS to identify differences that arise from a different choice of entities or consolidation technique used in preparing the consolidated data submitted as part of field testing. The issue of differences in the head of the group is being pursued separately as part of the wider ComFrame discussions and focuses on analysis of exceptionally complex and/or difficult cases.

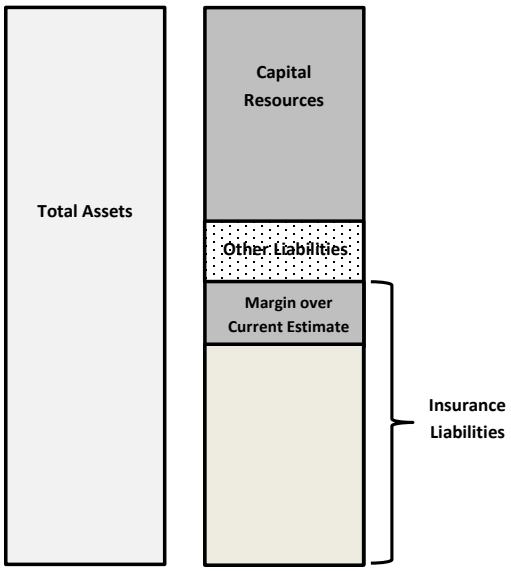
67. The IAIS will consider providing either a specific definition or principles for determining the materiality of entities to include or exclude from the scope of application.

4 Valuation

68. A key feature of the ICS is that the calculation basis is comparable across jurisdictions (ICS Principles 1 and 5 – refer to Section 2.3). Therefore, the valuation basis of assets and liabilities is an integral component of the ICS. In addition, the balance sheet used for ICS purposes provides most of the underlying exposures for the calculation of the ICS capital requirement, as well as the foundation for determining qualifying capital resources.

69. One of the main considerations in setting the valuation requirements is the pursuit of a total balance sheet approach[11] in line with ICP 17. A total balance sheet approach should lead to the interactions between assets and liabilities being reflected consistently in both qualifying capital resources and the ICS capital requirement as circumstances change.

Figure 1. Total Balance Sheet Approach



70. To satisfy ICS Principles 1 and 5, which address outcomes across jurisdictions and comparability of risk-based measures of capital adequacy, the ICS should be comparable across IAIGs regardless of the jurisdiction in which any IAIG's head office is located or the IAIG's legal domicile. Current regulatory regimes vary in the degree of prudence included in the valuation of insurance liabilities (eg margins), in the valuation of invested assets or other assets and liabilities, and in capital requirements.[12] If these differences are not addressed, they would affect both the measurement of qualifying capital resources and the ICS capital requirement.

[11] Total balance sheet approach: A concept which recognises the interdependence between all assets, all liabilities, all regulatory capital requirements and all capital resources. A total balance sheet approach should ensure that the impacts of all relevant material risks on an IAIG's overall financial position are appropriately and adequately recognised. It is noted that the total balance sheet approach is an overall concept rather than implying use of a particular methodology.

[12] ICP 14 addresses valuation but is not sufficiently granular to create comparability across jurisdictions. It is meant to set out the issues to be addressed by each individual jurisdiction and its development did not include the goal of comparability across jurisdictions.

71. ICS Principle 7 requires a valuation approach that prompts supervisory attention when appropriate, however such supervisory attention should not over-emphasise volatility that does not affect the solvency of an IAIG. Prudentially sound behaviour by IAIGs should be promoted but the ICS should not encourage IAIGs to take actions in a stress event that exacerbate the impact of that event (for example fire sales of assets) or to focus on short term goals to the detriment of appropriate long term objectives. Stability in valuation is important in that context, which means in particular that consistency between Asset and Liability valuation should be ensured.

72. Informed by field testing results and feedback on the 2014 and 2016 ICS CDs, the IAIS is working on two possible valuation approaches:

- The MAV approach;
- The GAAP Plus approach.

73. Successive iterations of field testing have progressively extended the range of elements the IAIS has tested. 2017 Field Testing includes the calculation of all risk charges on both a MAV basis and GAAP Plus basis.

4.1 Market-Adjusted Valuation (MAV) Approach

74. The MAV approach focuses on comparability of valuation of assets and liabilities across IAIGs, regardless of the jurisdiction in which any IAIG's head office is located or the IAIG's legal domicile. This should facilitate comparability of the exposure measures used for calculating the capital requirement as well as the amount of capital resources.

75. To achieve this, MAV requires that various IAIS prescribed adjustments are made to the most significant balance sheet components within jurisdictional GAAP accounting valuations, including: the requirement to use current estimates[13] for insurance liabilities;[14] the use of an IAIS prescribed yield curve (per currency) to project and discount the insurance liability cash-flows; and the use of fair value for financial instruments. The MAV approach will be transparent and verifiable to supervisors.

4.1.1 MAV General Approach

76. The MAV approach does not require IAIGs to revalue every balance sheet item. The adjustments are limited to the material assets and liabilities, including insurance liabilities and financial instruments. The valuation of the remaining balance sheet items should generally be based on International Financial Reporting Standards (IFRS) or GAAP valuations, as applicable for consolidated audited general-purpose financial statements (or statutory accounts in the case of U.S. mutual IAIGs).

[13] The term "current estimate" will be used going forward as that is consistent with existing IAIS terminology. Current estimate is defined in ICP standard 14.8: "The current estimate reflects the expected present value of all relevant future cash flows that arise in fulfilling insurance obligations, using unbiased, current assumptions."

[14] This leads to the elimination of margins from insurance liabilities as explained in section 4.1.2. Note that the IAIS is developing a consistent and comparable MOCE which together with current estimates will form the insurance liabilities – see section 4.3.

77. The IAIG should make adjustments to the following items:[15]

- Insurance liabilities and reinsurance balances should be adjusted to a current estimate as described below, to which a margin over current estimate is added (see section 4.3).

- Financial instruments, both assets and liabilities, including derivatives and mortgage/loan assets[16], should be adjusted to fair value using the fair value specification determined under the IAIG's applicable IFRS or GAAP standards for reporting or disclosure purposes.

- Non-insurance liabilities, including debt instruments issued by the IAIG, should be adjusted to a value that does not take into account changes in the credit standing of the IAIG.

4.1.2 Methodology for Calculation of the Current Estimate

78. For the purposes of MAV, the current estimate should correspond to the probability-weighted average of the present values of the future cash flows associated with insurance liabilities using IAIS specified yield curves.

79. The same concept applies equally to the calculation of reinsurance recoverables. Reinsurance recoverables should be calculated so that they are consistent with the current estimates of insurance liabilities. Therefore the same assumptions and inputs should be used.

80. The calculation of the current estimate should be based on up-to-date and credible information and realistic assumptions. Implicit or explicit margins are not part of the current estimate. The determination of current estimate should be comprehensive, and objectivity is required in terms of observable input data.

81. Uncertainty in future cash flows should be captured in the current estimate. Uncertainty in cash flows can arise from a number of sources, namely:

- the timing, frequency and severity of claim events;

- claims amounts, including uncertainty in claims inflation, and the period needed to settle claims;

- the amount of expenses;

- the value of an index/market values used to determine claim amounts;

- policyholder behaviour; and

- path dependency.

[15] See section 6.2 of the 2017 Field Testing Technical Specifications
[16] In this context, mortgage/loan assets means mortgages/loans that the IAIG has invested in or itself written as the lender.

82. The calculation should consider the variability of the cash flows so that the current estimate represents the weighted average of the distribution of cash flows.

83. To calculate the current estimate, it may not be necessary or even possible to explicitly incorporate all possible scenarios in the valuation of insurance liabilities, or to develop explicit probability distributions in all cases. This depends mainly on the type of risks affecting the scenarios and the expected materiality of their financial impact in the overall calculation.

84. Current estimate calculations are subject to the principle of proportionality, which means that methodologies applied should be proportionate to the scale and complexity of the risks from the liabilities being valued. Simplifications and adjustments have been included in the 2017 Field Testing Technical Specifications.

85. When valuing insurance liabilities, no adjustment should be made to take account of the own credit standing of the IAIG.

86. Further details of the methodology for determining current estimates are included in the 2017 Field Testing Technical Specifications, including:

- cash flow projections;
- recognition/derecognition of insurance liabilities;
- contract boundaries;
- time horizon;
- data quality and setting of assumptions;
- possible methodologies;
- liabilities expressed in different currencies;
- valuation of options and guarantees;
- policyholders' behaviour;
- valuation of future benefits and management actions; and
- simplifications/approximations and appropriate adjustments.

87. The current estimate methodology has been stable since embedding the feedback received on the 2014 ICS CD.

88. As part of its work towards the development of ICS Version 2.0, the IAIS will continue to refine the MAV approach through field testing and a public consultation, improving the guidance (Technical Specifications) as necessary.

4.1.3 Discounting

4.1.3.1 Base yield curve

89. Over the last two years, the IAIS work on the MAV approach focussed on the area of insurance liability discounting. 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.

90. In ICS Version 1.0 for extended field testing, the approach taken for discounting is to prescribe yield curves for the 35 most traded currencies and provide the methodology for determining those yield curves for Volunteer Groups that operate in other markets that are not covered by the prescribed yield curves. The prescribed yield curves by currency were created by:

- determining base yield curves (using either swap market data or government bond market data depending on currency); and
- applying an adjustment to that base yield curve.

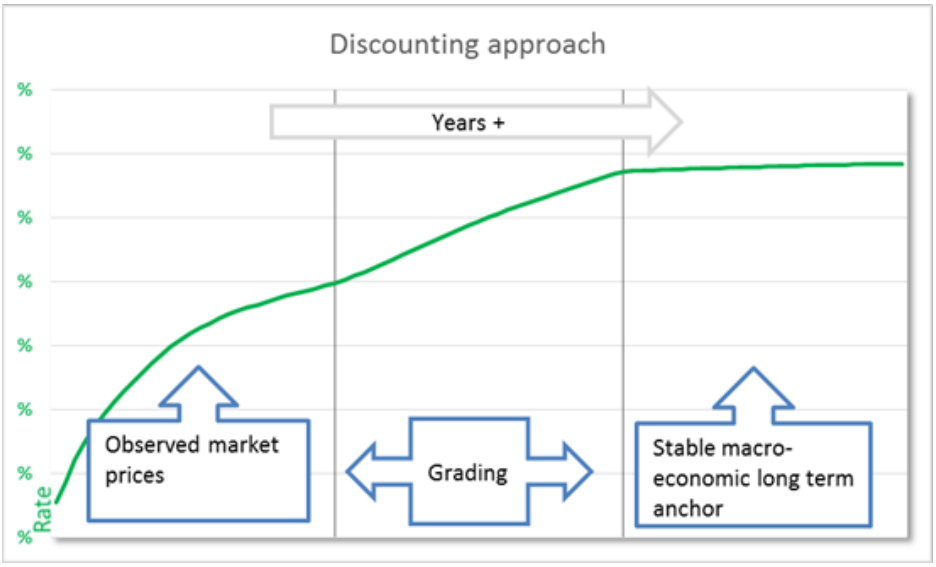
91. In response to feedback received through Field Testing and Public Consultations, the approach to the construction of the base yield curve evolved over the last years. The most significant change was the abandonment of the artificial flattening of the yield curve after the 30-year point (ie the “flat after 30 years” assumption). From 2015 onwards, the design of the base yield curve evolved into a 3-segment design:

- Segment 1: Liquid segment based on market information;
- Segment 2: Extrapolation/gradation between first and third segments; and
- Segment 3: (convergence): Long Term Forward Rate (LTFR) that currently begins at year 60 for all currencies. The LTFR was determined using a macroeconomic approach based on information from the Organisation for Economic Co-operation and Development (OECD).[17]

92. This approach is applied to ICS Version 1.0 for extended field testing.

[17] For further details please refer to http://www.oecd-ilibrary.org/economics/policy-challenges-for-the-next-50-years_5jz18gs5fckf-en

Figure 2. Current design of the base yield curve



93. The financial instruments used to determine Segment 1 are first adjusted for credit risk. Since 2016 Field Testing, only yield curves based on swap rates are subject to a credit risk adjustment (CRA).[18] Curves based on government bond rates are unadjusted for credit risk following the assumption that these instruments are risk-free.

94. The convergence point, ie the maturity at which the forward rates of the yield curves converge to the LTFR (or the end of Segment 2), has been set at 60 years for all currencies, irrespective of whether the last point of Segment 1 comes at year 10 or year 30. On one hand, the LTFR is assumed to represent the nominal rate expected to be earned when economies reach their long-term macroeconomic equilibrium. It follows that the convergence point to the LTFR must be set in the distant future, such as in 60 years as the IAIS has chosen for field testing purposes.

95. The LTFR for each currency is based on long-term expectations of economic growth and long-term expectations of inflation for the relevant economies. The long-term expectations of economic growth are derived from an OECD study as indicated above. In that study, OECD economies are expected to reach an annual growth rate of 1.5% per annum at the end of the forecast period (2060) and non-OECD countries are expected to reach an annual growth rate of 2.75% per annum over the same period. When combined with inflation targets of the central banks, a LTFR figure can then be derived. For example, for Australia the inflation target is 2.5% and the growth expectation is 1.5% which results in a 4% long-term forward rate. Brazil is a non-OECD country with a 2.75% growth expectation and long-term inflation expected of

[18] The CRA relates to the fact that the reference rates used as floating legs in the swap agreements carry counterparty Credit risk, since they originate from unsecured interbank market transactions. For example, the floating leg of Euro area swaps is based on Euribor rates. Given that the floating leg reflects counterparty Credit risk, the fixed leg will also carry Credit risk, since in an efficient market the fixed leg will be based on expectations of future realisations of the floating rate over the duration of the swap arrangement. For the sake of simplicity, the CRA has been set at 10 basis points for all currencies for 2017 Field Testing.

4.5%, leading to an LTFR of 7.3% (rounded up). Below is a table setting out target long-term inflation rates for different economies.

Table 3. Long-term target inflation

Long term target inflation	
2.0%	Default
2.5%	Australia, Poland, Iceland and Norway
3.0%	Chile, Hungary, Mexico and Korea
4.0%	Argentina, China, India and Russia
4.5%	Brazil, Indonesia and South Africa
5.0%	Turkey

96. In its path towards ICS Version 2.0, the IAIS will further develop the methodology used to derive the base yield curves, to ensure consistency in the determination of the yield curves across the different currencies. Refinements will address key elements of the methodology such as the choice of financial instruments underlying Segment 1, the identification of the last point of market liquidity (end of Segment 1), the length of Segment 2, or the definition of the Long Term Forward Rate, among others.

97. Once finalised, this methodology will be transparent to IAIGs and stakeholders, in order to be replicable for other currencies where risk-free yield curves are not produced by the IAIS.

4.1.3.2 Adjustments to the base yield curve

98. To strive to reflect the long-term nature of insurance contracts and mitigate potential excessive volatility in capital resources (by avoiding reflecting in the valuation of insurance liabilities changes in market conditions that do not affect the solvency of the IAIG), an adjustment to the base yield curve was introduced.

99. The design and calibration of this adjustment to the base yield curve has evolved over time, leading to the options included in ICS Version 1.0 for extended field testing.

100. In 2014 and 2015 Field Testing, the spread adjustment was based on applying a proportional increase across the yield curve. The magnitude of the proportional increase was determined by observing spreads earned on a reference asset portfolio defined as an investment grade corporate bond or broad market index (ie a basket of liquid bonds with a credit rating from AAA to BBB). Where a relevant corporate bond index was not available, a default level of 50 basis points was used as a proxy. In a second step, the observed spread on the reference portfolio was used to proportionally uplift the yield curve under the assumption that the 10 year tenor would receive 40% of the total spread observed on the reference portfolio. A cap was applied to avoid any point on the yield curve receiving more than 100% of the spread observed on the reference portfolio.

$$interest\ rate\ adjustment_t = min\left(basic\ risk\ free_t \frac{40\% \times spread_{10}}{basic\ risk\ free\ rate_{10}}, spread_{10}\right)$$

101. In light of comments received from Volunteers Groups and other stakeholders about the potential volatility that the methodology of determining the credit spread adjustment to the

base yield curve used for the 2014 and 2015 Field Testing could introduce on capital resources under specific market conditions, the IAIS has been refining the design of the adjustments to the base yield curve.

102. In 2016 Field Testing, a range of different approaches (six in total) were included, with the aim to collect information about the behaviour of different possible technical solutions. The information collected allowed the IAIS to refine the approach and narrow the number of options to three, which are part of ICS Version 1.0 for extended field testing.

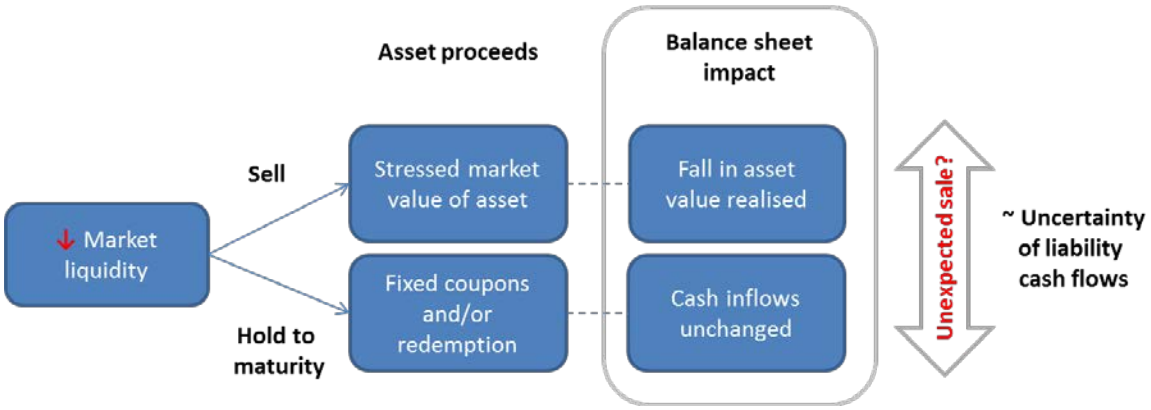
103. The MAV credit spread adjustment to the base yield curve is intended to mitigate the potential excessive volatility in capital resources due to periods of exaggeration of credit spreads in financial markets. The various designs tested by the IAIS explored different approaches to identify the portion of future investment return the IAIG may be able to earn, owing to the specific nature of insurance business. Performing such estimation with greater accuracy, based on a very tailored assessment of the IAIG's assets and liabilities, increases the complexity of the calculations and can provide incentives to IAIGs to inflate their regulatory capital resources by investing in high-yield assets. On the other hand, estimating the adjustment on the grounds of a reference portfolio of assets will reduce complexity, but maintain a certain level of basis risk (to the extent to which the assets held by IAIGs deviate from those represented in the reference portfolio). The six adjustment options tested in 2016 were chosen to investigate the trade-offs between accuracy, complexity and minimising poor risk management incentives.

104. An important element in estimating the likely future investment return on assets is the likelihood of unexpected sales of assets. This is particularly relevant for assets offering fixed cash inflows, such as debt instruments, since the market value of assets can vary even while the expected value of future coupons and/or redemption payments remains unchanged. Following a fall in the levels of liquidity in a market, for instance, the prices of debt instruments are likely to fall due to decreased demand. The degree to which this affects an IAIG holding such instruments then depends on whether or not the IAIG:

- subsequently sells the debt instrument, in which case the IAIG realises the loss stemming from the asset price fall; or
- holds the bond to maturity, in which case the value of the asset to the IAIG is not based on its market value but on the value of the future coupon and/or redemption payments.

105. The relevance of the current market value of the asset to the IAIG's ability to meet its obligations is therefore dependent on the likelihood that it will unexpectedly be required to sell the asset. For IAIGs, this will depend in part on the uncertainty of their corresponding liabilities. Whilst in many cases IAIGs' positive cash flows will enable IAIGs to hold investments to maturity, the more uncertain their liabilities are, for instance due to surrender options or by covering more volatile risks, the more likely the IAIG is to unexpectedly sell the asset and realise the market value. To reflect this, some of the adjustment options tested varied the balance sheet impact of market value fluctuations according to 'liability liquidity' categories (or buckets).

Figure 3. Possible effects of market fluctuations on balance sheet



106. A fall in the market value of a debt asset has the effect of increasing its yield spread, since this effectively measures the value of the fixed coupons and/or redemption payment against the current market value of the asset. Each of the adjustments acts to reflect a portion of this expected future return on debt instruments in the discount rate used to value the liabilities, thereby reducing the overall balance sheet impact of market price fluctuations in assets.

4.1.3.3 Policy issues regarding the design of the adjustment tested in 2016

107. The IAIS discussions concerning the possible refinement of the 2015 adjustment methodology developed around five policy issues:

- The approach to portfolio selection for the calculation of spreads

  This relates to the methodology that is used to determine the spread adjustment, such as one (or multiple) reference portfolio(s), the representative portfolio or based on IAIG-specific assets. The main issue to consider is the trade-off between comparability and basis risk (the risk that there will be differences between the basis on which liability cash flows are discounted and the implicit credit spreads that markets apply to determine the fair value of the assets held by the IAIG).

- The approach to liability bucketing

  This refers to whether the adjustments should be applied equally to all insurance liabilities (ie single bucket) or if there should be a more nuanced approach to the adjustment through the use of multiple buckets linked to liability features, leading to different application ratios of the initial adjustment. The most relevant considerations relate to the trade-off between complexity and reflection of the economic reality.

- The level of granularity allowed for in the calculation of the credit spread adjustment

  This item is linked to the previous one. The discussion was about whether a single spread adjustment should be calculated and applied to the different buckets or whether different classes or combinations of assets backing specific classes of liabilities associated with each bucket, should have different credit spread adjustments for each bucket on the basis of the asset groups identified.

- The approach to default allowance

This issue refers to the specification of the methodology for the adjustment of spreads for default and other risks that are deducted to reflect unexpected losses that are not reflected in observed market spreads.

- The segments of the base yield curve that should be affected by the application of the adjustment

  In 2014 and 2015 Field Testing, the IAIS applied the spread adjustment only to the liquid part of the base curve (Segment 1). The adjustment was then phased out over Segment 2 (extrapolation). For 2016 Field Testing, the IAIS defined a 10 bps placeholder adjustment at the level of the LTFR to be used until this issue is discussed in greater depth.

108. As an additional refinement and in order to address the technical constraints posed by a low or negative yield curve environment, the IAIS also considered a move away from a proportional adjustment (eg the 2015 Field Testing adjustment methodology) to an absolute value adjustment. Under this revised approach, the adjustment would be a number of basis points to be added to the base yield curve as a parallel shift, rather than a proportional movement.

109. Finally, it should be highlighted that the interplay between the adjustment to the base yield curve for the purpose of the valuation of insurance liabilities and the calculation of capital requirements under the ICS Standard Method has not been addressed yet by the IAIS. It will be discussed following the adoption of ICS Version 1.0 for extended field testing.

4.1.3.4 Options for adjustments to base yield curves tested in 2016 Field Testing

110. On the basis of the policy issues described in the previous section, in 2016 Field Testing, the IAIS tested a set of three options for determining credit spread adjustments for discounting liabilities. These options were designed to collect information on the potential impact of different possible design methodologies and application ratios with a view to refine the MAV approach for ICS Version 1.0 for extended field testing.

111. In addition to these options, the IAIS also collected additional information on the impact of three methods which served as reference points:

- **Reference method 1:** "Risk-free" rates without adjustment – this allowed the benchmarking of the effectiveness of the three aforementioned options.

- **Reference method 2:** 2015 adjustment methodology – this allowed comparison with previous year's exercises and the assessment of the effectiveness of the three aforementioned options.

- **Reference method 3:** Asset earned rate – this option allowed the IAIS to assess the impact of rates linked to the specific assets held by the IAIG under the liquidity bucket construct used in option 3 (ie it allowed the assessment of differences between the asset spreads set out in option 3 compared to rates earned by IAIGs on their asset portfolios).

112. To assess the effectiveness of this mitigation measure and the behaviour of the different options under different market conditions, the IAIS also requested that Volunteer

Groups calculate the impact of the discount rate adjustment options and reference methods to their balance sheets under two different credit scenarios:

- Current market conditions at the reference date; and
- Stressed credit spread conditions, specified by the IAIS for all currencies (eg 2008 or 2011 type of scenario), depending on when the most stressed recent market conditions had been observed.

113. The following table summarizes the different options and reference methods which Volunteer Groups were requested to calculate for each of the two scenarios.

Table 4. Reference Methods and Options Tested in 2016 Field Testing

		Reference Methods			Options		
		Risk-free	2015 methodology	Asset earned rate	Option 1: currency-specific	Option 2: firm-specific	Option 3: Bucketing
Liability segmentation (buckets)		N/A	1	3	1	1	3
Portfolio Composition		N/A	Reference portfolio per jurisdiction	IAIG's own portfolio – own view of earning rate	Representative portfolio per currency	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	Risk Correction	Risk Correction	Risk Correction
Liquidity buckets	1	0%	100%	80%	100%	100%	80%
	2			60%			60%
	3			40%			40%

114. Further details on the specification of these discounting options can be found in the MAV section of the 2016 Technical Specifications, which also includes a description of the stress scenario to be applied for each of the reference methods and discounting options.

4.1.3.5 Options for adjustments to base yield curves included in ICS Version 1.0 for extended field testing

115. Based on the evidence and experience gathered through field testing exercises and the 2014 and 2016 ICS CDs, the IAIS has continued to work on the design and calibration of the adjustment mechanism.

116. ICS Version 1.0 for extended field testing includes three options, namely:

- The Blended option;
- The High Quality Asset (HQA) option; and

- The Own Assets with Guardrails (OAG) option.

117. Similar to previous exercises, Volunteer Groups will need to report the impact of each of the options under normal market conditions (at the reference date of the exercise) and under stressed credit spread conditions (under a synthetic scenario of widening of spreads developed by the IAIS for 2017 Field Testing, which does not aim to replicate any specific historical market event).

Blended Option ("Blended")

118. The main aim of this proposal is to enable the IAIS to make progress in this complex area, acknowledging that the range of options and methods tested in 2016 reflects a range of supervisory objectives and stakeholders' views which are, to a large extent, irreconcilable. These different (and sometimes opposite) views and features promoted by IAIS Members and stakeholders need to be reconciled. For this reason, this approach blends two options designed to address very diverse sets of objectives and attempts to reconcile the different views of IAIS Members and stakeholders. Another feature of this proposal is that it builds entirely on methodologies and concepts from 2016 Field Testing without introducing any new concepts. This should facilitate its understanding and impact assessment.

119. The Blended option combines two options from 2016 Field Testing using:

- A **General Bucket** based on a representative portfolio approach, with an 80% application ratio[19] and the spread level capped at BBB; and

- A **Top Bucket** based on the weighted average of multiple representative portfolios (WAMP) methodology and subject to a set of strict criteria, enabling a higher application ratio (100%) also capped at BBB level. The use of the Top Bucket is optional[20].

120. The Blended option also includes two Basis Risk Mitigation Mechanisms to mitigate the potential basis risk that may be generated by the use of a representative portfolio approach under the Top Bucket. The mechanisms address exposures to multiple jurisdictions within a single shared currency and exposures to assets denominated in a currency that does not correspond to that of the liabilities which they are backing.

121. The technical details of the representative portfolio (2016 Option 1) and WAMP (2016 Option 2) methodologies are kept broadly unchanged, compared to 2016 Field Testing. The spread adjustments are risk corrected and only fixed-income assets are deemed eligible for the determination of the adjustment.

High Quality Assets Option ("HQA")

122. This option has been designed to test the use of currency-specific representative portfolios. For portfolio composition, it uses representative portfolios per currency. Under this option, the application ratio for the spread adjustment is 100%, the spread level is capped at AA and the adjustment is subject to a risk correction. The liabilities are not bucketed (the same

[19] The Application Ratio is the percentage of the risk-corrected spread, calculated according to the relevant methodology, that is added to the base yield curve.

[20] Volunteer Groups may assess whether this extra calculation will lead to significant changes to the valuation of their liabilities and decide whether to apply the general bucket approach to all liabilities or to also use the top bucket approach.

application ratio is used to discount all liabilities) and most assets (except cash) contribute to the calculation of the adjustment.

123. Under the HQA option, the adjustment is not applied as a parallel shift to the base yield curve (as under the Blended option). Instead, a term-dependent curve of adjustments was built for each currency based on data relevant for each duration along Segment 1 of the base yield curve.

124. The proposal took inspiration from accounting developments under discussion around the world, which include proposals that discounting of long-duration contracts be based on high-quality fixed income instrument yields independent of an insurance company's expected investment performance.

125. For reasons similar to those considered for the Blended option, HQA also includes the two basis risk mitigation mechanisms, using similar specifications.

Own Assets with Guardrails Option (OAG)

126. Under the Own Assets with Guardrails (OAG) option, IAIGs have the option to discount a subset or all of their insurance liabilities using the relevant risk free IAIS specified yield curves, adjusted at a liability portfolio level by a spread (the "adjusted lifetime spread") determined using the specific assets held by the IAIG allocated to each liability portfolio

127. The main objective of this option is to reflect internally approved asset liability management (ALM) processes of the IAIG, promoting full alignment between the behaviour of assets and the corresponding liabilities.

128. OAG uses a 100% application ratio and considers that all assets except cash contribute to the determination of the adjustment. Another differentiating feature of OAG is that the spreads calculated for the own assets of the IAIG are assumed to be earned throughout the lifetime of the assets, even where this goes beyond the Segment 1 of the risk-free yield curve.

129. For portfolios where the IAIGs do not apply the OAG option, they should apply the HQA option.

130. To mitigate the potential perverse incentives of a methodology based on the own assets of each individual IAIG, the methodology includes a set of quantitative and qualitative guardrails.

Summary of the discounting options included in ICS Version 1.0 for extended field testing

131. The following table summarize the key features of the three options under consideration for the adjustment of the risk-free yield curve under the MAV approach in ICS Version 1.0 for extended field testing.

132. For the purpose of ICS Version 1.0 for extended field testing, the Blended option has been defined as the MAV benchmark.

Table 5. Options tested in ICS Version 1.0 for extended field testing

	Options		
	Blended	**HQA**	**OAG**
Liability segmentation (buckets)	**2**	**1**	**1**
Portfolio Composition	**Representative portfolio per currency / WAMP[21]**	**Representative portfolio per currency[21]**	**Volunteer Group's own assets**
Default Deduction	**Risk Correction**	**Risk Correction**	**Risk Correction**
Scope of Assets	**Only eligible assets**	**All assets except cash**	**All assets except cash**
Quantitative Guardrail	**BBB**	**AA**	**BBB**
Application Ratio	**100% (Top)**	**100%**	**100%**
	80% (General)		

[21] The basis risk mitigation mechanisms, as described in Paragraph 120, may apply to both the Blended option and the HQA option.

4.2 GAAP with Adjustments (GAAP Plus)

4.2.1 Background

133. The GAAP Plus approach to valuation was developed in response to concerns that departures from GAAP for valuation could pose operational and audit challenges. Discussion and debate by IAIS Members regarding these concerns gave rise to the notion of a GAAP Plus approach, which would be based to the extent possible on amounts, systems, processes and rigorous controls that support reported GAAP amounts and that any adjustments would be transparent and verifiable to supervisors, internal auditors and independent external auditors. This discussion and debate culminated in the determination by the IAIS Executive Committee in October 2014 on the way forward regarding valuation under the ICS.

4.2.2 Feedback on the 2016 ICS CD

134. GAAP Plus was only two months into development prior to the publication of the 2014 ICS CD. While progress had been made to develop GAAP Plus, there were no detailed specifications at the time of the 2014 consultation publication date. Therefore, and as a practical matter, the 2016 ICS CD was the first opportunity to seek input from all stakeholders in a formal consultation process about the initial design of GAAP Plus.

135. The 2016 ICS CD included a number of questions regarding GAAP Plus that were intended primarily to determine if the GAAP Plus principles were sound; whether the various jurisdictional examples needed corrections or enhancements; whether refinements should be made to the guidance regarding the valuation of assets and of liabilities (particularly relating to insurance contracts, whether life or non-life), and to provide input on the technical aspects of the proposed AOCI adjustment.

136. In general, responses to questions in the 2016 ICS CD were split between views of respondents that preferred a more market-based approach that would be more closely aligned to MAV and those that preferred an approach that more closely aligned with what could be referred to as a book value approach aligning with the accounting rules followed in certain jurisdictions.

137. The 2016 ICS CD also contained certain technical design questions for which respondents provided specific suggestions, many of which were incorporated into the specifications for 2017 Field Testing. In particular, there were a number of questions related to the definition of the Accumulated Other Comprehensive Income (AOCI) adjustment. Under US GAAP and Japanese GAAP, long term insurance products are measured using a long term, average investment portfolio earned rate adjusted for future reinvestments. This rate adjusts relatively slowly (as compared to a MAV approach) based on long-term trends versus instantly reacting to current market movements. Assets backing these products adjust to current fair value each reporting period with the change flowing through AOCI, which is included in capital resources. This produces asymmetrical accounting and artificial and undue volatility in capital resources.

138. In 2015, a solution was proposed to identify the portion of AOCI comprised of unrealised gains and losses related to debt securities backing long-term liabilities, and exclude that portion from capital resources. The definition of unrealised gains and losses to be included in the AOCI adjustment was at a high level and more principles based. The 2016 CD questions thus solicited input to develop more specific language for the AOCI adjustment definition.

139. The input received from respondents has been integrated into the 2017 Field Testing Technical Specifications. There is one element of the definition, the adjustment for expected defaults, that remains to be specified and for which further work is needed.

4.2.3 2016 Field Testing

140. GAAP Plus is a valuation methodology that differs from MAV. Key objectives in field testing of GAAP Plus include to (1) determine that GAAP Plus is developed so as to result in an appropriate capital ratio in its own right, and (2), assess the comparability of outcomes between GAAP Plus and MAV. With regard to the latter objective, that has been assessed for 2016 in two key respects:

- The impact of valuation on capital resources, ie, the numerator of the ICS ratio.
- The impact on capital requirements, ie, the denominator of the ICS ratio.

141. 2016 marked the second year of field testing for GAAP Plus. Results were largely comparable to the prior year, showing that, with some exceptions/outliers among Volunteer Groups, the principal difference in the impact of valuation on capital resources between GAAP Plus and MAV is related to the different discounting methodologies used for the two valuation approaches and, to a lesser extent, differences in the definitions for contract recognition and contract boundaries. The differences in discounting can be material as measured relative to insurance liabilities of Volunteer Groups, and to its corresponding impact on capital resources. New reconciliations between GAAP Plus and MAV have been developed in order to examine the drivers of differences between the GAAP Plus and MAV insurance liability valuation.

4.2.4 ICS Version 1.0 for extended field testing

142. The valuation approach under GAAP Plus for ICS Version 1.0 for extended field testing is consistent with the 2016 Field Testing Technical Specifications with the addition of minor technical updates derived from field testing results and input from Volunteer Groups and stakeholders collected during field testing and in response to the 2016 ICS CD. As noted in the Background section, a primary principle supporting the rationale for GAAP Plus is that it should be based, to the extent possible, on amounts, processes and/or systems that are subject to audit. As a result of recent accounting rule changes under IFRS and anticipated changes under US GAAP that will significantly impact valuations of invested assets and insurance contracts, it will be necessary to re-evaluate the current design of GAAP Plus for jurisdictions that report under IFRS or U.S. GAAP for the purposes of 2018 and subsequent field testing exercises.

143. The US FASB and IASB did not issue final rules on insurance contracts in time to contemplate changes for ICS Version 1.0 for extended field testing[22]. Thus, for ICS Version 1.0 for extended field testing, GAAP Plus will follow the 2016 Field Testing Technical Specifications with incremental enhancements. Discounting will continue to follow currently-existing jurisdictional GAAP rules and any adjustments previously specified. This will be considered as the Benchmark option for GAAP Plus. The HQA discounting option, meant to fall within the bounds of anticipated new IFRS and US GAAP accounting rules with respect to

[22] The IASB issued IFRS 17 on 18 May 2017, while the FASB continues its deliberations of its Exposure Draft issued in September 2016 and is not expected to issue a standard before late 2017.

discounting, will also be tested. It is also expected to assist in highlighting non-discounting related differences in insurance liability valuation between GAAP Plus and MAV.

144. There are several key changes and new data requests for 2017 Field Testing under GAAP Plus:

- Balance sheet data will be collected based on stressed credit spread conditions consistent with the MAV specifications.

- New reconciliations between GAAP Plus and MAV have been developed in order to examine the drivers of differences between the GAAP Plus and MAV insurance liability valuation.

145. It was noted in 2016 Field Testing that, due to the current IFRS rules regarding insurance contracts, it is possible for a firm to have a mix of insurance liabilities for group level reporting as a result of aggregation of liabilities valued on different jurisdictional accounting bases at the legal entity level. In addition, there are firms reporting aggregated statutory balances where there may be more than one set of jurisdictional accounting rules applied under the group. As GAAP Plus is based on the underlying jurisdictional accounting, some Volunteer Groups found it necessary to report under multiple jurisdictional GAAP Plus examples. For 2017 Field Testing, it was decided to continue to allow Volunteer Groups to report under multiple GAAP Plus examples. While not considered to be the best possible solution, it was considered practical for the short term and for ICS Version 1.0 for extended field testing. IFRS 17 may contribute to addressing this issue once adopted.

146. There were also several changes introduced for risk charges for ICS Version 1.0 for extended field testing in order to address certain incompatibilities with GAAP Plus noted in prior years' field testing:

- During 2015 Field Testing, Volunteer Groups applying the US GAAP example of GAAP Plus noted that the method to derive a risk charge for Interest Rate risk, which was designed to work with a market-based discount curve, was not compatible with jurisdictional valuation approaches under GAAP Plus where a book yield was applied as a discount rate. Thus in 2016 Field Testing, a different method for calculating Interest Rate risk was developed to be more compatible with those GAAP Plus jurisdictional examples. This was presented as an option for 2016 Field Testing. For 2017 Field Testing, this method is no longer an option; rather, it is the only method to be applied under GAAP Plus where insurance liabilities are measured using a book yield plus reinvestment assumption. Insurance liabilities that are discounted using a market-based curve will continue to follow the prescribed method for determining interest rate risk as outlined for MAV.

- In addition, it was noted in 2016 Field Testing by several Volunteer Groups that it would be inconsistent to include an AOCI adjustment in capital resources that would, in essence, adjust fixed income assets backing long-term liabilities from fair value to amortised cost while excluding the same adjustment from relevant risk charge calculations. This would be most relevant for Credit risk. Thus, in 2017 Field Testing, the GAAP Plus method for calculating the Credit risk charge references amortised cost based exposure amounts, where certain fixed income investments are measured at cost via the AOCI adjustment.

147. As noted above, due to the changes in accounting rules for insurance contracts and financial instruments under IFRS and US GAAP, certain jurisdictional examples of GAAP Plus may require a redesign for ICS Version 2.0. The IAIS will consider the means by which Volunteer Groups and interested Stakeholders can share their views and provide suggestions as part of this redesign effort.

4.3 Margin Over Current Estimate (MOCE)

148. In many valuation contexts (eg GAAP regimes, actuarial guidance), margins in addition to the current estimate are included in the valuation of insurance liabilities. Differences in how margins are calculated is one of the key reasons for the lack of global comparability in the valuation of insurance liabilities. For the purposes of the ICS, the introduction of a "consistent and comparable MOCE" is being considered and tested. A consistent and comparable MOCE could be incorporated under both MAV and GAAP Plus valuation approaches.

149. Insurance Core Principle (ICP) 14 includes two standards referencing the MOCE :

- 14.7 - The valuation of technical provisions exceeds the current estimate by a margin (Margin over the Current estimate or MOCE).
- 14.9 - The MOCE reflects the inherent uncertainty related to all relevant future cash flows that arise in fulfilling insurance obligations over the full time horizon thereof.

150. Practitioners[23] recognise different possible objectives for a margin, such as to ensure that the promises made by an insurer to its policyholders will be kept, or to provide for the cost or price for bearing risk (including but not restricted to an "exit value" approach). These different objectives are not unrelated, but could lead to different designs or calibrations.

151. ICS Version 1.0 for extended field testing includes options for the MOCE, as described in this section. The IAIS aims to refine these options through field testing and further discussions in order to achieve convergence in the approach for a consistent and comparable MOCE for ICS Version 2.0.

4.3.1 Background

152. The IAIS has been considering two approaches to define a consistent and comparable MOCE, ie:

- A margin to recognise transfer value specified as a cost of capital approach; and
- A margin for prudence.

153. The IAIS has sought feedback on these two approaches through the 2014 and 2016 ICS CDs. These approaches have also been considered in 2015 and 2016 Field Testing.

[23]For instance the research paper published by the International Actuarial Association – Measurement of Liabilities for Insurance Contracts: Current Estimates and Risk Margins – April 2009

4.3.1.1 Background – Cost of Capital MOCE (C-MOCE)

154. ICP 14.7 sets out that '"The valuation of technical provisions exceeds the Current estimate by a margin (Margin over the Current estimate or MOCE)." ICP 14.7.5 provides some additional explanation: "In addition to covering the cash flows associated with fulfilling insurance obligations, an insurer incurs the cost of covering the uncertainty inherent in those cash flows (eg through holding capital, or through hedging, reinsurance or other forms of risk mitigation)."

155. A seminal principle underpinning the C-MOCE is the necessity to include a MOCE in the valuation of the insurance liabilities to achieve a risk adjusted valuation of insurance liabilities. Such risk adjustment could be seen as a way to ensure consistency and symmetrical treatment of assets and insurance liabilities; in particular, where assets are reflected at fair value. Indeed, the fair value of assets is a risk adjusted valuation (eg the price of bonds reflects the risk of default). In the absence of a MOCE, asset values will reflect the cost of the risk associated with the assets, while insurance liabilities will not.

156. As part of a prudential framework, the purpose of a risk adjusted valuation of insurance liabilities is to bring the value of the insurance liabilities (ie current estimate + MOCE) to an amount sufficient to allow the transfer of the insurance obligations to a willing third party or to allow the own fulfilment of these insurance obligations within the originating insurer.

157. The cost of capital design is a practical way to achieve the purpose (eg the ability to transfer the insurance obligations to a willing third party if needed). In particular, the margin necessary to allow transfer or own fulfilment is defined as the margin necessary to cover the cost to recapitalise to a level that meets the conditions required by the relevant prudential framework (eg an ICS ratio of 100%).

4.3.1.2 Background - Prudence MOCE (P-MOCE)

158. From ICP 14.9: "The MOCE reflects the inherent uncertainty related to all relevant future cash flows that arise in fulfilling insurance obligations over the full time horizon thereof… Only risk inherent to the policy obligations should be reflected in the MOCE. Other risks should be reflected in regulatory capital requirements. Where risks are reflected in both the MOCE and regulatory capital requirements to provide an overall level of safety, double counting should be avoided as far as practical."

159. The P-MOCE is intended to be a simple and comparable way to calculate a consistent margin to ensure policyholder protection. In particular it does not require any assumptions about the insurer's capital requirements beyond the specified time horizon or the capital required by any entity to which the insurance liabilities may be transferred.

160. P-MOCE is based on an own-fulfilment view with P-MOCE and capital requirements jointly providing an overall level of policyholder protection in a straightforward manner. To the extent that the same risks are included in both calculations, there could be double counting between MOCE and capital requirements. One view is that through the joint calibration of the P-MOCE and the ICS capital requirement, it is possible to achieve the ICS overall target level of policyholder protection (99.5% VaR over a one-year time horizon). Under this view, MOCE and capital requirements together form an overall loss absorbing layer; the greater the margin, the less the requirement for capital and the lower the margin the greater the capital requirements.

161. The P-MOCE is consistent with a going concern framework.

4.3.2 Feedback on the 2016 ICS CD

162. The feedback on the 2016 ICS CD indicated that views on MOCE-related issues amongst stakeholders are disparate. Specifically:

- Some stakeholders supported the inclusion of a margin to supplement the current estimate. Others (eg industry participants and representatives) stated that the MOCE is not required at all.

- Some stakeholders commented that the purpose of the MOCE overlaps with that of the capital requirement. Some also commented that it is loss absorbing and therefore should be counted as capital resources. Some views depend on the purpose and construct of the MOCE, with the P-MOCE sometimes seen as more directly overlapping with capital requirements than the C-MOCE.

- Questions were asked regarding some specific aspects of the designs and calibration tested during 2016 Field Testing (for both C-MOCE and P-MOCE). Some stakeholders expressed clear preferences for one or the other design. Different views were expressed on the technical aspects of the constructs (such as cost of capital parameter and projection of future capital requirements for the C-MOCE).

4.3.3 ICS Version 1.0 for extended field testing

163. As part of ICS Version 1.0 for extended field testing, the IAIS continues to test and refine both the C-MOCE and the P-MOCE. In addition, the impact of different ways in which the MOCE could interact with the capital requirement and capital resources is also being assessed.

4.3.3.1 C-MOCE

164. The C-MOCE is expressed as the sum of discounted current and future capital requirements multiplied by the cost of capital parameter:

$$C-MOCE = Cost\ of\ capital \cdot \sum_{t\geq 0} \frac{Capital\ requirement\ (t)}{(1+discount\ rate)^t}$$

165. The specification of the C-MOCE for ICS Version 1.0 for extended field testing adopts several simplifications to avoid unnecessary complexity while achieving a high level of consistency and comparability, in particular:

- The future capital requirements are derived from the ICS by prescribing the risks to be included in the calculations; certain risks are excluded as they could be avoided or hedged (eg most of the market and credit risks).

- The future capital requirements for non-life risks (ie Premium and Claims Reserve risk) are projected using three prescribed patterns (short, medium and long) applied to the relevant components of the non-life capital requirement.

- The projection patterns for the future capital requirement for life risks are provided by Volunteer Groups based on the related cash outflows.

- The discount rate is the relevant risk free rate. As both Market and Credit risks are mostly avoided, the invested assets will only earn the risk free rate (otherwise returns in excess of the risk free rate would be available without any residual market risk exposure).

166. The cost of capital parameter is the additional rate, above the relevant risk free rate, that an investor would require in order to take on the risk associated with the insurance liabilities. For ICS Version 1.0 for extended field testing, two approaches to determine the cost of capital parameter are being tested:

- A fixed cost of capital set at 5% ; and

- An adjusted cost of capital linked to the level of the risk free interest rate: cost of capital = 3% + 10 year risk free rate, subject to an absolute cap of 10% and an absolute floor of 3%. This approach aims to reflect differences in the cost of capital in different economic environments at a given point in time and over time.

167. The above specifications are subject to further analysis and the IAIS will continue to refine the specifications of the C-MOCE based on field testing data.

4.3.3.2 P-MOCE

168. The P-MOCE construction for life obligations measures the uncertainty of cash flows associated with life insurance obligations using the confidence interval approach and a normal approximation. The P-MOCE is calculated as a percentage of the standard deviation for the current estimate, providing a risk sensitive measure reflecting the IAIG's particular insurance portfolio. The calibration of P-MOCE in ICS Version 1.0 for extended field testing is broadly consistent with the overall level of margins being held by Volunteer Groups under current local jurisdictional requirements.

- For non-life obligations, the approach is based on avoiding the recognition of future profits. Given the different nature of the claims and premium liabilities, the P-MOCE components related to these two different liabilities are calculated separately. Both are subject to a floor of zero.

- For claims liabilities, where profits take the form of investment income on reserves, the P-MOCE takes the form of a discounting approach. The effect of discounting rises with the length of the cash flows, which is a proxy for estimation uncertainty.

169. For premium liabilities, the P-MOCE is the difference between liabilities as implied by a combined ratio of 100% and liabilities calculated using current estimate assumptions.

4.3.4 Interaction of the MOCE with the Capital Requirement and Capital Resources

170. Multiple ways in which the MOCE could interact with the capital requirement or capital resources have been identified. Rationales and motivations for these interactions are often related to the perception of the level of double counting between the MOCE and the capital requirement and more generally to the purpose that is assigned to the MOCE.

171. ICS Version 1.0 for extended field testing includes different options for the interaction of MOCE with the capital requirement and capital resources, which will be explored and assessed during field testing exercises. The following table lists those options for interaction.

Table 6. Possible interactions between MOCE, capital requirement and capital resources

Description	**Rationale**
No deduction of MOCE from the capital requirement and no adding back to capital resources	MOCE serves a different purpose from capital requirements and there is no overlap or double counting with capital requirements. The MOCE constitutes a risk premium. .
Full or partial deduction of MOCE from the capital requirement	MOCE and the capital requirement are exchangeable. Calibration primarily focuses on ensuring the margin and capital requirement in total achieve a defined target. Double counting will be removed by setting the capital requirement equal to the stress (at a one year 99.5% VaR) less the margin.
Full or partial inclusion of MOCE in the capital resources (Tier 1 and/or Tier 2)	MOCE is an amount in excess of current estimates that has not been created against expected/identified losses. For that reason, MOCE may qualify for inclusion in Tier 1 or Tier 2 capital resources. MOCE would qualify for Tier 1 capital resources to the extent that it absorbs losses as they arise due to unexpected stress (going concern). In a gone concern scenario, the remaining MOCE could be used to meet obligations in excess of current estimates, and could therefore qualify for Tier 2 capital resources.
Dual application/ ladder of intervention	The issue here is an early supervisory action level. Under this approach, the MOCE will be used to determine an early action level based on the formula: (ICS capital requirement + MOCE) /ICS capital requirement. The intervention ladder approach could define an early action level through setting an additional margin above the 100% that would trigger supervisory actions.
Reduce the calibration of the MOCE	This approach would attempt to avoid double counting through the design and calibration of the MOCE.

	For example, if there is a view that about 20% of the MOCE covers the same risks as the capital requirement, the MOCE can be reduced by multiplying it by 80%.

172. The following simplified example illustrates how the alternative options described above could impact the ICS solvency ratio. For example, consider an IAIG with the following balance sheet and capital requirement:

Total Assets	1775
Current Estimates	1500
Tier 1 capital resources if no MOCE were included in insurance liabilities	225
Tier 2 capital resources if no MOCE were included in insurance liabilities	50
Capital requirement (before deduction if any)	200
MOCE	75

173. The impact of the different alternatives is summarised in the table below.

	MOCE no deduction	**MOCE with full deduction**	**MOCE with inclusion in cap resources**	**Dual application**	**Reduce calibration of MOCE by 20%**
Assets	1,775	1,775	1,775	1,775	1,775
Liabilities	1,575	1,575	1,575	1,500	1,560
Tier 1 capital resources	150	150	165	225	165
Tier 2	50	50	100[24]	50	50
Total Capital Resources	**200**	**200**	**265**	**275**	**215**
Capital requirement	**200**	**125**	**200**	**200**	**200**
ICS ratio	**100%**	**160%**	**133%**	**138%**	**108%**
"Early Action" Threshold				(200+75)/200 = 138%	

[24] Assuming 20% is added to Tier 1 capital resources and 80% is added to Tier 2 capital resources with Tier 2 capital resources limited to 50% of the capital requirement (without a limit to Tier 2, then it would be 110 and the ICS ratio would 138%).

5 Capital resources

5.1 Background

174. The capital resources framework proposed for the ICS is similar to the approach adopted for the BCR, but will contain more refined criteria for financial instruments and a more stringent assessment of capital elements other than financial instruments. As the ICS is part of ComFrame, which applies to IAIGs and G-SIIs, it is intended to be a more risk-sensitive standard than the BCR and supported by higher quality capital.

175. The ICS identifies two tiers of capital. Tier 1 capital resources comprise qualifying financial instruments, and capital elements other than financial instruments, that absorb losses on a going-concern basis and in winding-up. Tier 2 financial instruments and capital elements other than financial instruments absorb losses only in winding-up.

176. The ICS classifies financial instruments into these two tiers to reflect their quality and suitability, based on consideration of a number of criteria focused on five key principles: loss absorbing capacity (on a going concern basis and/or in winding-up), subordination, availability to absorb losses, permanence, and absence of both encumbrances and mandatory servicing costs. Within each tier, the IAIS is considering allocating financial instruments into two categories with differing qualifying criteria:

- Tier 1:

i) Tier 1 financial instruments for which there is no limit (Tier 1 Unlimited)

ii) Tier 1 financial instruments for which there is a limit (Tier 1 Limited)

- Tier 2:

i) Paid-Up Tier 2 financial instruments (Tier 2 Paid-Up)

ii) Non-Paid-Up Tier 2 financial instruments (Tier 2 Non-Paid-Up)[25]

177. The following table provides a high-level overview of the features being considered for each tier/category of capital with respect to the classification of financial instruments against the five key principles:[26]

[25] The recognition of Non-paid up items within Tier 2 capital resources is still under consideration. One possible approach is to limit non-paid up capital items to mutual insurers.

[26] Tier 2 Non-Paid Up items are not included in the table as they do not directly possess these features. However, if and when the items become paid-up, the resulting financial instruments or capital elements other than financial instruments must possess the features required of Tier 1 or Tier 2 paid up capital resources.

Table 7. Overview of Tiering in Capital Resources

Key Principles	Tier 1 Unlimited	Tier 1 Limited	Tier 2 Paid-Up
Loss absorbing capacity	Absorbs losses on both a going concern basis and in winding-up	Absorbs losses on both a going concern basis and in winding-up	Absorbs losses in winding-up
Level of subordination	Most subordinated (ie is the first to absorb losses); subordinated to policyholders, other non-subordinated creditors and holders of Tier 2 capital instruments	Subordinated to policyholders, other non-subordinated creditors and holders of Tier 2 capital instruments	Subordinated to policyholders and other non-subordinated creditors
Availability to absorb losses	Fully paid-up	Fully paid-up	Fully paid-up
Permanence	Perpetual	Perpetual – no incentives to redeem; issuer may redeem after a minimum period of five years after issuance or repurchase at any time, subject to prior supervisory approval	Initial maturity of five years – may have incentives to redeem but first occurrence deemed to be "effective maturity date"
Absence of both encumbrances and mandatory servicing costs	IAIG has full discretion to cancel distributions (ie distributions are non-cumulative); the instrument is neither undermined nor rendered ineffective by encumbrances	IAIG has full discretion to cancel distributions (ie distributions are non-cumulative); the instrument is neither undermined nor rendered ineffective by encumbrances	The instrument is neither undermined nor rendered ineffective by encumbrances

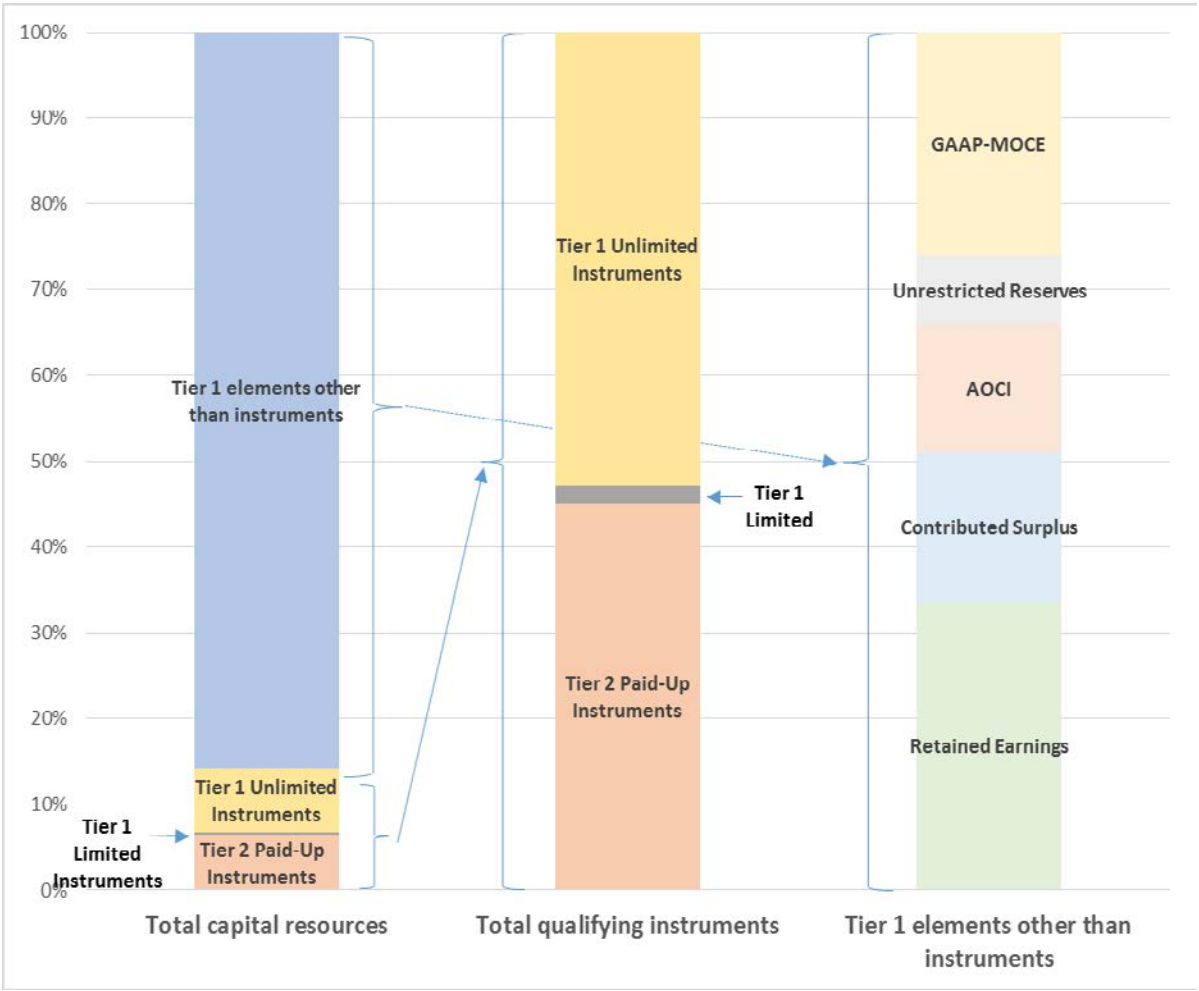
178. Analysis of 2016 Field Testing data and comments on the 2016 ICS CD highlighted important differences between certain financial instruments recognised within various regulatory regimes. As set out in section 5.3, the IAIS has re-opened a number of key areas to ensure that the ICS reflects the diverse methods by which financial instruments, local supervisory controls and regulatory regimes can deliver capital resources that meet the expectations around quality and suitability for the ICS as set out above.

5.2 Results from 2016 Field Testing

179. In 2016 Field Testing, Volunteer Groups reported 769 financial instruments with a total face amount of approximately US$404 billion (prior to assessment against the qualifying criteria). All financial instruments were assessed against the 2016 ICS qualifying criteria to classify each instrument as either Tier 1 (Unlimited or Limited), Tier 2, or non-qualifying. The qualifying criteria applied in 2016 Field Testing are included in Annex 1. Of the reported financial instruments, approximately US $140 billion qualified for Tier 1, US $114 billion qualified for Tier 2, and US $150 billion were non-qualifying.

180. The following chart presents the composition of capital resources, as observed from the 2016 Field Testing data, prior to deductions and limits.

Figure 4. Composition of capital resources reported in 2016 Field Testing



181. The results of the 2016 Field Testing exercise indicated that, on average, total capital resources (before deductions) were comprised of approximately 14% financial instruments and 86% capital elements other than financial instruments. In terms of tiering, on average total capital resources (after deductions) were comprised of approximately 90% Tier 1 capital resources and 10% Tier 2. It should be noted that the 86% and 90% figures include full recognition of the insurance liability/reinsurance adjustment offset within Tier 1 and are expected to decrease when the IAIS finalises the ICS approach to the consistent and comparable MOCE.

5.3 Feedback on the 2016 ICS CD

182. The IAIS consulted on a number of issues related to capital resources as part of the 2016 ICS CD. This section summarises key themes from the responses.

5.3.1 Structural vs Contractual Subordination (Treatment of Senior Debt)

183. Some respondents stated that structural subordination is sufficient to guarantee that policyholders will be paid first in a winding up. The main reason stated was that capital cannot

generally be removed from an insurance company to repay debt holders without supervisory approval. Another view was that the ICS is a group capital standard that eliminates all intra-group transactions and does not contemplate fungibility issues. Another theme focused on the potential acceleration of future debt payments, including the principal amount, that is prevalent in structurally subordinated senior debt in some jurisdictions. In the situation that a company does not pay scheduled debt service, an event of default is triggered.

5.3.2 Financial Instruments Issued by Mutual IAIGs

184. There was support from some jurisdictions for amending the qualifying criteria to recognise financial instruments issued by mutual IAIGs within Tier 1 capital resources. However, other jurisdictions considered that the same Tier 1 criteria should apply to both mutual and joint-stock IAIGs. Another view was that, taking into consideration regulatory controls that exist within some jurisdictions to prevent any and all distributions of both interest and principal, potentially on a permanent basis, certain types of financial instruments issued by mutual IAIGs effectively already meet the 2016 Tier 1 Unlimited qualification criteria and should therefore be recognised as Tier 1 capital resources.

5.3.3 Non-paid-up Capital Resources

185. Some stakeholders responded that they support the inclusion of non-paid-up capital resources. The main reason cited is that when subject to reasonable safeguards, these items constitute a reliable form of capital. These stakeholders generally responded that the qualifying criteria for non-paid-up capital resources were appropriate and that the relevant limit should be higher than 10% of the ICS capital requirement. Another view was that non-paid-up items are not loss absorbing at the ICS measurement date nor may they be under stressed conditions. While the Tier 2 Non-Paid-Up criteria included a requirement for these items to be callable on demand by the IAIG, in a financial stress situation, the counterparty may be unable or unwilling to meet contractual obligations in a timely manner.

5.3.4 Treatment of Items Deducted from Tier 1 (DTAs, computer software intangibles and net defined benefit pension fund surplus)

186. There were differing suggestions as to how these items should be treated within the ICS capital resources framework. It was suggested that the application of a realisability test should be based on the same principles as the local accounting principles. Another suggestion was that the full amount deducted from Tier 1 should be recognised within Tier 2, while another suggestion was that, due to the uncertainty associated with these items, capping or limiting their impact is logical, particularly in the context of a stress scenario.

5.3.5 Financial Instruments Issued by Consolidated Subsidiaries of the IAIG and Held by Third Parties

187. Some stakeholders suggested that if a financial instrument meets the qualifying criteria, then the instrument should count in full and no limit should be applied on the qualifying amount. Other stakeholders considered this to be a matter of fungibility, an issue that should be addressed holistically within the ICS. One suggestion was to limit the issuing subsidiary's consolidated capital at the IAIG level and that such a limit should be at least equal to the subsidiary's capital requirement. Another suggestion was that restrictions on the availability should be reflected in liquidity considerations as they are not related to capital.

5.3.6 Prior Supervisory Approval for Redemption at Maturity and Consideration of Lock-in Features

188. There was a split in views among stakeholders who responded as to the appropriate circumstances under which prior supervisory approval should be required for repayment or redemption of a qualifying financial instrument. Many respondents supported such a requirement at effective maturity only, while some stakeholders supported supervisory approval at both effective and contractual maturity. A few stakeholders supported supervisory approval at contractual maturity only, while several respondents did not consider prior supervisory approval to be necessary at effective or contractual maturity, since they viewed amortisation or lock-in as sufficient tools to deliver the expected degree of permanence.

189. Some stakeholders responded that a lock-in feature provides the same safeguard as supervisory approval prior to redemption of a financial instrument and that lock-in is a more objective safeguard. These stakeholders generally responded that the criterion for prior supervisory approval should be amended to recognise the equivalence of a lock-in feature.

190. One stakeholder considered supervisory approval to be a superior control, noting that the provisions of a lock-in feature may be based on the issuing firm/group's capital position as of the last reporting date, which may not reflect current market conditions which could be taken into account using the supervisory approval approach.

5.3.7 Principal Loss Absorbency Mechanism (PLAM)

191. Some stakeholders were in favour of adopting a PLAM requirement for Tier 1 Limited financial instruments. These stakeholders were predominantly based in Europe, which has applied a PLAM requirement as part of Solvency II. Stakeholders from non-EU jurisdictions tended to have opposing views. Supporters of PLAM suggested that the mechanism would improve the quality of capital. However, there was another view that a PLAM is not necessary for instruments to absorb losses in a going concern, and is complex and prone to unintended consequences. Another view was that preference shares should be considered a suitable instrument for Tier 1 Limited capital resources due to their equity status and should not require a PLAM.

5.3.8 Encumbered Assets

192. Some stakeholders commented that the structure of the deduction for encumbered assets applied in the 2016 ICS Field Testing was too punitive (ie: did not adequately reflect outcomes of various scenarios or varying processes within and across jurisdictions) and too complex (ie there was difficulty in calculating the offset amount for incremental capital requirements).

5.3.9 Capital Composition Limits

193. Some stakeholders provided suggestions for capital composition limits. One respondent had a general concern that the proposed ICS capital composition limits for tiering purposes were based on required capital. As a consequence, risk-reducing activities that reduce required capital have the unanticipated effect of lowering capital composition thresholds and thus potentially reducing available capital. Another stakeholder suggested a limit system based on minima rather than maxima because the use of maximum limits incentivises insurers to issue cheaper, lower quality instruments rather than more expensive, higher quality instruments for financing purposes.

5.3.10 Treatment of Components of AOCI

194. Almost all stakeholders that responded indicated that the AOCI elements provide loss absorbing capacity on a going concern basis. Specific elements that were identified were unrealised gains and losses, translation of foreign subsidiaries, cash-flow hedges and revaluation surplus. One view was that asset classifications under an accounting basis do not change the loss absorbing capacity of the assets and so AOCI elements should be included in capital resources. Another view was that for long-term risks, AOCI will typically not have any loss absorbing capacity and AOCI should be excluded from the GAAP Plus balance sheet for purposes of achieving symmetry between the valuation of assets and liabilities and more appropriately measuring risks under the standard method.

195. One additional element of AOCI that respondents identified as having loss absorbing capacity on a going concern basis was derivatives that qualify for hedge accounting under U.S. GAAP. These will have their mark-To-market impacts recorded in AOCI.

5.3.11 Treatment of Insurance Liability/Reinsurance Adjustment Offset

196. The revaluation of the balance sheet under both the MAV and GAAP Plus approaches results in a balancing amount that has been termed "insurance liability/reinsurance adjustment offset". More specifically, this amount represents the sum of adjustments for insurance liabilities, reinsurance assets, deferred expense assets and related deferred tax amounts. Some stakeholders responded that the definition of the insurance liability/reinsurance adjustment offset was appropriate, though some stakeholders questioned the purpose of the calculation as it involves comparing a prudential balance sheet with a financial balance sheet and the size of the "adjustment" has no direct bearing on an insurer's ability to meet policyholder liabilities. Respondents expressed conflicting views as to whether inclusion of this offset would generate significant volatility in capital resources.

197. One respondent considered that increased volatility will be inherent in any economic balance sheet and there is no reason to include within the ICS balance sheet an item based on the difference with an accounting balance sheet. The volatility should be addressed by an appropriate valuation basis for assets and liabilities. Another respondent considered that such volatility is inevitable, as it arises from different policy liability valuation methods under the GAAP and MAV bases, and volatility of the policy liability valuation method itself under the MAV basis. So it is difficult to avoid such volatility within the ICS balance sheet.

5.4 ICS Version 1.0 for extended field testing

198. The IAIS recognises the importance of designing a capital resources framework that is consistent with the ICS Principles and appropriately recognises the diverse methods used by IAIGs to raise capital in various regulatory regimes. ICS Version 1.0 for extended field testing does not reflect a definitive conclusion on some of the important issues that were part of the 2016 ICS CD. The IAIS has decided to seek further input on these issues through 2017 Field Testing with a view to finalising all outstanding issues for ICS Version 2.0.

5.4.1 Subordination

199. For 2017 Field Testing, the IAIS is collecting additional data on how financial instruments in different jurisdictions are subordinated to policyholders and other non-subordinated creditors, either through contractual or structural subordination.

200. In particular, the IAIS is giving further consideration to the recognition within ICS capital resources of structurally subordinated debt – that is, debt issued by a holding company and down-streamed into insurance subsidiaries. Possible conditions of such arrangements that the IAIS has identified for potential recognition of structural subordination include:

- The instrument has been issued by a "clean" holding company (Hold Co), defined as a Hold Co that either does not have operational liabilities on its balance sheet (ie does not undertake any operations itself, including writing insurance business), or regulatory capital is subordinated to operating liabilities.

- The proceeds from the instrument issuance have been down-streamed into an insurance subsidiary of the Hold Co that is located in a jurisdiction where there exists a 'sufficiently high level of regulatory controls' over distributions from insurance companies. The IAIS is considering different tests to determine whether a regulatory regime possesses a 'sufficiently high level of regulatory controls'.

- The IAIG is able to accurately track and report the amount of the instrument issuance proceeds that have been down-streamed into insurance subsidiaries.

201. For both contractual and structural subordination, the IAIS is collecting additional information in 2017 Field Testing on whether the subordination of debt issued by a Holding Company is expected to be effective where the proceeds are down-streamed into an insurance subsidiary within a different country/jurisdiction with a different legal framework.

5.4.2 Financial Instruments Issued by Mutual IAIGs

202. The recognition of financial instruments issued by mutual IAIGs in Tier 1 capital resources is still under consideration with possible options including a carve-out within Tier 1 capital resources for certain financial instruments issued by mutual IAIGs. The IAIS is collecting additional information in 2017 Field Testing to determine the extent to which financial instruments issued by mutual IAIGs meet potential qualifying criteria on the key principles of loss-absorbing capacity, permanence and absence of both encumbrances and mandatory servicing costs.

5.4.3 Non-paid-up Capital Resources

203. The recognition of non-paid-up capital resources within the ICS capital resources framework is still under consideration. Furthermore, the IAIS is considering if recognition of non-paid up capital resources should be limited to mutual IAIGs.

5.4.4 Discretionary Repurchases of Tier 1 Unlimited Financial Instruments

204. The 2016 Field Testing Technical Specifications included, within Tier 1 Unlimited, a qualifying criterion that requires prior supervisory approval for the discretionary repurchase of Tier 1 Unlimited financial instruments. For jurisdictions where such prior supervisory approval was not a requirement, the entire reported amount for Tier 1 Unlimited instruments (eg common stock/ordinary shares) would not be recognised as ICS capital resources since both Tier 1 and Tier 2 capital resources required supervisory approval prior to redemption.

205. The IAIS is currently considering whether to retain the 2016 Field Testing Tier 1 Unlimited criterion (e), ie the requirement for prior supervisory approval for discretionary repurchase.

5.4.5 Prior Supervisory Approval for Redemption at Maturity and Consideration of Lock-in Features

206. The IAIS has decided that, for ICS Version 1.0 for extended field testing, the Tier 2 criterion requiring prior supervisory approval for redemption of debt instruments will not apply at contractual maturity. Furthermore, for 2017 Field testing, the IAIS is collecting additional information about lock-in clauses and supervisory approval. The IAIS is considering whether to treat lock-in clauses as equivalent to prior supervisory approval and if so, which criteria or conditions should apply.

5.4.6 Capital Composition Limits

207. ICS Version 1.0 for extended field testing does not include explicit capital composition limits due to the optionality currently present in the capital resources framework.

208. The IAIS has previously identified three capital composition limits to apply to ICS capital resources:

- a limit on Tier 1 Limited capital;
- a limit on total Tier 2 capital; and
- a limit on Tier 2 Non-Paid Up capital.

209. Capital composition limits can only be set once the capital resources framework is finalised and the features and qualifying criteria for each tier of capital resources have been determined.

5.4.7 Treatment of Items Deducted from Tier 1 (DTAs, computer software intangibles and net defined benefit pension fund surplus)

210. These items will receive some limited recognition in Tier 2 capital resources, through the development of a Tier 2 basket. The basket is constructed by allowing a proportion of the amount deducted from Tier 1 capital resources to be added to the basket. The sum of the items in the basket will then be capped at a predefined level.

211. The amount of each item added to the basket will be further assessed during 2017 Field Testing. The IAIS will consider whether the realisable value of the amount deducted from Tier 1 capital resources, as reported by the Volunteer Group, or a fixed percentage of the amount deducted from Tier 1 capital resources is more appropriate.

212. Since ICS Version 1.0 for extended field testing does not include explicit limits, various values for the limit on the basket will be assessed during the 2017 Field Testing analysis phase.

5.4.8 Qualifying Capital Resources Arising from a Consolidated Subsidiary of the IAIG and Attributable to Third Party Investors (Third Party Capital)

213. The IAIS is currently considering an approach to limit the inclusion of financial instruments issued by a consolidated subsidiary of an IAIG and held by third party investors, as well as other capital elements arising from the subsidiary and attributable to third party investors (ie capital elements other than financial instruments included in a non-controlling interest), in qualifying capital resources. This is in order to reflect the lack of availability of those items.

214. The data required to calculate a limit, including local jurisdictional information of the relevant subsidiary insurers, will be collected in 2017 Field Testing.

5.4.9 Encumbered Assets

215. For ICS Version 1.0 for extended field testing, the deduction for encumbered assets has been simplified by applying a proxy for the calculation of the incremental capital requirement. In addition, the amount deducted from Tier 1 is recognised in Tier 2, subject to the limit on Tier 2 capital resources. This treatment is subject to further refinement for ICS Version 2.0.

5.4.10 Other Open Issues

216. The following capital resources issues were de-prioritised for ICS Version 1.0 for extended field testing and will be considered in the development of ICS Version 2.0:

- Principal loss absorbency mechanism (PLAM);
- Treatment of components of AOCI;
- Treatment of insurance liability/reinsurance adjustments offset; and
- Holistic approach to the fungibility of capital within the ICS.

6 ICS Capital Requirement: The Standard Method

6.1 Risks

217. It follows from ICS Principle 4 that all material risks to which an IAIG is exposed should be reflected in the ICS. The IAIS considers that the key categories of risk included in the standard method are: Insurance risk, Market risk, Credit risk and Operational risk.

218. There are risks to which an IAIG is exposed other than the key risks set out in Table 8 below, such as Group risk and Liquidity risk (other than that addressed in Lapse risk). The IAIS considers that these other risks, for the time being, should not be quantified in the ICS capital requirement and should be addressed elsewhere in ComFrame's qualitative requirements,[27] specifically in Module 2 Elements 3 and 4 which addresses ERM. However, it is noted that some aspects of Group risk, such as fungibility and minority interests, may be addressed within qualifying capital resources.

219. The ICS capital requirement is based on the potential adverse changes in capital resources resulting from unexpected changes, events or other manifestations of the specified risks. The risks covered by the ICS capital requirement are outlined in Table 8. The definitions and risks described in the table builds on those proposed in the 2014 ComFrame Draft. Where appropriate, some modifications have been made and further refinement may follow as the ICS is finalised.

Table 8. Risks and Definitions

Categories of risk	**Key risk**	**Scope/definition: Risk of adverse change in the value of capital resources due to**
Insurance risk	Mortality risk	Unexpected changes[28] in the level, trend or volatility of mortality rates
	Longevity risk	Unexpected changes[28] in the level, trend or volatility of mortality rates
	Morbidity/Disability risk	Unexpected changes[28] in the level, trend or volatility of disability, sickness and morbidity rates
	Expense risk	Unexpected changes[28] in liability cash flows due to the incidence of expenses incurred
	Lapse risk	Unexpected changes[28] in the level or volatility of rates of policy lapses, terminations, renewals and surrenders
	Premium risk (non-life)	Unexpected changes[28] in the timing, frequency and severity of future insured events (to the extent not already captured in Morbidity/Disability risk)
	Claim reserve risk (non-life)	Unexpected changes[28] in the expected future payments for claims (to the extent not already captured in Morbidity/Disability risk)

[27] See http://www.iaisweb.org/page/supervisory-material/common-framework for the latest draft of ComFrame.
[28] Expected impacts are assumed to be incorporated in valuation methodologies

	Catastrophe risk	Unexpected changes[28] in the occurrence of low frequency and high severity events
Market risk	Interest Rate risk	Unexpected changes[28] in the level or volatility of interest rates
	Equity risk	Unexpected changes[28] in the level or volatility of market prices of equities
	Real Estate risk	Unexpected changes[28] in the level or volatility of market prices of real estate or from the amount and timing of cash-flows from investments in real estate
	Currency risk	Unexpected changes[28] in the level or volatility of currency exchange rates
	Asset Concentration risk	The lack of diversification in the asset portfolio
Credit risk		Unexpected changes[28] in the actual default as well as in the deterioration of an obligor's creditworthiness short of default, including migration and spread risks.
Operational risk		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

220. The approach taken for the standard method is to consider each risk and, based on current risk knowledge, insurance products' characteristics, and practicality versus materiality, determine the most appropriate approach to measuring that risk on an individual basis[29]. Some risks are best measured on the basis of a stress approach (see below for a description of a stress approach). This is particularly the case where a risk could manifest in changes both in the values of both assets and liabilities, or where the risk cannot be adequately captured by a single factor or item on the balance sheet (eg Mortality/Longevity risk, Interest Rate risk).

Stress approach

In a stress approach, the calculation of the capital requirement for a particular risk, or a number of risks, follows a dynamic approach looking at the balance sheet at two points in time: the IAIG's current balance sheet pre-stress and the IAIG's balance sheet post-stress.

The capital requirement for each individual risk is determined as the decrease between the amount of capital resources on the pre-stress balance sheet (CR_0) and the amount of capital resources on the post-stress balance sheet (CR_1). Stresses can be applied individually with individual stressed balance sheets being calculated (CR_0 - CR_1) to determine the capital requirement with respect to each individual stress.

221. Other risks are measured using a factor-based approach. Examples where this is appropriate include cases where a risk exposure is appropriately captured by a balance sheet item. However, particularly in the case of Catastrophe risk, a stochastic modelling approach

[29] For 2015 and 2016 Field Testing, all calculations of risk charges exclude MOCE. All stress-based calculations include only current estimates in determining the Net Asset Value (NAV). Factors applied to insurance liabilities are only applied to current estimates.

forms part of the standard method as this is likely to provide the desired level of risk sensitivity and more adequately reflect the risk profile of the IAIG.

Factor-based approach

Under a factor-based approach, the calculation of the ICS capital requirement for a particular risk, or a number of risks, is determined by applying factors to specific exposure measures. It should be noted that a factor-based approach would, in general, be simpler to implement than a stress approach; however, it would need to include additional measures to allow for the IAIG-specific recognition of loss absorbing effects of mechanisms such as risk mitigation techniques and profit sharing. An example of a factor-based approach is represented by the BCR.

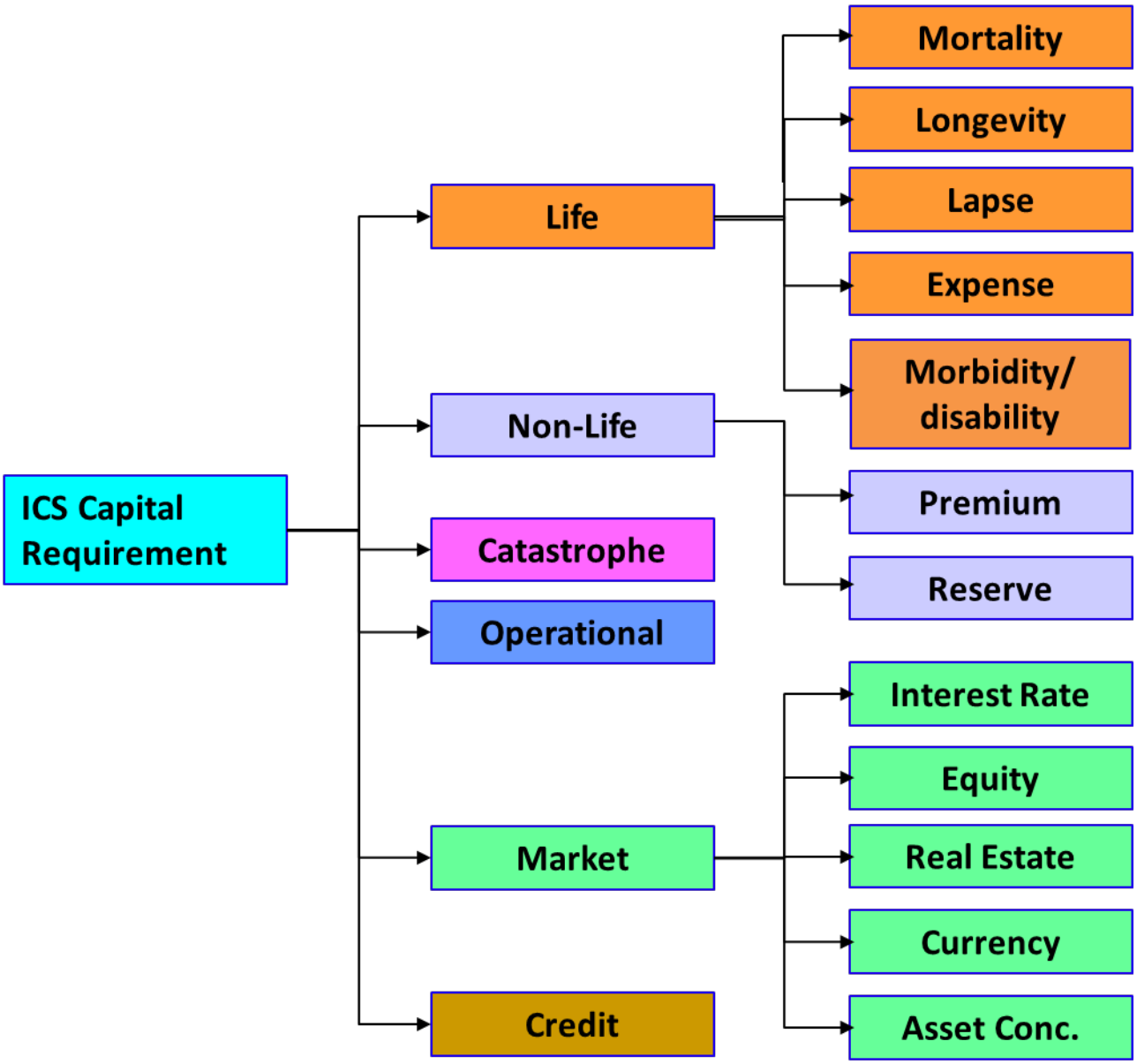
222. Table 9 below provides a summary of the risk measurement methods in the standard method as set out in the 2017 Field Testing Technical Specifications.

Table 9. Summary of risk measurement methods for the standard method

Risk/Sub-risk / Approach	Factor-based	Stress	Other
Insurance risks			
○ Mortality		✓	
○ Longevity		✓	
○ Morbidity/Disability		✓	
○ Lapse		✓	
○ Expense Risk		✓	
○ Premium	✓		
○ Claims reserve	✓		
○ Catastrophe			✓
Market risks			
○ Interest rate		✓	
○ Equity		✓	
○ Real estate		✓	
○ Currency/FX		✓	
○ Asset concentration	✓		
Credit risk	✓		
Operational Risk	✓		

223. Figure 5 provides an overview of the structure of the standard method as currently set out in ICS Version 1.0 for extended field testing.

Figure 5. Overview of standard method for the purposes of ICS Version 1.0 for extended field testing



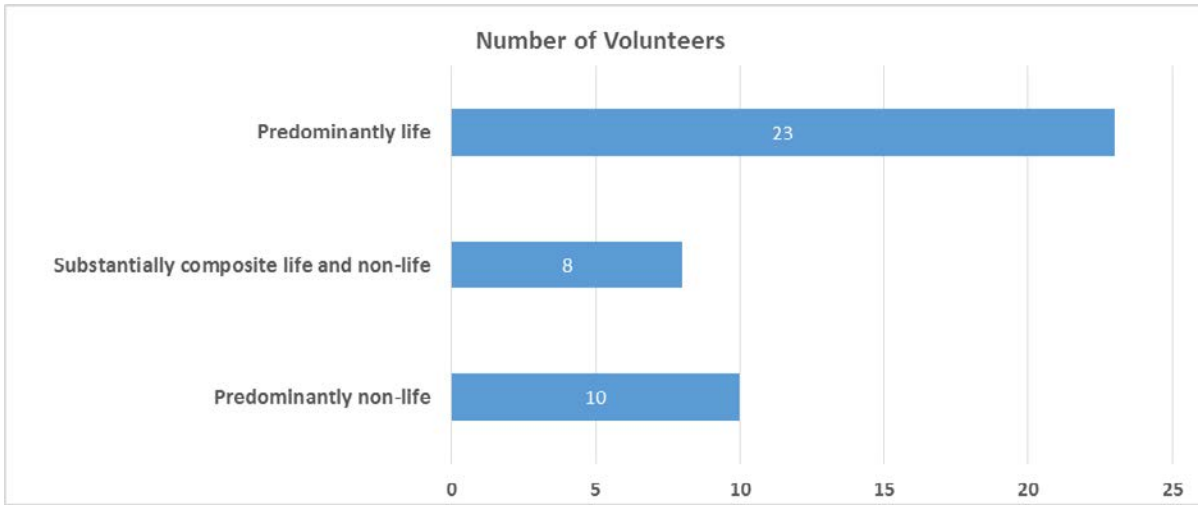
224. The individual risks will be combined to recognise risk diversification.

6.1.1 Results from 2016 Field Testing – MAV

225. To provide context to the following sections covering individual risk charges, some results from 2016 Field Testing are relevant. The primary focus of 2016 Field Testing was on the calibration of the stresses. Equity risk, Interest Rate risk, Currency risk, Credit risk, Premium and Claims Reserve risk were calibrated using available data. The aggregate data collected for the Life risks calibration exercise was considered in the refinement of the Life risks stresses, along with analysis of jurisdictional data, professional/supervisory judgment and the results from 2015 and 2016 Field Testing. However, it must be noted that even where using available data, supervisory judgement is still highly relevant, for example in selecting calibration methodologies and the length of the data series to use. Where a calibration using available data has been performed, there have been refinements for 2017 Field Testing and there are likely to be further refinements in the future. Therefore the results from 2016 Field Testing in terms of the materiality of each of the risks can be considered indicative rather than definitive.

226. Another important point to understand is the nature of the population of 41 Volunteer Groups for 2016 Field Testing. There is a predominance of life business in the collective business mix of the population of Volunteer Groups. See Figure 6:

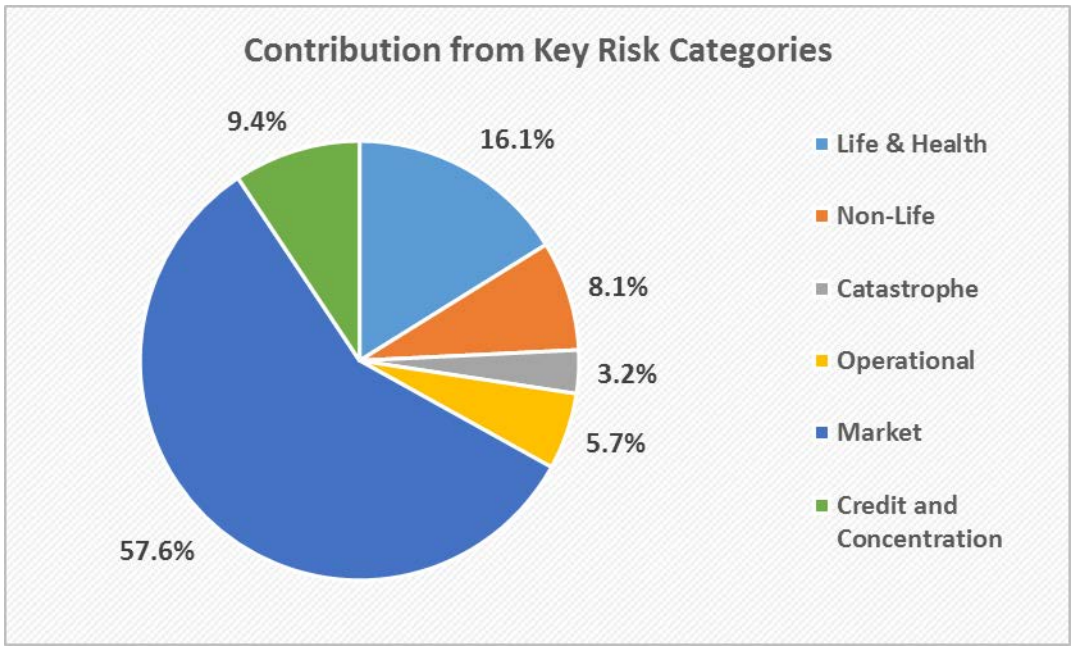
Figure 6. Business mix of Volunteer Groups[30]



227. This shows that 23 of 41 Volunteer Groups in 2016 Field Testing predominantly conduct life insurance business, with 10 of the 41 predominantly conducting non-life insurance business. The remaining eight can be considered composite life and non-life groups. This provides context to the results on the contribution from each of the risks shown below.

[30] Based on contribution of non-life risk charges to the overall ICS capital requirement.

Figure 7. Contribution of key risk categories to ICS capital requirement

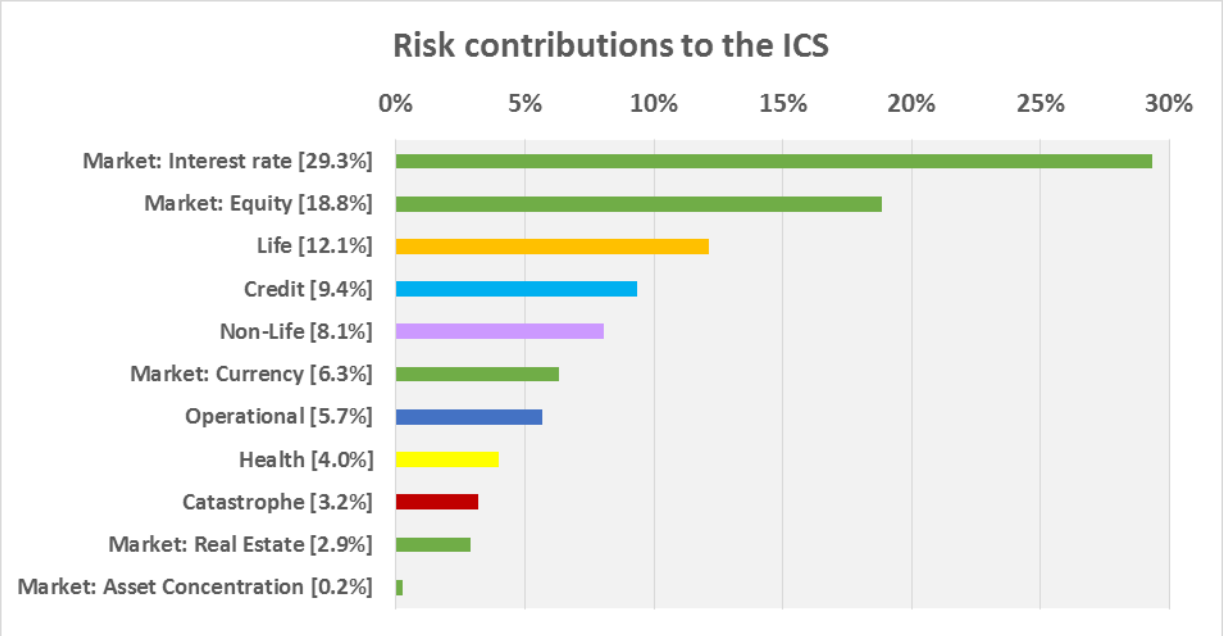


228. Figure 7 shows the contributions of the major risks over the entire set of Volunteer Groups as determined through the ICS capital requirement post management actions and post diversification. The relative weights for individual Volunteer Groups did vary significantly from this global risk profile picture, depending on their individual business models which were diverse as shown in Figure 6. The results should not be compared to similar analyses based on one firm. There are significantly different results per Volunteer Group. It is expected these results will evolve in 2017 due to changes in the population of Volunteer Groups as well as changes in the design and calibration of the ICS Standard Method.

229. In particular, the contribution of Catastrophe risk to overall risk appears to be low. However, data shows that Catastrophe risk can be more material for some (non-life) groups.

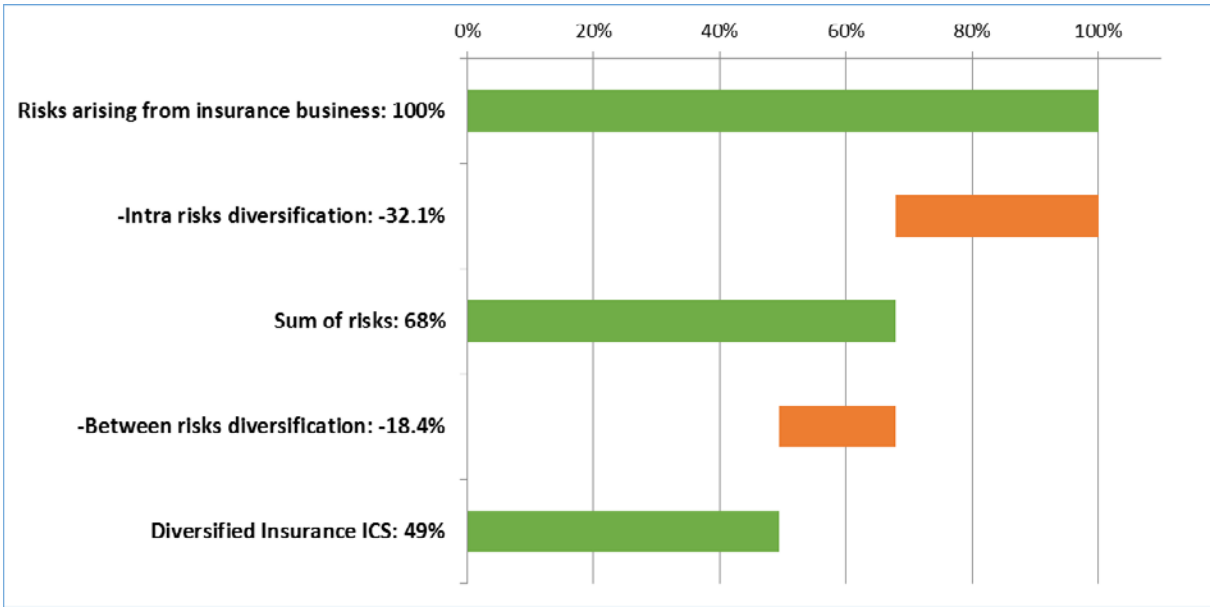
230. In further detail, the contribution of the individual risk charges is set out in Figure 8 below. Figure 7 and Figure 8 are designed to fit with the risk structure set out in Figure 5 with one notable change from 2016 Field Testing. For ICS Version 1.0 for extended field testing, the Health module has been removed and replaced with Morbidity and Disability risk within Life risks.

Figure 8. Contributions of various risks to ICS Capital Requirement in 2016 Field Testing



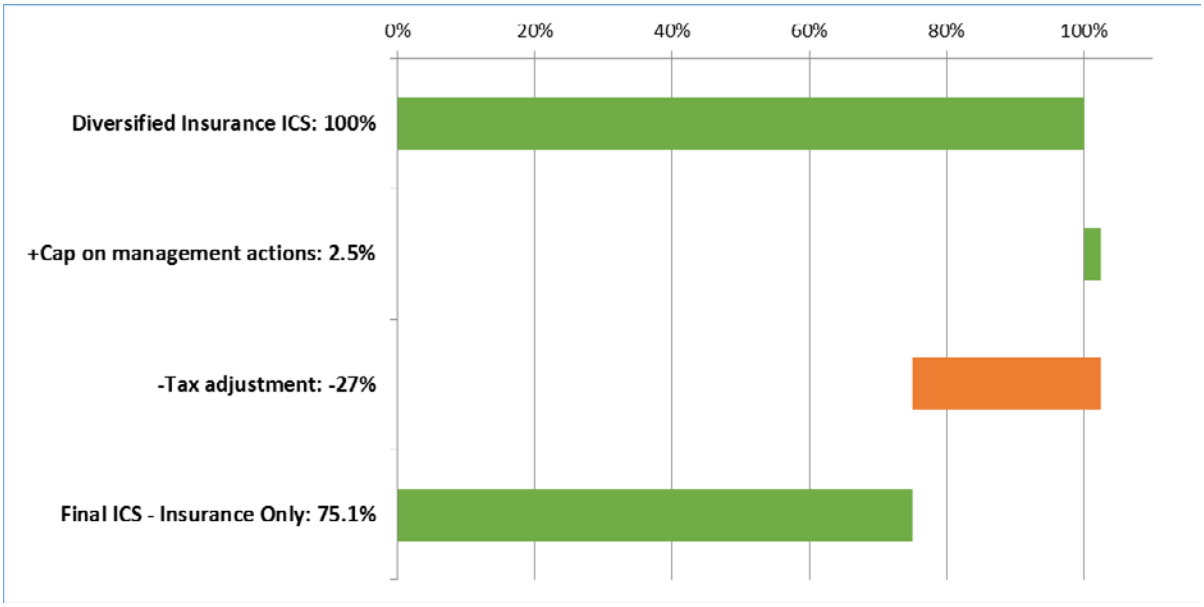
231. These graphs must be interpreted in the context of the notional 99.5% VaR calibration over a one-year time horizon used for 2016 Field Testing (see next section on "Target Criteria"). For example, there were concerns from Volunteer Groups about the calibration of Interest Rate risk. Any high calibrations will then result in an over-representation of those risks compared with other risks. This is the reason that these results must be considered indicative rather than definitive or conclusive about the materiality of particular risk charges.

Figure 9. Impact of Diversification



232. Figure 9 shows that the impact of diversification is significant across the population of Volunteer Groups. The difference in the level of diversification for individual Volunteer Groups reflects differences in business mixes.

Figure 10. ICS Top Level Adjustments



233. As shown in Figure 10, the only material high-level adjustment is based on the application of a global effective tax rate, which is a placeholder approach (see Section 7). In most cases, Volunteer Groups chose the corporate tax rate applicable in their home jurisdictions with rates up to 35%.

234. The figures above only relate to the insurance component of the ICS capital requirement. Overall, the non-insurance components were not material across the population of Volunteer Groups, but were material for some individual Volunteer Groups.

6.1.2 Results from 2016 Field Testing – GAAP Plus

235. Risk charges calculated under the GAAP Plus valuation approach for 2016 Field Testing were generally consistent with the results under MAV with the exception of Interest Rate risk. In 2016 Field Testing, two options were tested for calculating an Interest Rate risk charge in order to address the potential incompatibility of any single design of an interest rate stress with certain jurisdictional GAAP Plus approaches. Most Volunteers Groups submitted data for only one of the options, which made analysis of the results more challenging. Differences in the interest rate stress were most pronounced for jurisdictions where insurance liability current estimates were discounted using a book yield plus reinvestment assumption and with fixed income assets backing long-term liabilities measured at amortised cost. Defined market shocks had much less impact under this valuation approach as compared to MAV, highlighting a fundamental difference between certain jurisdictional GAAP Plus approaches and MAV. GAAP Plus for most jurisdictions is based on a book value concept where market movements are not immediately reflected in valuations, whereas MAV valuations are much more sensitive to current market changes.

236. Other differences between GAAP Plus and MAV risk charges were primarily driven by the valuation of insurance liabilities and, more specifically, the different discounting methods that were applied under each valuation approach. Discounting options under MAV continue to be evaluated. Furthermore, and as described in Section 4.2.4, accounting rules may also lead to changes in discounting and possibly valuation more broadly under GAAP Plus. Thus, the results of 2016 Field Testing for risk charges under GAAP Plus are neither conclusive nor indicative of results that may be achieved in future field testing exercises.

6.2 Target Criteria

237. The definition of the ICS capital requirement needs to achieve materially consistent results in the calculation of the ICS capital requirement globally across IAIGs. To achieve this, the definition needs to specify a number of key aspects for the quantification of the ICS capital requirement. These key aspects are:

- A risk measure (eg VaR,[31] Tail-VaR,[32] etc.)
- A time horizon (eg one-year, run-off to ultimate, etc.)
- A confidence level (eg 99.5%, 99%, etc.).

238. The IAIS has agreed that ICS Version 1.0 for extended field testing and subsequent further development for ICS Version 2.0 will be on the basis of the target criteria of 99.5% VAR

[31] Value-at-Risk (VaR) is the loss at a predefined confidence level (eg 99.5%), ie the loss that is not exceeded with probability equal to the confidence level.
[32] Tail Value at Risk (Tail-VaR) is the expected value of the loss given that the loss exceeds the predefined confidence level. It is sometimes also called Conditional Tail Expectation (CTE), Expected Shortfall (ES) or Expected Tail Loss.

over one-year time horizon, Further details on each of the three key aspects of the target criteria are described below.

6.2.1 Risk Measure

239. In comments received on the 2014 and 2016 ICS CDs, most stakeholders commented that VaR is the most appropriate from a practical perspective (ie easier to implement). Some stakeholders commented that Tail-VaR is theoretically superior (particularly if used in conjunction with internal models), but far more difficult to implement, so VaR should be used for a standard method. Several stakeholders commented that Tail-VaR is not suitable for a standard approach and should not be field tested.

240. Through 2015 and 2016 Field Testing, the IAIS learned that Volunteer Groups largely support the use of a VaR measure on practical grounds. Given this, and the complexity of implementing a Tail-VaR measure (especially from a calibration of risks perspective), the IAIS agreed to focus on only a VaR risk measure for ICS Version 1.0 for extended field testing and ICS Version 2.0.

6.2.2 Time Horizon

241. Most stakeholders responded that a one-year time horizon is appropriate. However, a few stakeholders commented that a one-year time horizon is inappropriate for IAIGs with long-term liabilities.

242. For ICS Version 1.0 for extended field testing and ICS Version 2.0 the IAIS will proceed with a one-year time horizon as it is in line with the annual cycle of financial reporting and solvency surveillance prevalent throughout the financial services industry. Supervisors, policyholders, beneficiaries and other stakeholders are interested in the financial position an IAIG reports through its balance sheet.

243. The 2014 ICS CD also sought feedback on whether or not, for the purposes of the ICS capital requirement, it may be assumed that the IAIG will carry its existing business for the one-year time horizon as going concern or if the ICS capital requirement may only apply to risks existing at the measurement date (ie assume no new business). Stakeholder responses on this issue varied. Some stakeholders view the going concern assumption as more appropriate because it leads to a more accurate risk assessment including a reflection of the IAIG's business plan. Others stakeholders commented that the ICS should only apply to risks at the measurement date as including new business increases complexity and the ICS capital requirement should focus on policyholder protection (ie a run-off basis).The IAIS will proceed with the assumption that the IAIG will carry on only existing business[33] for the one year time horizon as a going concern.

6.2.3 Confidence Level

244. The ICS capital requirement should be calibrated so there is only a small probability that the balance sheet one year from now will have negative capital resources.

245. Over the last few years the IAIS attempted to calibrate all risks at 99.5% VaR over a one-year time horizon. Calibrations set out for ICS Version 1.0 for extended field testing are

[33] Premium risk and Catastrophe risk are exceptions to this as new business to be written in the next 12 months will also be taken into consideration.

based on a notional 99.5% VaR and subject to change and refinement as calibration work progresses. For example: some calibrations are based on IAIS analysis (ie Equity risk, Currency risk, Interest Rate risk, partially non-life and life risks, and Credit risk), whereas the remainder of calibrations have been derived from inference from existing jurisdictional capital requirements, analysis of jurisdictional data, and professional supervisory judgement. As explained in the individual risk sections (eg Life and Non-life risks), the IAIS continues to seek inputs on the most appropriate methodologies and data to be used to further refine the calibrations.

6.3 Risk Mitigation

6.3.1 Background

246. In order to promote good risk management and achieve an appropriate level of risk sensitivity, 2016 Field Testing took account of the effect of risk mitigation techniques provided certain conditions were met. These criteria were set out in the 2016 Field Testing Technical Specifications and were designed to ensure that the risk mitigation techniques were accurately and appropriately reflected within the risk charges.

247. The effect of risk mitigation techniques that were in force for a period shorter than 12 months was taken into account in the ICS capital requirement in proportion to the length of time involved for the shorter of the full term of the risk exposure or the period that the risk-mitigation technique is in force.

248. An example of risk mitigation arrangements covering a market risk that is in-force for a period of less than 12 months is the hedging of currency risk where some firms use a rolling program of short term currency forwards that are then regularly renewed.

249. However, some non-life exposures to Premium and Catastrophe risks include business to be written over the next year. It is general market practice to manage these risks using risk mitigation arrangements (eg reinsurance protection) often on a “losses occurring during” basis. It was noted that existing risk mitigation arrangements with respect to non-life business could be in force for a shorter period than the time horizon for the calculation of the ICS, but that they would often be expected to be subsequently renewed. The IAIS decided for 2016 Field Testing that it would recognise the renewal of these risk mitigation arrangements subject a further set of criteria being met.

6.3.2 Observations from 2016 Field Testing

250. Analysis of the data collected in 2016 Field Testing highlighted that certain market risks were materially affected by the approach to recognising risk mitigation techniques proportionally to their duration. For example, it showed that the approach had a very material impact on Currency risk for some Volunteer Groups.

251. The responses to the Field Testing Questionnaire highlighted the materiality of this issue and the view that the current approach did not adequately reflect the risk mitigating properties of the strategies that Volunteer Groups were employing.

6.3.3 Feedback on the 2016 ICS CD

252. The comments on the 2016 ICS CD were consistent with the responses to the Field Testing Questionnaire and were strongly supportive of greater recognition of the regular, well governed renewal of risk mitigation techniques.

253. The respondents felt that the approach used in 2016 Field Testing was overly restrictive with respect to the recognition of the renewal of the risk mitigation techniques for the other than non-life exposures. The majority of respondents felt that the proportional approach to recognising shorter duration risk mitigation techniques did not reflect the true value of the techniques and overstated the risks of not being able to renew in a stress.

254. A number of respondents highlighted the liquidity of the markets for currency and equity risk derivatives even during the height of the 2008 financial crisis as a demonstration of the continuing ability to renew in a stress scenario.

6.3.4 ICS Version 1.0 for extended field testing

255. Given these responses, the approach used in 2016 Field Testing was revisited. Alternative approaches that would provide balance between recognising the achievable risk mitigating effect of a strategy whilst avoiding understating the risk to which an insurance group is exposed were explored.

256. The approach chosen for ICS Version 1.0 for extended field testing allows for the recognition of the renewal by increasing the proportion of the in-force risk mitigation techniques that is recognised. This increase is subject to the renewal meeting a set of criteria and also applies a limitation, or cap, to the total proportion that can be recognised. This has been designed to best reflect the difficulty and uncertainty in quantifying the associated risks.

257. The criteria for the recognition of the renewal of risk mitigation arrangements for market risks have been chosen to limit recognition to circumstances where there is an established process for renewal as well as strong governance and a history of effective renewal. The IAIG should be able to demonstrate that it has a strong risk framework and understands the risks to which it is exposed and how these might react in stress scenarios. Importantly, IAIGs should be incorporating realistic and justifiable assumptions for the expected costs and effectiveness of renewal in the relevant stress scenario.

258. For the purposes of 2017 Field Testing, the renewal of such arrangements should be taken into account only if:

i) The renewal is consistent with previous business practice and documented strategy.

ii) The replacement of the risk mitigation instrument shall not take place more often than every three months;

iii) The risk that the risk mitigation arrangement cannot be replaced due to an absence of liquidity in the market is not material under different market conditions and there is no material basis or operational risks compared to the risk mitigation effect;

iv) The replacement of the risk mitigation technique is not conditional on any future event, which is outside of the control of the Volunteer Group. Where the

replacement of the risk mitigation technique is conditional on any future event that is within the control of the Volunteer Group, then the conditions should be clearly set out in the documented strategy referred to in point (a);

v) The renewal is realistic with regards to availability of the arrangement and its cost and the risk that these costs may increase during the following 12 months is deducted from the value attributed to the instrument;

vi) Any additional risk stemming from the risk mitigation arrangement (eg Credit risk) is taken into account in the capital requirement;

vii) The Volunteer Group's hedge effectiveness and any related risks are monitored on an ongoing basis.

259. Where these criteria are met, the recognition of the renewal of the risk mitigation arrangement will be limited such that the value attributed to the renewal element, net of all the potential costs that may be incurred from the implementation of the strategy, will not be more than 80% of the difference between applying a proportional recognition and a full recognition of the arrangement after allowing for the costs already captured.

260. This limitation has been introduced to require a minimum allowance for potential costs that might be incurred in renewing the instrument(s) in a stress scenario. Quantifying these costs is difficult given the uncertainty of the circumstances of a particular stress event. Therefore, a level of prudence is required when setting these assumptions.

261. The approach being applied for 2017 Field Testing is simplistic and calibrated at the same level for all risks; however, this approach is intended to provide a more balanced recognition of the risk mitigating properties. It requires that the risks and costs associated with renewal in stress conditions are adequately captured and includes features to try to limit underestimation of these risks.

262. For 2016 Field Testing, the renewal of risk mitigation arrangements for non-life exposures were recognised, subject a set of criteria being met. This approach has been retained for 2017 Field Testing with no changes to the criteria or the approach to recognition.

6.3.5 Dynamic Hedging

263. For ICS Version 1.0 for extended field testing, dynamic hedging arrangements are not recognised as a risk mitigation technique, except for the proportional recognition of what is in-force as at the balance date.

264. The recognition of renewals of in-force techniques is not intended to cover dynamic hedging programmes. The treatment of dynamic hedging programmes will be reconsidered in the development of ICS Version 2.0.

6.4 Look-through

6.4.1 Background

265. In 2015 Field Testing, data was collected with respect to look-through on the following basis:

- The look-through approach should apply whenever and to the extent possible on the basis of the underlying currency exposures at a point in time inherent in the indirect investment or insurance arrangement.
- This approach also allowed for partial look-through when full look-through was not possible. For example, for an investment fund it could be assumed that the fund first invests, to the maximum extent allowed under its mandate, in the asset classes with the highest risk charge, and then continues making investments in descending order until the maximum total investment level is reached.
- However, when look-through is not possible, this approach considered the full investment as an asset belonging to the asset class with the highest risk charge.

266. The same approach was maintained for 2016 Field Testing with one refinement: when look-through is not possible, the full investment should be considered as unlisted equity.

6.4.2 Feedback on the 2016 ICS CD

267. Respondents to the ICS CD indicated support for the look-through approach used in 2016 Field Testing and the ability to use partial look-through when a full look-through is not possible. It was noted that in some emerging markets, the look-through approach is difficult to implement and consideration should be given to allowing a transition period for applying look-through.

6.4.3 ICS Version 1.0 for extended field testing

268. The look-through approach from 2016 Field Testing will be maintained for ICS Version 1.0 for extended field testing.

6.5 Management actions

6.5.1 Background

269. The general approach to management actions was the same in 2015 and 2016 Field Testing. Specifically, a credit for exercising management actions with respect to participating/profit sharing and adjustable products was taken into account at the level of each risk in the ICS capital requirement. In addition, a cap on the credit for participating/profit sharing and adjustable products was set at the total amount of insurance liabilities for future bonuses or other discretionary benefits. The cap was applied after aggregating the total of management actions post-diversification across the risks.

270. In 2015 Field Testing, the definition of management actions was confined to reductions in liabilities for future bonuses or other discretionary benefits. The 2015 Technical Specifications further clarified that management actions should be realistic and cannot be

contrary to the Volunteer Group's obligations to policyholders or to legal provisions applicable to the Volunteer Group.

271. In 2016 Field Testing, the creation of a separate Health risk module prompted consideration of extending the definition of "Management Actions" to include limited premium increases for Health business. This was because for some (multi-annual) health products, IAIGs can contractually change the level of premium (within some constraints), for instance when the global claim experience is significantly worse than expected. This ability plays an important role in the management of the portfolio of contracts and it is directly comparable to the IAIG's ability to adjust the level of benefits. To appropriately reflect the risk profile of the contract in the solvency requirements, premium increases were recognised as future management actions for 2016 Field Testing (provided that this ability fulfils the general requirements applicable to future management actions for their recognition in the current estimate calculation).

6.5.2 Feedback on the 2016 ICS CD

272. There was support from stakeholders for the extension of management actions to include limited premium increases for Health business, with some noting that the extension should apply beyond just Health business. Examples provided of other instances where the recognition of premium adjustments should be considered included yearly renewable term (YRT) premiums in certain long-term life reinsurance agreements, cost of insurance (COI) charges in certain long-term life insurance contracts, including universal life, and adjustable premiums on adjustable premium term life insurance. It was noted, though, that premium increase could lead to other policyholder actions such as increased lapses and possibly reputational risk.

6.5.3 ICS Version 1.0 for extended field testing

273. The general approach to management actions from previous field testing exercises has been maintained for ICS Version 1.0 for extended field testing with one refinement compared to 2016 Field Testing. Management actions no longer include limited premium increases for Health business. As described in Section 6.7, ICS Version 1.0 for extended field testing does not include a separate Health module and instead includes a Morbidity/disability approach similar to that included in 2015 Field Testing.

274. ICS Version 1.0 for extended field testing has maintained the cap on the overall credit allowed in the ICS at the IAIG's total insurance liabilities for future bonuses or other discretionary benefits.

275. In addition, ICS Version 1.0 for extended field testing requires that management actions be substantiated in order to be taken into account. For example, management actions should be:

- documented in a formal plan with an approval process at the right level of authority, including regulatory approval, where required; and
- supportable through an objective review over prior periods, where applicable.

6.6 Mortality and Longevity Risk

6.6.1 Background

276. Mortality and Longevity risk is the risk of adverse change in the value of capital resources due to unexpected changes in the level, trend or volatility of mortality rates.

277. The Mortality risk calculation and the Longevity risk calculation applied only to those policies subject to Mortality risk and Longevity risk, respectively. Catastrophe Mortality risk was addressed as part of Catastrophe risk.

278. The 2015 Field Testing approach to Mortality risk and Longevity risk used a combined stress approach whereby the risk charge was determined by a stress to the level of mortality and the level of longevity, respectively.

279. The stress for Mortality risk was a 15% increase in mortality rates at all ages for all policies where an increase in mortality rates would lead to a decrease in the NAV, ie (1.15) x base mortality assumptions.

280. The stress for Longevity risk was a 20% decrease in mortality rates at all ages for all policies where a decrease in mortality rates would lead to a decrease in the NAV, ie (0.8) x base mortality assumptions.

281. Volunteer Groups were asked to determine the change in NAV both before and after management actions for both Mortality and Longevity risk. Mortality and Longevity risk stresses were not differentiated by geographical regions in 2015 Field Testing.

282. Volunteer Group feedback regarding the 2015 approach to Mortality and Longevity risk was that the stress levels were overly high and trend risk should be explicitly stressed since Volunteer Groups are more likely to be exposed to trend risk than level risk due to the size of their portfolios.

283. Consequently, for 2016 Field Testing purposes, the IAIS made the following key changes to Mortality and Longevity risk:

- The stress for Mortality level risk was lowered to a 10% increase in mortality rates at all ages for all policies where an increase in mortality rates would lead to a decrease in the NAV, ie (1.10) x base mortality assumptions.

- An explicit stress to mortality improvement rates (ie trend) was stipulated. In addition, the stress for Longevity risk is a simultaneous stress to mortality rates and mortality improvement rates. It is defined as:

    i. an increase of 1% in mortality improvement rates (ie base mortality improvement assumptions + 1%); and

    ii. a decrease of 15% in mortality rates (ie (0.85 x base mortality assumptions)).

6.6.2 Observations from 2016 Field Testing and Feedback on the 2016 ICS CD

284. For Volunteer Groups that participated in both 2015 and 2016 Field Testing, the overall Mortality risk charge decreased due to the reduction in the value of the stress. The Longevity risk charge increased significantly due to the change in the design of Longevity risk and the accompanying value of the stresses.

285. Stakeholders that responded to the 2016 ICS CD were largely in favour of not including a trend component for Mortality risk, but had split views with respect to a trend component for Longevity risk.

6.6.3 ICS Version 1.0 for extended field testing

6.6.3.1 Inclusion of an explicit trend component

286. For 2016 Field Testing, a trend component was explicitly included in the determination of Longevity risk, but not Mortality risk. For the purpose of ICS Version 1.0 for extended field testing, the IAIS favours the simplicity of a combined stress for both Mortality risk and Longevity risk.

6.6.3.2 Stress levels for Mortality and Longevity risk and geographic differentiation

287. During 2016 Field Testing, the IAIS undertook a voluntary data collection exercise with Volunteer Groups with the aim to determine an appropriate calibration level for Mortality and Longevity risk stresses and whether or not those stresses should vary by geographic region.

288. Overall, there was limited participation from Volunteer Groups, and more data was received from certain regions compared to others. There were also some issues related to the length and quality of submitted data.

289. Based on the analysis of the data received and consideration of the length and quality of the data, the IAIS will not differentiate the stress levels for Mortality risk and Longevity risk by geographic region for the purpose of ICS Version 1.0 for extended field testing.

290. The data was also analysed globally to compare against the 10% mortality stress from 2016 Field Testing. The data indicated that 10% is likely too low for the Mortality stress and that a higher stress of 12.5% is more appropriate for the purpose of ICS Version 1.0 for extended field testing.

291. For Longevity risk, there were various views as to what an appropriate stress level should be. Based on a review of existing jurisdictional requirements and results of data provided by Volunteer Groups for the calibration exercise, it was found that a combined stress between 15% and 20% may be appropriate. For the purpose of ICS Version 1.0 for extended field testing, a combined stress (including level, trend and volatility) of 17.5% has been specified.

6.7 Morbidity/Disability Risk

6.7.1 Background

292. Morbidity/disability risk is the risk of adverse change in the value of capital resources due to unexpected changes in the level, trend, or volatility of disability, sickness and morbidity rates.

293. The risk charge determined for this risk reflects the impact of unexpected changes in the level, trend, and volatility of disability, sickness, and morbidity rates (the expected impacts are assumed to be incorporated in valuation methodologies) as well as unexpected changes in the level of claim payments. This risk category includes risk events that are caused by accident as well as by sickness.

294. The design and calibration of Morbidity/Disability risk, forming the basis for ICS Version 1.0 for extended field testing, has stemmed largely from feedback received through the 2014 and 2016 ICS CDs.

295. The 2016 Field Testing exercise presented two alternative designs for calculating the risk charge for health business, including Morbidity/Disability risk. These alternative designs were referred to as Option 1 (default approach) and Option 2 (alternative approach).

6.7.1.1 Option 1 - Health Risk (Default Approach)

296. Under Option 1, the Health risk approach removed the distinction between “similar to life” and “not similar to life”, which had been part of 2015 Field Testing, and created a separate Health risk charge such that a stress was applied to the level of claims rather than incidence rates, recovery rates, and payment levels.

297. All insurance risks related to health business were captured by the new health module and were no longer included in the life and non-life modules and associated risk charges. Given that its applicability was limited to health business, this approach pointed to the elimination of the Morbidity/Disability risk from the Life insurance risk module. The health-specific lines of business were also removed from the non-life Premium and Claims Reserve risk charge calculations.

298. The selection of business to be included under Health risk was to be made independent of the time horizon of the policy.

299. The Health risk charge consisted of an underwriting risk charge and a lapse risk charge.

300. Option 1 defined four health segments or risk categories, as listed below. The health underwriting stress was expected to vary between these segments.

- Category 1: Medical expenses
- Category 2: Lump sum in case of health event
- Category 3: Short-term recurring payments

- Category 4: Long-term recurring payments

301. The Health risk capital charges were calculated for all businesses providing guarantees in one of the above risk categories or segments. When such guarantees were provided within other products (such as Life insurance products), the health component was to be unbundled and treated with Health risk.

302. The Health underwriting risk charge was calculated as the change in NAV after applying the prescribed shock, where NAV is defined as the value of assets less insurance liabilities. The shock was applied directly to the amount of expected claim and expense payments as projected in the calculation of the current estimate.

303. The Health lapse risk charge was calculated as the change in NAV after applying the prescribed shock. To capture the adverse impact of a sudden mass lapse on Health policies, the shock was an immediate lapse of 30% of all surrenderable, retail health policies and 50% of all surrenderable, non-retail health policies.

304. Volunteer Groups were allowed to include limited premium increases for Health business as part of their management actions.

6.7.1.2 Option 2 - Morbidity/Disability Risk (Alternative Approach)

305. Under Option 2, the Morbidity/Disability risk approach was similar to the approach used in 2015 Field Testing. This approach maintained the distinction between those products that were considered “similar to life” and “not similar to life”. The key difference compared to the 2015 Field Testing approach was that “similar to life” insurance obligations were split into two mutually exclusive segments that received different stresses. (The full details of the Morbidity/Disability approach can be found in the Morbidity/Disability risk section of the 2016 Field Testing Technical Specifications.)

306. Option 2 offered two product segments for assessing Morbidity/Disability risk—medical treatment insurance and financial compensation insurance.

307. The risk charge for the approach to Morbidity/Disability risk was the sum of the risk charges for the two specified product segments, where the stresses were defined as:

- medical treatment insurance: A relative increase of 5% for medical claim payments combined with an absolute increase of the inflation rate, which varies by geographical region as follows:
    i. 1% for EEA and Switzerland, U.S. and Canada, Japan and Other developed countries; and
    ii. 3% for China and emerging markets.
- financial compensation insurance: the maximum of the incidence (inception) rate stress and the recovery rate stress, defined as
    i. a relative increase of 25% of the incidence (inception) rate in the first year and 15% thereafter; and
    ii. a relative decrease of 20% of the recovery rate.

6.7.2 Observations from 2016 Field Testing and Feedback on the 2016 ICS CD

308. For Volunteer Groups that participated in both 2015 and 2016 Field Testing, the changes in design and calibration resulted in an overall decrease of the risk charge for both approaches (Health risk and Morbidity/Disability risk) in 2016 Field Testing compared to the corresponding risk charge for Morbidity/Disability risk in 2015 Field Testing.

309. Stakeholders that responded to the 2016 ICS CD had a preference for Option 2 (alternative approach), emphasizing its ease of implementation and its risk sensitivity whereby stresses were applied to the underlying risks in contrast to the factor-based approach applied under Option 1. Furthermore, it was noted that the requirement to unbundle policies that had both life and health components posed additional challenges under Option 1.

6.7.3 ICS Version 1.0 for extended field testing

310. Given the issues and concerns expressed by stakeholders, a newly constructed approach to assess Morbidity/Disability risk was developed for ICS Version 1.0 for extended field testing. This approach is a hybrid between the two options from 2016 Field Testing. This approach combines the 2016 Health risk segmentation from Option 1 (default approach) with newly-proposed contract term segments.

311. Each benefit category is divided into three segments by initial contract term:

- Short-term: Includes contracts with an original term of one year or less
- Medium-term: Includes contracts with an original term longer than one year and up to five years
- Long-term: Includes contracts with an original term longer than five years

312. The hybrid approach is applicable only to “similar to life” type health products, meaning that the “not similar to life” type health products return to the non-life segment. Unbundling is no longer necessary as stresses are applied to life and health benefits simultaneously and the extension of management actions to include limited premium increases for Health business has been removed.

313. Under the hybrid approach, stresses are risk-based (ie applied to inception and/or recovery rates) and tailored to each of the segments.

314. Since the hybrid approach is new for ICS Version 1.0 for extended field testing, the calibration data previously collected for the Health (default) approach and the alternative approach is not appropriate. A placeholder calibration is, therefore, being used for ICS Version 1.0 for extended field testing, with the aim to collect information such as exposure amounts for the purpose of developing a more refined calibration for 2018 Field Testing. The following table contains the stresses for Morbidity and disability risk for ICS Version 1.0 for extended field testing.

Table 10. Morbidity/disability risk shocks

Category (i)	Short-term	Medium-term	Long-term

1 (Medical expense)	20%	15%	10%
2 (Lump sum in case of a health event)	25%	20%	13%
3 (Short-term recurring payments)	20%	15%	10%
4 (Long-term recurring payments)	inception rate shock = 20%, recovery rate shock=20%	inception rate shock = 15%, recovery rate shock = 20%	inception rate shock = 10%, recovery rate shock = 20%

315. The risk charge for categories 1 to 3 is determined by applying the stresses to inception rates only, while the risk charge for category 4 is calculated as the maximum of (Inception Rate risk charge, Recovery Rate risk charge).

316. When benefits in categories 1-3 do not explicitly have inception rates and/or recovery rates, the shock to the "inception rate" is interpreted as a shock to the medical claim payments amount.

317. Thus far, data analyses from 2015 and 2016 Field Testing do not support differentiating stress levels by geographic region for ICS Version 1.0 for extended field testing. Geographic differentiation, however, has not been precluded from further consideration in future analyses, provided that adequate data in terms of quality and time series become available.

6.8 Lapse Risk

6.8.1 Background

318. Lapse risk is the risk of adverse change in the value of qualifying capital resources due to unexpected changes in the level and trend of exercise rates of policyholder options. The risk charge takes into account all legal or contractual options that can change the value of future cash flows. This risk is applicable only to Life business.

319. The 2015 Field Testing approach to Lapse risk took the higher of:

- Level and Trend component: ±40% of assumed option take-up rates in all future years for all homogeneous groups adversely affected by such risk; and
- Immediate Mass Lapse component: 30% (retail), 50% (non-retail) for policies with positive surrender strain, and 0% surrender for all other policies

320. Feedback received from 2015 Field Testing was that the Mass Lapse stress should not differentiate between policies with positive and negative surrender strains because in the situation of a loss of confidence, the decision to lapse by policyholders would not be based on the surrender strain.

321. For 2016 Field Testing, the key change was made to the Mass Lapse component which no longer differentiated between products with positive and negative surrender strain, and applicable to all surrenderable products within each region. The Mass Lapse stresses were unchanged from 2015 and remained the same across geographical regions. Likewise, the stresses for the Level and Trend component remained unchanged.

6.8.2 Observations from 2016 Field Testing and Feedback on the 2016 ICS CD

322. The change in the design of the Mass Lapse component in 2016 Field Testing allowed gains from the surrender of policies with negative surrender strain to offset the losses from the surrender of policies with positive surrender strain within the same region. This has resulted in a significant overall decrease in Lapse risk in 2016 Field Testing compared with 2015 Field Testing.

323. Stakeholders that responded to the 2016 ICS CD commented that the stress level for the level and trend component is high in some jurisdictions; however, some stakeholders did indicate that the level of the stress was appropriate.

324. For mass lapse, the majority of respondents to the 2016 ICS CD indicated that in such a situation, policyholders would not consider the impact to the IAIG, in particular when it involves a loss of confidence in the IAIG. According to these stakeholders, it is then appropriate to allow for cross subsidisation between policies with positive and negative surrender strains.

325. Some respondents indicated that if an IAIG were assumed to be a going concern (ie not going into default or liquidation), policyholders may be more selective in their decision to lapse, in particular for policies where the level of guarantees (if any) are likely to be higher. Policies with higher levels of guarantees (for example, those with guaranteed crediting rates that are above the rates available in a low interest rate environment) may be less likely to be surrendered if these returns would not be otherwise available in the market. Under a market-adjusted valuation approach, such policies that are in the money are likely to have a negative surrender strain (since the IAIG is likely to benefit from their surrender) and it may not make sense to apply the mass lapse stress to such policies.

6.8.3 ICS Version 1.0 for extended field testing

6.8.3.1 Treatment of Dynamic Lapses

326. In 2016 Field Testing, Volunteer Groups were required to apply both the Level and Trend component, as well as the Mass Lapse component, to products with a dynamic lapse function such as variable annuities and universal life products. Volunteer Groups were instructed to apply the Level and Trend component stress to the base rate of the dynamic lapse function.

327. Volunteer Groups responded through the 2016 Field Testing Questionnaire that this treatment was appropriate, and the IAIS has maintained the treatment for ICS Version 1.0 for extended field testing.

6.8.3.2 Stress level for Level and Trend component and geographic differentiation

328. During 2016 Field Testing, the IAIS undertook a voluntary data collection exercise with Volunteer Groups with the aim to validate the stresses specified in 2015 and 2016 Field Testing and explore the possibility of varying the stresses by geographic region. The IAIS had also considered other sources of data such as data from supervisors in reviewing the appropriateness of the stresses.

329. Overall, there was limited participation from Volunteer Groups, although more data was received from certain regions compared to others. There were also some issues related to the length and quality of submitted data. Analysis of data received did not indicate the stresses set out in 2015 and 2016 Field Testing were inappropriate.

330. Based on the analysis of data received and consideration of the length and quality of the data, the IAIS will not differentiate the stress level for the Level and Trend component of Lapse risk by geographic region and has maintained the stress level at 40% for ICS Version 1.0 for extended field testing.

6.8.3.3 Design of Mass Lapse Component

331. In arriving at the design of the Mass Lapse risk for ICS Version 1.0 for extended field testing, the IAIS took into account the results of 2016 Field Testing and responses to the 2016 ICS CD.

332. To mitigate the concerns of the Mass Lapse allowing significant cross subsidisation (which is perceived to be present in 2016 Field Testing) or the Mass Lapse risk charge being too onerous (which is perceived to be present in 2015 Field Testing), the IAIS is exploring a design where the Mass Lapse stress is applied to homogeneous risk groups instead of individual policies for ICS Version 1.0 for extended field testing. Under this design, cross subsidisation is limited to within each homogeneous risk group and is not allowed amongst homogeneous risk groups. A homogeneous risk group encompasses a collection of policies with homogeneous risk characteristics on a level of granularity most appropriate for the business of the IAIG. The 2017 Field Testing Technical Specifications provide guidance on the construction of homogeneous risk groups.

333. The following table provides a comparison of the design of the Mass Lapse component as specified in 2015 Field Testing, 2016 Field Testing, and the design for ICS Version 1.0 for extended field testing:

	2015 Field Testing	2016 Field Testing	ICS Version 1.0 for extended field testing
Design of Lapse Risk	Max (Level & Trend, Mass Lapse) by region		
Calculation of Mass Lapse	On policies with positive surrender strain	On all surrenderable policies	On all homogeneous risk groups
Floor of Mass Lapse Charge	ML ≥ 0 for each policy	ML ≥ 0 for region	ML ≥ 0 for each HRG

6.8.3.4 Design of Lapse risk

334. In both 2015 and 2016 Field Testing, Lapse risk was specified as Maximum (Level and Trend component, Mass Lapse component). Stakeholders that responded to the 2016 ICS CD largely agreed that the design is appropriate.

335. The approach to Lapse risk has remained the same compared to 2016 Field Testing with the only change being the application of the Mass Lapse component at the homogeneous risk group level. As such, the IAIS has maintained the same design for Lapse risk, which is to take the maximum of the Level and Trend component and the Mass Lapse component.

6.9 Expense Risk

6.9.1 Background

336. The Expense risk charge covers both unit expense risk and expense inflation risk. Unit expense risk is the risk of adverse change in the value of qualifying capital resources due to unexpected changes in the level of expenses incorporated within the insurance liabilities. Expense inflation risk is the risk of expenses inflating at a higher rate than assumed in the calculation of insurance liabilities due to adverse changes in factors relating specifically to the insurance sector. This risk is applicable only to life business.

337. The 2015 Field Testing approach to Expense risk used a simple stress approach whereby the risk charge was determined by simultaneously stressing both the best estimate unit expense assumption and the best estimate expense inflation assumption.

338. Building on 2015 Field Testing, the 2016 Field Testing approach remained the same in terms of design and stress levels.

6.9.2 Observations from 2016 Field Testing and Feedback on the 2016 ICS CD

339. In 2016 Field Testing, the overall level of the Expense risk charge was low but the results were wide-ranging at the individual Volunteer Group level and per jurisdiction. The materiality of Expense risk varied based on the structure of the Volunteer Group. For example, those most affected by Expense risk have significant business in emerging markets due to the higher expense inflation component.

6.9.3 ICS Version 1.0 for extended field testing

6.9.3.1 Compounding effect of inflation expense

340. Some stakeholders responded to the 2016 ICS CD that the high expense inflation stresses for regions such as China and Emerging Markets, which is applied until the maturity or expiry of insurance contracts, was too high and unreasonable. Such a large stress is likely to result in expenses increasing to a high level over time. This does not take into account that the growth of firms in emerging markets would serve to moderate the effects of expense inflation and developing countries are also likely to implement measures to control prolonged inflation. These stakeholders suggested grading the expense inflation assumption down over time.

341. As expense inflation can only be observed over a longer period of time, data received from the voluntary data collection exercise conducted during 2016 Field Testing was not sufficient to enable a meaningful calibration or validation of the expense inflation stress.

342. Taking into account the feedback received, for ICS Version 1.0 for extended field testing, the IAIS has modified the design of the expense inflation stress such that it grades down to 1% after a specified number of years. For China and Emerging Markets, the expense inflation stress will be reduced by 1% every 10 years, where the final applicable inflation stress is 1% after 20 years. Similarly for Other developed markets, the expense inflation stress will be reduced to 1% after 10 years. For other jurisdictions, the stress will be kept constant at 1% for all years.

6.10 Premium and Claims Reserve Risks

343. Premium risk covers risks associated with the timing, frequency and severity of future insured events. This includes the risk posed by business to be contracted over the next year along with already contracted policies.

344. Claims Reserve risk covers risks associated with expected future payments for claims or events that have already occurred (whether reported to the IAIG or not) and not yet fully settled. This includes all possible claims under policies, including claims that are not yet known about but would be covered under the policy. The risks associated with catastrophe events that have already occurred are included within Claims Reserve risk.

345. Premium and Claims Reserve risks are applicable to non-life business only because the risks for life are captured within other relevant components. Any overlap with Life risk is avoided using segmentation definitions.

346. Premiums reported under Premium risk may include catastrophe-exposed premiums that are also assessed under Catastrophe risk. Double counting of future Catastrophe risk across the Premium and Catastrophe risk components is proposed to be avoided by an appropriate adjustment to the Premium risk factors.

6.10.1 Background

6.10.1.1 Design of Premium and Claims Reserve risks

347. A factor-based approach, whereby factors are applied to exposure measures, was tested as part of 2015 and 2016 Field Testing. In addition, feedback was sought on this approach in the 2014 ICS CD and 2016 ICS CD. The exposures used for field testing are projected net earned premiums (for Premium risk) and net current claims estimates (for Claims Reserve risk).

348. During field testing, the exposures were collected based on segments used for jurisdictional regulatory reporting. Relying on existing jurisdictional regulatory reporting was expected to alleviate the burden on Volunteer Groups and to leverage on segmentations deemed appropriate to capture and differentiate risks in the relevant markets. Exposures for the calculation of Premium and Claims Reserve risks should be reported based on the location of the risks to ensure that the segmentation is used in an appropriate and consistent way.

349. For each reporting segment, a Premium risk charge and Claims Reserve risk charge is calculated by multiplying a factor by the exposure amount. In order to calculate the total Premium and Claims Reserve risk charge, a multi-step aggregation process was defined. This process was designed to balance simplicity and risk sensitivity by reflecting differences in risk profiles:

- Premium and Claims Reserve risks are aggregated for each segment.
- Each segment is then allocated to one of the ICS categories for the purpose of aggregation: property-like, liability-like, other, non-traditional other, mortgage and credit. The first four categories are aggregated within the Non-life risk component, while the last two categories (mortgage and credit) are aggregated with Real Estate and Credit risks, respectively. Risk charges within these four ICS categories are added and then aggregated across the four ICS categories within a region, with a correlation matrix applied to the risk charge.
- Risk charges within the non-life component are then aggregated across the geographical regions (EEA and Switzerland, USA and Canada, Japan, China, other developed markets, other emerging markets), using a correlation matrix applied to the risk charge. The mortgage and credit categories are added across the regions and to the Real Estate and Credit risk charges, respectively.

6.10.1.2 Developing a calibration process for the Premium and Claims Reserve risks factors

350. The adoption of existing jurisdictional regulatory reporting segments in the design of the Premium and Claims Reserve risk component of the ICS standard method provides challenges to ensure a consistent calibration of premium and claims reserve factors. In order to address that challenge, the IAIS has developed a multi-year process to set and refine the risk factors.

351. The first indicative calibration was developed in 2015 based on supervisory judgement. Starting from 2016, the IAIS developed a data driven calibration process to refine the preliminary calibration first based on data provided by IAIS members and then using data collected from Volunteer Groups. The purpose of developing a calibration process is to ensure that consistent methods and judgements are being applied.

6.10.2 Feedback on the 2016 ICS CD

352. The feedback received was largely supportive of leveraging on existing jurisdictional segmentations, although some stakeholders supported a more compact and standardised segmentation. Comments were received on exposure measures for Premium and Claims Reserve risk providing some support for the IAIS approach but also mentioning alternative approaches (eg using Net Written Premium instead of Net Earned Premium for Premium risk).

353. On the factors applied to calculate the Premium and Claims Reserve risk charges, several comments supported a calibration based on data. Some specific or non-specific comments were that some factors were too high.

354. The feedback received on the aggregation approach and the resulting diversification included that some correlation factors were too high (eg correlation between Premium and Claims Reserve for some lines) or there was a lack of diversification within categories. A few

alternative suggestions were also provided such as using a Herfindahl-Hirshman index to measure the concentration.

6.10.3 ICS Version 1.0 for extended field testing

355. As part of ICS Version 1.0 for extended field testing the IAIS has refined both the calibration of some of the Premium and Claims Reserve risk factors and some aspects of the aggregation within the non-life component.

6.10.3.1 Exposure measures and risk factors

356. For the purpose of ICS Version 1.0 for extended field testing, the Premium Risk charge is calculated by applying a factor to the greater of the net earned premiums for the past year and net premium to be earned during the next year, both net of reinsurance. However, when Volunteer Groups are not able to report these, net written premium may be used as a proxy.

357. The Claims Reserve risk charge is calculated by applying a factor to the net current estimates. This is the current estimate for claims that have already occurred, net of reinsurance.

358. Some previous calibrations were refined and for ICS Version 1.0 for extended field testing, some of the Premium and Clams Reserve risk factors were updated based on the data provided by Volunteer Groups and some other available sources. Most updated factors have been reduced and the global impact, on average, is a decrease of around 22% of the total non-life ICS risk charge (the total decrease when including changes to the aggregation/diversification approach discussed below is around 30%). Please refer to the 2017 Field Testing Technical Specifications for a detailed list of the Premium and Claims Reserve risk factors.

359. The calibration of Premium and Claims Reserve risk factors could be amended further in the future. In particular, it is expected that new Volunteer Groups taking part in 2017 Field Testing might be able to provide data for further refinement of the calibration. Further data may be provided in the future from supervisors as well. Based on the ability of Volunteer Groups to provide data, the IAIS will consider how and when to next update the Premium and Claims Reserve risk factors.

6.10.3.2 Use of jurisdictional reporting segments

360. Exposures are collected and factors are applied based on jurisdictional regulatory reporting for the main insurance markets and a list of specified lines of business otherwise. The use of jurisdictional segments is intended to ensure the practicality and accuracy of reporting. The range of segments used for ICS Version 1.0 for extended field testing is subject to revision. The IAIS may consider expanding the list if it appears that the current list does not appropriately reflect the portfolio mix of IAIGs. Alternatively, the IAIS may consider reducing the list to a smaller number of standardised segments to remove the difference of treatment (eg granularity) resulting from the use of jurisdictional reporting segments.

361. Although using a wide range of reporting segments involves defining and calibrating factors for a large number of jurisdictional segments, many of those may not be material to any IAIG.

6.10.3.3 Diversification within Non-Life risks

362. Explicit diversification is introduced in the non-life Premium and Claims Reserve risk component in multiple steps. Applying correlation factors between sub-components aims to reflect the main characteristics of each Volunteer Group's risk profile using a consistent methodology across all risks within the standard method. The correlation factors applied within the non-life component of the ICS standard method aim at appropriately capturing any tail correlation and non-linear dependencies between sub-components of non-life risks.

363. The first step of aggregation is to combine each line of business' Premium risk and Claims Reserve risk (applying a 25% correlation between Premium and Claims Reserve risk charges).

364. A second step is to aggregate four revised ICS categories: Property-like, Liability-like, Motor-like and Other by applying a 50% correlation between these categories (the Mortgage and Credit categories are aggregated with Real Estate and Credit risk, respectively). The Motor-like category is introduced for ICS Version 1.0 for extended field testing and is comprised of ICS segments previously included in the Property-like and Liability-like categories. This new category allows the recognition of some explicit diversification between motor business and other business without introducing material additional complexity.

365. The third step of aggregation is across regions, where a correlation matrix is applied to each region's total risk charge (applying a 25% correlation between regions).

366. Changes made to some correlation factors (ie correlation between Premium and Claims Reserve risks for some segments) and in the structure of the categories (ie the introduction of the "Motor-like" category) lead to a decrease of a global non-life ICS risk charge, on average, and for individual Volunteer Groups.

367. It is worth considering that additional implicit diversification is also reflected in the risk factors' calibration. For instance, when a particular ICS segment includes different sub-segments that are not perfectly correlated, the risk factors determined based on historical losses implicitly reflect the diversification between the sub-components.

6.11 Catastrophe Risk

368. Catastrophe risk covers risks associated with claim events that have yet to occur, and risks associated with low frequency/high severity events, often arising from an aggregation of multiple claims arising from a single source. It considers all losses arising in the next 12 months, not just from a single event, and may take into account expected business volumes. For clarity, this risk is applied to both life and non-life business.

6.11.1 Background

6.11.1.1 List of perils to be included in the ICS catastrophe component

369. The list of perils to be covered by the catastrophe component of the ICS standard method was tested as part of 2015 and 2016 Field Testing. In addition, feedback was sought on this approach in the 2014 ICS CD and 2016 ICS CD. A number of suggestions were received, which informed the list of perils included in 2015 and 2016 Field Testing.

370. Natural catastrophe includes a number of specific perils that, considering their potential materiality to individual IAIGs, deserve consideration in the ICS. This includes perils such as tropical cyclone, extra-tropical windstorm/winter-storm, earthquake and other material natural perils such as: flood, tornado and hail.

371. In addition to natural catastrophe, a list of man-made perils was also considered either as part of the previous field testing exercises or in the ICS CDs. The main perils considered were: terrorist attack, pandemic, liability catastrophe risk, marine collision, aviation collision and credit and surety event.

6.11.1.2 Method for the assessment of Catastrophe risks

372. Different options for the quantification of Catastrophe risk for the purpose of the ICS standard method were considered in the 2014 ICS CD. There was a broad agreement that Catastrophe risks cannot, in general, be realistically assessed using a simple factor-based approach due to the complex and heterogeneous nature of exposures and risk mitigation arrangements. In practice, the assessment of Catastrophe risks are carried out using models and standardised stress and scenario testing techniques.

373. For the assessment of natural catastrophe, the IAIS allowed Volunteer Groups to use stochastic catastrophe models. Allowing the use of natural catastrophe models as part of the standard method during field testing was perceived as an appropriate approach leveraging on scientific risk assessment methodologies embedded in such models and aligning the risk assessment with generally recognised market practices.

374. For the assessment of man-made perils, the IAIS specified scenarios aimed at providing individual Volunteer Groups with the necessary information to calculate the amount of potential loss at the level of the ICS target criteria (ie 99.5% VaR confidence level over a one-year time horizon). One of the two following approaches was adopted to specify the scenarios:

- a description of the severity of the scenario, with each individual Volunteer Group identifying its own specific set of exposures. This approach was adopted for the terrorism, aviation and marine scenarios.

- a set of prescribed parameters to be applied to specific exposures, defined based on a global or market wide scenario and then allocated back to global or market wide exposures. This approach was adopted for the liability, pandemic and credit and surety scenarios.

375. For more details on the individual scenarios, please refer to the Field Testing Technical Specifications. The main change made to the scenario during the first two field testing exercises relates to the assessment of liability catastrophe risk. Liability catastrophe risk aims to capture risk on liability exposures that is not adequately reflected by historical claims experience. This risk materialises slowly and impacts many underwriting years. It is distinct from catastrophe perils that appear suddenly and only pose a threat to business in force at the time of occurrence. The first approach field tested in 2015 was subsequently materially amended following the feedback received and the data analysis performed. The redefined scenario specified as latent liability risk aims to cover a “mass tort” event as opposed to the broader range of latent exposures (eg professional indemnity) covered in the prior scenario. Latent liability risk is assessed using a factor-based approach.

376. Risk mitigation arrangements (eg outwards reinsurance protection purchased), which may reduce overall Catastrophe risk, are recognised. IAIGs are allowed to claim the benefit of such arrangements, subject to the provisions on the use of risk mitigation provided (see the section on “Risk mitigation” in this document and the Field Testing Technical Specifications) and the recognition of the contingent Credit risk associated with such recoveries to be assessed as part of Credit risk.

6.11.2 Feedback on the 2016 ICS CD

377. Relatively large support was expressed for allowing catastrophe models for the assessment of natural catastrophe risks, although some stakeholders disagreed. In that context stakeholders supported the need for requirements associated with allowing the use of models. Amongst the type of requirements mentioned were: qualitative and quantitative requirements for both data and models, disclosure to supervisors and prior supervisory approval.

378. The list of man-made perils included in the ICS standard method for field testing was discussed and some comments suggested including additional perils such as cyber, fire and motor liability and health related risks. Other comments suggested to remove some of the existing perils (eg on materiality grounds), to amend some of the scenarios perceived as too severe (eg credit and surety) or to remove some scenarios from the catastrophe component and consider them with the relevant insurance risk (eg pandemic with Mortality risk).

379. Specific feedback was sought and received on the latent liability scenario. Although changes made for 2016 Field Testing were seen as positive, limitations of the tested approach were raised such as: treatment of some lines (eg general liability and workers compensation), the risk of double counting with Premium and Claims Reserve risks and the perceived prudent level of the calibration.

6.11.3 ICS Version 1.0 for extended field testing

380. For the purpose of ICS Version 1.0 for extended field testing, the IAIS has refined the approach to Catastrophe risk with the main features described below:

6.11.3.1 Natural catastrophe risk

381. As confirmed by the previous field testing exercise, the natural catastrophe perils are the most material Catastrophe risks to which non-life insurance is exposed. ICS Version 1.0 for extended field testing captures the individual natural perils (eg earthquake, tropical windstorm, extra-tropical storm, flood, etc.) as soon as they are material for an individual IAIG. This is done through allowing the use of stochastic catastrophe models leveraging on the largely accepted methodology for risk assessment of natural catastrophe.

382. Although there are some concerns inherent in the use of such models, under some conditions these concerns could be mitigated to an acceptable level.

383. The first area of supervisory concern relates to the quality of the model itself. This includes the definitions and characteristics of the simulated physical events (eg their consistency with historical events), the impact generated by the events (eg potential impact on people, property and other valuables) and the financial components (eg calculation on the losses on insurance contracts).

384. The second area of supervisory concern relates to the use of the models by IAIGs. This includes the collection and preparation of exposure data, any adjustment of input or results to reflect any incompleteness of collected data and any adjustment to the model itself to correct any identified weaknesses.

385. Allowing the use of catastrophe models to calculate the Catastrophe risk charge requires that the supervisory concerns identified above be properly addressed. For the purpose of ICS Version 1.0 for extended field testing, information regarding both the model being used and the way the model is being used is collected. The IAIS will continue to assess how to better address the concerns, for example:

- by requiring IAIGs to report fit-for-purpose information such as, but not limited to, the identification and characteristics of the models used, information on the risk profile and natural catastrophe risks to which the IAIG is exposed, and information on the way the model has been used (eg adjustments made).
- by setting some restrictions, if any, either to the models being allowed, and/or to the way the models have been used (eg regarding the use of some options provided by vendor models, and/or regarding potential adjustments).
- by requesting the IAIG to perform a self-assessment, an appropriate sign-off on the use of the model or by receiving agreement from the IAIG that such self-assessment could be performed if concerns emerge.

6.11.3.2 Man-made catastrophe risks

386. The list of man-made perils included in ICS Version 1.0 for extended field testing was reviewed by the IAIS considering the materiality and the potential to become material for any individual IAIG. The IAIS decided to limit the list of man-made perils to be included in ICS Version 1.0 for extended field testing to:

- Pandemic;
- Terrorist attack;
- Latent liability; and
- Credit and surety.

387. The Marine and Aviation scenarios, included in previous field testing exercises, have been removed from ICS Version 1.0 for extended field testing due to their limited materiality, although this will be monitored through the Field Testing Questionnaire. In addition, some changes were made to the specifications of the terrorist attack scenario, which is now more detailed (please refer to the 2017 Field Testing Technical Specifications for more details).

388. The scope of the latent liability scenario, as well as its interaction with Premium and Claims Reserve risk, is under consideration by the IAIS. In particular, further scenarios along with refinements to the approach, specifically for product liability, are under consideration.

389. The IAIS will continue to monitor the list of perils to be included in the ICS. New risks that may emerge may need to be reflected in the ICS standard method in the future, such as

Cyber risk or other risks. For instance, the development of Cyber risk insurance indicates the need to monitor developments in this field and consider the relevance of a Cyber risk component at a later stage. Additional Catastrophe risks could emerge from the development of existing products; for instance, the foreseen development of driverless cars in the not-so-distant future will likely result in changes in motor insurance with potential concentration of risk on manufacturers and technology providers and away from individual drivers.

6.11.3.3 Aggregation of risk charge

390. For the purpose of calculating the Catastrophe risk charge, the man-made catastrophe scenarios are assumed to be mutually independent and independent from the natural catastrophe perils. Consequently, the total ICS Catastrophe risk charge is calculated as follows:

$$ICS_{Cat} = \sqrt{ICS_{NatCat}^2 + ICS_{Terror}^2 + ICS_{Liab}^2 + ICS_{Pand}^2 + ICS_{Credit}^2}$$

6.12 Interest Rate Risk

391. Interest Rate risk is defined as the risk of loss arising from adverse movements in the level and volatility of interest rates. Since changes in interest rates affect both assets and liabilities of an IAIG, the ICS Interest Rate risk charge aims to measure the net loss in an IAIG's qualifying capital resources in the event of an adverse movement in interest rates.

6.12.1 Background

392. Interest Rate risk has proven challenging to calibrate globally in a consistent way. Different currencies have different base levels of interest rates. For instance the Swiss Franc and the Japanese Yen are in a negative interest rate environment currently. Compare that to currencies like the Brazilian Real where high levels of inflation are reflected in high nominal interest rates. Finding a common methodology to calibrate interest rate risk stresses to a 99.5% VaR level has proved challenging in the last two years of field testing.

393. There are two key challenges, one technical and one more of a policy choice:

- Calibrating Interest Rate risk in the observable part (Segment 1) of the yield curve which is a technical challenge
- Deciding whether it is appropriate to shock the Long Term Forward Rate (LTFR) and if so the calibration of this shock

394. The following approach was taken for 2016 Field Testing:

- the stressed yield curves were calibrated using currency specific volatilities;
- twelve calibration points were used based on twelve observable maturities – years 1 to 10, year 20 and year 30 (if available for a particular currency);

- each calibration point was based on six years of historical data (from the beginning of 2010), without filtering for outliers. This period for calibration corresponds to the change in monetary policy in most advanced economies after the Great Financial Crisis (GFC);

- the stress levels were determined by applying a Principal Component Analysis (PCA) on the twelve observed maturities;

- to derive the shocked interest rate curves, the weekly changes in the past data were captured by the formula below. The focus is on the annual interest factor (1+r) used for discounting: (1+r)^-t. Multiplicative movements $e^{s(i)}$ for maturity *i* can be derived using the following formula:

$$s \sim \ln\left(\frac{1+R_{t+1}^{i}}{1+R_{t}^{i}}\right) \quad (i = 1,2,3,4,5,6,7,8,9,10,20,30)$$

- stress levels between the observed maturities were interpolated using the interpolation part of the Smith-Wilson technique for consistency with the methodology used to determine the base yield curves;

- a stress of 15% was applied to the LTFR before the notional spread adjustment (10 basis points, see MAV section); and

- stressed yield curves between the last observable point and the stressed LTFR were extrapolated.

395. Stress scenarios for 2016 Field Testing were calibrated as follows:

- a maximum of the up stress and down stress calibrated according to the 1st Principal Component;

- a flattening stress calibrated according to the 2nd Principal Component;

- the first two principal components are mathematically independent, and reflect the level and shape changes of observed interest rate movements; and

- the first two components were found to explain a high proportion of the total observed volatility.

396. In 2016 Field Testing, the results of the three stresses were combined using a square root aggregation. This is the square root of the sum of squares of the 1st Principal Component (maximum of the up or down stress) and the stress derived from the 2nd Principal Component (flattening stress).

6.12.2 Observations from 2015 and 2016 Field Testing

397. Interest Rate risk was the largest ICS risk among the pool of Volunteer Groups both in 2015 and 2016 Field Testing, with significant differences from one exercise to the next based on the methodologies used and on the distribution of results.

398. In summary, the methodologies used in 2015 and 2016 Field Testing produced results that were considered by IAIS Members and Volunteer Groups to be inappropriate for particular currencies. Generally, the feedback centred on where the Interest Rate risk charge seemed inappropriately high. In 2015 Field Testing, Interest Rate risk seemed to be overstated for negative and low interest rate environments. This issue was addressed for 2016 Field Testing, but as a result of the changes, Interest Rate risk for higher interest rate environments was deemed to be overstated. Further details about the prior calibration methods can be found in Annex 2.

6.12.3 ICS Version 1.0 for extended field testing

6.12.3.1 Calibration methodology for Interest Rate risk in Segment 1 of the yield curve

399. The comments received on the 2016 ICS CD included a variety of suggested alternative methods. Ultimately, only one of these methods was pursued.

400. Taking this feedback into account and based on input regarding three options from IAIS Members, the IAIS decided that a third and different methodology for calibration of Interest Rate risk would be used for 2017 Field Testing. The IAIS has chosen the Dynamic Nelson-Siegel (DNS) method. See Annex 3 for a description of the DNS method. In coming to this conclusion, the CSFWG considered the following:

- **Modifications to the 2016 Principal Components Analysis (PCA) approach** to calibration which was not taken forward as it was difficult to determine the appropriate modifications to make in order to address the variable impact of this methodology across different currencies.

- **Modifications to the 2015 application of a simplified Cox Ingersoll Ross (CIR) model** to calibrate interest rate risk stresses. The modified CIR model considered was the CIR model with a switching approach with relative shocks for high interest rate currencies and a constant shock model for negative and low interest rate currencies. For high interest rate currencies, the outcome would have been much the same as for the 2015 method. To address the main shortcoming of the 2015 method, the constant shock model would have been applied only to negative and low interest rate currencies. Calibrating this constant shock model and the point at which the models switched was a challenge.

- **The DNS method** including simplifications for implementation with the construction of the base yield curves used for MAV and a reduction in the number of scenarios needed for easier implementation by Volunteer Groups. For a number of reasons, the DNS method was preferred but in particular it provided stressed curves in a reasonable range, thus addressing issues found with the 2016 approach (for currencies that are not in a low or negative interest rate environment). In addition, the DNS method is well known among financial market participants.

6.12.3.2 Period of data to be used for calibration

401. The data used to undertake the calibration exercise is unchanged from 2016 except to add one more year of observations that is now available. The calibration is based on data from 1 January 2010. There is a tension between a wish for as much calibration data as possible, and that the period of calibration data incorporates data relevant to the current

interest rate environment. Data from 1 January 2010 has been chosen as a period of relevant data. From the comments on the 2016 ICS CD, there was considerable stakeholder and Member support for using a longer time series of data for calibration. This can be considered for ICS Version 2.0 but it is important to settle on a calibration methodology first using comparable calibration periods for consistency of field testing results. Then the impact of a longer time series of data could be investigated. It must also be noted that the DNS method is better suited to a longer time series of data.

6.12.3.3 Scenarios to be applied

402. The implementation of the DNS methodology chosen for field testing will require Volunteer Groups to apply five different shocks per currency. This compares to the three different shocks applied in 2015 and 2016 Field Testing[34]. It is important to note that most of the feedback from the 2016 ICS CD was towards moving to only two stresses – upward and downward stresses only and not including the twist scenarios. However, IAIS Members are of the view that it is important to capture the effect of the twist scenarios which can be material depending on the business model and asset-liability management approach of the Volunteer Group.

6.12.3.4 Aggregation of the results of interest rate scenarios

403. The aggregation method needs to be consistent with the calibration methodology applied. Therefore the aggregation method has changed in each year of field testing consistent with changing the calibration methodology. For ICS Version 1.0 for extended field testing, the total interest rate risk requirement[35] is:

$$\text{Gain or loss under mean reversion scenario} + \sqrt{\text{Max loss (level up, level down)}^2 + \text{Max loss (twist up to down, twist down to up)}^2}$$

6.12.3.5 Whether to recognise diversification of Interest Rate risk between currencies

404. No diversification among currencies is considered for Interest Rate risk and this is unchanged from 2016 Field Testing. This is an issue that can be revisited for ICS Version 2.0. There was significant support from both Members and stakeholders for recognising some diversification between currencies with respect to Interest Rate risk, which would have the impact of reducing the overall Interest Rate risk result. Those that oppose this usually do so on grounds of complexity, particularly in the context of a standard method to determine the ICS Capital Requirement.

6.12.4 Approach to IRR for GAAP with Adjustments for 2016 Field Testing

405. For GAAP Plus, there were two methods used in 2016 Field Testing (see Annex 4). Under GAAP Plus, with the exception of the GAAP Plus methods applied for Volunteer Groups based in the European Union, Singapore and South Africa, the valuation of long-term insurance current estimates utilises a discount rate representing a blend of the book yield

[34] Note that a steepening scenario could also be derived from the 2nd Principal Component for 2016 Field Testing. On reflection, if the 2016 approach was applied again it would be appropriate to have four shocks per currency including the steepening scenario.
[35] Floored at zero

based on the current portfolio adjusted for defaults and expenses, and a reinvestment rate either based on current market assumptions or prescribed under supervisory rules.

406. Method 1, while not compatible with GAAP Plus principles on valuation in some jurisdictions, was used to test how a market-value based (not MAV per se) approach to valuation, using market-based discount rates, works for GAAP Plus balance sheets. Method 2, for liabilities that do not use market rates in discounting, is an approach better aligned with the GAAP Plus approach to valuation used in certain jurisdictions. The stressed rates impact the valuation by impacting the reinvestment rates. Short-term changes in interest rates would impact reinvestment assumptions, but have little to no impact on a book yield based on a current portfolio return adjusted for defaults and expenses. For a more detailed description of Methods 1 and 2, please see Annex 4.

6.12.5 GAAP Plus IRR for ICS Version 1.0 for extended field testing

407. For 2017 Field Testing, liabilities valued using market based discount curves follow the MAV approach to Interest Rate risk, while liabilities valued using a book yield and blended reinvestment rate follow Method 2 as specified in 2016 Field Testing.

6.13 Equity Risk

408. The Equity risk charge covers the risk of adverse changes in the value of capital resources due to unexpected changes in the level or volatility of market prices of equities.

6.13.1 Background

409. To determine applicable risk charges, the Equity Risk approach was initially designed to apply differentiated shocks covering price and volatility risks on various segmented categories of equities.

410. While the general aspects of the initial design have been maintained, the approach has evolved significantly as a result of the feedback received on ICS CDs as well as from analysing the results of previous ICS field testing exercises. For example:

- The segmentation of equities was reduced to four categories, in response to previous stakeholder feedback on the need to maintain simplicity;
- The number of scenarios was reduced from four to one (the “prices down, volatility up” scenario), based on previous field testing results confirming that scenario produced the most adverse results, and stakeholder concerns with the calculation work and complexity involved in testing the four scenarios; and
- The approach to hybrid debt and preference shares was changed such that the determination of their applicable risk charges would correspond to a relative drop in value depending on their credit rating, which addressed risk sensitivity concerns.

411. From their initial development, the Equity risk shocks have also changed, including:

- Calibrations for listed equities are now based on data from FTSE Indices (rather than MSCI indices), which resulted in slight changes to the shocks and to the allocation of countries between the “developing” and “developed” categories; and

- Implied volatility shocks based on different tenors were introduced, and have now been expanded for ICS Version 1.0 for extended field testing in response to comments received on the 2016 ICS CD.

6.13.2 Observations from 2016 Field Testing and Feedback on the 2016 ICS CD

412. 2016 Field Testing data analysis indicated that the Equity risk charge was a material component of the ICS market risk charges and also of the overall ICS capital requirement. However, there were clear regional differences, and the results were found to be wide-ranging at the individual Volunteer Group level.

413. Within the 2016 ICS CD, the IAIS identified and sought input on the following Equity risk issues:

- The stressing of equity volatilities;
- Development of a long-term equity investments segment;
- The application of equity stresses simultaneously;
- Developing a counter-cyclical measure for the Equity risk charge; and
- Exploring an approach based upon path dependence.

414. Respondents were largely split on most 2016 ICS CD questions on Equity risk, with some supporting the approach used within 2016 Field Testing and/or favouring simplicity, while others provided specific change proposals such as the development of more granular segments, lower risk charge stresses, re-designs of the approach, and suggestions for the development and use of correlation matrices and countercyclical measures.

6.13.3 ICS Version 1.0 for extended field testing

415. For ICS Version 1.0 for extended field testing, the IAIS has continued with the Equity risk approach used for 2016 Field Testing, except that the differentiated equity volatility shocks have been extended beyond 48 months.

6.13.3.1 Exposure measures and risk shock

416. Equity risk exposures refer to values sensitive to changes in the level or volatility of market prices for equities, including all direct and indirect financial impacts. Indirect exposures may include, but are not limited to mutual funds invested in equity (use a 'look-through' approach), derivatives sensitive to equity prices/volatilities, unit-linked products (especially those providing guarantees such as variable annuities), and participating products.

417. The following segmentation of assets is used to determine the Equity risk charge:

1) ***Listed equity in developed markets***. This includes equities listed on the securities exchanges of countries used in the calculation of the FTSE Developed Index.

2) ***Listed equity in emerging markets***. Any country not included in the FTSE Developed Market index is to be considered an 'emerging market'

3) **Hybrid debt / preference shares**[36]. This includes all subordinated debt/ loans.

4) **Other equity**. This includes equities that are not listed, hedge funds, limited partnerships, commodities, infrastructure and other alternative investments.

418. The Equity risk charge is calculated as the change in the (NAV) due to the simultaneous application of the following stresses:

- Instantaneous relative decrease by 35% of the market prices of all listed shares in developed markets
- Instantaneous relative decrease by 48% of the market prices of all listed shares in emerging markets
- Instantaneous relative decrease by 49% of the market prices of all other types of assets;
- Instantaneous relative increase by x% of the implied volatilities of all the asset classes listed above, with x having the following values:

Maturity (months)	1	3	6	12	24	36	48	60	84	120	144	180
X as %	210	137	112	92	80	74	70	66	60	55	49	45

- For maturities not specified above, the value of the increase should be linearly interpolated. For maturities shorter than 1 month, the increase to be used is 210%. For maturities longer than 180 months, the increase to be used is 45%;
- Instantaneous relative decrease of the market prices of hybrid debt / preference shares by:

4%	when the item is rated AAA/AA
6%	when the item is rated A
11%	when the item is rated BBB
21%	when the item is rated BB
35%	when the item is rated B or below

419. Certain Equity risk design aspects will continue to be explored for the development of ICS Version 2.0, including the possible introduction of new equity segments, a correlation matrix, a countercyclical measure, and an approach to capture path dependent risks.

420. For ICS Version 2.0, changes made to the design of the Equity Risk approach may also create some consequential calibration impacts.

[36] Preference shares are defined as a company's shares that generally entitle the holder to receive dividends (often fixed) before common share dividends are issued and are to be paid out before common shares in the event of bankruptcy, but that do not have any voting rights.

6.14 Real Estate Risk

421. The Real Estate risk charge covers the risk of adverse changes in the value of capital resources due to unexpected changes in the level or volatility of market prices of real estate or from the amount and timing of cash-flows from investments in real estate.

6.14.1 Background

422. Since its initial design, the ICS Real Estate risk approach has used a universal shock to the NAV of (direct and indirect) property exposures to determine applicable risk charges.

423. The 2014 and 2016 ICS CDs, as well as the previous ICS field testing exercises, have provided useful feedback on a number of Real Estate risk design issues. As a result, the design of the risk approach has evolved such that:

- The clear preference is for the use of simplified approaches;
- For consistency with the treatment of investment property and to avoid inappropriate charges (ie the risk charge for property held for own use being greater than the balance sheet value of those assets), changes were made in 2016 so that property held for own use under the MAV approach is to be adjusted to fair value as determined under the IAIG's IFRS or GAAP valuations; and
- The Real Estate risk charge under GAAP Plus was also changed in 2016 so that it is calculated as the difference, if positive, of the balance sheet value at the balance date less a percentage (1 – shock level) of the property's fair value at the balance date. If the fair value of such a property is not available, then the risk charge is the universal shock applied on the property's book value. The risk charge is to be determined on a property-by-property basis;

6.14.2 Observations from 2016 Field Testing and Feedback on the 2016 ICS CD

424. From 2016 Field Testing data analysis, Real Estate risk represented a small proportion of ICS market risks, but the results were wide-ranging at the individual Volunteer Group level and per jurisdiction. Commercial property (direct and indirect) comprised most of the total real estate holdings.

425. Within the 2016 ICS CD, the IAIS sought input on the general design and calibration of the Real Estate risk approach used within the 2016 Field Testing. Respondents largely supported the approach to Real Estate risk used in 2016 Field Testing, but some indicated the calibration was too high and/or wanted more segmentation by property type, use and/or geography.

6.14.3 ICS Version 1.0 for extended field testing

426. Given that the Real Estate risk charge generally accounted for a relatively small component of the overall ICS capital requirement, the further development of the Real Estate risk approach has not been made a high priority. Thus, for ICS Version 1.0 for extended field testing, the IAIS has continued with the Real Estate risk design used for previous field testing exercises.

427. From its initial development, the universal risk shock was based in large part on existing jurisdictional requirements and supervisory judgement. However, based on the feedback and data assessed since 2014, the level of the stress has now been lowered from 30% to 25% for ICS Version 1.0 for extended field testing. This is more in line with the supporting calibration data and risk charges being applied in local capital regimes.

6.14.3.1 Exposure measures and risk shock

428. Except for special considerations for owner-occupied property under the GAAP Plus approach, which are described further below, the Real Estate risk charge is calculated as the change in NAV due to the simultaneous decrease of 25% in the value of all real estate exposures.

429. For owner-occupied property under the GAAP Plus approach, the Real Estate risk charge is calculated as the difference, if positive, of the balance sheet value at the balance date less 75% of the property's fair value at the balance date. If the fair value of such a property is not available then the risk charge is 25% of the property's book value. The risk charge is determined on a property-by-property basis.

430. The following applies to the determination of Real Estate risk exposures:

- Include exposures relating to direct and indirect real estate holdings (using a 'look-through' approach); and
- Exclude exposures relating to mortgage values of assets secured by real estate, and investments in companies engaged in real estate management, facility management or real estate administration, or investments in companies engaged in real estate project development or similar activities.

431. There are some Real Estate risk design aspects that will continue to be explored for the development of ICS Version 2.0, particularly considerations for differentiating real estate risk by property type, use and/ or geography.

432. Also, as Real Estate risk can differ substantially based on various factors, particularly with geographic location, for ICS Version 2.0 the IAIS will continue to explore the use of differentiated geographic risk shocks based upon demonstrated differences in various jurisdictional real estate calibration data and market developments.

6.15 Currency Risk

433. Currency risk is the risk of adverse change in the value of capital resources due to unexpected changes in the level or volatility of currency exchange rates.

6.15.1 Background

434. The ICS Currency risk is determined using a stress approach whereby pre-defined stresses are applied to the net open position in each currency that the IAIG holds. This overall design has been maintained since Currency risk was first tested in 2015 Field Testing.

435. In this stress approach, the Currency risk charge (both for the MAV and GAAP Plus approaches) is equal to the higher of the aggregated losses incurred under two scenarios:

- Scenario 1: All of the currencies in which the Volunteer Group has a net long position decrease in value, while all of the currencies in which the Volunteer Group has a net short position remain unchanged.

- Scenario 2: All of the currencies in which the Volunteer Group has a net short position increase in value, while all of the currencies in which the Volunteer Group has a net long position remain unchanged.

436. For each scenario, the losses by currency are aggregated using a correlation formula for which the assumed correlation of losses between each pair of currencies is 50%.

437. In 2015 Field Testing, two currency stress levels were used: 30% for currencies in developed markets and 60% for all other currencies. These stresses were perceived as overly punitive. In fact, in many instances the stress was seen as much larger than the historical volatility between individual currency pairs, particularly in emerging markets.

438. Taking this into account, the 2016 Field Testing approach provided more granular pairwise currency stresses. The volatility since 1 January 1999 was calculated for each pair of 35 predefined currencies. Results were converted to annual rates at a confidence level of 99.5% VaR. The results were then rounded to the nearest 5% with a floor of 5% and a cap of 75%. A world bucket was defined for currencies not in the list of 35 predefined currencies. Any currency pair that has one currency from the world bucket received a stress of 60%.

439. 2016 Field Testing also included an exemption for a portion of an investment in a foreign subsidiary (ie offset). Specifically, the net open position for each currency was defined as (Assets – Liabilities) less up to a 10% deduction of the net insurance liabilities in that currency from the net open (long) position in that currency.

6.15.2 Observations from 2016 Field Testing and Feedback on the 2016 ICS CD

440. From 2016 Field Testing data analysis, Currency risk represented a material proportion of ICS market risks, but the results were wide-ranging at the individual Volunteer Group level and per jurisdiction. The materiality of Currency risk varied based on the structure of the Volunteer Group. For example, those most affected by Currency risk have significant foreign business in comparison to their home market business or have significant exposures in emerging market currencies.

441. Within the 2016 ICS CD, the IAIS sought input on the general design and calibration of the Currency risk approach used within 2016 Field Testing.

442. Respondents largely supported the more granular approach to Currency risk used in 2016 Field Testing, though there were comments that the cap of 75% should be removed. Other comments received include that the 2016 methodology may overstate the risk for IAIGs with significant currency exposures, the applied stress of the 60% “world bucket” seems overly simplistic and much too high, and that most of the risk is actually currency translation risk, which does not materially impact an IAIG’s ability to meet policyholder obligations.

6.15.3 ICS Version 1.0 for extended field testing

443. The approach to Currency risk for ICS Version 1.0 for extended field testing is unchanged from the approach used in 2016 Field Testing. Specifically:

- Pair-wise stresses, based on pair-wise volatility since 1 January 1999, for 35 predefined currencies have been maintained, but will be recalibrated for ICS Version 2.0 taking into account that at that time 20 years of historical currency data will be available for the Euro.

- The current diversification allowance (ie pairwise correlation of 50%) has been maintained for ICS Version 1.0 for extended field testing but will be reconsidered for ICS Version 2.0.

- Pegged currencies are treated the same as all other currencies and have been calibrated based on historical data for the same period of time. However, changes will be considered for ICS Version 2.0 (including potentially developing qualitative criteria for assessing the strength of a peg).

- Due to the inconsistency of local capital requirements and the desire for simplicity, the 10% offset for investments in subsidiaries has been maintained. The level of the offset as well as the appropriateness of the proxy will be reconsidered for ICS Version 2.0.

6.16 Asset Concentration Risk

444. The Asset Concentration risk charge covers the risk of adverse changes in the value of capital resources due to a lack of diversification within the asset portfolio.

445. Standard risk charges are generally developed under the assumption that portfolios are well-diversified. This section specifies an ICS incremental risk charge for situations where an IAIG's asset portfolio is not well-diversified.

6.16.1 Background

446. Since its initial design, the ICS Asset Concentration risk approach uses simple factors to determine incremental risk charges for large risk counterparty and/ or property exposures exceeding a specified exposure threshold, and where the applicable factors progressively increase with higher risk exposure levels.

447. The 2014 and 2016 ICS CDs, as well as the previous ICS field testing exercises, have provided useful feedback on a number of Asset Concentration risk design issues. As a result, the design of the risk approach has evolved such that:

- Exposure thresholds are based only upon a percentage of total insurance assets, a threshold based upon a percentage of qualifying capital resources was dropped in 2016 given concerns with potential pro-cyclicality of using such a threshold;

- Sovereign exposures were given a 0% risk charge, and OECD/ non-OECD distinctions were dropped in 2015 to address fairness concerns; and

- The collection of supplementary data on G-SII exposures to other G-SIFIs when using a lower exposure threshold was dropped in 2016 given its limited impacts.

448. Asset Concentration risk can take the form of excessive exposures under various perspectives, including to single counterparty names, connected-groups, industry sectors, or

geographies. The extent to which exposures may be considered excessive is typically a function of the prudential limits and thresholds developed to manage and control asset concentration risks, with a particular focus on limiting impacts from idiosyncratic risks.

449. Given that the purpose is to cover risks that are idiosyncratic in nature, finding appropriate data to support incremental risk charge factors is a challenging endeavour.

450. From its initial design, the risk factor calibrations developed for the ICS Asset Concentration risk charges are based on supervisory judgement. There will be further consideration of the appropriateness of the incremental Asset Concentration risk factors during the development of ICS Version 2.0.

6.16.2 Observations from 2016 Field Testing and Feedback on the 2016 ICS CD

451. From 2016 Field Testing data analysis, Asset Concentration risk represented a very small proportion of ICS market risks, but the results were wide-ranging across regions and at the individual Volunteer Group level.

452. While only a small proportion of Volunteer Groups were impacted by the risk charge, many of those are domiciled in developing asset markets, where good investment opportunities may be more limited. The most impacted Volunteer Groups had more, and lower rated (drawing higher risk changes), counterparty exposures exceeding the risk charge threshold.

453. Within the 2016 ICS CD, the IAIS sought input on the general design and calibration of the Asset Concentration risk approach used within 2016 Field Testing.

454. Respondents largely supported the approach to Asset Concentration risk used in 2016 Field Testing, but some indicated concerns that the approach is not appropriate for IAIGs in developing asset markets, calibrations are too high, more granularly is needed, some ‘sovereign-like’ exposures should be excluded, the criteria should be simplified, and the risk charge should be eliminated.

6.16.3 ICS Version 1.0 for extended field testing

455. Given that the Asset Concentration risk charge accounted for a very small component of the overall ICS capital requirement, impacting only a small proportion of participating insurance groups, the further development of the Asset Concentration risk approach has not been made a high priority. Thus, for ICS Version 1.0 for extended field testing, the IAIS has continued with the Asset Concentration risk approach used for previous field testing exercises.

456. At the same time, given the range of different approaches to Asset Concentration risk being used internationally by insurance regulators, fundamental questions still remain as to the best approach for the ICS treatment of Asset Concentration risks. This matter will continue to be explored for ICS Version 2.0.

6.16.3.1 Exposure measures and risk factors

457. The Asset Concentration risk charge only applies to net exposures in excess of the risk threshold. The threshold is calculated using total insurance business assets, excluding

assets in separate accounts or where investment risks fully flow-through[37] to policyholders, and based upon the applicable valuation basis (MAV or GAAP Plus approach).

458. Counterparty related net exposures should be determined on the basis of non-affiliated single counterparties or connected group of counterparties (including for reinsurers). The BCBS definition[38] of a connected group of counterparties should be used. Specifically, two or more natural or legal persons should be deemed a group of connected counterparties if at least one of the following criteria is satisfied:

- Control relationship: one of the counterparties, directly or indirectly, has control over the other(s);

- Economic interdependence: if one of the counterparties were to experience financial problems, in particular funding or repayment difficulties, the other(s), as a result, would also be likely to encounter funding or repayment difficulties.

459. Net exposures for property should be based upon single property, or group of properties in very close proximity to each other (for example, two properties within 250 metres of each other), including exposures from both direct and indirect (such as funds of properties and mortgage) holdings.

460. The following applies to the determination of gross counterparty and property exposures:

- Include exposures relating to: both on- and off-balance sheet positions, sub-national governments (eg states, provinces), guarantees made, commitments given, bank deposits, receivables and any other item subject to the possibility of financial loss due to counterparty default;

- Exclude exposures relating to: central counterparty clearinghouses, national governments, contingent credit risk arising from catastrophe scenarios applied,

- Over-the-counter (OTC) derivatives exposures should be on a credit-equivalent basis as applicable,

- Apply a 'look-through' for investment funds, structured products etc. when the issuer of a security is a trust (SPV or a similar entity) that has no material creditworthiness, the source of payments is the assets in the trust, and there is no guarantor for the payments. When there is a guarantor that is responsible for maintaining sufficient assets in the trust for interest and principal payments, or directly guarantees those payments, the exposure is the guarantor (such as a government sponsored entity (GSE)) and the assets in the trust provide additional credit support should the guarantor not be able to honour its obligations.

461. The following applies to the determination of net counterparty and property exposures:

[37] Not considering any guarantee to policyholders that may exist on the value of the overall investment fund(s) such as on variable annuity products.
[38] As specified in the BCBS publication *Supervisory framework for measuring and controlling large exposures* (April 2014), which also outlines criteria for assessing whether 'control' or 'economic interdependence' exists.

- Exposures from assets held in separate accounts or in respect of life insurance contracts where the investment risks fully flow-through to policyholders (not considering any guarantee to policyholders that may exist on the value of the overall investment fund(s) such as on variable annuity products) should be excluded;

- Asset exposures should only be netted against liability exposures to the extent that they are subject to a legally enforceable right of offset;

- For collateral and for unconditional and irrevocable guarantees, the 'substitution approach' specified within the ICS Credit risk section may be used, if favourable, for the portion of exposure that is covered by the collateral and guarantees. There should be no gross exposure reduction for amounts of over-collateralisation. Where national government exposures are substituted for corporate exposures, such amounts are excluded from the determination of Asset Concentration risk charges.

462. The aggregate net exposure amounts by counterparty (or connected counterparties) or property in excess of the risk thresholds should be further segmented by the applicable weighted-average credit quality for purposes of applying the relevant risk charge factor.

463. The following table outlines the applicable thresholds and risk charge factors:

Asset concentration risk charge category	Applicable threshold (% of total insurance assets)	Incremental capital charge factor
Counterparty-related (weighted average)		
in ICS rating category 1 and 2	3%	15%
in ICS rating category 3 and 4	3%	25%
in ICS rating category 5, 6 and 7	1.5%	50%
Property	3%	25%

6.17 Credit Risk

464. The Credit risk charge covers the risk of adverse changes in the value of capital resources due to unexpected changes in the actual default as well as in the deterioration of an obligor's creditworthiness short of default, including migration and spread risks.

465. Note that non-default related spread risk is not covered within ICS Version 1.0 for extended field testing, but it will be considered for ICS Version 2.0.

6.17.1 Background

466. To determine applicable risk charges, the Credit risk approach was initially designed largely based upon the asymptotic single risk factor model that serves as the basis for the Basel II internal ratings-based (IRB) approach.

467. While many aspects of the initial design have been maintained, the approach has evolved significantly as a result of the feedback received on ICS CDs as well as from analysing results of previous field testing exercises. For example:

- For 2016 Field Testing, rather than a simple factor-based approach applied to the asset side of the balance sheet only, Credit risk was refined to be a factor-based stress applied to the whole balance sheet to allow for management actions through the liabilities;
- The external credit rating agencies recognised for ICS purposes was expanded in 2016 with A.M. Best ratings being allowed for reinsurance exposures and other agencies allowed where jurisdictional regulators recognise the agency and explicit acceptance has been provided by the IAIS; and
- More granular stress factors were developed for commercial mortgages for 2016 Field Testing, using a model similar to that currently utilised by the U.S. NAIC.

468. In 2016 Field Testing, a 0% stress factor was set for exposures to multilateral development banks and supranational obligations in order to better align these exposures with the current ICS approach to sovereign risks.

6.17.2 Observations from 2016 Field Testing and Feedback on the 2016 ICS CD

469. Overall, Credit risk is a material risk in the ICS, as well as for most Volunteer Groups. There were clear regional differences in the contribution of Credit risk to the overall ICS capital requirement, and results were found to be wide-ranging at the individual Volunteer Group level. Those Volunteer Groups with high levels of investments in sovereign debt have a lower risk contribution from Credit risk.

470. Excluding sovereign debt, corporate debt made up most of the debt investment holdings, with mortgages and securitisations mostly held in certain regions. As investments in securitisations draw high risk charges, Volunteer Groups holding such securities had proportionally higher credit risk charges.

471. For Volunteer Groups utilising NAIC designations, the impact on the Credit risk charge was found to be substantial, mostly due to better ICS ratings for securitisations.

472. Analysis of 2016 Field Testing data showed that the approach to Credit risk for commercial mortgages and residential mortgages needed greater alignment.

473. Within the 2016 ICS CD, the IAIS identified and sought input on the following Credit risk issues:

- Reliance on the use of external credit ratings;
- Granularity for commercial and residential mortgages;
- Treatment of reinsurance exposures; and
- Treatment of sovereign exposures.

474. Respondents generally supported current approaches, but many also made comments such as: calibrations are too high (for corporates, securitisations, residential mortgages, agent/ broker receivables etc.), there were onerous data requirements (such as for debt service coverage ratios), the need for more granularity for corporates, and on allowing the use of internal models. There was also general support for allowing use of NAIC designations – including modifying current ratings recognition criteria if necessary - and for exploring other approaches for collateralised reinsurance.

6.17.3 ICS Version 1.0 for extended field testing

475. For ICS Version 1.0 for extended field testing, the IAIS has continued with the Credit risk approach used for 2016 Field Testing, with some refinements as set out in this section.

476. The Credit risk charge applies to all direct and indirect (apply the 'look-through approach) senior debt obligations to specified exposure classes of issuers and borrowers[39]. The Credit risk charge is determined by applying specified stress factors based on exposure class, rating category and maturity to the net exposure amounts, then taking into consideration management actions, and summing.

477. The following classes of Credit risk exposures are used in ICS Version 1.0 for extended field testing:

a) Public sector entities (including national administrative bodies, regional governments and municipal authorities);

b) Corporates (including non-paid up qualifying capital resources, banks other than short-term obligations, securities dealers and commercial undertakings owned by governments or municipal authorities, unsecured loans and rated commercial mortgages);

c) Reinsurance exposures including reduction credit taken for reductions in the catastrophe risk charge;

d) Securitisations (including all asset-backed securities, mortgage-backed securities, and asset-backed commercial paper). It also includes any other assets where the cash flow from an underlying pool of exposures is used to service at least two different tranches reflecting different degrees of Credit risk;

e) Resecuritisations (where underlying assets include a securitisation exposure);

f) Mortgage loans separated into commercial, agricultural and residential; and

g) Miscellaneous assets including policy loans (zero risk charge), short-term obligations of regulated banks (demand deposits and other obligations that have an original maturity of less than three months), outstanding premiums, amounts due from agents and brokers, other receivables, and prepaid expenses.

478. For categories described in a) to e) above, risk factors vary by rating category and maturity. For mortgage loans, see Section 6.17.3.1 for the revised approach for ICS Version

[39] Note that preferred shares, hybrid obligations and subordinated debt are excluded from the Credit risk charge, and are instead subject to the Equity risk charge.

1.0 for extended field testing. With respect to miscellaneous assets, each type of exposure has a single stress factor. The applicable stress factors for exposures within these categories can be found in the 2017 Field Testing Technical Specifications.

479. Credit exposures to national governments and their central banks, central counterparty clearing houses, and multilateral development banks and supranational organisations do not have an applicable ICS Credit risk charge.

480. Additional details for the determination of the Credit risk charge can be found within the 2017 Field Testing Technical Specifications, including on:

- Recognition and use of credit assessments from external providers;
- Criteria for recognition of collateral;
- Treatment of reinsurance exposures;
- Criteria for the recognition of guarantees and credit derivatives; and
- Determining the credit equivalent amounts for OTC derivatives and off-balance sheet exposures.

6.17.3.1 Refinements included in ICS Version 1.0 for extended field testing and further developments

481. Based on the 2016 Field Testing results that showed the average Credit risk charge for commercial mortgages was actually lower than the average Credit risk charge for residential mortgages, the IAIS reconsidered both the granularity and calibration of the stress factors for residential, commercial and agricultural mortgages. For residential mortgages, the IAIS used a model similar to what the BCBS has recently developed for the banking industry, appropriately scaled for ICS purposes. This separates the residential mortgages into two distinct categories: where repayment depends on property income and where repayment does not depend on property income. The stress factors vary by loan to value ratio within those two categories with the stress factors calibrated based on BCBS risk-weights with appropriate rescaling to the ICS target criteria.

482. For commercial mortgages, the IAIS has also separated those into the same two categories. For commercial mortgages where repayment depends on property income, the IAIS continues to apply the approach based on the U.S. model with three possible ways of determining the stress factors depending on data availability. If both loan to value ratio and debt service coverage ratio are available, then stress factors based on both ratios are applied. If only the loan to value ratio is available then stress factors based on that ratio are applied. If neither ratio is available, a flat 8% stress factor is applied. The applicable stress factors have been increased so that they are more consistent with what the BCBS has recently developed for the banking industry, but have been appropriately rescaled to the ICS target criteria.

483. Credit risk stress factors were extended out to 15 years for investment grade rating categories for the five categories of credit exposures where stress factors are dependent upon maturity. This change was made due to availability of data to extend these tables of stress factors for investment grade credit exposures.

484. In order to align the calculation of Credit risk with the approach to valuation for GAAP Plus, where fixed income investments have been included in the AOCI adjustment, the Credit risk exposures should be at amortised cost for purposes of determining the Credit risk charge for GAAP Plus.

485. Certain Credit risk design aspects will continue to be explored for the development of ICS Version 2.0, including the treatment of collateralised reinsurance, non-default spread risk, and the use of various credit ratings providers (including criteria for the use of supervisory owned credit assessment processes such as the NAIC Securities Valuation Office). In addition, there will be further consideration of allowing local calibrations for mortgage loans if reliable local data can support a different calibration.

486. For ICS Version 2.0, changes made to the design of the Credit risk approach in some areas may also create some consequential calibration impacts.

487. The BCBS is currently re-examining its approach to sovereign credit exposures for bank capital purposes. In order to avoid creating significant differences in the capital treatment of sovereign exposures between banks and insurers, which could raise 'level playing field' issues and create opportunities for sectoral arbitrage, the IAIS will reconsider this matter after the BCBS concludes its work.

6.18 Operational Risk

488. Operational risk is defined as the risk of adverse change in the value of capital resources due to 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.

6.18.1 Background

489. Both 2015 and 2016 Field Testing explored three different methods for calculating Operational risk based on applying factors to a predetermined set of exposure measures. Three exposure methods were specified:

- **The other risk charges in the standard method** for the ICS capital requirement – for example, the sum of the other charges after any diversification credit
- **The business of the IAIG** – for example, exposure measures for non-life and life business, such as premiums or liabilities or account balance. Additional factors could be developed to be applied to exposure measures such as growth in premium; or
- **A combination of the two methods described above**

490. The second option (the business of the IAIG) was used in 2016 Field Testing as the default option for the calculation of the ICS capital requirement. This was done without prejudice to further developments of the ICS.

6.18.2 Feedback on the 2016 ICD CD

491. The 2016 ICS CD sought input from stakeholders on the appropriateness of the exposure measures and specified factors. Most respondents commented that the operational risk calculation should use exposures that are reported before the impact of ceded reinsurance because reinsurance is meant to mitigate insurance risk, not operational risk. However, some respondents did comment that exposures after reinsurance should be used in order to not undermine incentives for good risk management. Most respondents commented that the specified exposure measures were appropriate, though there were some comments that business volume and growth are not necessarily correlated with the level of operational risk. A suggestion was made to refine the premium growth rate threshold so that it varied by market since the growth rate is often significantly higher for developing markets than that for developed markets.

492. There was general support from respondents on the proposed Operational risk factors, though there were some comments that the factors were high. One suggestion was to consider a cap on the Operational risk charge that is a proportion of the other risk charges. Another comment was that an Operational risk charge should not be included in the ICS quantitative requirements and instead, it should be considered under ERM requirements.

6.18.3 ICS Version 1.0 for extended field testing

493. The approach to Operational risk for ICS Version 1.0 for extended field testing is unchanged from the approach used in 2016 Field Testing. The design of Operational risk, including exposure measures and factors, will be reconsidered for ICS Version 2.0.

6.19 Aggregation/Diversification

6.19.1 Background

494. For the development of the ICS standard method, the IAIS developed an approach for aggregation/diversification using multiple steps, aggregating sub-sets of individual risks, and then aggregating the multiple results from prior steps using a sequence of correlation matrices.

495. Through previous field testing and the ICS CDs, there was widespread, although not universal, support for both the use of correlation matrices and the use of multiple steps in the calculation of the aggregation/diversification benefit for the ICS standard method capital requirement calculation

496. The approach included multiple steps in the ICS aggregation process, with some of these steps either implicitly or explicitly reflecting diversification:

- individual risk components were calibrated at 99.5% VaR, which implicitly reflects the diversification within individual risks (eg the calibration of non-life risk segments implicitly reflects the diversification within each segment);
- some risk components were calculated as the maximum between multiple stresses (eg upward or downward movements of exchange rates);
- some individual risks were added using a simple sum (eg life risks in different geographic areas); and

- some individual risks were aggregated using linear (tail) correlation assumptions (eg 50% correlation between Equity and Real Estate risks).

497. Some arrangements for risk sharing were also taken into account (eg risk sharing with policyholders for participating products).

6.19.2 Feedback on the 2016 ICS CD

498. The multi-step structure using correlation matrices was largely perceived as a reasonable, pragmatic approach, although a few stakeholders commented that a flat structure would be more able to reflect some correlations between individual risks.

499. Stakeholders recognised the challenge to calibrate the correlations in the context of reflecting a 99.5% confidence level and considering the limitations of available data with some suggestions to consider not only the pair-wise correlations but also the total impact on diversification. Some stakeholders suggested that internal model calibration could be used in particular for correlation between insurance risks.

500. Different views were expressed on the calibration of the correlation factors. Some stakeholders viewed some correlations as too high and others viewed some correlations – the same or different – as too low. Several concerns were voiced regarding the limited recognition of diversification between countries.

6.19.3 ICS Version 1.0 for extended field testing

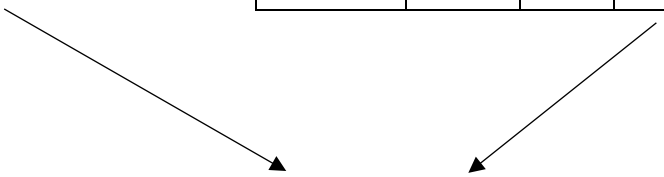
501. The approach adopted for ICS Version 1.0 for extended field testing follows the same approach as for previous field testing exercises. Risks have been aggregated in multiple steps using correlation matrices. The structure has been adapted to the changes in the design of the ICS capital requirement.

502. The structure of correlation matrices represents a trade-off between simplicity and risk sensitivity that is deemed appropriate for the standard method. For instance, the multiple steps approach offers the benefit of limiting the number of correlation parameters to be prescribed and calibrated, but reduces the risk sensitivity that a single matrix (including the correlation between each individual risk) would have produced.

Figure 11. Multiple-step aggregation approach through different sets of variance/covariance matrices

Life Risks	Mortality	Longevity	Morbidity/ Disability	Lapse	Expense
Mortality	1	-25%	25%	0%	25%
Longevity	-25%	1	0%	25%	25%
Morbidity/ Disability	25%	0%	1	0%	50%
Lapse	0%	25%	0%	1	50%
Expense	25%	25%	50%	50%	1

Market Risks	Interest rate	Equity	Real estate	Currency	Asset concentration
Interest rate	1	25%	0%	25%	0%
Equity	25%	1	50%	25%	0%
Real estate	0%	50%	1	25%	0%
Currency	25%	25%	25%	1	0%
Asset concentration	0%	0%	0%	0%	1



ICS Global	Non-life	Catastrophe	Life	Market	Credit
Non-life	1	25%	0%	25%	25%
Catastrophe	25%	1	25%	25%	25%
Life	0%	25%	1	25%	25%
Market	25%	25%	25%	1	25%
Credit	25%	25%	25%	25%	1

7 Approach to Tax within the ICS

503. Taxes impact different parts of the ICS. Since there are three key components of the ICS: Valuation, Capital Resources and Capital Requirements the effect of taking taxes into account can be considered in each key component. For ICS Version 1.0 for extended field testing, no change is being made compared to the approach in 2015 and 2016 Field Testing pending a more holistic consideration of tax in each of the components and overall for the ICS.

7.1 2016 Field Testing Approach to Tax

504. The approach to tax in 2016 Field Testing is summarise below for each of the components of the ICS:

- Deferred taxes as reported on an ICS balance sheet, whether MAV or GAAP Plus, arise from differences between the value ascribed to an asset or a liability for tax purposes and its value in accordance with either MAV or GAAP Plus valuation rules. Deferred taxes may also result from certain carry forward items such as tax credits and operating loss carry forwards. Deferred taxes recognised for local (jurisdictional) GAAP purposes are adjusted to reflect the different valuation approaches under the ICS. The impact of this adjustment, which flows through to capital resources, can be significant.

- Proposed options for the consistent and comparable MOCE have not been subject to tax effects in field testing thus far.

- With respect to capital resources, DTAs are deducted from Tier 1 capital resources and added back as Tier 2 capital resources if considered realisable. Specific criteria to determine DTA realisability have not yet been proposed for field testing.

- The individual risk charges are calculated on a pre-tax basis and then aggregated taking into account diversification. The ICS capital requirement is subject to an overall tax effect through the application of a global effective tax rate to the post-diversification, pre-tax capital requirement (a top-down approach).

505. There are acknowledged inconsistencies in this approach but the approach is considered workable as a placeholder. It should be noted that the placeholder should not be taken as an indication of the direction of any future proposal on the treatment of taxes in the ICS.

7.2 Observations from 2016 Field Testing and Feedback on the 2016 ICS CD

506. What is clear from field testing is that tax is very material for most Volunteer Groups through the following observations (varying significantly across the Volunteer Groups depending on their circumstances):

- There are material amounts of Deferred Tax Assets (DTAs) and Deferred Tax Liabilities (DTLs) on some Volunteer Group's balance sheets

- Material DTLs are recognised from the adjustment of insurance liabilities to current estimates (note that this outcome is somewhat dependent on there being no tax effect on MOCE)

- There are significant reductions in the ICS Capital Requirement due to the application of the group-wide effective tax rates to the overall ICS Capital Requirement, with many Volunteer Groups applying the maximum tax rate in their home jurisdiction (up to 35%)

- Most Volunteer Groups are treating the entire net DTA balance as realisable for the purposes of recognising it as qualifying Tier 2 capital resources

507. A lot of valuable feedback has been received in response to the ICS CDs and the IAIS is still considering that feedback in determining the way forward for ICS Version 2.0.

7.3 ICS Version 1.0 for extended field testing

508. There is no resolution of tax issues for ICS Version 1.0 for extended field testing with a continuation of the approach used in field testing so far. The IAIS understands that tax is a significant and complex topic that requires time to work through and plenty of input from Volunteer Groups and other experts. In the second half of 2017, the IAIS intends to organise a round table discussion of tax experts to determine the way forward based on a 'straw man' proposal.

Annex 1 Classification of Financial Instruments as ICS Tier 1 and Tier 2 Capital Resources from 2016 Field Testing

Tier 1 Unlimited Financial Instruments issued by the Volunteer Group

1. The following criteria applied in 2016 Field Testing for instruments to qualify as Tier 1 capital resources for which there is no limit.

a) The instrument is fully paid-up.

b) The instrument is in the form of issued capital such that it is the first instrument to absorb losses as they occur.

c) The instrument represents the most subordinated claim in a winding-up of the IAIG where the holder is entitled to a claim on the residual assets proportional to its share of the issued share capital after all claims have been repaid, and which is not subject to a fixed or capped amount.

d) The instrument is perpetual (ie it does not have a maturity date).

e) The principal amount of the instrument is not repaid outside winding-up, other than by means of discretionary repurchase permitted under national law, which is subject to prior supervisory approval.

f) There is not an expectation created at issuance by the IAIG, or through the terms of the instrument, that the Volunteer Group will repurchase or cancel the instrument, or that such action will receive supervisory approval.

g) There are no circumstances under which a distribution is obligatory (non-payment is, therefore, not an event of default).

h) Distributions are paid out of distributable items, including retained earnings (ie distributions should reduce equity rather than the profit / loss of the current year).

i) The instrument is neither undermined nor rendered ineffective by encumbrances. In particular, priority of claims should not be compromised by guarantees or security arrangements given by either the IAIG or another related entity over which the IAIG exercises control or significant influence, for the benefit of investors.

j) Neither the IAIG nor a related party over which the IAIG exercises control or significant influence has purchased the instrument, nor has the IAIG directly or indirectly funded the purchase of the instrument.

k) The paid-in amount is recognised as equity capital (ie not recognised as a liability) where a determination that liabilities exceed assets constitutes a test of insolvency.

Tier 1 Limited Financial Instruments issued by the Volunteer Group

2. The following criteria applied in 2016 Field Testing for instruments to qualify as Tier 1 capital resources for which there is a limit:

a) The instrument is fully paid-up.

b) The instrument is subordinated to policyholders and other non-subordinated creditors and holders of Tier 2 capital instruments but may rank senior to holders of Tier 1 capital instruments for which there is not a limit.

c) The instrument is perpetual (ie it does not have a maturity date).

d) The instrument does not contain a step-up or another incentive to redeem.

e) The instrument is only callable at the option of the issuer after a minimum of five years from the date of issue (ie, the instrument is not retractable by the holder) and prior supervisory approval is required for any redemption.

f) The instrument may be repurchased by the issuer at any time with prior supervisory approval.

g) There is not an expectation created by the IAIG, or through the terms of the instrument, that the IAIG will repurchase the instrument or exercise any right to call the instrument, or that the repurchase or redemption will receive supervisory approval.

h) The IAIG has full discretion at all times to forego or cancel distributions (ie dividends and coupon payments are non-cumulative). The IAIG's obligation to pay missed distributions is forever extinguished and non-payment is not an event of default.

i) Distributions are paid out of distributable items, including retained earnings (ie distributions should reduce equity rather than the profit / loss of the current year).

j) The instrument does not have distributions that are tied or linked to the credit standing or financial condition of the IAIG or another related entity, such that those distributions may accelerate winding-up.

k) The instrument is neither undermined nor rendered ineffective by encumbrances (in particular, priority of claims should not be compromised by guarantees or security arrangements given by either the IAIG or a related entity over which the IAIG exercises control or significant influence, for the benefit of investors.

l) Neither the IAIG nor a related party over which the IAIG exercises control or significant influence has purchased the instrument, nor has the IAIG directly or indirectly funded the purchase of the instrument.

m) If jurisdictional insolvency law includes a test of whether liabilities exceed assets, then the instrument is not treated as a liability for the purpose of that test.

n) The instrument cannot possess features that hinder recapitalisation, such as provisions that require the issuer to compensate investors if a new instrument is issued at a lower price during a specified time frame.

o) If the instrument is not issued out of an operating entity or the Hold Co of the IAIG (eg it is issued out of an SPV), proceeds must be immediately available without limitation to an operating entity or the Hold Co of the IAIG in a form that meets or exceeds all of the other criteria for inclusion in Tier 1 Capital for which there is a limit (ie the SPV may only hold assets that are intercompany instruments issued by the IAIG or a related entity with terms and conditions that meet or exceed the criteria for Tier 1 Capital for which there is a limit).

Tier 2 Financial Instruments issued by the Volunteer Group

3. The following criteria applied in 2016 Field Testing for instruments to qualify as Tier 2 Paid-Up capital resources:

a) The instrument is fully paid-up.

b) The instrument is subordinated to policyholders and other non-subordinated creditors of the IAIG.

c) The instrument has an initial maturity of at least five years with its effective maturity date defined to be the earlier of:

   i. the first occurrence of a call option together with a step-up or other incentive to redeem the instrument; and

   ii. the contractual maturity date fixed in the instrument's terms and conditions.

d) The instrument's availability to absorb losses as it nears its effective maturity is captured by either:

   i. decreasing the qualifying amount of the instrument from 100% to 0% on a straight-line basis in the final five years prior to maturity; or

   ii. the existence of a lock-in clause, which is a requirement for the Volunteer Group to suspend repayment or redemption if it is in breach of its applicable regulatory capital requirement or would breach it if the instrument is repaid or redeemed.

e) The instrument is only callable at the option of the issuer after a minimum of five years from the date of issue (ie the instrument is not retractable by the holder) and prior supervisory approval is required for any redemption prior to contractual maturity.

f) The instrument may be repurchased by the issuer at any time with prior supervisory approval.

g) There is not an expectation created by the IAIG, or through the terms of the instrument, that the IAIG will repurchase the instrument or exercise its right to call the instrument, or that the repurchase or redemption will receive supervisory approval.

h) The instrument does not have distributions that are tied or linked to the credit standing or financial condition of the IAIG or another related entity, such that those distributions may accelerate winding-up.

i) The instrument does not give holders rights to accelerate the repayment of future scheduled principal or coupon payments, except in winding-up.

j) The instrument is neither undermined nor rendered ineffective by encumbrances. In particular, priority of claims should not be compromised by guarantees or security arrangements given by either the IAIG or a related entity over which the IAIG exercises control or significant influence, for the benefit of investors.

k) Neither the IAIG nor a related party over which the IAIG exercises control or significant influence has purchased the instrument, nor has the IAIG directly or indirectly funded the purchase of the instrument.

l) If the instrument is not issued out of an operating entity or the Hold Co of the IAIG (eg it is issued out of an SPV), proceeds must be immediately available without limitation to an operating entity or the Hold Co of the IAIG in a form that meets or exceeds all of the other criteria for inclusion in paid-up Tier 2 capital resources (ie the SPV may only hold assets that are intercompany instruments issued by the IAIG or a related entity with terms and conditions that meet or exceed the criteria for paid-up Tier 2 capital resources).

Annex 2 2015 and 2016 Methods of Calibrating Interest Rate Stresses

2015 Field Testing

1. During the development of 2015 Field Testing stressed curves, issues with methodologies for calibration arose when examining currencies with very low (less than 0.5%) and negative interest rates. In 2016, this issue became more pronounced as more currencies of developed economies moved to very low or negative interest rate territory. In 2015 Field Testing, rates were floored at 0.5% to accommodate the square root stress formula. For example, an upward stress was calculated as follows:

$$r_i' = r_i + a_i\sqrt{\max(r_i, 0.5\%)} + b_i$$

where a_i and b_i were provided by the IAIS for all currencies. The calibration of these factors was carried out using a simplified Cox-Ingersoll-Ross model without a mean reversion parameter.

2. If the same approach had been used for determining stressed yield curves in 2016 Field Testing, the rate floor would have been binding for large portions of some yield curves, thereby skewing the calibration of the stresses.

3. A key issue for 2015 Field Testing is that a single volatility calibration taken from a reference currency was applied to all currencies. Only two calibration points were used. Aggregation of stresses

4. A maximum of up, down and flattening stresses was taken to be the interest rate risk pre diversification. No diversification of interest rate risk among currencies was allowed.

2016 Field Testing

5. For 2016 Field Testing:

a) the stressed yield curves were calibrated using currency specific volatilities rather than applying the single volatility from a reference currency to all currencies;
b) twelve calibration points were used (instead of the two in 2015) based on twelve observable maturities – years 1 to 10, year 20 and year 30 (if available for a particular currency);
c) each calibration point was based on historical data from the beginning of 2010, without filtering for outliers. This period for calibration corresponds to the change in monetary policy in most advanced economies after the Great Financial Crisis (GFC);
d) the stress levels were determined by applying a Principal Component Analysis (PCA) on the twelve observed maturities listed above;
e) to derive the shocked interest rate curves, the weekly changes in the past data were captured by the formula below. The focus is on the annual interest factor (1+r) used for discounting: (1+r)^-t. Multiplicative movements $e^{s(i)}$ for maturity *i* can be derived using the following formula:

$$s \sim \ln\left(\frac{1+R_{t+1}^{i}}{1+R_{t}^{i}}\right) \quad (i = 1,2,3,4,5,6,7,8,9,10,20,30)$$

f) stress levels between the observed maturities were interpolated using the interpolation part of the Smith-Wilson technique for consistency with the methodology used to determine the base yield curves;
g) a stress of 15% was applied to the long-term forward rate (LTFR)
h) stressed yield curves between the last observable point and the stressed LTFR were extrapolated.
i) stressed yield curves between the last observable point and the stressed LTFR were extrapolated.

6. Stress scenarios for 2016 Field Testing were calibrated as follows:

a) a maximum of the up stress and down stress calibrated according to the 1st Principal Component;
b) a flattening stress calibrated according to the 2nd Principal Component;
c) the first two principal components are mathematically independent, and reflect the level and shape changes of observed interest rate movements; and
d) the first two components were found to explain a high proportion of the total observed volatility.

7. Note that a steepening scenario could also be derived from the 2nd Principal Component, but it was discarded because stress losses under this scenario are highly unlikely to exceed the projected losses under the other scenarios.

8. In contrast to 2015 Field Testing where only the maximum of the three scenarios became the pre-diversification Interest Rate risk charge, in 2016 Field Testing the results were combined using a square root aggregation. This is the square root of the sum of squares of the 1st Principal Component (maximum of the up or down stress) and the stress derived from the 2nd Principal Component (flattening stress).

9. The cash surrender value floor was dropped from 2016 Field Testing. This floor was equivalent to assuming that polices with cash value would be surrendered when interest rate changes push the value below the cash surrender value. Volunteer Groups believed that policyholders were unlikely to lapse policies in great numbers, even if the value of a contract dips below the cash surrender value.

Annex 3 Description of DNS Method

1. Five scenarios are specified, based on the Dynamic Nelson-Siegel yield curve model. The first scenario represents the expected mean reversion over the next year as forecast by the model. The remaining four scenarios consist of two symmetric pairs of independent stresses: a level upward (downward) stress, and a twist stress from up to down (down to up). When available, the datasets for all currencies used to calibrate the interest rate risk requirement contained weekly interest rate observations for 12 maturities – years 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, and 30 - starting on 1 January 2010. No filtering adjustment has been applied to the raw dataset to derive the calibration. Over the coming years, the datasets used for calibration will be expanded. The weekly observations were transformed into zero-coupon spot rates, using the same methodology as for the valuation curve – ie including a credit risk adjustment of 10 basis point when the observed instruments are not government bonds. Under the Dynamic Nelson-Siegel model, the yield curve at time t is described in a closed form by a weighted average of a level curve (L), a Slope curve (S) and a Curvature curve (C)

$$y_t(\tau) = L_t + S_t\left(\frac{1-e^{-\lambda\tau}}{\lambda\tau}\right) + C_t\left(\frac{1-e^{-\lambda\tau}}{\lambda\tau} - e^{-\lambda\tau}\right)$$

2. The dynamic of the change in the yield curve - restricted to model definitions where mean-reversion matrix is diagonal[40] - is described by the following transition equation.

$$\begin{pmatrix} dL_t \\ dS_t \\ dC_t \end{pmatrix} = \begin{pmatrix} \kappa_{11}^P & & \\ & \kappa_{22}^P & \\ & & \kappa_{33}^P \end{pmatrix} \left(\begin{pmatrix} \theta_1^P \\ \theta_2^P \\ \theta_3^P \end{pmatrix} - \begin{pmatrix} L_t \\ S_t \\ C_t \end{pmatrix} \right) dt + \begin{pmatrix} \sigma_{11} & 0 & 0 \\ \sigma_{21} & \sigma_{21} & 0 \\ \sigma_{31} & \sigma_{32} & \sigma_{33} \end{pmatrix} \begin{pmatrix} dW_t^{L,P} \\ dW_t^{S,P} \\ dW_t^{C,P} \end{pmatrix}$$

3. For each currency, the model was fitted using Excel Solver. The Excel fitting results were back-tested against the result of fitting the same model using a specialised statistical package[41]. From this model specification, the DNS shocks are then computed using the following algorithm.

[40] A fully flexible model with cross terms in the mean reversion factors (ie with non-diagonal elements in the K matrix) was also tested, without much difference.
[41] The R statistical package (https://cran.r-project.org/) was used.

DNS Shock Generating Algorithm

1) Fit *L*, *S* and *C* to the discrete year-end data points using least squares. That is, choose L, S and C so that the sum of the squares of the difference between L*Level Curve + S*Slope Curve + C*Curvature Curve at the terms for which we have data points, and the data points themselves, is minimized. We refer to this initial vector (L, S, C) as X_0.

2) The mean reversion shock, expressed as an (L, S, C) vector is:

$$(I - e^{-K})(\theta - X_0)$$

where I is the 3 x 3 identity matrix. This linear combination of the DNS curves gets added to the year-end rates.

3) One set of shocks that we could place under the square root, expressed as (L, S, C) vectors, are the columns of:

$$M = K^{-1}(I - e^{-K})\Sigma$$

multiplied by the normal percentile $N^{-1}(0.995)$.

4) In order to reduce the workload on the insurers and keep this method comparable to the principal components approach used in the previous field test, a principal components-type analysis on the three shocks available is performed and the least significant shock is discarded[42]. Let:

$$N = \begin{pmatrix} LOT & & \\ & a & \\ & & b \end{pmatrix} M$$

where:

LOT = Last Observed Term (eg 30 for USD) $a = \sum_{\tau=1}^{LOT} \frac{1-e^{-\lambda\tau}}{\lambda\tau}$, $b = \sum_{\tau=1}^{LOT} \left(\frac{1-e^{-\lambda\tau}}{\lambda\tau} - e^{-\lambda\tau}\right)$

Diagonalise the matrix $N^T N$, and let e_1 and e_2 be the two orthonormal eigenvectors of $N^T N$ (with $\|e_1\| = \|e_2\| = 1$) that have the largest eigenvalues (ie the eigenvector with the lowest eigenvalue is discarded). The remaining shocks are defined by Me_1 and Me_2.

5) A rotation is applied on these shocks[43] in order to produce equivalent shocks where the second shock can be characterized as a twist shock. The characteristic of a twist is that the shocks at some terms are up, and at others the shocks are down. To make things definite, we define a shock curve to be a twist if the sum of the shocks at each term is zero. The corresponding rotated first shock is assumed to be mostly a level shock.

Let Θ be the rotation angle, ie the rotated vectors are defined by $Twist = (\cos(\theta)Me_2 - sin(\theta)Me_1)$ and $Level = (\cos(\theta)Me_1 + sin(\theta)Me_2)$.

[42] The remaining two shock account to around 99% of the requirements
[43] This is equivalent to applying a rotation on the eigenvectors, thus preserving the independence property.

Let $S_1(\tau)$ and $S_2(\tau)$ be the shocks at term τ corresponding to the vectors Me_1 and Me_2. The twist definition used imply that Θ satisfy:

$\sum_{\tau=1}^{LOT}(\cos(\theta)S_2(\tau) - \sin(\theta)\, S_1(\tau)) = 0$

Or equivalently $\tan(\theta) = \frac{\sum_{\tau=1}^{LOT} S_2(\tau)}{\sum_{\tau=1}^{LOT} S_1(\tau)}$

6) The final shocks are defined by $Twist\ shock = N^{-1}(0.995) * (\cos(\theta)Me_2 - sin(\theta)Me_1)$ and $Level\ shock = N^{-1}(0.995) * (\cos(\theta)Me_1 + sin(\theta)Me_2)$.

7) The actual shocked curves are equal to the year-end curve plus or minus the linear combination of DNS curves, with coefficients taken from the components of the vectors $Level\ shock$ and $Twist\ shock$. For example, if the $twist = (\cos(\theta)Me_2 - sin(\theta)Me_1)$ is equal to:

$$\begin{pmatrix} -0.001 \\ 0.002 \\ 0.01 \end{pmatrix}$$

then the corresponding shocked curves are:

$$\text{Year-end curve} \pm N^{-1}(0.995) * (-0.001\ \text{Level Curve} + 0.002\ \text{Slope Curve} + 0.01\ \text{Curvature Curve})$$

Aggregation

4. The total interest rate risk requirement[44] is:

$$\text{Gain or loss under mean reversion scenario} + \sqrt{\text{Max loss (level up, level down)}^2 + \text{Max loss (twist up to down, twist down to up)}^2}$$

5. The impact of the level and twist scenarios is aggregated assuming they are independent. In order to capture convexity, optionality, and other nonlinear aspects of assets and liabilities, both the gain/loss under the level and twist stresses and their negatives are evaluated. For the shocks under the square root, any gain is set to zero (ie a gain is considered a zero loss). However, if there is a gain under the mean reversion scenario then this amount is subtracted from the requirement.

[44] Floored at zero.

Annex 4 GAAP Plus Interest Rate Risk for 2016 Field Testing

Method 1

Assets

1. Where assets are measured at fair value, the stress is consistent with the standard method for MAV. Assets that are measured at cost (eg loans, and bonds classified as held to maturity) are not impacted by the market value-based stress scenario.

Liabilities

2. For insurance liabilities where a market consistent discount curve is applied directly in valuation under GAAP, such as for guarantees and options, the interest rate stress would be the same as under MAV.

3. For insurance liabilities where a Volunteer Group uses discount rates for each tenor (based on portfolio earned rates, reinvestment rates or other assumptions), the IAIG should apply the differences between the IAIS base and stressed yield curves to corresponding discount rates at each tenor.

4. For all other insurance liabilities where a single discount rate is applied, IAIGs should apply single rate stresses based on the average difference between the IAIS base and stress yield curves over tenor buckets that correspond to effective duration of each liability:

- the use of tenor buckets is a means to translate points along the IAIS yield curves into a single discount rate stress for each bucket; and
- the stress will be applied to the pre-stress discount rate used for the GAAP methodologies and the stressed liability valuation will be calculated to derive the liability stress.

Method 2

Assets

5. Method 2 measured the changes for long-term life insurance liabilities and the assets supporting them. As both are intended to be held to maturity, the impact of the rate shock is measured through changes in cash flows rather than assessing the changes in market values which would be both inconsistent with the GAAP valuation principles in some jurisdictions and considered irrelevant by some Members where assets are intended to be held to maturity. Assets are initially marked to market in accordance with GAAP valuation, but the value, for those assets supporting long-term liabilities, is changed back to book value through the AOCI adjustment in GAAP Plus. The stress impact is from changes in the reinvestment cash flows, as the coupon and principal payments are reinvested at the stressed rates. The liabilities are then valued using a blended rate as the discount rate. The blended rate is a rate between the portfolio earned rate and the market based reinvestment rates.

6. Where assets are measured at fair value through profit and loss, the stress is consistent with the standard method for MAV. Assets measured at cost (eg loans, and bonds classified as held to maturity) are not impacted by the market value-based stress scenario.

7. An "AOCI adjustment," as included in GAAP Plus capital resources, was reflected under this method, ie, fixed income investments backing long-term insurance liabilities and that have a relatively low liquidity risk would be measured at amortised cost and would not be impacted by stress curves.

Liabilities

8. For insurance liabilities where a market consistent discount curve was applied directly in the valuation under GAAP, such as for guarantees and options, the interest rate stress would be the same as under MAV.

9. For all other insurance liabilities that are discounted using a portfolio earned rate/curve, long-term insurance liabilities were to be discounted using a blended rate of the portfolio earned rate on existing investments and the stressed IAIS yield curves for reinvestment at each tenor and currency.

Glossary

Terms	Acronym	Description/Reference
2014 ICS Consultation Document	2014 ICS CD	http://www.iaisweb.org/page/supervisory-material/insurance-capital-standard
2015 Field Testing		See "2015 Quantitative Field Testing package" at http://www.iaisweb.org/page/supervisory-material/insurance-capital-standard
2015 Technical Specifications		See "Public 2015 Field Testing Technical Specifications" also known as the "Instructions for the April 2015 Quantitative Data Collection Exercise," at http://www.iaisweb.org/page/supervisory-material/insurance-capital-standard
2016 Field Testing		See "2016 Quantitative Field Testing package" at http://www.iaisweb.org/page/supervisory-material/insurance-capital-standard
2016 Technical Specifications		See "Public 2016 Field Testing Technical Specifications" also known as the "Instructions for the May 2016 Quantitative Data Collection Exercise," at http://www.iaisweb.org/page/supervisory-material/insurance-capital-standard
2016 ICS Consultation Document	2016 ICS CD	http://www.iaisweb.org/page/supervisory-material/insurance-capital-standard
2017 Field Testing		See "2017 Quantitative Field Testing package" at http://www.iaisweb.org/page/supervisory-material/insurance-capital-standard
2017 Technical Specifications		See "Public 2017 Field Testing Technical Specifications" also known as the "Instructions for the May 2017 Quantitative Data Collection Exercise," at http://www.iaisweb.org/page/supervisory-material/insurance-capital-standard
Accumulated Other Comprehensive Income	AOCI	*See section 4.2.5 on "2016 Field Testing"*
Available for Sale	AFS	
Basic Capital Requirements	BCR	See "IAIS Basic Capital Requirements for G-SIIs" and other related documents at http://www.iaisweb.org/page/supervisory-material/financial-stability-and-macroprudential-policy-and-surveillance

Terms	Acronym	Description/Reference
Basel Committee on Banking Supervision	BCBS	https://www.bis.org/bcbs/
Common Framework for the Supervision of Internationally Active Insurance Groups	ComFrame	http://www.iaisweb.org/page/supervisory-material/common-framework
Consistent and Comparable MOCE		*See section 4.3 on "Margin Over Current Estimate (MOCE)"*
Cost of Capital MOCE	C-MOCE	*See section 4.3.1.1 on "Background - Cost of Capital MOCE (C-MOCE)"*
Credit Risk Adjustment	CRA	*See section 4.1.4.3 on "IAIS' response to stakeholder comments and Field Testing results"*
Deferred Tax Assets	DTAs	*See section 5.3.3 on "Treatment of items deducted from Tier 1 (DTAs, computer software intangibles, net defined benefit pension plan surplus asset)"*
Deferred Tax Liabilities	DTLs	*See section 7.2.1 on "Valuation"*
Enterprise Risk Management	ERM	The process and activities of identifying, assessing, measuring, monitoring, controlling and mitigating risks in respect of the insurer's enterprise as a whole http://www.iaisweb.org/page/supervisory-material/glossary
European Economic Area	EEA	http://www.efta.int/eea
Financial Stability Board	FSB	http://www.fsb.org/
GAAP with Adjustments	GAAP Plus	*See section 4.2 on "GAAP with adjustments"*
Generally Accepted Accounting Principles	GAAP	https://en.wikipedia.org/wiki/Generally_accepted_accounting_principles http://www.accountingfoundation.org/gaap
Global Financial Crisis	GFC	https://en.wikipedia.org/wiki/Financial_crisis_of_2007-08
Global Systemically Important Financial Institutions	G-SIFI	http://www.fsb.org/2011/11/r_111104bb/

Terms	Acronym	Description/Reference
Global Systemically Important Insurers	G-SII	http://www.iaisweb.org/page/supervisory-material/financial-stability-and-macroprudential-policy-and-surveillance http://www.fsb.org/2014/11/2014-update-of-list-of-global-systemically-important-insurers-g-siis/ http://www.fsb.org/2015/11/2015-update-of-list-of-global-systemically-important-insurers-g-siis/
Higher Loss Absorbency	HLA	See "IAIS Higher Loss Absorbency Requirement for G-SIIs" and other related documents at http://www.iaisweb.org/page/supervisory-material/financial-stability-and-macroprudential-policy-and-surveillance
Insurance Capital Standard	ICS	http://www.iaisweb.org/page/supervisory-material/insurance-capital-standard
Insurance Core Principles	ICP	http://www.iaisweb.org/page/supervisory-material/insurance-core-principles
International Association of Insurance Supervisors	IAIS	http://www.iaisweb.org/home
International Financial Reporting Standards	IFRS	http://www.ifrs.org/About-us/IASB/Pages/Home.aspx
International Monetary Fund	IMF	http://www.imf.org/external/index.htm
Internationally Active Insurance Group	IAIG	See the Revised ComFrame draft 2014 at http://www.iaisweb.org/page/supervisory-material/common-framework
Lock-in Clause		A condition in the terms of a financial instrument which prescribes the circumstances under which distributions of capital or redemption of the instrument are not permitted in order to protect the solvency position of the issuing firm *See section 5.3.8 on "Prior supervisory approval for redemption of financial instruments"*
Long Term Forward Rate	LTFR	*See section 4.1.4 on "Discounting"*
Management Actions		*See section 6.5 on "Management actions"*
Margin Over Current Estimate	MOCE	A margin that exceeds the Current Estimate in valuation of technical provisions to cover the inherent uncertainty of those obligations. http://www.iaisweb.org/page/supervisory-material/glossary See also ICP 14.7

Terms	Acronym	Description/Reference
Market-Adjusted Valuation	MAV	*See section 4.1 on "Market-adjusted valuation (MAV) approach"*
National Association of Insurance Commissioners	NAIC	http://www.naic.org/
Net Asset Value	NAV	The value of assets minus the value of liabilities.
Organisation for Economic Co-operation and Development	OECD	http://www.oecd.org/
Other Comprehensive Income	OCI	*See section 6.12.1 on "Interest Rate risk"*
Own Assets with Guardrails	OAG	*See section 4.1.3.5 on "Options for adjustments to base yield curves included in ICS Version 1.0 for extended field testing"*
Own Risk and Solvency Assessment	ORSA	ICP 16 Enterprise Risk Management for Solvency Purposes
Prescribed Capital Requirement	PCR	A solvency control level above which the supervisor does not intervene on capital adequacy grounds. See ICP 17.4
Principal Component Analysis	PCA	https://en.wikipedia.org/wiki/Principal_component_analysis *See section 6.12.1 on "Interest Rate risk"*
Prudence MOCE	P-MOCE	See section 4.3.2 on "Background – The Prudence MOCE (P-MOCE)"
Reference date		The balance sheet date on which the ICS is calculated
Simplified Cox-Ingersoll-Ross Model		https://en.wikipedia.org/wiki/Cox-Ingersoll-Ross-model *See section 6.12.1 on "Interest Rate risk"*
Smith-Wilson Technique		http://www.finanstilsynet.no/Global/Forsikring%20og%20pensjon/Skadeforsikring/Tilsyn%20og%20overv%C3%A5king/Rapportering/A_Technical_Note_on_the_Smith-Wilson_Method_100701.pdf *See section 6.12.1 on "Interest Rate risk"*

Terms	Acronym	Description/Reference
Systemic Risk from Insurance Product Features	SRIPF	http://www.iaisweb.org/page/supervisory-material/financial-stability-and-macroprudential-policy-and-surveillance
Tail Value at Risk	Tail-VaR	Value at risk (VaR) plus the average excess over the VaR if such excess occurs over a specified amount of time. Sometimes also called "Conditional value at risk", it asks the question "If things do get bad, how much can we expect to lose?" http://www.iaisweb.org/page/supervisory-material/glossary
Value at Risk	VaR	An estimate of the worst expected loss over a certain period of time at a given confidence level http://www.iaisweb.org/page/supervisory-material/glossary
Field Testing Volunteer Insurance Groups	Volunteer Groups	*See section 1 on "Introduction"*
Weighted Average of Multiple Representative Portfolios	WAMP	*See section 4.1.3.5 on "Options for adjustments to base yield curves included in ICS Version 1.0 for extended field testing"*