CIA Submission to the International Association of Insurance Supervisors through their online submission tool (February 11, 2015).

2 INSURANCE CAPITAL STANDARD

Question 1. Are these principles appropriate as the foundation for a global consolidated insurance capital standard? Are any enhancements or modifications needed to the ICS Principles?

We generally agree with the principles. Principle 6 could elaborate on the importance of risk mitigation programmes by insurers (not just provide credit for positions that happen to offset each other on a given calculation date, but provide credit/incentive for maintaining ongoing risk mitigation activities, e.g., dynamic strategies).

Question 2. What does comparability mean for the ICS from your perspective?

Principle 1 speaks of comparability of risk-based measures while Principle 5 speaks of comparability of outcomes. In our opinion, the first implies that two insurers that are identical except for the fact that they are based in different jurisdictions should have similar capital requirements. And the second implies that similarly low capital ratios (i.e., below similarly specified thresholds) should prompt similar supervisory responses and/or additional requirements/restrictions imposed on the insurer.

4 SCOPE OF GROUP

Question 3. Should the IAIS consider integrating the measurement of some or all risks across different sectors?

We read this question to have two possible parts, which are whether the measurement of some or all risks should (i) be made more comparable across sectors where requirements would otherwise differ significantly for similar risks, and (ii) be calculated in aggregate, i.e., allowing offsets (e.g., for natural hedges) across sectors.

On the first part, of course it would be ideal if the same risk attracted the same capital requirement regardless of the sector in which the risk is found. For practical reasons, we are comfortable with relying on other sectoral requirements for non-insurance activities, provided there is reasonable comparability globally in capital requirements within such non-insurance sectors (e.g., such sector also has a global standard). Should the non-insurance capital requirements vary significantly globally within a sector, we would then encourage the IAIS to consider developing a measure to apply globally and ensure that such measure is also similar to the measure for the same risk applied to the insurance sector.

On the second part, if the risk measure is sufficiently comparable, we would encourage calculating a requirement for a given risk across sectors, allowing for natural hedge offsets to reduce total requirements for a given risk. We believe such cross-sector offsets could be reasonable for broad market risks, e.g., exposures to interest rate risks, equity markets, currency markets.

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5 VALUATION

Question 4. Should the IAIS attempt to develop a consistent and comparable MOCE? Why or why not?

If the MOCE is to be a margin to recognize transfer value (as per para 49b), and is not to be treated as capital resources (as per para 47), then we can see value in having a MOCE and that the IAIS should develop a consistent and comparable MOCE, driven by market valuation principles. In that case, we would encourage working toward developing a MOCE that is also consistent with the Risk Adjustment proposed under the proposed IFRS 4 Phase 2.

If not to recognize transfer value or if still treated as capital resources, we see little value in developing a MOCE, and would then instead encourage the use of a zero MOCE for purposes of determining capital requirements. This would have the benefit of simplifying the calculation (fewer items to calculate) and therefore promoting greater comparability across IAIGs.

Question 5. If the IAIS were to develop a consistent and comparable MOCE should it fulfil one of the possible purposes listed in paragraph 49 above? If yes, please explain. If no, what should be the purpose of the MOCE? Please explain.

If a MOCE is to be developed, we would favour the approach in para 49b, i.e., to recognize transfer value, on its theoretical/conceptual merit. Practically, if the capital requirements can be reasonably projected over the full lifetime of the insurance liability, then the MOCE could also be calculated without much difficulty, and with few additional assumptions/parameters. There would be value in specifying these additional assumptions/parameters, to enhance comparability. We do caution that without sufficient specificity, requiring that a MOCE be calculated and included in the value of the liability could hinder comparability.

Question 6. If the IAIS were to develop a consistent and comparable MOCE, what principles should underlie its development?

Relative simplicity and consistency in application, requiring the least possible subjective input.

Question 7. Depending on your answers to the above three questions, what calculation methodology should be applied for the MOCE?

See response to Q5.

Question 8. Should the IAIS develop an alternative definition of contract boundaries? If so, please provide such a definition with rationale for that alternative definition.

Similarly as suggested in Q4, we would encourage the IAIS to maintain consistency with IASB definitions in this regard.

Question 9. If such alternative definition is adopted what would be the impact on the definitions of ICS capital requirement and qualifying capital resources?

Question 10. Are there any other aspects of the market-adjusted approach that would benefit from further enhancement or greater specificity or other changes in any way?

We agree that greater specificity would be beneficial for the items listed in para 55, in particular the treatment of discretionary benefits and deferred taxes.

Question 11. What refinements, if any, should be made to the market-adjusted approach as currently formulated in regards to the treatment of long-term business?

Our main concern lies in the discount rates used in determining the market-adjusted approach. See our comments in Q12.

Question 12. What enhancements could be made to the IAIS prescribed yield curve used to discount insurance liabilities? In particular, what enhancement could be made to further consider procyclicality with reference to ICS Principle 7?

Subject to the comments that follow, we encourage the IAIS to strive to maintain consistency with the principles underlying the development of discount rates to be employed for financial reporting purposes under IFRS 4 Phase 2. We acknowledge that the IFRS 4 Phase 2 discount rates do not currently have great specificity, hindering comparability.

Prescribed discount curves have a direct impact on the valuation of insurance liabilities, and hence on the value of Capital Resources available to meet capital requirements. Our concern is that the discount rates used for later years will, for several insurance entities, have a very material effect both on the available Capital Resources and on the capital requirements (i.e., both the numerator and the denominator, and in opposite directions, exacerbating the impact on the capital ratio).

We would strongly encourage that the discount rates only be linked to the current market data for durations where the market is deep and liquid and in sufficient volume to be credible. Discount rates used for the period beyond the last liquid point of the observable spot curve should be graded (over a reasonably short period of time) to an ultimate discount rate at a duration that is prescribed. The ultimate discount rate should be developed giving more weight to long-term estimates than to short-term fluctuations. The ultimate discount rate would only be promulgated from time to time based on an updated long-term estimate. This would replace the proposal of a simple flat extension beyond the last observable rate.

As an example, assume that the current 20-year spot rate is the last liquid point observable with a rate of 3.5%, and that the long-term estimate is a rate of 5%. We would then suggest that the discount rates for the period beyond the last liquid duration of the observable term structure be prescribed to grade from the longest observable rate (3.5% at year 20) to a rate of 5% by year 30 or 40, for example, and then be level for all subsequent years. This seems to us consistent with the principle of calculating an unbiased current estimate of the liability, and simultaneously mitigates the undue volatility in the capital ratios. The Canadian Institute of Actuaries would be happy to support the development of long-term discount rate assumptions consistent with this approach.

Regarding spreads above risk-free rates, the current IAIS proposed approach is different than the approach proposed under IFRS 4 Phase 2. The IAIS approach may be preferable due to its increased specificity, enhancing comparability.

Question 13. Is the methodology for determining the IAIS yield curve under the market-adjusted approach appropriate for and consistent with the business models of insurers that write long-term business? If not, how should it be adjusted? Please explain.

We believe the current proposed approach is not consistent with insurer business models. See comments in Q12 above.

Question 14. Would your IAIG/jurisdiction be likely to consider the use of a GAAP with adjustments valuation approach, and why?

While we expect we could readily implement such an approach in Canada, in general we're opposed to such an approach as it hinders comparability.

Question 15. For the purpose of determining ICS qualifying capital resources, what adjustments, if any, should be made and to which local jurisdictional GAAP financial statements?

Question 16. For the purpose of determining the ICS capital requirement, what adjustments, if any should be made to which local jurisdictional GAAP financial statements?

Question 17. Please describe how the above adjustments should or could be calculated, using GAAP or readily available information, so that the results could be most comparable to the market-adjusted valuation approach, after application of the ICS. Please also comment on the likely or potential variations of the results of the adjustments using the GAAP with adjustments approach compared to the market-adjusted valuation approach.

6 CAPITAL RESOURCES

Question 18. Are there other key principles not included above that should be considered when assessing the quality of financial instruments for regulatory capital purposes? If so, please suggest other principles and the rationale for including them.

We agree with these principles, which are in common with existing rules for capital resources both for insurance companies and other financial institutions.

Question 19. Should qualifying capital resources be classified in more than one or more than two tiers of capital? How many? And, if different from above, what key criteria should be used to determine tiering?

There should be at least two tiers for qualifying capital resources. One tier should contain capital resources which are permanently in place, especially in times of adverse financial turmoil. The top tier should be exclusively available and subordinate to meeting policyholder guarantees.

A second tier can include non-permanent financial instruments.

Question 20. If qualifying capital resources are classified in two or more categories of capital, should the ICS capital adequacy be expressed using only one, two or more ratios? Why?

Yes, if there are two broadly defined tiers of qualifying capital, disclosing both ratios would enhance financial transparency, serve stakeholders, and address ICS Principles 6 (promote sound risk management) and 9 (transparency). This is consistent with other model financial regulations, in particular in the banking sector.

We could see this idea being taken too far. For example, if there are multiple granular tiers of capital, it may be more confusing than useful to disclose ratios for each of the granular tiers.

Question 21. Should any amount of non-paid-up items be included in qualifying capital resources? Why? If yes, how should these be classified and should there be limits? Should there be an additional limit on non-paid-up elements that give rise to paid-up Tier 2 elements as opposed to those that give rise to paid-up Tier 1 elements? Please give reasons for your answer.

Question 22. If non-paid-up capital items were permitted, should the capital composition limit for non-paid-up Tier 2 items be based on a percentage of Tier 1 capital resources, on ICS capital requirement or determined on another basis?

Question 23. Should the residual amount of GAAP insurance liabilities in excess of current estimate plus consistent MOCE (as referred to in paragraphs 53 and 89) continue to be considered as part of Tier 1 capital resources? If so, should it be all in Tier 1 for which there is no limit, or at least partially recognized in Tier 1 for which there is a limit? If it is not all recognized in Tier 1, should it be recognized in Tier 2, and if so, which part of Tier 2? Should any part of the residual amount of GAAP insurance liabilities not be recognized at all in qualifying capital resources, and therefore effectively be deducted from qualifying capital resources?

Yes, residual amounts of GAAP insurance liabilities in excess of current estimate plus consistent MOCE should ordinarily be counted toward available capital.

The above view would be further strengthened:

(i) If the MOCE is determined using a cost of capital approach, which would increase the likelihood that the MOCE component of the insurance liability would be sufficient to attract new capital when needed; and

(ii) Provided that the GAAP insurance liabilities do not exceed the total requirement (sum of the current estimate, consistent MOCE and total ICS capital requirement). If the GAAP liabilities do exceed that total requirement, it may be appropriate to exclude some or all of that excess from Tier 1 capital and perhaps even from Tier 2 capital. The amount to be excluded could, for example, be determined by treating the excess over the total requirement as an additional capital requirement and determining a cost of capital on that additional capital.

Question 24. Should reserves that are set up under regulatory requirements to cover specific types of risks, and that can be unappropriated under supervisory approval, be considered unrestricted and therefore be included in Tier 1 capital?

If the said reserves represent a current estimate (plus MOCE?) for some risks to the insurer that would otherwise not be provided for, then said reserves should not be included in Tier 1 or other capital. If said reserves are not in respect of such risks, then you have the same considerations as raised under question 23 above.

Question 25. Should Tier 1 instruments for which there is a limit be required to include a principal loss absorbency mechanism that absorbs losses on a going-concern basis by means of the principal amount in addition to actions with respect to distributions (e.g. coupon cancellation)? If so, how would such a mechanism operate in practice and at what point should such a mechanism be triggered?

Question 26. Should any value with respect to DTA, computer software intangibles and defined benefit pension plan assets be included in Tier 2 capital resources? Why?

Such items should only be included in Tier 2 capital to the extent of a monetary payment they could fetch from a third party.

Question 27. Is it appropriate to include in Tier 2 add-backs from items that are deducted from Tier 1 capital resources (i.e. DTAs, computer software intangibles, defined benefit pension plan assets)? What methodology could the IAIS use to determine an objective realisable value in a stress scenario for these items or should the IAIS adopt a more arbitrary approach such as

permitting a percentage of the amount deducted from Tier 1 capital resources to be included in Tier 2 capital resources? If Tier 2 add-backs are included, how would the ICS capital requirement work in relation to the amounts added back?

See answer 26.

Question 28. What objective methodology could the IAIS use to determine the amount of a non-controlling interest that is not available to the group for the protection of policyholders of the IAIG?

If an investment in a non-controlling interest is not available to meet policyholder guaranteed obligations, it should not be included in capital.

Question 29. Should other items be deducted or should some of the above items not be deducted? Please provide details and explain your answer.

Consider adding an adjustment to qualifying capital resources to take into account the loss of value of own-use properties upon winding-up. Under these circumstances, it is expected that the reduced occupancy rate of these properties would have a negative impact on their value.

Question 30. Instead of treating the above elements as deductions to Tier 1 capital resources, should some or all of these elements be included in the ICS capital requirement? Please provide details and explain your answer.

Such elements should be deductions from Tier 1 capital resources. This treatment leads to a realistic and understandable amount of capital that is available to meet policyholder obligations.

Including such elements in capital requirements would inflate the effect if the target capital is above a ratio of 100%.

Question 31. Instead of treating the above elements as deductions to Tier 2 qualifying capital resources, should some or all of these elements be included in the ICS capital requirement? Please provide details and explain your answer.

See question 30.

Question 32. Should the ICS contain capital composition limits? Why?

Question 33. If it were to contain limits, what would be an appropriate limit for Tier 1 capital instruments that satisfy the criteria set out in Section 6.3.3 (i.e. Tier 1 capital resources for which there is a limit)? How should this be expressed? If it were expressed as a percentage of Tier 1 capital resources, net of regulatory adjustments and deductions, what would an appropriate limit be?

Question 34. If the ICS were to include a capital composition limit on Tier 2 capital resources, how should it be determined? If it were set as a percentage of the ICS capital requirement, what should the limit be? Please include reasons for your answer.

Question 35. If GAAP with adjustments were used as an alternative valuation approach for the ICS, are the definitions of capital resources detailed above appropriate? Please describe key differences and any complications that might emerge under a GAAP with adjustments approach to valuation.

Question 36. Should the IAIS consider transitional arrangements for financial instruments that do not meet the ICS qualifying criteria? If so, what transitional arrangements would be appropriate?

7 ICS CAPITAL REQUIREMENT

Question 37. Should the ICS capital requirement be developed so that it can be implemented as a PCR? If not, why not?

Yes, we agree that the ICS should be developed with a view that it be implemented as a PCR, which would act as a supervisory target capital level.

Question 38. Should the IAIS promulgate a less risk-sensitive backstop capital measure? Should this backstop measure be used for monitoring the risk-sensitive ICS capital model, or should the backstop serve the role as a capital floor to the ICS?

Yes, we believe there is value in having a simpler capital requirement measure that could act as an early warning system, indicating direction and magnitude of changes in insurer's capital adequacy position. The measure could potentially also serve as a validation tool, to help identify situations where an insurer's ICS model may have weaknesses, calling for further investigation. However, given that such a measure would be less risk-sensitive and less indicative of an insurer's specific situation, we believe it would be inappropriate for such measure to act as a hard and fast floor for ICS capital requirements.

Question 39. What other risks should be included in the ICS capital requirement? Should any of the risks identified be excluded from the ICS capital requirement? Please provide reasons.

Risks identified in para 110 table 2 are reasonable. Potential other key risks that could be considered:

- Policyholder behaviour risks (other than lapse), e.g., extent and timing of utilization of optional policyholder benefits and guarantees; and
- Other asset risks (other than fixed income, equity, and real estate).

Question 40. Are these specified risks and their definitions appropriate for the ICS capital requirement? If not, why not?

Yes. However, while we can envision how most of the key risks can be quantified directly, catastrophe risk may perhaps be better assessed by considering the impacts of catastrophes on other key risks (e.g., on mortality or on equity markets).

Question 41. Is it appropriate to not quantify risks other than those identified in Table 2 in the ICS capital requirement? If not appropriate, what risks in addition to those in Table 2 should be quantified in the ICS capital requirement, and how could they be quantified?

We agree to exclude group and liquidity risks.

Question 42. Which risk measure – VaR, Tail-VaR or another – is most appropriate for ICS capital requirement purposes? Why?

There is ample literature to support the idea that Tail-VaR is in theory superior to VaR as a risk measure. So, from the perspective of which is "better", we'd have to say Tail-VaR in more appropriate. However, Tail-VaR is practically more challenging to calculate than VaR. In particular for some catastrophe risks, it is difficult to obtain consensus estimation of the extreme tail events (e.g., the last 0.1% of the distribution), rendering the calculation of the Tail-VaR problematic.

Question 43. What are some of the practical solutions which may be used to address known issues with respect to modelling tails and diversification benefits, e.g. in the internal risk measures used by IAIGs, particularly in ORSA?

Question 44. Is the prescription of a one-year time horizon appropriate? If not, what are the alternatives and why?

Yes.

Question 45. Should the ICS capital requirement include an assumption that the IAIG will carry on existing business for the one-year time period as a going concern? Should the ICS capital requirement only apply to risks at the existing measurement date? Why?

In principle, the ICS capital requirement should cover all material risks that the IAIG expects to be exposed to over the one-year time horizon, and allowance should be made for risks that are not yet on the books at the measurement date (new and renewal business). This is particularly important for short-term business with short claim payment periods (such as property excess of loss or travel accident) where the premium and claim liabilities at any balance sheet date are typically small. However, care should be taken to avoid too much work or detail in determining capital requirements for longer-tail business (for example, whole life), where the additional risk from new business is not material.

We believe that the impact of future new business in these circumstances is better considered elsewhere, e.g., in the company's ORSA and in setting its target capital levels. When the new business risk is small relative to the balance sheet in-force, we believe ICS capital requirements should only be calculated for business in-force as of the measurement date, without regard for future new business, but with consideration given to the expected ongoing management of that in-force business (e.g., risk mitigation programs).

Question 46. In what ways are the proposed initial field testing target criteria appropriate or inappropriate for the development of the ICS?

The proposed targets VaR 99.5% and TVaR 90% do not appear on the surface to represent a similar level of confidence, at least not for most risks.

While a key principle of the ICS is to achieve comparability across jurisdictions, the level at which required capital is set is ultimately a policy decision that reflects the trade-off between wanting a strong insurance sector capable of withstanding all but the worst of catastrophes, fostering a competitive market which offers affordable insurance products and services, and ensuring a level playing field with other (non-insurance) financial service providers.

Question 47. Describe the costs and benefits of conducting field testing on either one or both target criteria.

Question 48. In order to field test a Tail-VaR measure, how should the IAIS specify the Tail-VaR measure for a given confidence level?

Question 49. Do the proposed principles adequately address the concept of risk mitigation? If not, which principles should be changed and why? What additional principles should the IAIS consider and why? What unintended consequences do the proposed principles create?

For principle b) in paragraph 134, since in some situations a direct third party may not exist, we suggest changing the wording to: "b) The risk mitigation technique must be legally effective and

enforceable in all relevant jurisdictions and there must be an effective transfer of risk to a third party or to a market/exchange via the purchase of marketable vehicles."

Principle c) in paragraph 134 states that only assets existing at the reference date should be considered. We suggest changing the principle c) to: "The calculation should be made on the basis of a board-approved hedging policy and the ongoing net risk position consistent with the approved policy."

Question 50. 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. If that is the case:

a) Which criteria should be considered in order for the renewal of risk mitigation arrangements to be recognized in the ICS calculation?

b) In particular, which criteria should be met for a full recognition of the renewal of risk mitigation, and which criteria should lead to partial recognition of the renewal of risk mitigation?

Projection of substantially similar future mitigation arrangements, subject to expected cost changes, should be recognized. Different future mitigation arrangements should be recognized to the extent that they are substantially complete.

Question 51. Should credit for participating/profit sharing and adjustable products be calculated in a last step adjustment as an overall adjustment to the capital requirement, or along the intermediate calculation steps in the determination of individual risk charges? Why?

It is preferred to determine the credit for participating/adjustable in a last step overall adjustment rather than by risk factor. The overarching rationale is that there are a number of interactions in adjustments that would be made as different risk factors kick in and the sum of the individual pieces might be different than the whole. This goes along with allowing credit for diversification. We believe that the appropriate amount is the amount by which aggregate dividends would be reduced (or other adjustments made) in a scenario where the risk factors are stressed, but only to the after-diversification level. This might be difficult to determine in practice, but the concept is clear. Whichever approach is used, the credit should always be lower than the capital requirement of the products to which the credit applies and also be lower than the present value of the discretionary benefits.

Question 52. How can an overall adjustment for discretionary credits be calibrated in a manner that takes account of the reaction of policyholders to extreme scenarios into account? How can it be made comparable to calculations based on scenario projections?

Question 53. What are some other criteria or considerations in determining qualifying participating/profit sharing and adjustable products?

One consideration would be the management's willingness to make adjustments to the dividends/adjustable features in the stress scenario. The estimates should be based on the adjustments that would be made in real life, not necessarily the maximum adjustments that are available. In Canada, we use the concept of policyholders' reasonable expectations (PRE) to describe this.

Question 54. What are some of the considerations for determining the aggregation of the credit for participating/profit sharing and adjustable products? What are some of the limitations with respect to cross-subsidisation of different products, the application of the credit generally or its ability to be used across the IAIG?

The credit determination should be consistent with what the management would do with respect to cross-subsidisation and the level of aggregation in the determination of participating dividends/adjustable features.

Question 55. As a starting point for determining the value of the credit, does the approach described above represent any challenges? What other options or methodologies should be considered and why?

Question 56. How should dependencies and inter-relationships between risks during stressful situations be addressed by the ICS capital requirement?

Question 57. Are there any aspects of diversification of an IAIG's activities that are not identified in this section and that the IAIS needs to consider?

8 Approaches

Question 58. What major approaches for measuring risk are not included in Sections 8.2 to 8.5? In what circumstances would these alternative approaches be appropriate?

9 Example of Standard method

Question 59. Should a look-through approach be applied on the basis of Option 1 or Option 2?

Option 1 is preferred as it is more immediate, and it has simplicity and better comparability

Question 60. Is the proposed grouping above appropriate? How can the grouping be refined?

The groupings discussed in paragraph 190 are appropriate. They reflect risks appropriately (more homogeneous). The grouping is expected to provide reasonable results.

The proposal does not appear to want to give credit for hedging (or for risk mitigation in general).

Question 61. Is it appropriate and practical to use a stress approach to calculate the mortality and longevity risks for some products/portfolios within the ICS? If yes, which products/portfolios? If not, why not (see also Question 62)?

Yes, for all products with duration longer than one year.

Question 62. Is it appropriate and practical to use a factor approach to calculate the mortality and longevity risks for some products/portfolios within the ICS? If yes, which products/portfolios? If not, why not?

Yes, for products with duration of one year or less.

Question 63. Where risk mitigation tools are used, which ones are more practically measured separately from the liabilities and which ones are more practically measured in combination with the liabilities?

- Measurements separate from the liabilities would be items such as credit for participating insurance and adjustments for Cost Of Insurance rates where limits apply.
- In combination with the liabilities would be items such as reinsurance not subject to limit.
- More generally:

  o Factor-based items should be net (in combination); and

  o Stress-based items should be separate.

Question 64. How should participating policies be allowed for in the mortality and longevity risk charge calculations?

The calculation should be done separately for participating policies, allowing consideration of participation features in the risk assessment to affect only participating business.

We note that mortality and longevity are not the only risks that may be at least partly passed through on participating business and that other risk charges would also best be calculated separately for participating and non-participating businesses.

Question 65. Which sub-risk components (see paragraph 194) should be included within the mortality and longevity risks calculation?

We agree that subcomponents (a) and (b) should be included. Subcomponent (c) should be excluded; it has a feel of spurious accuracy for insurers with large portfolios such as IAIGs have.

Question 66. For each risk component that should be included, which approach may be most appropriate for its measure and why?

We agree with the approach discussed in paragraph 198. It is simple and would still produce risk sensitive results.

Question 67. Should the IAIS explore other groupings or should it not further explore one or both of the geographic or stress bucket groupings in favour of determining a specific level of stress for each jurisdiction as these implement the ICS at the then specified target criterion?

We believe the groupings in paragraph 204 are appropriate.

Question 68. Are there jurisdictions where an IAIG does business for which it may not be clear in which geographic grouping it should be included? If yes, which jurisdictions and in which geographic group should they be included?

Question 69. How could stress buckets/groupings be used and how should these is defined?

Question 70. If GAAP with adjustments were used as an alternative valuation approach for the ICS, detail those adjustments, if any would be required to produce comparable mortality/longevity risk charge to those produced using the Market-Adjusted Valuation approach under the mortality/longevity risk charge described in this section.

Question 71. With respect to the list examples of major types of morbidity/disability in paragraph 211, the expectation is that the "Other" category should be small. Are there material omissions in the preceding list of examples?

No.

Question 72. Are there any material or benefit payment approaches (or implications of them) that that should be included but are not mentioned above?

No.

Question 73. Regarding the over/under payment risk, is this likely to be significant? More generally, are there good reasons for excluding consideration of the over/under payment risk in the design of risk charges for morbidity/disability risk?

The over-/under-payment risk is not in aggregate expected to be significant. There could be some products where the total benefit payment is more variable. Examples include morbidity claims resulting from automobile accidents or other significant medical claims.

Question 74. Should a distinction be made between "similar to life" and "not similar to life" products? Or should a stress scenario as designed above be applied consistently across all the portfolio of policies of IAIGs?

Yes, make a distinction between similar and not similar to life.

Question 75. With regard to the stress scenario, is the example provided above fit for purpose? If not, why? If "no," what should be refined, e.g. the differentiation of the stress factors by type of biometric risk; by geographical area; by point in time in the future (please indicate in order of priority)?

Question 76. Is the combination structure presented above (simultaneous occurrence of stresses) appropriate? If not, why and what is the alternative?

Question 77. If GAAP with adjustments were used as an alternative valuation approach for the ICS, detail those adjustments, if any that would be required to produce comparable morbidity/disability risk charge to those produced using the market-adjusted valuation approach under the morbidity/disability risk charge described in this section.

Question 78. Does the proposed scope of the capture the key risks relating to lapses? If not, please provide comments on any other key risks that should be considered.

The emphasis of this section is on lapse risk, despite the section title including a reference to "contractual option". Some insurance products include potentially valuable options that require the policyholder action for the option's value to be realized (e.g., use of fixed rate policy loans, selection of withdrawal start dates on variable annuities with guaranteed lifetime withdrawal benefits, and increasing deposits when guaranteed credited rates are above new money market rates). It is not clear how policyholder behaviour risk associated with these types of embedded options is meant to be captured in the ICS.

Question 79. Is the proposed grouping by geographical region appropriate for lapse risk? If not, what should be the appropriate geographical grouping?

The proposed high-level geographical groupings could be problematic for IAIGs writing across different geographies (inter- or intra-national) where the variation of products and sales methods from one jurisdiction to another are so significant even within regions that lapses and their effect may vary significantly. Therefore, more granularity would be suggested.

Question 80. Should the mass lapse risk charge depend on the type of products? If yes, how should the mass lapse risk charge be considered by product?

This should be applied to those products where there is a probability of mass withdrawal.

This would include group-type insurance and annuity products, where there is the possibility of large withdrawals such as group transfers or withdrawals due to credit ratings.

Question 81. Is the above methodology appropriate? If not, please provide comments on how the methodology can be refined.

We agree that the methodology is appropriate.

Question 82. Is lapse risk also relevant for Non-life business, and if so, to what extent would the methodology described for measuring lapse risk for life business be appropriate for non-life business?

Lapse risk for non-life can be easily dealt with under premium risk instead.

Question 83. If GAAP with adjustments were used as an alternative valuation approach for the ICS, detail those adjustments, if any that would be required to produce comparable lapse risk charge to those produced using the market-adjusted valuation approach under the lapse risk charge described in this section.

Question 84. Is the above methodology appropriate? If not, please provide comments on how the methodology can be refined.

We agree that both an upward shock and increased inflation are appropriate, with the latter being the more important of the two. On the basis that, absent inflation, management has some degree of influence and control over ultimate expense levels, we agree it would be appropriate that an upward shock be more pronounced in the short-term and be small (or perhaps even nil) in the long-term.

Question 85. If GAAP with adjustments were used as an alternative valuation approach for the ICS, detail those adjustments, if any that would be required to produce comparable expense risk charge to those produced using the market-adjusted valuation approach under the expense risk charge described in this section.

Question 86. Will there be any issues with separating non-life business in the way outlined above? Why or why not?

There may be issues with using life insurance approaches for certain blocks of apparently similar non-life business, primarily because the non-life insurer may not be able to apply the data-driven and assumption-heavy (seriatim) approaches often used in life insurance. For example, a significant portion of the liabilities arising from Ontario automobile insurance policies is first-party accident and disability coverage that is conceptually similar to life insurance accident and sickness and/or disability policies. That is, the coverage is a first-party, no-fault coverage broadly based on a defined benefit schedule—the key difference being coverage is only triggered by an automobile accident. However, many Ontario auto insurers do not have (or, if they do have the data in their claim files, do not store in their systems) complete information on claimants' age and sex, necessary for even a simple life insurance approach.

Question 87. Will there be any difficulties in separating premium and catastrophe risk? If yes, how else can these two risks be treated? If no, where should the threshold between premium risk and catastrophe events be set? Why is this appropriate?

Question 88. Is it appropriate to use a factor-based approach to calculate premium risk? If not, what other alternative approaches in Section 8 could be used? How would it/they work? If yes, which type of factors should be included in the ICS capital requirement, set factors or shocks to loss ratios? Is it necessary to address idiosyncratic risks?

Question 89. Which exposure amount – premium charged or unearned premium – would be most appropriate to use for most classes of business and why? Which classes of business should not use this as an exposure measure? If possible, provide alternatives including reasons for those alternatives.

Unearned premium is the appropriate exposure for future risks. It is appropriate for those risks that are short-tail business such as group insurance and non-renewable life, non-life and medical insurance.

Question 90. How should the risk charge for premium risk capture these additional risks? Why is this appropriate?

Via expected premium.

Question 91. What segmentation of business lines would be appropriate for premium risk? What specific issues with respect to reinsurance should be addressed?

At least long versus short tail versus mixed, with possibly more granularity along the lines of high-level annual statement lines of business.

Question 92. Is the proposed grouping by geographical region appropriate for premium risk? If not, what should be the appropriate geographical grouping?

The proposed high-level geographical groupings could be problematic for IAIGs writing across different geographies (inter- or intra-national) where policyholder rights and insurance laws can vary enough that claims costs could be impacted.

Question 93. If GAAP with adjustments were used as an alternative valuation approach for the ICS, detail those adjustments, if any that would be required to produce a comparable premium risk charge to those produced using the market-adjusted valuation approach under the premium risk charge described in this section.

Question 94. Will there be any issues with separating non-life business in the way outlined above? Why or why not?

Question 95. Is it appropriate to use a factor-based approach to calculate claim reserve/revision risk? If not, what other alternative approaches in Section 8 could be used? How would it/they work?

Due to the size nature of IAIGs, using a stochastic model might be preferable.

Question 96. Is it appropriate to apply the factor to current estimates? If not, what exposure would be more appropriate? Why?

Yes.

Question 97. What segmentation of business lines would be appropriate for claims reserve/revision risk? Should the segmentation be the same for premium risk? Why or why not?

Segmentation should differentiate at least long versus short tail, with possibly more granularity along the lines of high-level annual statement lines of business.

Question 98. Is the proposed grouping by geographical region appropriate for claim/revision risk? If not, what should be the appropriate geographical grouping?

The proposed high-level geographical groupings could be problematic for IAIGs writing across different geographies (inter- or intra-national) where policyholder rights and insurance laws can vary enough that claims costs could be impacted.

Question 99. If GAAP with adjustments were used as an alternative valuation approach for the ICS, detail those adjustments, if any that would be required to produce a comparable claim/revision

risk charge to those produced using the market-adjusted valuation approach under the claim/revision risk charge described in this section.

Question 100. Which of the two approaches described above would be most appropriate in the context of the ICS capital requirement?

a) Modelling the various sub-risks together.

Question 101. Is the approach above appropriate? If not, please explain what other approach should be adopted and why.

Yes.

Question 102. Which perils should be included in the ICS standard method? Is the list above appropriate? Should it include additional perils or exclude some of the listed perils? Please provide comments with reasons. Please provide comments about possible criteria for perils to be included in the list of perils.

Additional non-life perils to consider include wild fire and flood/water.

Question 103. How should the IAIS define material in this context? Should materiality be defined in terms of likely impact on the ICS, or in relation to a more objective measure such as premium or other exposure threshold?

Materiality should be defined by reference to an objective measure, such as premiums or claims.

Question 104. For the purpose of field testing, the IAIS is considering collecting data for various confidence levels from full empirical distributions, in order to consider the shape of the distribution and the most appropriate aggregation method. Is that likely to be a challenge for IAIGs? Please explain.

Question 105. Are the defined scenario method and the use of partial models appropriate for the purpose of the ICS standard method? If yes, please explain why. If not, please provide alternative methods and explain why they would be more appropriate.

Question 106. In case of a defined scenario by the IAIS:

a) **What elements should be part of the description of the scenario defined by the IAIS? Please provide an example.** Location, Magnitude, Timing.

b) **Which calculation method by the IAIG of the impact of a defined scenario should be allowed by the IAIS for the ICS standard method? Please explain why this is appropriate.**

Question 107. In the case of a bespoke defined scenario by the IAIG, should the scenario be approved by the IAIS before its application by the IAIG?

Question 108. Should the use of partial models be allowed for the calculation of catastrophe risk for the ICS standard method? Why or why not.

Question 109. In the case where the use of partial models is allowed by the IAIS:

a) **Should IAIGs be required to seek prior approval of the partial models?** Yes.

b) **What criteria should be applied by the IAIS (either as generic conditions, or as part of the prior approval) to allow the use of internal models?** Conformity with best generally accepted practices.

c) **What information about the partial model and its use by the IAIG should be provided to the supervisor with each ICS calculation?** Detailed model input parameters and detailed model output.

Question 110. If GAAP with adjustments were used as an alternative valuation approach for the ICS, detail those adjustments, if any that would be required to produce a comparable catastrophe risk charge to those produced using the market-adjusted valuation approach under the catastrophe risk charge described in this section.

Question 111. Are the approaches outlined above appropriate for the calculation of the interest rate risk charge? Should any other approaches be considered, and if so, what are they and why?

The calculation of interest rate risk should recognize investment strategies using non-fixed income assets; that is, allow the use of non-fixed income assets in addition to the use of fixed income assets. This is a real world projection of assets and liabilities.

The interest rate charge should reflect the long-duration characteristics of non-fixed income assets.

If the IAIG cannot perform the real-world asset/liability cash flow projection, then a simple conservative duration-based factor approach can be used (which would overstate the risk and incent the company to do the more-sophisticated risk assessment using cash flow projection).

Question 112. What should be the form of the prescribed interest rate shocks, and in particular how should the shocks relate to the existing term structure? Are there any other scenarios besides upwards and downwards shocks at all terms that should be included in the set of prescribed scenarios?

A common approach to modelling interest rate risk in a deterministic shock setting is to use Principal Component Analysis (PCA) to develop three interest rate shocks, one for each of the level, slope, and curvature of the interest rate term structure. This increases the likelihood of capturing exposures that might otherwise appear to offset each other in a simpler “parallel shift” shock.

Question 113. Under the second approach, should the IAIS consider different shock magnitudes for each duration bucket, or even a flat or inverted yield curve scenario?

Question 114. Should the IAIS consider an immediate shock or a shock over a period of time, or both?

Question 115. Should the IAIS consider inclusion of interest rate volatility shocks in addition to the term structure shocks?

We believe that for a standard approach the complexity added for shocking the interest rate volatility generally outweighs the benefits.

Question 116. If GAAP with adjustments were used as an alternative valuation approach for the ICS, detail those adjustments, if any, that would be required to produce a comparable interest rate risk charge to those produced using the market adjusted valuation approach under the interest rate risk charge described in this section. Please pay particular attention to interest rate-sensitive liabilities.

Question 117. Is it appropriate for the equity risk to include a stress on volatilities? For IAIGs, is the impact of a stress on volatilities likely to be material when compared to the impact of a stress on equity prices?

We believe that in most cases equity volatility risk will be more significant for IAIGs than interest rate volatility risk and therefore believe its inclusion in ICS warranted. Presumably, this component would only be required if the IAIG does indeed have material amounts of exposures whose fair values are sensitive to the equity volatility assumption.

Question 118. Would implementation of a volatility stress result in a significantly increased implementation complexity? In particular, would such a stress result in the necessity to set up IT tools not required otherwise, or a significantly increased time calculation when computing the effects of stress scenarios? Please provide any quantitative or qualitative detail if possible.

IAIGs with material amounts of exposures whose fair values are sensitive to the equity volatility assumption would ordinarily already have developed tools to value and analyze that risk exposure. However, since such tools typically involve stochastic valuation techniques, this test could lead to a significant increase in required computing resources (both time and dollars).

Question 119. Is segmentation based on 5 buckets appropriate? Should the number of buckets be increased, or reduced? Why?

We believe the number of equity buckets is adequate, but note that there is a high degree of correlation between different classes of non-fixed income securities in stress periods.

We suggest infrastructure should be included under real estate risk, not equity risk. Infrastructure investments are closer to real estate than equities in terms of how they are used in insurer's ALM strategies and in their market risk profile. For example, investments in hospitals, toll roads, shipping ports, and highways are long-term investments that are chosen to align with long-term insurance liabilities. Including these assets with equity risk suggests that there could be a more speculative investment component, implying more risk.

Similarly, limited partnerships are often focused on a specific investment, and should be bucketed based on that underlying investment, not by default as equity risk. For example, a limited partnership designed for investments in agriculture would have market risk closer to real estate than listed equities.

Question 120. Are the proposed buckets fit for purpose? If not, what could be an alternative?

Question 121. Is it appropriate to apply all stresses simultaneously across all equity classes or would it be more appropriate to use a correlation matrix?

We believe all stresses should be applied simultaneously due to the high degree of correlation in a stress environment.

Question 122. With regard to hybrid debt and preference shares, amongst the 3 proposed alternatives, which is more appropriate? Why? Is there any other alternative that should also be considered?

Question 123. Assuming that a volatility stress is included in the ICS framework, is it sensible to use the same relative stress across all types of equity?

Yes.

Question 124. Would the proposed design in this example lead to an adequate quantification of the equity risk? If not, why?

We believe that the test should involve a price shock upward or a price shock downward.

We believe information could be aggregated into one bucket because many non-fixed income assets behave similarly in a stressed environment.

Question 125. Does the proposed design in this example involve workable and proportionate calculations? If not, why?

Question 126. What improvements to that design would be needed, in order to improve either accuracy or feasibility?

Question 127. If GAAP with adjustments were used as an alternative valuation approach for the ICS, detail those adjustments, if any that would be required to produce a comparable equity risk charge to those produced using the market-adjusted valuation approach under the equity risk charge described in this section. Please pay particular attention to equity market-sensitive liabilities like variable annuities and index annuities.

Question 128. Is it appropriate to use a stress approach to calculate the real estate risk within the example standard method for the ICS capital requirement? Why or why not?

We believe this is appropriate. We believe it is more indicative of the risk, or the dual component of real estate (cash flows and value of property).

Question 129. Which components should be included within the real estate risk charge, if a stress approach is taken?

We believe (b), the volatility component, should be excluded.

Question 130. Is it appropriate to include property held for own use in the real estate risk within the real estate risk charge?

Yes, it is appropriate to include own-use property; value for capital should be market value.

Question 131. Is it worthwhile to have different stresses applied depending on specific items or usage characteristics? If yes, under a stress of real estate market price approach, should the granularity of the stress be limited to only broad characteristics, such as commercial vs residential, to cover the real estate risk within the example standard method for the ICS capital requirement? What would be the optimal granularity for the example standard method for the ICS capital requirement?

We do not believe there should be granularity because the complexity would outweigh the benefits. We believe that one factor for all real estate is appropriate.

Question 132. Would the benefits of the increased risk sensitivity of a layered approach based on splitting a rental yield in a real estate spread on top of a financial component outweigh the costs of increased complexity? Why or why not?

We do not believe the benefits would outweigh the complexity. We are also concerned that such an approach may lead to spurious accuracy.

Question 133. Should lease payments and other contractually specified cash flows associated with a property be unbundled from its market value? Is it appropriate to use an equity-type stress for the residual amount?

We believe they should be unbundled (see also response to question 128 above).

Question 134. Is the proposed stress or scenario approach appropriate? If not, please describe a more appropriate approach and explain why it is more appropriate.

Yes.

Question 135. Is the identification of the reference currency for the purpose of assessing the currency risk appropriate? If not, please explain why, suggest an alternative approach and explain why this will be more appropriate.

Yes.

Question 136. Is the proposal to adopt option b) for the standard method appropriate? If not, please describe a more appropriate proposal and explain why it is more appropriate.

Yes.

Question 137. Is proposal to adopt option a) for the standard method appropriate? If not, please described a more appropriate approach and explain why it is more appropriate.

Yes.

Question 138. How should the currency risk charge be applied to net capital investments in foreign subsidiaries?

While it may not be practical for the IAIG to avoid the currency risk associated with net investment in foreign subsidiaries (although in some cases hedging should be possible), that does not imply that the currency risk should not be recognized. Hence it should be treated like any other currency exposure.

Question 139. How should the issue of asset concentration be addressed for the purpose of the ICS capital requirement? Please provide detailed considerations and rationale.

We believe that this might perhaps be too sophisticated for a first cut at the standards.

Question 140. Should the large exposure limit be based on qualifying capital resources, or should the limit be based on other measures such as assets?

We believe the large exposure limit should be based on capital requirements.

Question 141. Should the ICS credit risk factors vary by maturity?

We believe the credit risk factor needs to vary by maturity.

Question 142. Are there any other major asset classes that this list has omitted? Should some of the classes in this list be further segmented or merged? Why?

We believe the proposed segmentation is reasonable, and therefore no change is suggested.

Question 143. Are there are any proposed alternatives for assessing credit quality that do not rely on rating agencies or on internal models?

It may be appropriate to consider the approach that was suggested by Basel.

Question 144. Are the Basel II standardised credit risk weights an appropriate basis for the ICS credit risk charges? If yes, what modifications should be made to the factors? If no, what other basis is appropriate?

Question 145. Are there any proposed risk segmentations of residential and commercial mortgages that are possible to apply internationally to differentiate the credit risk charge?

It is difficult to get comparable data at the international level. However, we encourage the IAIS to develop a more risk-sensitive approach for the future.

Question 146. Should a different approach be used for reinsurance exposures than is used for other credit risk exposures?

- Reinsurance and OTC derivatives should be segmented.
- Reinsurance requires its own approach, recognizing that reinsurers themselves are subject to supervisory oversight and capital standards. At a minimum, any application of factors to reinsurance exposures (including potential contingent exposures) should make use of "claims-paying ability ratings" of the rating agencies, not the usual "credit ratings".
- It is not evident whether a bond approach is appropriate for OTC derivatives and other off-balance sheet exposures. It may be possible to determine through field testing.

Question 147. If GAAP with adjustments were used as an alternative valuation approach for the ICS, detail those adjustments, if any that would be required to produce a comparable credit risk charge to those produced using the market-adjusted valuation approach under the credit risk charge described in this section.

Question 148. Which of the options presented above should be pursued? Why should this method be pursued? How can the drawbacks to that method be addressed within the standard method?

We believe that neither of the approaches realistically captures the operation risk due to the fact that relevant and credible experience does not exist. However, option (b) better captures the exposures of the IAIG, especially if the factors are related to the activities of the IAIG.

Question 149. Are there any alternative methods to capture operational risk that should be explored other than the three methods described in paragraph 345 above? If so, please provide details and rationale.

Question 150. What risk charges as outlined in this Consultation Document should be included when determining the exposure measure for the IAIG that is used in the operational risk charge? Why is this appropriate?

We believe all elements should be included.

Question 151. Should the operational risk charge include an additional component for growth? Why or why not?

Yes, rapid growth insurers are more likely to have issues in coping with that growth, whether it be systems, hiring capable staff, absorbing acquisitions successfully, change in culture, etc.

Question 152. What are the views on the granularity and exposure measures proposed above for option (b)?

We believe that the following granularity is appropriate:

- Life/non-life;
- Gross of reinsurance; and
- Investment versus insurance.

We believe there should be credit for good risk management practices:

- This could be based on supervisory judgment or ORSA measures;
- It would include a scorecard of existing risk management; and
- It should be transparent and objective.

For non-life: also perhaps direct versus assumed and personal versus commercial; gross written premium would be better than gross earned premium.

Question 153. Is the use of a variance-covariance matrix approach appropriate for the example standard method for the ICS capital requirement? If not, please explain what other approach would be more appropriate and why.

We believe it is appropriate. The correlation matrices would ideally be scientifically based with good calibration, but would more likely require judgment because correlation in the tail is likely different from overall correlation, and correlation in the tail in difficult to measure.

Question 154. Which approach (i.e. single or multiple steps) should the IAIS adopt for the example standard method for the ICS capital requirement and why? If a multiple steps approach is recommended, please describe and explain why this will be appropriate.

Any approach should be split into manageable components. We prefer "aggregation through multiple steps", as we believe it is simpler to apply and easier to justify. Insurers are large and complex, and have a lot of different risks. A single correlation is too difficult for diverse IAISs to match up risks.

10 Other methods of calculating the ICS capital requirement

Question 155. How can it be assured that different implementations of the ICS are sufficiently comparable? What is the role of the example standard method in this context?

Question 156. What other methods besides those in this section may be able to be implemented whilst still meeting the ICS Principles and ICPs?

Question 157. Should any variation to the standard method be allowed? If so, should IAIG-specific variations to the standard method be allowed? If yes, for which risks should IAIG specific parameters be allowed?

We believe that in the interest of maintaining comparability, experience should be gained with the standardized approach before consideration is given to allowing variations.

Question 158. If variations from the standard method are allowed, what disclosure should be made of the variations? Should there be a standardised disclosure no matter what variations are allowed so that stakeholders can assess the impact of the variations?

Yes, we believe IAIGs should be required to disclose results under the standardized approach, at least until experience has been gained with the "with variations" methods.

Question 159. Should the IAIS permit the use of partial internal models for calculating elements of the ICS capital requirement? If so, for which elements of the ICS capital requirement should partial models be allowed? What are the advantages and disadvantages?

Partial internal models are defined in para 369 as "the use of internal models limited to some risks".

Yes, partial internal models should be allowed to quantify the types of risks that cannot otherwise be accurately reflected or measured using the standard ICS method. For example, an exposure that only becomes significant when two or more underlying risk factors (e.g., lapse and interest) are in relatively extreme positions at the same time.

The advantages of using of an internal model include:

- Better reflection of the IAIG's own risk profile, which is unique to the regulatory and operating environment for each IAIG;
- Better assessment of capital needs and solvency position;
- Also serves as a management/strategic planning tool that identifies challenges and opportunities (i.e., SWOT analysis); and
- Allowing comparison and reconciliation to the other reporting measurement (i.e., same risk measure under ICS versus ORSA versus MCCSR versus Solvency II).

The disadvantages of using of an internal model include:

- Difficult to compare (the particular type of risks measured using the partial internal model) across different IAIGs due to potentially inconsistent methodology across IAIGs based in different jurisdictions, and resources/knowledge limitation; and
- Necessary to develop a thorough supervisory review/approval process that involves regulatory, auditor, and peer reviewers.

Question 160. Should the IAIS permit the use of a full internal model for calculating the ICS capital requirement? What are the advantages and disadvantages?

The use of a full internal model should be avoided as it compromises the comparability principle across IAIGs.

Question 161. In what ways would the inclusion of internal models impact the ability of the ICS to be comparable across jurisdictions?

We agree with paragraph #369 and #370; by allowing the use of internal models in the calculation of the ICS capital requirement, it can be valuable to capture risk not reflected or imperfectly reflected in the standard method. Nevertheless, IAIGs can have varying views and techniques in developing internal models for capital requirements on certain types of risks, which reduces the comparability across jurisdictions

Question 162. What additional safeguards and supervisory standards will the IAIS need to develop to support and complement the use of internal models (partial or full)? Please explain.

Allowing the use of internal models will require the IAIS to develop requirements for model methodology, controls, calibration, own use, etc. In addition, a supervisor will have to approve the initial introduction of an internal and annually approve its continued use.

Question 163. Should the development of internal models for the ICS be assessed against the standard method? What role should the example standard method play in this context?

It is assumed that the incentive for the use of an internal model is to indicate a lower required capital. However, if an internal model results in a higher required capital level than the standard method, then the higher amount should be held.

The standard method could act as reference or alternative measure to help assess the reasonableness of an internal model.

Question 164. Please give details and explain any experience with model approval processes.

The Canadian experience is that a proper model approval process in a supervisory environment is a very detailed and time-consuming process for both the company and the supervisor. The supervisor established a set of criteria (governance, technical, use test, etc). Insurers demonstrate via document production and management interviews that the internal model meets the criteria.

Question 165. Should the use of external models be allowed? Should it be restricted to certain risks? If yes, which risks should be better assessed using external models?

Yes, use of external models should be allowed. We agree that external models can better measure tail risks/catastrophe risk as they have the expertise and better access to relevant data in those specific areas.

Question 166. Should the criteria for the use of external models be the same as for internal models? Please provide the reasons

All of the criteria for the use of internal models should apply to the use of external models as well. The IAIGs need to provide justification of the certain types of risks that are better measured by external models as opposed to using the ICS, and to demonstrate that the capital requirement set using the external models are appropriate to the nature and the level of the risks

Question 167. In order to achieve comparability across IAIGs, what criteria should be applied to the use of internal models and why?

We agree with the criteria set out in para 375, which is to include minimum criteria for some particular areas of modelling, and to establish some level of granularity in the modelling such as the prescription of credit sub risks: default, downgrade, spread.

Question 168. What are the risks that are more likely to be reliably modelled, and which are the risks that are less likely to be reliably modelled?

As mentioned in para 376, the ability to reliably model risks depends on the availability of appropriate methodology, and the availability of relevant data.

Typically, risks that can be reliably modelled or quantified include market risks (e.g., equity risk, interest rate risk, and volatility risk), and insurance risks (e.g., mortality, longevity, and expense).

On the other hand, risks such as operational/business risk are less likely to be reliably modelled. They are more difficult to quantify; instead, these risks are measured based on risk indicators. Other risks such as catastrophe risk and policyholder behaviour risk are difficult to model due to lack of relevant data or appropriate methodology.

Question 169. In order to allow for the use of internal models, what are the criteria to be set in order to provide a framework consistent with the ICS principles?

We agree with the criteria set out in para 377 and 378, which include:

- Quantitative aspects such as the suitability of the modelling methodologies, the credibility of the assumptions, and the quality of the data used;
- The qualitative aspects such as the governance covering both the development and ongoing monitoring of the internal models, and the risk management framework.