

CAS Exam 6I – B (Solvency) Quick Summary:

(B) IAIS CC 5.6.1 – Solvency Principles and Structures

1. Introduction

- **1.1 What is solvency:** (1) at a specific point of time, a provider of service has more assets than liabilities and has capacity to pay all debts thus meeting obligations (Cash flow solvency). This does not consider liquidity, quality of assets or future positions.
- Core solvency question: “How can a supervisor gain adequate comfort that an Insurer will remain in business in the future” (this paper focus on supervisor’s perspective – can differ in approach if other perspective)
- **1.1.1 Time horizon:** Insurer obligation will be influenced by future events, hence can only be estimated. Impossible to guarantee that currently able to meet obligations will still be able to do so in future.
- Common compromise is use one-year time horizon. May also require to project business plans for longer period (e.g.: 3 years) and demonstration that capital adequacy is expected to be maintained throughout the projection period.
- **1.1.2 Uncertainty:** Nature of insurance business impossible to guarantee solvency with certainty (there may be economic scenario, natural disaster or human-made catastrophe event that will lead to insolvency).
- Key component is financial strength. Financial weakness is threat to solvency.
- Assessment of uncertainty with regard to solvency is to focus on financial strength. Having specified a time period to work with, supervisor can specify measure confidence to be met for insurer to be considered financially solvent.
- Common approach, high level confidence that insurer not expected to breach financial solvency requirement in the specified time period (e.g.: Solvency 2, with 99.5% confidence over 1-year period).
- Question of how much certainty is necessary/appropriate is judgment. Process making such assessment can be complex and challenging. Supervisory judgment may also be require in making asse
- **1.1.3 Purpose:** in below cases, purpose of solvency assessments may be different (different assessment due to circumstances & expectations)
 - **Going Concern:** insurers operate as going concern (open to new business). No supervisory restriction, but supervisory awareness through appropriate reporting. Financially solvent by able to meet obligations to both existing and those will become policyholders in future. Desirable for all stakeholders
 - **Inforce/Runoff:** Ability to meet obligations to existing policyholders (no future policyholders). Relevant if ceased writing NB, voluntarily or supervisor. Assume insurer remained in operation, collect premiums and paying benefits until all existing policies expired or matured.
 - **Break-up or winding-up:** Stop writing NB and existing obligations be settled or transferred to another insurer asap. Supervisor interest greater than insurer’s shareholders.
 - **Merger:** Special case of breakup situation. Either one to other, or both to third party. Desire to transfer business quickly as possible. Risk that insurers’ shareholders, BOD and senior management distracted from policyholder considerations. Supervisor’s obligation to policyholder protection become important
- **1.1.4 Definition:**
 - **Solvency:** ability of insurer to fully meet its obligations (liabilities) to policyholders as they fall due (in the future). *Include capital adequacy, but also other aspects of solvency regime (technical provisions, qualitative aspects, supervisory review and reporting.*
 - **Supervisory solvency:** at a point in time, supervisor has sufficient confidence that an insurer will continuously remain viable, for purpose of solvency assessment, specified length of time into the future. Requires level of confidence, time horizons and purpose must be defined. If fails to meet one or more assessment requirement, becomes insolvent.

- **Capital adequacy:** determine if insurer is capital adequate, continuously expected to meet supervisory capital requirements. Include assessment of technical provisions
- **Liquidity:** Is there adequate liquidity to meet obligations in timely and appropriate way?
- **Corporate governance:** are qualitative requirement of good corporate governance in place? Include corporate culture and incentives.
- **Risk management:** are qualitative and quantitative requirements for effective enterprise risk management in place? Include appropriate compliance and control functions in place.
- When insurer fails to meet ≥ 1 more of the supervisor's solvency assessment requirements, becomes insolvent from perspective of supervisor. This may not mean common meaning of solvency (cash flow solvent) is breached. But, over a specified time period, specified purpose, the supervisor does not have sufficient confidence the insurer will be able to continuously meet all its obligation in a full and timely way. Over time, this may still lead to loss of value and unmet expectations of policyholders (& stakeholders).
- Definition: *Solvency is the ability of an insurer to meet its obligations (liabilities) to policyholders as they fall due. Solvency includes capital adequacy but also involves other aspects of a solvency regime, for example, technical provisions, qualitative aspects (such as would be addressed in an enterprise risk management framework), supervisory review and reporting.*
- Supervisors monitor solvency so can get early warning of risks to (supervisory) solvency and then take appropriate actions. As the risk of breaching increase, challenges supervisor faces increase (financial weakness). Less quantifiable indicators also important, can still become insolvent if capital adequate.
- Initial actions are likely remedial, with insurer continuing in business and recovering. More serious actions if insurer cannot continue business and need to wound up.
- If part of a group, solvency of group is a different matter to solvency of each components of group.
- **1.2 Solvency is challenging:** Solvency is difficult to maintain, often traced back to internal causes (problems with management, shareholders, external controllers). Problems include incompetence, operating outside areas of expertise, lack of integrity or conflicting objective, weakness in the face of inappropriate group decisions. Internal weakness lead to inadequate decision-making processes, internal control and risks decisions, vulnerable to external trigger events. Vulnerability to financial difficulties can be reduced by ensuring asset cash flows are available to meet liabilities when they come due (ALM, liquidity management, safety margin of asset over liabilities – capital)
- **1.3 Supervisors role:** protecting the interests of current & prospective policyholders. Must be able to make good on their promises. Insolvent will be unable to meet obligations in full and on time.
- **1.4 The need for capital:** Capital is the financial resources of an insurer. Cushion against adverse experience and financial fluctuations, maintain solvency while it deals with many risks.
- Capital is essential in enabling insurers to meet strategic and operational needs. New insurer needs cash (working capital) to finance start-up expenses. Established insurers need capital to finance expenses, and buffer against risks (new product, market segments, geographic)
- As business grows, capital needed for adequate safety margin grows. New business costs may depress profits, when business is taken on (high initial expenses), several years to report profit.
- Strong capital can increase confidence of current or prospective policyholders that insurers to meet obligations. E.g.: may refuse to do business with insurers with low rating (lack capital).

2. Elements of a solvency regime

- **2.1 Overview:** ICP are principles based and prescribe essential elements that must be present in a supervisory regime. Objective to promote financially sound insurance sector and provide adequate level of policyholder protection.
- Next level after ICPs are standards link to specific ICPs, set out high level requirements fundamental to the implementation of the ICPs.
- Essential elements of a solvency regime:
 - Valuation of liabilities, including technical provisions and the margins contained therein.
 - Quality, liquidity and valuation of assets

- Matching of assets and liabilities
- Suitable forms of capital
- Capital adequacy requirements
- Group supervision
- The Board and senior management responsible for prudent operation, responsible for ensuring solvency. Insurer and supervisors need to understand not all risks can be mitigated solely with capital. Weakness in any one of the areas (adequate pricing, careful underwriting, reinsurance) may make economically unfeasible to maintain enough capital for an effective safety margin.
- Disclosure on risks undertaken and financial capacity to bear risks, enables markets to act efficiently and the discipline it engenders serves as an adjunct to supervision.
- Capital adequacy and other quantitative requirements (e.g.: supervisory assessment of risk management, disclosure of information) be integrated to broader solvency regimes (key elements/pillars).
- **2.2 Liabilities and Assets:** solvency is assessment of balance sheet, important for liabilities and assets are valued appropriately (reliable and reasonably consistent). Many exposures may exist, but do not show up in balance sheet (high limit policies, large catastrophe exposures, other concentrations).
- Valuation bases should provide clear picture of financial situations, reflecting economic viability. Avoid distortions (past vs current value) and volatility unrelated to true economics of the business. Should produce results comparable from one period to next and facilitate comparisons with another insurer.
- Accounting and actuarial standards, or supervisor specify valuation bases (different from shareholder report)
- **2.2.1 Technical Provisions:** liabilities on balance sheet due to its obligations arising out of insurance contracts. Typically vast majority of liabilities, essential provisions are reflective. ICP requires supervisor to establish procedures for assessing valuation of assets, non-policyholder liabilities and technical provisions.
- Regardless of techniques, technical provisions should be sufficient to cover claims, benefits, admin expenses, taxes, embedded options, policyholder dividends or bonuses, required margins.
- Technical provisions are only estimates, adequacy can only be known retrospectively. ICP guidance that technical provisions plus supervisory capital requirement sufficient satisfy probability of sufficiency required by the supervisor (margin for adverse experience).
- Margin: 1) best estimates + explicit margins; 2) supervisors limit or specify values for particular assumptions (conservative), generally do not facilitate identification of the amount of margin; 3) explicit level of margin through stochastic modelling of multiple scenarios. Capital adequacy requirements sensitive to level of margin in technical provisions, may change in response to economic conditions.
- **2.2.3 Assets:** Asset realizable (quality, liquidity and valuation) to meet obligations at any time.
- Diversified portfolio likely to maintain value than one whose are speculative. Solvency regimes typically include restriction on types and mix of assets insurers may invest.
- Amount & timing of obligations are seldom certain and may fluctuate significantly, need to maintain enough cash or liquid assets (easy to cash out, value close to book) to meet obligations on short notice. Usually cash flow from premium and interest on invested assets sufficient for insurer to meet obligations, without needing to realise any assets, however, insufficient liquidity to cope with abnormal circumstances can lead to solvency difficulties.
- Valuation methods of assets should be prudent, transparent, objective as possible and produce consistent results. Easy-valued (cash, govt. bond, shares from established exchanges), Complex (real-estate – assessment by expert; derivatives – use of models).
- Prudent: defer recognition of increase in value of certain assets (e.g.: increase in market value only after sold, recognize only a portion each year)
- Values of assets may diminish in situation of stress or insolvency (e.g.: tax saving on losses), illiquid (e.g.: furniture, amount due from intermediaries, investment in subsidiaries or affiliated companies). May disallow these assets on balance sheet to supervisor or capital adequacy test (non-admitted assets) or limit recognition (percentage, haircutting) or high-risk weight under risk-based capital adequacy test.

- **2.3.2 Reinsurance:** risk mitigation or transfer should consider effectiveness and security of any counterparty. Reinsurance protection does not extinguish insurer ultimate obligations, in case of default by reinsurer, insurer must nevertheless meet obligations out of its own resources.
- Limit reinsurance counterparty credit risk. 1) encourage insurers to deal with reputable, financially strong reinsurers (perform due diligence); 2) credit on balance sheet for amount due from unlicensed reinsurers; 3) “haircuts” to credits from amount due from unlicensed/lower rating, or only allow if reinsurer posts collateral in trust; 4) Limits on concentration with a single reinsurer.
- Credits for reinsurance may be in form of assets: amount receivable from reinsurers, reduction in liabilities: lowering technical provisions. These credits premised on assumptions of meaningful transfer of risk. Financial reinsurance, primarily assist to meet prudential requirements, with little or no transfer of risk.
- Solvency regime may include criteria for assessing effectiveness of risk transfer, and no balance sheet credit unless criteria is made Supervisors may review financial records, or contract of reinsurance arrangement.
- **2.4 Capital:** Amount available = Asset – Liability. Dependent on valuation bases, hence supervisors need to be fully aware of valuations or accounting practices applied by insurers when examining reported capital.
- Consider sources of assets and nature of claims against those assets. Capital can be view as claims against insurer’s net assets, roughly asset – technical provisions and other liabilities
- Capital on balance sheet: 1) Equity claims: shares, contribution certificates of initial capital of mutual insurer, participating policies. 2) Debt claims: instrument such as bonds or commercial paper).
- Solvency regimes should clearly define forms of capital that will be recognized suitable or set out criteria used to assess suitability of capital instruments. Usually defined by tiers of capital quality, e.g.: Tier 1 – common shares, retained earnings, perpetual non-cumulative preferred shares; Tier 2 – not fully meeting quality criteria but contribute to financial strength, e.g.: intangible assets, goodwill, future income tax credits and hidden reserve.

3. Capital Adequacy

- Considers interaction of available resources and compares to the potential for adverse outcomes that may erode these resources. Difficulty: many potential adverse event (different likelihood, magnitude), correlation of event occur together.
- ICP indicate insurer should be able to recognize, measure, manage and mitigate risks it faces. Risk mitigation: Capital, reinsurance, underwriting controls.
- Objective of capital regulation: 1) provide minimum level of resources considered prudent for supervisory purposes (provide element of capital to meet obligation); 2) provide trigger for intervention.
- Minimum solvency margin is an approximation, capable of broad and practical application.
- ICP note that useful to establish solvency control levels above minimum solvency margin. E.g.: 1.5x minimum solvency margin represent different companies. This distinction will be more consistent if solvency margin reasonably approximates level broad terms at least.
- **3.1 Risks mitigated by capital:**
 - Underwriting/Technical risk: majority of liabilities consist of provisions for obligations. Likelihood and size are uncertain for non-life. Risk relates to uncertainty of outcomes in policies, in force or expired but claims remain outstanding or could still be reported.
 - Credit risk: potential that a counterparty fails to repay commitments.
 - Concentration risk: level of exposure to a single counterparty, consider all types of commitments.
 - Liquidity risk: unable to realise value of an investment in a timely manner consistent with needs.
 - Market risks: possibility that even if an asset is able to realized, its value fluctuated adversely.
- Possible to match fluctuation on asset match with liability, but not always possible. Extent of risk arising from mismatching should be considered in capital adequacy requirements.
- Efforts to measure most of these risks led to desire to apply risk mitigation techniques.
- Reinsurance is risk mitigation, transfer to another party, but has its own risk (e.g.: differing definition of claims between insurance and reinsurance contract, counterparty risks).

- Liquidity risk not a major concern, normally premium exceed claim and insurer are net investors. If claim increase sharply, usually find mechanism to pay progressively to avoid distress (clause). How capital assist in liquidity problem depends on whether those assets are themselves liquid. With difficulties in quantifying liquidity risk, advisable that solvency implication addressed through supervisory assessment.
- Operational risk (all other risk): vary widely and difficult to anticipate. Must be addressed effectively through good corporate governance, internal controls and risk management practices.
- Fixed minimum capital or solvency margin for reason that, regardless of insurer size, some risks exists, and new insurers face particular risks (managing start-up, operations, lack of data, building book by accept riskier business). Absolute minimum ensure only some substance are permitted to enter market.
- **3.2 Minimum requirements:** must be clearly defined, as they identify point at which financial intervention occurs, supervisor take over company and relieves senior management and owners of their rights.
- Requirement open to interpretation can hold up intervention in legal disputes. Can impede important need to protect the interests of the policyholder. Thus, minimum solvency requirement is usually defined in terms more precise than the assessment of solvency, judgment.
- **3.2.1 "Index-based" requirements:** solvency margin that is expressed as the greatest of a range of balance sheet or income statement indexes. Minimum capital requirement that uses fraction of various indices of risk exposure.
- Premium index using gross premium income as measure of exposure. Average claims costs as claims incurred over the last 3 years. Various percentages generally determined using mathematical approach (ruin theory – probability that insurer face financial ruin, given risk profile and solvency margin)
- The larger the premium or claims provisions, the greater the overall risk that the company is carrying. Focuses on liability side of balance sheet, and does not reflect all risks faced.
- **3.2.2 "Risk-based capital" (RBC) requirements:** specify the minimum amount of capital required based on company's size and risk profile. Computation includes adjustment for correlation among risks and additional risks inherent in certain types of activity.
- **3.2.3 Internal models:** more closely reflects the risks an insurer is exposed. Costly and very complex.
- Solvency regime not simply driven by solvency margin itself, but valuations of assets and technical margin influence this, and the parameters. Actuaries and auditors can play a role in adding credibility to these accounting values. In other cases, supervisor may have more specific and detailed rules.
- **3.3 Providing greater resilience:** more recently, desirable to have "solvency control levels", to reflect that supervision does not stop above minimum requirement, but also early intervention criteria.
- Minimum solvency criteria provide buffer at base level of security, fall below level, market and lawmakers determined that it should not continue to operate. If well above borderline, supervisor and public can expect withstand a period of adversity without falling below critical level. Higher level provides company with opportunity to take corrective action to flow through to a turnaround in financial position.
- Control levels can be used to 1) prompt earlier intervention on a graduated basis. 2) encourage insurers to explicitly incorporate solvency buffers when doing business and financial planning, and avoid the risk of a "few bad days" (volatile/uncertainties) leading to company under official administration)
- Usefulness of understanding risk (volatility of results) when assessing adequacy of capital, capital buffers, and having levels of control above the minimum (problem can be identified, corrective action can be put in place, has chance to take effect before situation deteriorates)
- Stress testing (develop alternative / adverse scenarios and impact on balance sheet position immediately or over time) can help identify significant risks and put in place procedures to limit risks or respond.
- Some jurisdiction, stress testing part of broader solvency regime, where stress tests part of risk management process and results considered by boards. Then discussed with supervisor so that they can be comfortable that the company has adequately addressed the identified risks. In other cases, stress test part of capital requirement, by a defined adverse scenario.

(B) New Zealand – Insurance Solvency Standards, Structure and IFRS17

1. Principles and purposes

- Key part of supervision involves imposing minimum amount of capital that the insurers must hold. This set a minimum likelihood that insurers will be able to pay claims and meet other obligations to policyholders.
- **1.1 Purpose statement:** Insurance (Prudential Supervision) Act 2010 (IPSA) provides general purposes to govern regulation and supervisory activity and empowers solvency standard but provides no specific purpose for holding regulatory capital. Propose the purpose to ensure that in adversity, insurer obligations to be met in full as they fall due.
- **1.2 Principles:** 2 matters:
 - 1) whether adopt total balance sheet approach to capture 2nd-order effects and balance sheet interactions (stresses used to determine solvency capital applied on all balance sheet items, not just that primarily influence – e.g. interest rate risk on policyholder behavior, surrender, inflation) .
 - 2) whether certain “sectorally important” insurers critical to NZ financial system (criteria: size, global activity, interconnectedness, asset liquidation and substitutability) and who should be treated differently for capital purposes.
- *Resilience:* insurers’ continued ability to operate even after major adverse event. Benefits of greater resilience must be balanced with considerations around efficiency and competition.

2. Application of the Solvency Standards

- **2.2 Industry Sectors:** maintain separate standards for life and non-life. Health insurance, generally short-term nature, accommodated in non-life standard. Long-term non-life, catered in non-life standard by a requirement to have regard to the life standard principles.

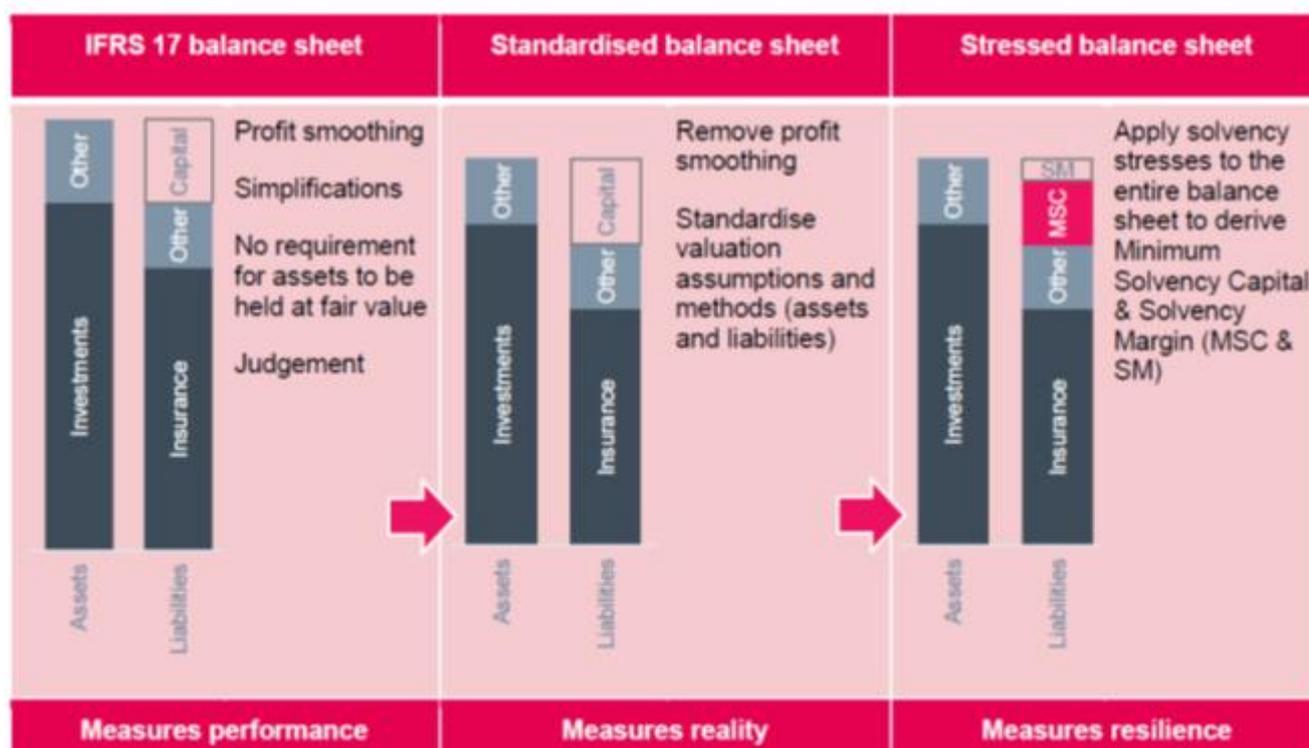
Option - Description	Advantages	Disadvantages
1. Sector-differentiated status quo – separate Life and Non-Life Standards	Least cost for industry as would not require the industry to change its calculation methodologies.	Potential inconsistencies and more complex upgrade path.
2. Single solvency framework covering all sectors and subsectors	Streamlined approach and less potential for inconsistency	Higher cost to industry as industry would be required to make significant changes to their calculation methodologies. Risk that sector-specific risks may not be accurately captured.
3. Rationalisation – folding the variable annuity standard into the life standard, and the three non-life standards into a single document.	Would address some of the issues listed above relating to inconsistency, while still explicitly allowing for sector specific differences.	Potentially minor costs to affected insurers.

- **2.4 Consolidation:** solvency standards apply to licensed insurers and any of their subsidiaries that are also licensed insurers. Requirement apply to each entity individually and group as a whole. Non-insurance subsidiaries not captured explicitly under group solvency requirement, but as related party investment, subordinated loan, or other obligations. May distort solvency of group, as they can contribute to parent balance sheet. May be appropriate to look at asset, liabilities and risks of non-insurance subsidiary.

3. Dealing with Impacts of IFRS 17

- **3.1 Background:** IFRS17 to have material impact on balance sheet (technical provisions are most affected), likely some area **requiring judgment** to be exercised, **leading to inconsistent results across the industry**.
- 1 way for consistency and comparability is to prescribe methods and assumptions for particular balance sheet elements for solvency purpose, e.g.: specific discount rates, prescribe method for valuing insurance liabilities.
- **3.2 Insurance liabilities and other technical provisions:** includes outstanding claims liabilities, premium liabilities including unexpired risk provision, deferred acquisition costs, reinsurance.

Accounting balance sheet	Balance sheet used for financial reporting purposes. Assets and liabilities on the balance sheet are valued on a Generally Accepted Accounting Principles ("GAAP") basis.
Solvency balance sheet	Balance sheet used as the starting point for solvency calculations. This is <i>before</i> the application of any stresses. This balance sheet will be used as the base case for solvency stresses.
Stressed balance sheet	Balance sheet after the application of solvency stresses (solvency stresses applied on the solvency balance sheet components, including any adjustments to asset values). This is the basis that will be used to assess the sufficiency of the company's assets.



- **3.2.2 Regulatory balance sheet:** Regulator specifies valuation method and assumptions for each item on balance sheet to be used as starting position for solvency purpose (independent of GAAP balance sheet); Or use GAAP, where minimally adjusted basis for assets and liabilities value (imply accounting requirement a reasonable estimate of assets and liabilities for solvency purpose. OR in-between (GAAP-adjusted).
- **3.2.3 NZ IFRS 4 vs 17:** see Appendix 2.
- **3.2.4 International benchmark:** ICPs valuation of assets & liabilities for solvency purpose should reflect economic valuation (ICP14) – not obscured by hidden or inherent conservatism or optimism (reflect current, prospective valuation of future cash flows, allowing for riskiness and time value of money).
- Assets in deep and liquid market: current quoted market value, as price considered with risk premiums. Adjustments (in the form of deduction or risks charges) are applied for assets with reduced or nil value under a stressed scenario.
- Liabilities with no active market: economic value achieved by a margin (e.g. 75%) to allow for uncertainty on top of best estimate liability (present value of future claims cash flows – os + prem liability).

Option – Description	Advantages	Disadvantages
1. Status Quo – Continue IFRS4 for solvency, even after transition to IFRS17, with no change in solvency standard	<ul style="list-style-type: none"> • Low implementation cost for supervisor. • No (upwards or downwards) spike in solvency ratios after transition, easier for public to understand. 	<ul style="list-style-type: none"> • Burden on industry to maintain both reporting requirements. • Not robust and difficult to maintain through future generations of accounting charges.
2. GAAP – Continue GAAP balance sheet after	<ul style="list-style-type: none"> • Low implementation cost for supervisor and insurers. 	<ul style="list-style-type: none"> • Obscure true financial strength (identical risks could have different positions), as

transition to IFRS17, and make no further changes to the solvency standard.	<ul style="list-style-type: none"> • Flexibility for insurers to choose what works for them (through judgements under IFRS17) • Easy to reconcile to accounts. • Makes solvency standards easily understandable and easily accessible for overseas entity (international standard) 	<ul style="list-style-type: none"> • open to judgment (choice of method and assumption) • Doesn't provide consistent basis to implement ladder intervention approach as solvency ratio may mean different things for different insurers. • Even consistent valuation method, various IFRS17 allowable approaches may not be appropriate for solvency.
3a. Specify insurance liability valuation parameters – allow insurers flexibility of choice regarding liability valuation method under IFRS17, but specify parameters to use	<ul style="list-style-type: none"> • Least implementation cost for insurers as can leverage off IFRS 17 implementation • IFRS17 international standard, solvency standards more easily understandable to overseas regulators and insurers (less barrier to entry) 	<ul style="list-style-type: none"> • Insurers may select best valuation method that works best for them (management & systems) and not necessarily have solvency in mind when selecting valuation method, does not reflect economic value. • Difficult to ensure consistency (onerous contracts, risk adjustments and contractual service margin) and comparability as different insurers may treat same product differently
3b. Specify IFRS17 insurance liability valuation method – IFRS17 on liabilities, but specify which valuation method/parameters to use.	<ul style="list-style-type: none"> • Easier from an implementation point of view. • Comparability across industry • Easy to understand from an international perspective. 	<ul style="list-style-type: none"> • Might increase cost of implementation if method specified is different to what they are using. Likely for insurers with small and relatively homogeneous range of products. • Large range of products in market that might be difficult to find a one-size-fits-all approach.
3c. Use a non-IFRS17 insurance liability valuation method – use IFRS for other parts, but specify non-IFRS17 valuation method	<ul style="list-style-type: none"> • Might be better solution to reflect the economic reality of products. • Consistency and comparability across industry, internationally (if careful on valuation method) • Provides a good base for implementing ladder of intervention. • Robust and future-proofed, in case of future accounting standard changes. 	<ul style="list-style-type: none"> • Higher implementation costs as have to maintain multiple valuation systems and methods. • Potentially confusing as fragmented requirements • May not be comparable to financial statements.
4. Regulatory balance sheet – Ignore GAAP entirety, specify new set of regulatory reporting requirements.	<ul style="list-style-type: none"> • Structured and tidy as all requirements are in one place, with no need to reference separate standards (GAAP and solvency) for different assets and liabilities • Better harmonization and consistency across industry can be achieved, while at the same time specifying requirements appropriate for NZ, as GAAP still allow for judgement in some areas • Robust and future-proofed, in case of future accounting standard changes. • Good base for implementing ladders of intervention as it is standardized and consistent 	<ul style="list-style-type: none"> • May lack international comparability if we choose something too NZ-specific. • Potentially burdensome for small market like NZ to maintain multiple sets of accounts, from both the industry as well as the out standpoints. • Even harder to reconcile to financial statements. While this could be mitigated by requiring insurers to provide a reconciliation, this requirement might be viewed by industry as overly burdensome.

- **3.3 Other (non-technical) items:** Under IAA framework for capital requirements and risk oversight, 2 jurisdictions with similar business, legal, economic and demographic environments and supervisory philosophy should be comparable.
- Total balance sheet approach is that an insurer's financial position should be based on consistent and meaningful measurement of assets and liabilities. Inconsistent methods and assumptions could generate

hidden surpluses or deficits, and create appearance of differing capital positions for otherwise similar insurers.

- Darker shades of grey (technical insurance liabilities) more direct impact of IFRS17. Lighter shades of grey are non-technical insurance component:

Assets	Liabilities	Likely with IFRS17, insurance-related receivables and payables will no longer appear as explicit item in balance sheet, but part of insurance contract assets/liabilities:	
Cash & cash equivalents	Trade and other payables	Today*	IFRS 17
Investments	Reinsurance premium payables		
Premium receivables	Claims payable	Assets	Assets
Trade and other receivables	Unearned premium liability	Deferred acquisition costs Premiums receivable	Insurance contract assets (for groups that are assets)
Reinsurance receivables	Outstanding claims liability	Liabilities	Liabilities
Loans	Life insurance contract liability	Insurance contract liabilities Unearned premiums Claims payable	Insurance contract liabilities (for groups that are liabilities)
Insurance contract assets	Life investment contract liability	(*) Common presentation in the statement of financial position applying IFRS 4 <i>Insurance Contracts</i>	
Current tax assets	Lease liabilities		
Deferred reinsurance expense	Current tax liabilities		
Deferred acquisition costs	Deferred tax liabilities		
Reinsurance and other recoveries	Other liabilities		
Reinsurance in respect of the insurance contract liability			
Deferred tax assets			
Right of use assets			
Property, plant and equipment			
Intangible assets			
Investment in subsidiaries			
Goodwill			
Other assets			

- **3.3.2 Non-technical insurance items:** Insurance (premiums, claims, reinsurance) receivables and payables. These reflect rights and obligations arising under insurance and reinsurance contracts. Some insurers show that insurance receivables are amortised cost impairment provisions (not sure if consistently used by all).
- Presenting those separately would better reflect nature of these items (credit risk), system to record receivables and payables may be separate from insurance liability valuation system.
- IASB reasoning for single line: 1) group of contracts create single bundle of rights and obligations, measuring separately can result in internal inconsistencies in IFRS17 and potentially mislead users of financial statement into thinking these are separate rights and obligations. 2) Reduced comparability as insurers may use different definitions of receivables and payables (no consistent definition under IFRS17)
- Current solvency standards apply capital charge for unpaid premiums and third party recoveries (asset risk charge) and reinsurance receivables (reinsurance recovery risk charge) to reflect credit risk.
- Requirement to use probability-weighted cash flows under IFRS17 GMM means that credit risk allowed for implicitly, but some consideration remain:
 - Without specific guidance on credit risk or impairment, insurers may have different view on probability of cash flows, hence not comparable across industry.
 - Allowance for impairment and credit risk under the simplified model may be less transparent than GMM, as based on cash received basis, not expected future cash flows.
 - Is credit risk of unpaid premiums and reinsurance recoveries significant. Insurer can lapse policy after missed payments. Overdue premium generally relatively small portion of asset. RI receivables more material portion. Credit risk related to RI receivables are higher for longer claims settlement.
 - Possibility insurers may not implement full system changes to combine receivables/payables system with insurance liability valuation system, and use high-level adjustment. If this is the case, possible to leverage this treatment and ask insurers to retain this info for solvency purposes.
- Treatment of insurance payables/receivables is not independent of treatment of technical provisions:

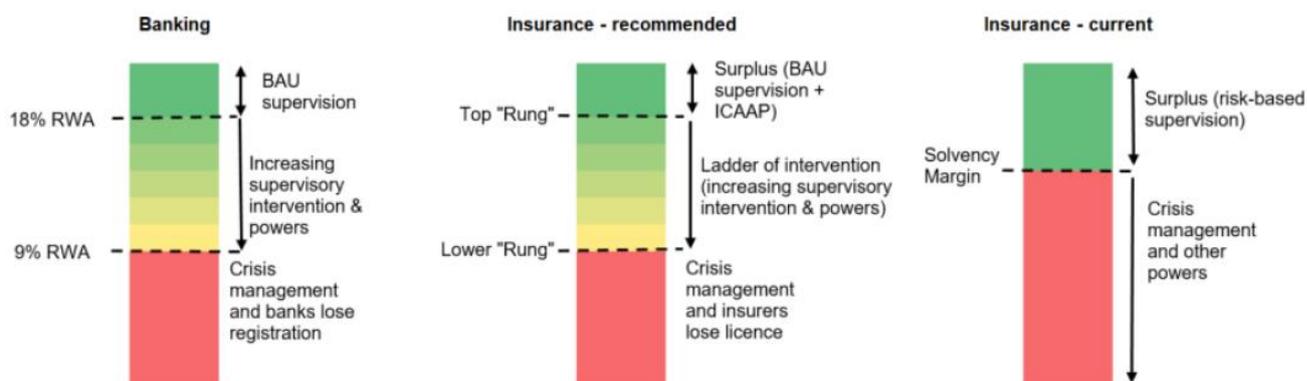
Options	Treatment of insurance payables and receivables
3a: Allow insurers choice of valuation method under IFRS 17	No further adjustment needed to make sure insurance receivables/payables are covered. Possible to standardize allowance for impairment and credit risk through prescribed valuation parameters. Whether or not the impairment can be easily unwound/unloaded to apply 1-in-200 year stress.
3b: Specify which IFRS17 valuation method and parameters	
3c: Specify non-IFRS17 valuation method	Require explicit adjustment to BS to ensure insurance receivables/payables are accounted for. Require consistent definition, but risk being unduly complex and burdensome for industry/supervisor.
4: Regulatory balance sheet	

Alternative: add explicit entry on balance sheet for valuation of technical provision.
 Problematic to underwriting to apply in a 1-in-200 year stress.

- **3.3.3 Tax:** may be affected to extent that it affects recognition of profit (change in profit recognition pattern between IFRS4 and IFRS17), flow through deferred tax asset and liability component. Solvency standards deduct deferred tax asset from calculation of actual solvency capital. This means impact of changes to DTA may be mitigated.

4. Ladder of intervention framework:

- **4.1 Solvency control levels:** ICP 17 requires possible triggers and interventions at each control level to be disclosed appropriately. Criteria should be simple and readily explainable when seeking court enforcement of supervisory action:
 - *Prescribed capital requirement (“PCR”)* – highest solvency control level, where supervisor does not intervene on capital adequacy grounds, asset exceed technical provisions and other liabilities with specified level of sufficiency over a defined time horizon.
 - *Minimum capital requirement (“MCR”)* – lowest solvency control level, ultimate safety net for policyholders, if breach, supervisor invoke most stringent power. MCR sets minimum level which no insurer is seen as able to operate effectively. Supervisor’s actions increase in intensity as insurer’s capital position approaches MCR.
- Proposed ladder of intervention:



- **4.2.1 Solvency control levels: measures**
 - **Value-at-Risk (VAR):**
 - **Pros:** Least implementation cost (current solvency standard), widely used internationally.
 - **Cons:** Ignore size of loss in tails (significant for heavily skewed losses), added cost and complexity for industry and supervisor, as accurate calculation require stochastic.
 - **Scenario-based:** number of prescribed scenarios (severe, moderate, mild stresses):
 - **Pros:** More easily understood from policyholder perspective.
 - **Cons:** Severity of scenarios subjective and may not allow full range of extreme scenarios, if based on historical events. Mya not be internationally recognized. Does not give indication of probability of failing to meet claims.

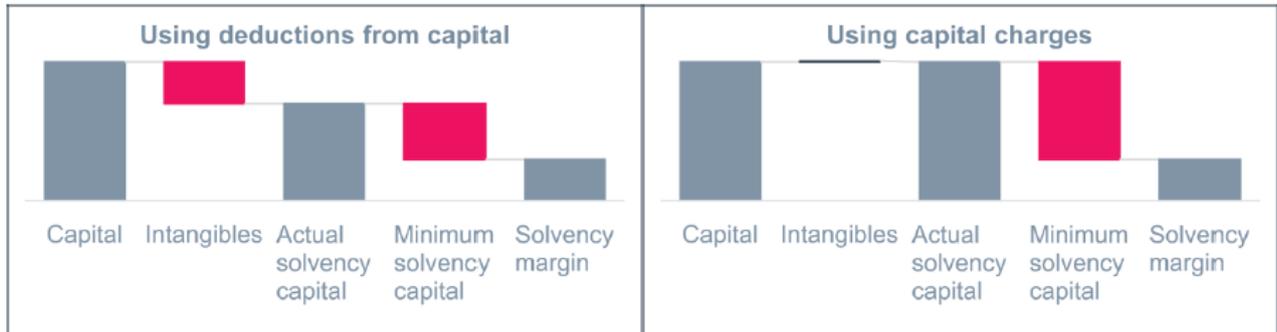
4.2.2 Measures of solvency position: assess insurer performance against solvency control levels:

Measures	VaR	Scenarios
Solvency ratio: Actual capital / Required Capital • Pros: Least cost/complexity (current method). Broadly comparable (most jurisdiction) • Cons: Not best measure to assess solvency (presence of large negative policy liability on life insurers BS distorts comparison), consider change due to IFRS17, only indirect indication of how likely company is not able to meet its obligation to policyholders.	/	/
Assets over stress liabilities: • Pros: Direct calculation approach (easily understood), better comparison across industry as less susceptible to distortions due to peculiarities in insurance accounting • Cons: Not comparable to other jurisdiction, consider communication impacts transition to IFRS17, only indirect indication of how likely company not able to meet obligations.	/	/
Probability if failure:	/	X

<ul style="list-style-type: none"> • Pros: Policyholders more interested in knowing how likely insurer not able to meet obligations to policyholders. More natural way describing loss. • Cons: Involve complex modelling and subjective assumptions. Danger in misinterpreted. 		
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5. Solvency calculations

- **5.1 Deduction vs charges:** deduction (wind-up valuation) where certain asset are deducted (not realizable or potential mask) appropriate for minimum solvency. Resilience Risk Capital Charge, more of going concern.
- Solvency margin is unaffected by replacing deductions with capital chargers of same amount (change if different). Solvency ratio decreases as denominator and numerator increase by same amount.



- **5.2 Supervisory adjustments:** situations for supervisor to adjust solvency calculations:
 - Material item on balance sheet is held at value not reflecting true economic value.
 - Insurer used judgement regarding solvency stresses/discretions. Minimum solvency Capital (MSC) no longer aligns with target solvency criterion.
 - Insurer subject to material risks not assumed by solvency standards.
- Main tool by imposing minimum solvency margin ratio through condition of license. Weakness:
 - Solvency ratio/margin published do not incorporate additional license condition, distorting picture presented to policyholders and the public.
 - License condition in fixed dollar or percentage, practice is difficult to make conditions responsive to changes in business volumes or risk profile.
- Supervisory adjustment (fixed dollar amount, ratio to BS aggregates - %premium/claims, instruction to use certain methods or assumptions in valuation balance sheet items) to add to calculated MSC.
- **5.3 Hierarchy of Risks and Diversification:** e.g.: list of risks, then individual risk are applied capital charges, then correlation among individual risks were combined

$$\text{Compound Capital Charge} = \sqrt{\sum_{ij} \text{Correlation}_{ij} \times \text{Capital Charge}_i \times \text{Capital Charge}_j}$$

- Allow for broad range of material risks identified and analysed in logical framework that recognizes relationship between risks. Degree of risk diversification can be assessed and rewarded or penalized as appropriate.
- Major criticisms of correlation matrices: peace-time relationship rather than conditions prevail in stress. Can be mitigated by carefully examining the relationship in times of stress.

B) IAA ORSA – Deriving Value from ORSA

- ORSA should consider (1) have financial resources to accomplish objectives? 2) utilize resources in efficient manner?
- Regulatory and rating agency capital requirements are determined based upon large market segments, disregard specific risks on individual company -> too optimistic/conservative.
- ORSA: ongoing process where SMT routinely assesses its own risk and solvency position (profit, risk, capital; now/future; different scenario; relative to risk appetite). Consistent with business strategy and business planning process.
- ORSA should consider risk and solvency both from purely economic view and regulatory requirements, reflect material differences between the 2, demonstrate company resources are adequate considering both views looking forward over the time horizon of the business planning process under baseline and stressed conditions.
- The ORSA consists of several major steps along a cycle of appropriate length, carry out on a regular basis and whenever the company experience significant change in its risk profile and before strategic decisions are made. Findings analyzed by management and reported to board. Process should be self-reflective, identifying potential weaknesses and points of improvement of the ORSA process itself.

Introduction

- Board role 1) overseeing management assessment of risk and solvency. 2) challenge ORSA results. ORSA:
 - 1) Enhances the information basis for Board decisions.
 - 2) Provides understanding of company's risk profile going forward (relates to risk appetite under various alternatives, major risk drivers, capital resources available to support current and emerging risks).
 - 3) Increases credibility with regulators or supervisors.
 - 4) Helps build/maintain risk awareness throughout the company.

Understanding the Company's Risk Appetite and Risk Profile

- "Solvency Risk Profile": company's risk profile from perspective of ongoing viability (economic/regulatory, quantifiable/not). Reflection of contribution of each of material risks to the total solvency risk.
- Different levels of profit per unit of risk, leads to strategic discussions with management about the reasons for participating in businesses with lower risk-adjusted profitability, company plans for growth of businesses with high/low risk adjusted profitability over time, plans for improvement.
- Total solvency risk, discussion with management about acceptable levels of solvency risk. Min/max level of risk -> risk appetite -> budget if review by Board.
- If action results in risk profile outside appetite, consult Board for consent.
- Risk profile often described within broad categories of risk: insurance, market, credit, operational, strategic and liquidity risk.
- Risk profile/appetite assessment helpful to Board to be kept aware of major changes. Discussion should be done on: proposed M&A, enter/exit new line of business/product/territories/distribution networks, major change in business model.

Assessing the Adequacy of the Risk Evaluation and Risk Treatment Process

- **Identification:** No such thing as benchmark risk profile. Management responsible ORSA capable of identifying unique nature of company's risk profile, changes in risk profile over time, major drivers and reporting information timely. Board will only trust ORSA info as reliable and useful if understand linkage between major individual characteristics of risk profile and management of risk including capital requirement. Sufficient reporting by management, sufficient compatibility between management business judgement and ORSA findings.

- **Priorities:** Senior management responsibility to provide Board with prioritized evaluation of all major risks on a periodic basis, for Board to effectively challenge and advise management.
- **Quantitative vs qualitative evaluation and treatment of risks:** Certain risks that could be equally material and quantifiable may be treated better using appropriate risk treatment techniques rather than capital (e.g.: liquidity risk treated with robust liquidity policy with good governance; operational risk management policy with carefully designed controls; reinsurance/hedging). Board analysis of result over time.
- **What-if Analyses:** stress/scenario tests with qualitative/quantitative considerations. Should be consistent with and proportionate to the nature, scale and complexity of the risks to which the company is currently or may be exposed, including dependencies/correlations. Board to be made aware of appropriateness of the economic, strategic, and operational scenarios tested -> more informed on strategic decisions.
- **Capital and Resource Adequacy:** ORSA may reveal insurer positive or negative gap of available capital, how capital need changes in relation to changing risk profile.
- **Emerging risks:** Board should be made aware of risks may threaten company in future, even though not visible or material when standard evaluation techniques used in ORSA.
- **Model Validation and Governance:** ORSA rely upon complex models, significant model risk. Important that models subject to independent validation and appropriate controls on input of model (assumption, quality of data), changes to models, model outputs, and model execution.
- **Regular review of the ERM framework:** Board best interest that every major part of ORSA (identification, treatment of material and relevant risks, evaluation process, tools) process continues to be fit for purpose. Regular assessment of whole ORSA process, even if no change is necessary, should be part of the ORSA process itself (including periodic independent review)

Understanding management's strategic risk-based decisions

- ORSA has potential of shifting Board's discussion with management away from a strict focus on growth and profits, holistic understanding of how management balances and ultimately plans to optimize risks taken, expected return and capital required to support business plan.
- Management that do this effectively level up ERM processes – away from identifying key risks and adequate control – to strategic risk orientation, by management to assess critically which risks is willing to take on, within the risk appetite, by evaluate potential return and capital required. Board should consider challenging management to demonstrate how each new major risk taken is consistent with the adopted risk strategy and returns on capital expected from the venture.
- Diversification, by taking new risks that are loosely or negatively correlated with current risk. However, difficult due to correlation is difficult to understand (require data to demo level of correlation) & seemingly independent risks can become much more correlated during extreme event. Must be balanced with cautious assessment of potential new ventures where risk not fully understood (no experience, process)
- Before adopting overall strategic plan, Board should have sufficient info to ensure management identified and quantified risks inherent in various alternatives, and sufficient risk mitigation plans to limit risk associated with the plan.
- Board will want to receive sufficient info from management to ensure both are focusing on critical decisions. Attention should focus on material risk unique to the company.

Limitations and Caveats

- **Incompleteness:** complete ORSA would include unknown unknowns (impossible), focusing on reporting past events instead if forward looking risk assessments.
- **Unnecessary Complexity:** too many categories of risk, too slow in making critical decisions.
- **Over-reliance:** focus more on process than its content or results. Effective process does not imply risk undertaken is low.
- **Under-reliance:** too far away from business decision that ORSA are not used by company.

- These ORSA process risks can be addressed by: 1) including idea how undertaking assesses the risks from unknown unknowns. 2) routinely used for high level decisions. 3) management culture encourages second opinions of everybody involved in the ORSA-process.

(B) IAA Risk Book 10 – ORSA

Executive Summary

- ORSA: collection of internal “own” processes, highly tailored to the nature, scale and complexity of an insurer, that result in key strategic information for senior management and board.
- ORSA is an ongoing part of risk and capital management practices and merit beyond any regulatory requirement
- ORSA is not “one-size-fits-all” process. Significant variations occur from company to company and even within different organizational units of large group
- Both quantitative and qualitative analyses support ORSA processes
- ORSA processes are most effective when integrated within other business process (strategic & business planning, capital management, product pricing and underwriting)
- Promoting ORSA disciplines has value at both macro (industry-wide) and micro (company/group) level
- Actuaries are highly experienced in assessing complex topics and have the skills and professional processes and perspective needed to create valuable risk analysis frameworks for management, boards and regulators.

Introduction

- ICP 16 ERM for Solvency Purposes, requires company to establish an ERM framework that specifies the processes and techniques the company will use to maintain risk exposures within predefined risk limits. Key elements to include in ERM framework:
 - 1. Provide for identification and quantification of risk
 - 2. Must include risk management policies to guide the company
 - 3. Establish and maintain risk tolerances setting out overall quantitative and qualitative levels within which the company assumes and manages risk
 - 4. Responsive to changes in the risk profile and the environment through the periodic conduct and communication of ORSA results and management’s strategic response to these results.
- Primary objective of ORSA to support company’s strategic decision making by providing insights into the risks the company chooses to accept in return for the reward that can be expected. Specifically:
 - 1. Enhance the information basis for board decisions
 - 2. Provide senior management with understanding of company’s current and evolving risk profile relative (thru periodic discussions) to company’s appetite for risk under various stress events of scenarios and an understanding of the adequacy of capital resources to support both current and emerging risks.
 - 3. Help build/maintain risk awareness throughout the company.
 - 4. Increase credibility and insight with regulators or supervisors. (help understand risk profile, management framework, and capacity to face the risks that company may become exposed)

ORSA Process

- Fundamental: assessment of key risks and capital adequacy, current & prospective, under anticipated (baseline) and stressed conditions.
- Besides follow regulatory requirement, fundamentally represent company’s own view of key risks and level of capital it needs, and risk management framework to achieve strategic objectives. Since well beyond rating agency and regulatory requirement, sufficient to mitigate risk of insolvency.

- Consists of variety of assessments that results in overall understanding of key risks leading to decisions regarding the management of these risks, an understanding of capital adequacy at a given point in time. Carried out using overall approach, needs to fit company's organizational structure.
- ORSA is not just report or outcome, but ongoing process on periodic basis and whenever experiencing significant change on its risk profile or before major strategic decisions. True value is realized when ORSA becomes integral to management's strategic decision-making:
- Complementing steps, regulatory expectations:
 - Include assessment of company's overall solvency needs (regulatory & own standards)
 - Forward looking (adopting medium or longer-term, forward-looking)
 - ORSA takes into account company's risk appetite tolerance and limits
 - In certain jurisdictions, ORSA is expected to explain divergence between how assets & liabilities are valued and recognized in the ORSA and how they are valued and recognized in company's regulatory capital computations.
 - Results expected to be taken into account in business decisions (capital, business planning, product pricing and underwriting)
 - Group-wide ORSA consider group-specific considerations (e.g.: liquidity & fungibility of capital)
 - Adequately documented such that 3rd party of appropriate level of expertise can understand the principal methodologies, processes, key assumptions made & judgment applied.

Conducting an ORSA:

1. Identification of Key Risks

- Risk profiles of companies varies due to significant variability in business models and environments, hence types of risks exposed can vary significantly: market, credit, insurance (premium, reserve, catastrophe, mortality, morbidity, expense and lapse), operational. E.g.: long-tail p&c: "insurance" risk.
- Qualitative methods for identifying risks that are most significant: currently & prospectively:
 - Discussion with senior management and board on types of risks of concern
 - Workshops (by risk managers) where business leaders explore and rank risks that are important to their business or functional areas
 - Review of risks that other similar companies exposed to, or have suffered loss, supported by external advisers or data sources.
 - Consideration of scientific and environmental reports
 - Review of company's own past losses and "near misses" to understand risk drivers, causes and impacts.
- Process is iterative in nature and include gross and net of risk mitigation (e.g.: Reinsurance). Risks range from those risks amenable to quantitative assessment to those difficult to quantify.
- Take into account consideration of known or potential changes to the environment it operates that might have significant impact on risks it exposed. Assessment thru "horizon scanning" for emerging risks, bearing in mind that environment is rarely static

2. Assessing Key Risks and Capital Adequacy – Current and Future

- Risk and capital adequacy assessment involve all material risks the company faces. Apply an assessment technique or combination most appropriate for each key risk and for all risks in aggregate, understanding correlations between risks, indicated levels of required capital relative to establish capital targets and adequacy of available capital relative to both own and regulatory measures of required capital.
- A. Techniques for assessing Risk and Capital Adequacy:
 - Economic Capital Models (ECMs): robust view of future financial condition and ability to fulfil obligations to policyholders. Depend on assumptions of general economy, environment, and operating situation. Derived from stochastic generators using parameters based on historical experience or on current or recent conditions. Resulting models can be extremely complex, assuming reliability and validity can be a significant challenge.

- Stress and Scenario Testing: critical in identify potential threats and developing management action. Assess financial impacts of specific events. Can enhance understanding of company vulnerability to highly uncertain tail risk and develop suitable mitigating actions. Easy to communicate and understood by management, board than output of ECM. Can enhance risk culture of company by alert decision makers to problematic area and provide a framework to enable companies to base business strategies and risk mitigation activities on a range of forecast, rather than single best-estimate. Supplement with reverse stress tests to explore scenarios that result in company business models being fatally damaged, aim to identify business models that are more robust to such scenarios and also develop triggers for mitigating actions when potential threats developing.
- Factor-based models: rely on capital factors calibrated to selected return period and applied to financial statement data, straightforward to use, and beneficial for quick assessment of trends. Since rely on capital factors developed considering industry experience as a whole, may not fully reflect risk profile of any individual company
- Many regulatory regimes require companies perform stress and scenario testing for regulatory purposes, prescribe certain stress tests and scenarios, or strongly encourage stress testing as a means to communicate potential impact of most significant risks. Some may also need to include assessment of appropriateness of methodology the company has selected.
- B. Establishing Capital Targets: own level, regulatory or rating agency. Differences between capital measures are often based upon different valuation or accounting bases, varying time horizons (1 year of new business) and risk measures (99.5 VaR). Need to understand and able to reconcile the difference. Typically reflect capital buffers above certain binding capital constraints to allow for loss absorption capacity in the event of significant stress, volatility of profits, and uncertainty in models and data, dividend policies, access to capital, overall quality of capital. Continuously comply, not just point-in-time.
- C. Forward-Looking Assessments: ORSA consider capital adequacy over business planning horizon given evaluation date, point-in-time assessment of risk and capital adequacy. ORSA beyond one year require design and implementation of approaches that reflect key risk behaviors and likely management responses to risk events when they occur while limiting the additional uncertainty with projecting potential outcomes over multiple years. Methods: multiyear stochastic, stress scenarios to result of one-year model to reflect additional years of stress event, factor-based approaches based on complex and granular 1 year stochastic.

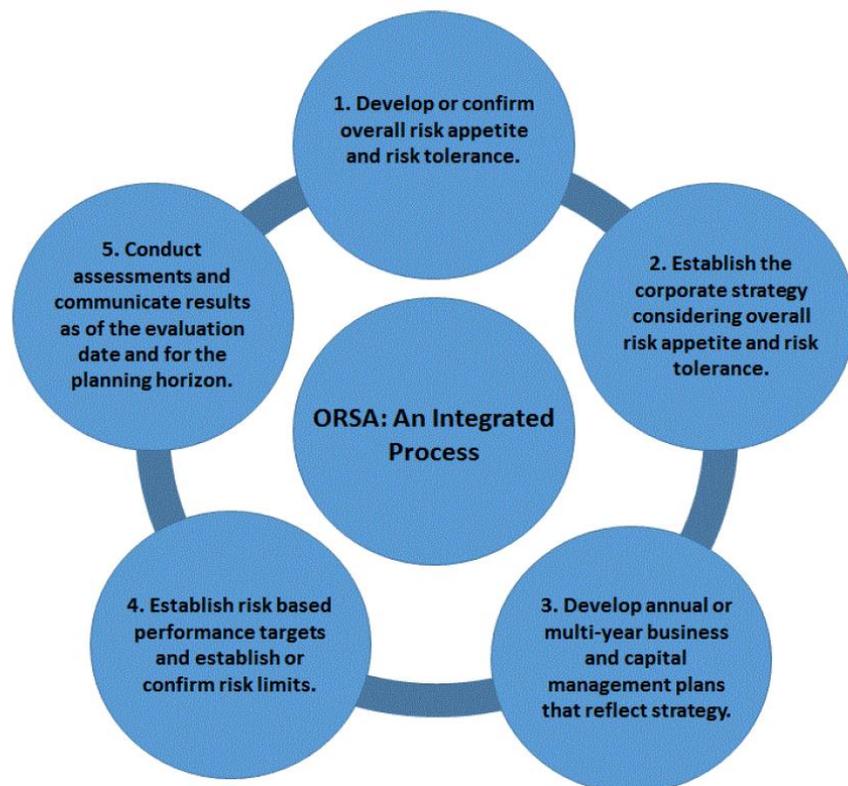
3. Communicating and Reporting ORSA Results

- A. Senior Management, the Board, and the Business: owner (e.g. Board) of ORSA may be designated by local legislation. Findings and insights from ORSA are to meet needs of users. Owners to approve key aspects of methodology being used. Business unit may use ORSA for decision making. Reporting to board and senior management in multiple points in the year. Communication plans responsive to timing of ORSA processes.
- B. Supervisors: Use of internal reports generated for senior management/board to avoid separate reports for compliance purposes. Supervisors do not have access to day-to-day ORSA process, likely need to reference supporting documentation (or in ORSA summary report themselves)
- C. Other External Parties: e.g.: Rating Agency, Shareholders and Policyholders. ORSA may contain proprietary information not for competitors, hence confidentiality is highest priority. External disclosures driven by minimum regulatory requirements, consistent with risk disclosures under accounting or investment securities standards.
- Key attributes of ORSA report:
 - Succinct overview of key insights arising from ORSA and how they fit together.
 - Analyses of key scenarios considered, including management actions assumed, and confirmation whether or not these have been approved by the board
 - Where “use test” part of regulation, information on where the board has been consulted.
 - Explicit or separately, descriptions of methodology and key assumptions underlying ORSA results, including info on principal limitations and judgements.
 - Cross-referencing to any relevant supporting documents so that additional supporting details can be obtained if required.

4. Assessment of ORSA process itself, identifying key expert judgements, potential weaknesses and points of improvement

Integration with Other Business Process:

Figure 1



- Linkage between business strategy and decision-making processes with ERM framework including ORSA processes is often referred to “use” test by independent reviewers of ORSA process, including regulators.
- Regulators value use test because it incentivizes companies to enhance risk management disciplines and processes, ultimately leading to further protections for policyholders. ORSA less desirable if focus only on understanding risk, ignore insights uncovered in the process.
- Scope of use test include senior management and board responsible for company oversight. Senior management to actively consider ORSA results when developing future strategies & clearly evidenced. Board actively involved in framing and overseeing how company ORSA to be carried out, help oversee business, challenge inappropriate activities in risk appetite context, hold senior management accountable.

Other Group Considerations (Group Wide ORSA):

- Need to reflect potentially differing risk perspectives arising from different parts of the group (relative to other member, impact multiple entities at same time). Consider capital available to, fungible and transferable between different companies within the group (including forex risk), impact of planned transfers of capital around group or other planned risk redistribution activities.
- Different jurisdictions and business types, regularly reporting ORSA clearly identifies companies that are within or excluded from the scope of ORSA. Spell out any governance requirements and variations in risk management perspectives applicable to individual companies have been address. Multinational, how the group-wide ORSA addresses any difference in supervisory need.
- If head of group us not an insurer details might need adapting to address regulatory requirements applicable to non-insurer elements on the group.

Guiding the ORSA Process

- Company develops policies and procedures to key business process. Solvency II: ORSA process is documented in ORSA policy (how carry out – processes, procedures, methodologies, data quality standard;

record of ORSA conducted – frequency & timing, stress/reverse tests, sensitivity analyses; internal & supervisory report). Summary of ORSA approach publicly available, so customers understand risk management disciplines and solvency needs.

- Public disclosures help promote adoption of best practice ORSA disciplines, benefiting industry and customers more generally.

Insurance Supervision and ORSA

- Supervisors may have authority to require enhancement to ORSA approaches deemed deficient or penalize.
- Supervisors have authority to request info from insurers where important to understand the nature of risks assumed and adequacy of capital to provide for those risks. May ask additional info and analysis if not within the ORSA or other relevant risk and capital assessment process.
- Supervisors may exercise authority to affect capital targets by imposing additional external constraints to be taken into account by insurer in its own capital identification process.

Actuaries and ORSA

- ORSA highly technical, rely on actuaries and other professionals to lead or support for ORSA processes. Also work with risk, finance, legal, claims and underwriting.
- Actuaries highly experienced in assessing complex topics. Practiced in areas of low-freq high-severity events. Pricing and reserving estimate central tendencies of likely future outcomes and understand variability around those estimates.
- Actuaries apply risk assessment techniques to account for nature, scale, complexity and correlation of wide range of risks and that reflect risk mitigation strategies.

(B) Geneva – Modernising Insurance Solvency Regimes

- Insurance regulatory & supervisory regimes aim at protection of policyholders and supporting financial stability.
- Common Framework (ComFrame): set of internationally active group-wide supervision of Internationally Active Insurance groups (IAIG). International Association of Insurance Supervisors (IAIS) is developing a risk-based global Insurance Capital Standard (ICS).

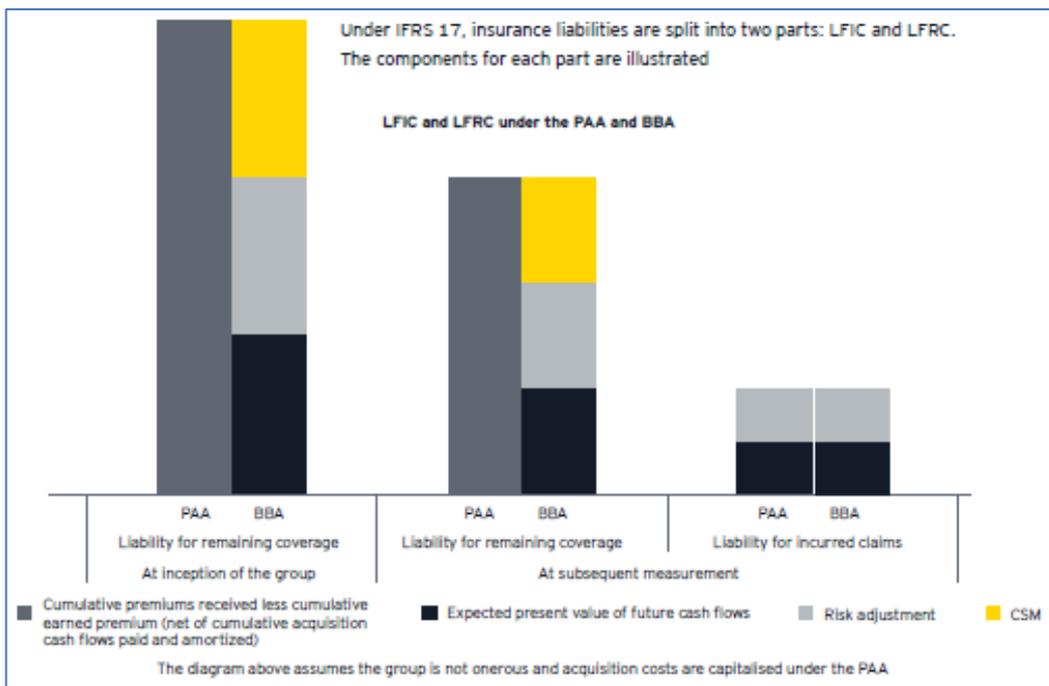
Key Findings

- *Regulatory capital requirements*: risk-based, where solvency regimes reflects all risks with potential to affect the potential to affect balance sheet of the Insurer. Specific risks such as strategic and reputational risks are generally not accounted for in the capital calculation. Strengthening over time of the degree of risk sensitivity in regulatory capital requirements.
- *Assets*: compatible with IFRS/GAAP or local statutory accounting rules. Particular adjustments for intangible assets, goodwill and deferred tax for solvency capital calculation purposes required in some countries.
- *Liability Valuation*: heterogeneous across jurisdiction (underlying assumptions, applied rules, adequacy tests, degree of illiquidity). Based on cash flow projections, discounted by a risk-free rate, with/without adjustment for credit spread / liability illiquidity. Margin over current estimate are added to current estimate. Explicit countercyclical elements that reflect degree of illiquidity of liabilities are rarely considered. Some prescribed conservatism over and above expected obligations and subject companies to annual reserve adequacy assessments.
- *Capital requirements*: set at predetermined confidence level. Not common to account future management actions. Specified at 'solo entity level' (individual insurance company) not group level.
- *'Ladder of Intervention' approach*: requisite supervisory tools intervene in different degrees of intensity connected to solvency situation of supervised company and remediate deficiencies as necessary. Intervention triggers may be part of regime. Can adapt tools to align with degree of severity of problem. Allows company to anticipate supervisory actions and contribute to orderly means to address issues raised by the supervisor.
- *Internal models*: subject to specific regulatory criteria and can be applied only upon supervisory approval. Actual use and reliance on full/partial internal models is high for certain businesses (reinsurance).
- *Capital resources*: quality is assessed based upon specific criteria (loss absorbency), Tier 1 to Tier 3.
- *Qualitative requirements*: all regimes, mostly regarding governance (especially risk management and internal control)
- *Own Risk and Solvency Assessment (ORSA)*: imposed on large number of countries, or being planned.

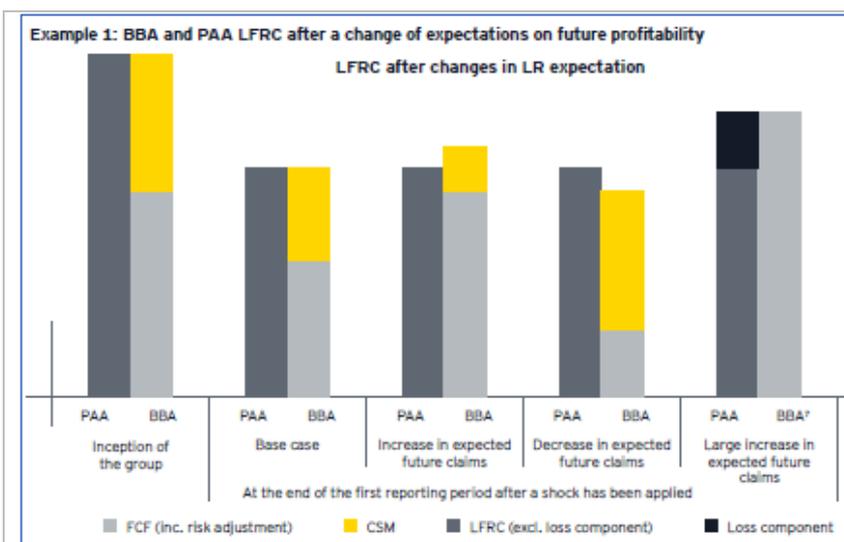
CAS Exam 6I – C (IFRS) Quick Summary:

C) EY PAA Eligibility

- PAA, valuation of **unearned portion of liability** (liability for remaining coverage – LFRC) similar to calculation of: unearned premium reserve – deferred acquisition cost – premium receivables (+ any additional unexpired risk reserve for unprofitable business)
- Liability for Incurred Claims (LFIC): amounts due to policyholders for claims incurred from **earned portions of the liability**. => Estimate future cash flows adjusted for time value of money + adjustment for non-financial risk.
- Criteria for PAA: (1) coverage <= 1 year, OR (2) PAA on LFRC would not differ materially from BAA.



Changing expectations of profitability for the remaining coverage period (e.g. due to claim expectation).

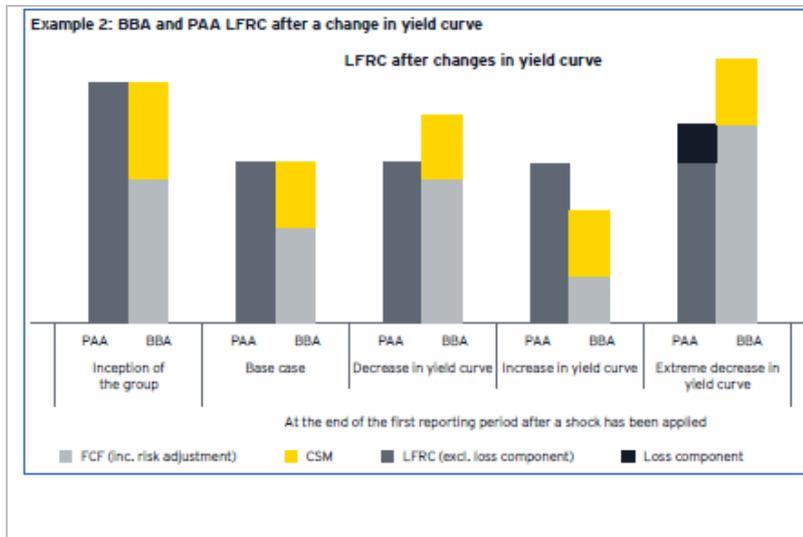


- Expected future claim increase, BBA give higher estimate of LFRC (and vice versa)
- Where increase in future claim is larger than remaining CSM, BBA and PAA give same LFRC (loss component liability is set up using IFRS 17 fulfillment cash flows (FCF))

- PAA **would not** recognize the improvement or deterioration in profitability **until exposure is earned**.
- Under BBA, **CSM would be adjusted 1st** before the proportion of CSM that relates to the current period being recognized as insurance revenue.

- Likely in following contracts: longer duration (chance of change happening), expected LR are uncertain (new LOB), exposure to shocks (affect expected future claims), longer settlement period (change in future claim impact 2nd order discounting effect).
- Catastrophe: impact LFIC, where PAA = BBA. However, this may affect entity's expectations of future loss events, indirectly affect PAA eligibility assessment.

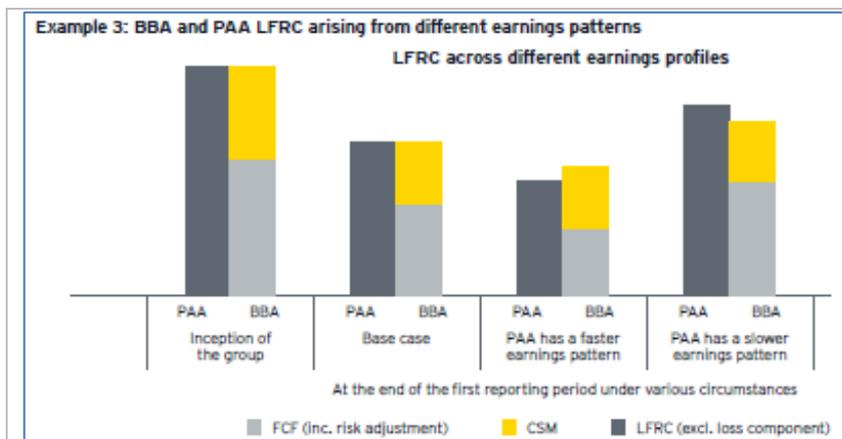
Changing expectations of profitability for the remaining coverage period.



- Yield curve decrease, LFRC under BBA increases as **discounted future cash flows increase (CSM unchanged)** based on yields at initial) – vice versa.
- Yield curve change so significant, that the discounted **future cash flow larger** than LFRC under PAA, then **loss component** is added under PAA (become onerous). FCF cash flows updated, CSM unchanged (discount rate change is reported in income statement).

- Depend on the following sensitivities: length of coverage, how large discounting impact, how large a change might be expected in the currencies of liabilities, claims settlement pattern (long tail, discount)
- Under PAA, can choose not adjust LFRC on TVM at initial -> expect that **time between providing each part of coverage and related premium due date is no more than a year** -> might be difference with BBA.

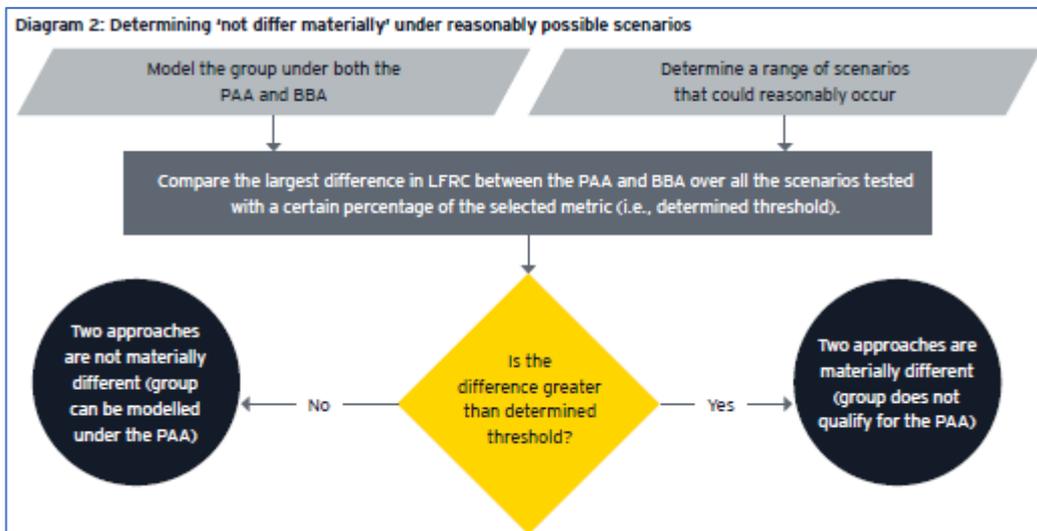
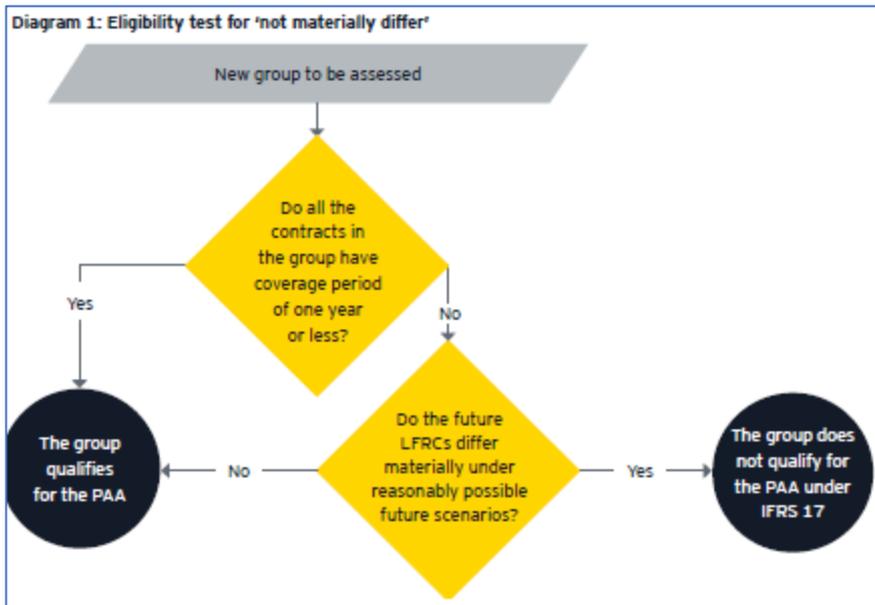
Uneven earnings pattern



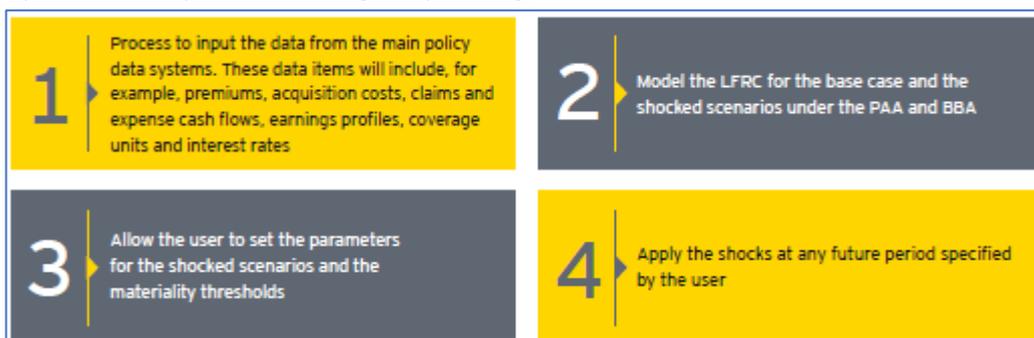
- When earning patterns assumed to be **more accelerated** under PAA than the allocation of coverage unit (e.g. thru SI) for the BBA, PAA produce **lower LFRC** and vice versa

- CSM under BBA allocated based on coverage units reflecting expected quantity of benefits and duration of contracts in the group. Revenue under PAA based on passage on time, or pattern of release of risk.
- In contract of seasonality (catastrophe) but one year or less, then PAA can still be used
- Risk adjustment can contribute to uneven earnings patterns if not released in line with claims.

Basis for the PAA eligibility assessment:



Operational impact of PAA eligibility testing:



- The cost of setting up model and process should be minimal when compared with implementing at full scale.

C) IAA ISAP 4

- **2.1 Relevant Knowledge Requirement** – have sufficient knowledge: on IFRS17 & other relevant IFRS; business environment; risk appetite; products & operations; methodologies and assumptions; law; auditing standards.
- **2.2 Materiality** – seek guidance from principal, threshold not greater than entity’s threshold.

- **2.3 Proportionality** – refinement of assumptions/methods should be proportionate to possible impact on the results
- **2.4 Identification, Combination, Aggregation, Separation, Recognition, Derecognition and Modification**
- **2.5 Measurement Approach** – GMA, PAA, VFA.
- **2.6 General Measurement Approach** –
 - 2.6.1 General Approach for Selection of Assumptions – combining similar risk based on nature, no constrained by actual grouping; other assumptions (pricing) is appropriate for IFRS17; links for consistency between assumptions; asymmetrical distributions of current estimates, e.g. tail events; credibility data; long-term trends, seasonal variations & environment (law, economic, tech)
 - 2.6.2 Process for Updating Assumptions – discuss change with principal, whether constitute change in accounting policy or just change in accounting estimate.
 - 2.6.3 Insurance Risk – characteristics of contract and policyholder; past experience of incurred claims including delays in reporting; practices of the entity – uw procedure, claim management
 - 2.6.4 Policyholder Options – past experience of how policyholders have exercised options; likely behaviour of policyholder; policy characteristics; significant scheduled changes in premiums, charges, benefits or T&C; any short-term spikes in cancellation rates.
 - 2.6.5 Entity Discretion – (expectations & limitations) marketing, promotions, past practices, current policy, market practice, laws & rulings.
 - 2.6.6 RI Contracts Held – multiple arrangement, consider order; financial condition, collateral & extent default, allow for uncertainty; commutation; reinstatement.
 - 2.6.7 RI Contracts Issued – expected behaviour of policyholders, issuer on available options; uw and management processes; reinstatement; default by issuer.
 - 2.6.8 Currency Exchange – reflect current market expectations of future currency exchange rates.
 - 2.6.9 Discount Rates – if beyond observable data, consider how current rates expected to evolve over time using best info available; if contract cash flow vary with returns on invested assets, consider investment policy, communications & anticipated policyholder behaviour; illiquidity/credit/default adjustments.
 - 2.6.10 Contracts with Cash Flows that Vary with Returns on Underlying Items – a select discount rates to calculate present value of cash flows to measure fulfilment cash flows that are consistent with investment returns anticipated, consistent with market expectations of future economic conditions.
 - 2.6.11 Maintenance Expenses – e.g. policy admin, claim handling costs, overheads; consider cost-accounting & expense allocation policies; expenses expected from fulfilling obligations existing on measurement date, and impact of future inflation; terms of any outsourcing arrangements.
 - 2.6.12 Insurance Acquisition Cash Flows – Allocation to portfolio of contracts is made on consistent basis.
 - 2.6.13 Risk Adjustment for Non-financial risk – understand inherent risk; compensation (reflect diversification, source of relevant info: capital/risk management & pricing policies); methodology where assumptions consistent with those used in determination of corresponding estimates of future cash flows, reflect risk differences between contracts, allow diversification; make appropriate allowance for mechanisms resulting in risk passed to policyholder (participation); compensations for bearing uncertainty of net exposure; (f) non-financial risk not using confident level approach, consider: ability to diversify, inherent uncertainty in translation to confident level.
 - 2.6.14 Aggregation of CSM –
 - Identification of portfolios of insurance contracts;
 - Allocation of individual insurance contracts into portfolios of insurance contracts, and division of each portfolio of insurance contract into groups of insurance contracts.
 - Treatment of loss component on onerous contracts.
 - Determination of the coverage units.
 - Roll forward of the CSM.

Subject to ISAP 1 **Assumptions & Methodology** – 2.7 Set by Actuary, 2.8 Prescribed (another party)

- **2.7 Premium Allocation Approach –**
 - 2.7.1 At initial recognition if coverage > 1 year, consider differences between GMM & PAA:
 - Expected patterns of Insurance Revenue
 - Expected timing of cash flows, resulting in different adjustments for the time value of money.
 - Whether future assumption changes under GMM would render PAA invalid.
 - 2.7.2 Whether significant financing component, measure liability accordingly
 - 2.7.3 Whether entity recognize insurance acquisition cash flows as expenses when incur and determine liability in accordance to entity's choice.
 - 2.7.4 Whether entity reflect time value of money or effect of financial risk, when not required to do so and determine the liability in accordance with the entity's choice.
 - 2.7.5 Whether facts and circumstances indicate the group of insurance contracts is or has become onerous and advise entity accordingly.
- **2.8 Variable Fee Approach –** apply 2.6, except 2.6.6 and 2.6.7, since VFA does not apply to RI.
- **2.9 Financial Statement Presentation and Disclosure –** 2.9.1 comply with relevant presentation and disclosure requirements, if info is incorrect/inappropriate, discuss with principal; 2.9.2 consistent order of calculation across all reconciliation from period to period, or disclose any change, including rationale and impact of change.
- **2.10 Transition –** whether full retro application of IFRS17 is impracticable consider:
 - Availability and integrity of past data for fulfilment cash flows/ past products.
 - Sufficient data (without hindsight) to determine initial assumptions and subsequent changes that entity would have adopted over lifetime of contract.
 - Method to adjust past known interest rates to achieve rates that reflect characteristics of insurance contracts.
 - Difficulty (without hindsight) in evaluation past risk adjustment for non-financial risk and entity use of discretion.
- **3.1 Disclosures –** disclose in the report:
 - 3.1.1 Information regarding change in assumption or method, whether from consistent or changed process.
 - 3.1.2 Changes in processes, with rationale & impact, related to:
 - Identification, combination, aggregation, separation, recognition, derecognition and modification (2.4)
 - The selection of the measurement approach (2.5)
 - The process for updating assumptions (2.6.2)
 - Aggregation and CSM (2.6.14)
 - The order of calculation on reconciliations provided for financial statement presentation and disclosure (2.9.2)
 - 3.1.3 When risk adjustment for non-financial risk has not been determined using confidence level approach, the uncertainty inherent in the translation to a confidence level (2.6.13.f)

CAS Exam 6I – D (RI Acct) Quick Summary:

D) IAIS CC: Module 5.5.1, Chapters 5 – 7

Chapter 5: Impact of reinsurance and risk transfer

Accounting treatment: different treatment lead to different result, income tax

- US Statutory Accounting doesn't allow immediate recognition of equity in unearned premium provisions. Proportional RI with ceding commissions as surplus relief. Also doesn't allow discounting on claim provision, incentive to achieve effect of discounting indirectly with claims portfolio transfers.
- Long-tailed business, not well served by accounting practices on short-term and certain. Issues in matching and spreading/smoothing transactions over number of years can be significant.
- Accounting standards must be followed, insurers & supervisors rely both on financial results and on the external audit. Standards change over time to reflect change in environment and practice.
- Underlying accounting principles:
 - *Premiums:* recognized from risk attachment date, and revenue earned measured over POI in accordance with incidence of the risk.
 - *Expenses:* Premiums ceded to reinsurers recognized as an outward RI expense in accord with pattern of reinsurance service.
 - *Gross reporting:* Accounting for insurance and RI transaction should be on gross basis.
 - *Liability recognition:* Technical provisions for OS claims recognized for direct and inward reinsurance business measured as present value of expected future payments.
 - *Claims recoveries:* Anticipated claims recoveries recognized as assets where amount can be measured reliably and calculated as present value of the expected future receipts.
- Recognition, accrued: premiums, claim admitted basis for technical provisions; received: claim payment. Uncertainty in assessment of future claims.
- RI arrangement needs to satisfy test that significant transfer of risk has been involved in transaction (uw & timing risks, not investment), reasonable range of outcomes, unbiased. (e.g. US arbitrarily 10% prob of at least 10% loss by RI, with specific consideration of catastrophe risk, which does not have 10% prob of occurrence)
- Principles based approach – intent and economic outcomes of transactions (look through approach). Supervisors may approve RI arrangement before put in place, reserve the right to vary or void arrangement after inception. Moral hazard for supervisor, if adverse outcome. May be blamed.
- If transaction not treated as RI, will be treated as “funding”/loan. Ideally zero result, where discounting on future claim recovery payment.
- If deposit is paid in return for sequence of future payments from invested premium, then if properly accounted in terms of present values, contract is zero result. However, treating premium as reinsurance and future “recovery” payments, at face value, as recovery payments leads to increase in insurer's solvency. This is because premium income net of reinsurance is reduced, but net outstanding claims are reduced at the significantly higher undiscounted face value of future recoveries.
- Growing prevalence of financial reinsurance and RI contributed to failure of the insurer. Insurer & reinsurer arrangement a form of regulatory arbitrage

Effect on Insurer's Financial Position:

- *Ratios:* cession & retention rates; maximum event ratios (hold capital to cover event); reinsurance recoveries (expected recoveries relative to net technical provision)
- *Trends:* reinsurer's result over time.
- *Assessment of position excluding reinsurance:* analyses are recomputed removing impact of reinsurance, compare, “straddle” minimum, key values, provide focus for further investigation.

- *Reflection of credit risk assessment*: ratios recomputed to reflect potential default by RI on some expected claims obligations
- Impact of RI on financial statement should consider specific circumstances of insurer (business size, product lines. New product).

Appropriateness of reinsurance strategy and program:

- *Insurer's position*: risk profile, business, exposure, retention level & structure. Consider risk profile, tolerance and available capital, nature/extent of gross business (geography, business class, catastrophe), exposure distribution to identify large potential claims. Optimisation of retention levels for RI programs in terms of costs and benefits.
- *Practical constraints*: established program, maintain continuity, long-term relationship, obtaining detailed pricing info from RI, impact of RI cycles and availability. Consider choice of RI, type, diversification
- *Insurer's RI governance processes*: BOD (review RI strategy – profile, capital & business plan):
 - Managing & monitoring RI program,
 - Compliance with legal & supervisory requirements,
 - Setting appropriate risk limits
 & Senior management implement RI strategy:
 - Ensuring clear policies, procedures and internal controls.
 - Setting & approving specific program structures and limits
 - Ensuring appropriate, accurate and timely reporting
 - Ensuring presence of appropriate systems and processes of internal control to govern interaction of insurer and reinsurer on transactions. Regularly reviewed.
- *Impact of external standards*: affect reported financial position & business management (accounting standards and income tax)
- Changes in RI capacity affect capacity of direct insurers. Cannot assume consistent RI capacity will be available, hence ensure not overly exposed to the impact of sudden reduction in reinsurance capacity. (e.g.: September 11, significant capacity withdrawal from direct markets)

Chapter 6: Security of reinsurance: Appropriateness of placing business with reinsurer. ConsiderL

- *Consistency of approach*: appropriate and up-to-date BOD & senior management RI strategies, consistent with risk appetite & approach, reflected in reinsurance contracts.
- *Legal and statutory framework*: if RI is not domiciled in the same jurisdiction as the insurer.
- *Financial assessment*: Appropriate & documented criteria => assess financial condition & credit risk of RI.
- *Business practices*: Understand RI UW and claims practices & how integrate with insurer's practices & reporting; use of alternative risk transfer tools, investment policy, derivatives.
- *Management*: expertise, quality & stability of management of the reinsurer.
- *Structural Unducatis*: ownership structures, affiliates, group.

Outsourcing: similar to management & assessment of outsourcing apply to RI. Treaties seek to cover these issues.

Operational Risks: not uncommon in low priority (delays in completion & signing, poor admin, weak systems e.g.: poor or manual reports) on management of RI matters.

Chapter 7: Failures and reinsurance: unable to meet regulatory requirement (e.g.: capital & surplus) can be designated as 'financially impaired' If impairment is not successful, insurer may be liquidated.

Reinsure Failure: insufficient capital/ IBNR/ Other technical provisions; fraud; catastrophe; poor UW, Over exposure to high-risk market; Risky assets; Mismanagement; Default of retrocessionaire.

CAS Exam 6I – E (Actuary) Quick Summary:

(E) IAA Professionalism

PG 1 – Principles of Professionalism

- Professionalism for actuarial profession: 1) application of specialist actuarial knowledge and expertise; 2) demonstration of ethical behaviour, especially in doing actuarial work; 3) actuary's accountability to a professional oversight organization on the basis of a code of conduct.
- Distinguishing feature of profession apart from a trade, craft, guild, syndicate is the overriding interest of the individual professional in the public well-being.

2. Principle A: Knowledge and Experience

- **2.1 Specialist Knowledge**
 - Clients incl. governments, community organizations, funds, industries, businesses and individuals.
 - Are equipped to help clients to make informed choice and develop solutions to safeguard their future in an ever-changing world.
 - Provide realistic, innovative and numerate solutions to complex financial and other measurable problems, sometimes over long time horizons and for uncertain events, using a control process to monitor and refine solutions over time.
 - Experts in modelling complex future events, often develop from 1st principles and are experts in understanding and analysing data. Use modes include sensitivity analysis and scenario testing to communicate the model dynamics and implications of the model results.
 - Apply skill set within a professional environment which ensures, through adherence to principles of professionalism, delivery of competent work, professional ethics, life-long learning and professional standards and discipline. Allow actuary contribute to public debate in matters affecting public.
- **2.2 Professional communication**
 - Needs to be clear and appropriate to the circumstances and the intended audience, and to satisfy applicable standards of practice and apply to individual actuary's situation.
 - Appropriate communication includes ability to; 1) Document the work done; 2) Communicate the basis and outcome of work to other actuaries; 3) Communicate with others who contribute to the work with courtesy and respect; 4) Communicate the assumptions/outcome/implications or actuarial work to superior or client; 5) Prepare material for presentation.
 - Work requires awareness of business context to determine the correct response and effectively communicate results. Advice given need to be communicated effectively, to avoid misunderstanding by clients that may not have relevant skills or knowledge.
 - Education to develop and improve communication skills. FMA may consider furthering communication skills of member actuaries include professionalism courses and CPD.
- **2.3 Required education** – (large and specialist skill set, breadth of knowledge, training) criteria for FMA: education syllabus, code of professional conduct, formal discipline process, and governing document.
- **2.4 Continuing Professional Development** – maintain knowledge, expertise and skills.
 - Can work variety of areas, need to be competent in chosen area(s) before providing advice. Over time changes in techniques, regulations, professional standards, and code of professional conduct.
 - CPD include analysis of case studies, general topics on ethics and analysis of current problems.
 - Interaction with other professions (operate in multi-disciplinary teams), knowing their code of conduct, exchanging points of view, joint sessions analysing current business of society issues.
 - CPD may be supported by compliance program administered by actuary membership association.

3. Principle B: Values and Behaviour

- **3.1 Ethical Behaviour** – FMA must have code of professional conduct consistent with principles in Internal Regulations. Definition of professionalism explicitly incorporate reference to ethical behaviour. Difference of views can be accommodated (e.g; whistle-blowing vs resolved by indirect means)
- **3.2 Integrity** – prominence in code of conduct, cornerstone of professional ethical behaviour
- **3.3 Independent advice** – important aspect of professionalism and ethical behaviour is the ability to express an independent opinion or provide unbiased independent advice (freedom from undue influence)
- **3.4 Trust and reputation** – Codes of Conduct designed to create and maintain trust in the in the work of actuaries among users of advice. Many codes require not to do anything that harm the reputation of the profession or association. Encourage to enhance profession reputations (individual responsibility)
- **3.5 Responsibility to the public**
 - Profession difference in protecting the public from unsound practices, regardless of conflict with immediate objective of earning a living. Owe status and recognition to the trust that public places in them.
 - Individuals to uphold value and standards, fulfilling statutory roles, avoiding conduct that could bring disrepute, and supporting organization. Met responsibility to profession and public by meeting requirement of law, code of professional conduct and professional standards.

4. Principle C: Professional Accountability

- **4.1 Entry and qualification standards** – FMA has its own requirements to admit members and determine who is qualified to do what kind of actuarial work. Include passing exams by FMA, subject to professional requirements by FMA or another regulatory body, completion of work-based skills.
- **4.2 Code of Conduct / Standards of practice** – 1) integrity; 2) public interest; 3) confidentiality; 4) qualification and competence; 5) conformity with professional standards; 6) taking responsibility; 7) disclosure; 8) conflict of interest; 9) consultation with previous actuary; 10) disclosure of related remuneration; 11) subjection to disciplinary procedures.
- **4.3 Disciplinary process** – FMA must have formal process of professional discipline for transgression of code, must be applied and be seen to be applied equably. Criteria:
 - Complaint process accessible to anyone affected by actuary’s work and professional peers
 - Due process of defense available to the actuary complained against, and the actuary’s rights are fully respected.
 - Objective formal appeal process independent of the body that has ruled at prior level.
 - Available sanctions appropriate to the seriousness of the violations committed, including termination of membership in the association
 - Process shall enable association to give appropriate notice and information to the public of the results of the complaint process, where any penalty is imposed, including providing information to other associations. Any notice to public shall be consistent with the discipline process.

PG 2 – Principles in relation to the Governance of International Actuarial Work

1. Definition of “International Actuarial Work” – work under the jurisdiction or regulation of one country, but carried out by actuary whose principal jurisdiction of practice or professional membership in a different country.

- “Governance” refers to regulation and supervision of actuary’s conduct and work by member association.
- Law/standards/regulatory frameworks of >1 country are relevant (legal jurisdiction) and material.

2. Proposed Principles

2.1 Qualification, Codes and Standards

- Adherence to Codes of Conduct (except where inconsistent – apply reasonable judgment) ensure actuaries are competent to undertake work for which they are responsible, and have appropriate understanding of relevant legal and regulatory requirements applicable to them and to that work. Actuaries also to satisfy

education and qualifications standards and requirements of each full IAA member bodies which they are member. Where appropriate, follow any applicable local qualification and standards of practice.

- Appropriate to advise and justify to clients as to the code and standards have been applied to work.
- Associations encouraged consideration of international and cross-border practice in code, qualification standards and standards of practice, to reduce or avoid situations of direct conflict with applicable codes.

2.2 Continuing Professional Development (CPD)

- Range from highly prescriptive requirements with numerous rules, to general principle-based requirements.
- CPD compliance is expected of every full IAA member association. The actuary may be required to fulfill organization's CPD requirement to fully meet local qualification standard. May create difficulties where CPD from one organization cannot be used to fulfill another.
- Associations are encouraged to recognize CPD of another member association as fulfilling their own requirement, including any requirement incorporated into qualification standards. Where possible, avoid duplicative requirements, relation to undertaking of substantive CPD, or compliance burden of CPD.

2.3 Disciplinary Investigation and Enforcement

- Member associations are encouraged to facilitate sharing of relevant info with other IAA associations in relation to disciplinary proceedings, cooperate in disciplinary investigations & proceeding of other member association. Sharing of info should take into account any relevant laws, regulations and court rulings in respect of entitlement of members and third parties to privacy, confidentiality and/or data protection.
- Coordinate disciplinary managements as follows:
 - Put in place formal cross-border discipline arrangement (e.g.: define formal responsibility for undertaking investigation then informing the other).
 - Less formal arrangement not involving conferral of actual legal jurisdiction on Association 1, where associations 1 & 2 agree to provide mutual assistance. Might be some form of MOU.
 - >1 association may have jurisdiction and required to undertake separate disciplinary proceedings. Either by coordination, or one take a lead in substantive investigation. Encouraged to enter dialogue with other relevant association at the outset.
 - Can consider what weight or recognition can be given to disciplinary findings or determination of another association. Avoid the need for potentially duplicative inquiry.
 - Joint disciplinary panel or committee is convened, comprising appropriate representative and appointees from each associations involved. Single joint hearing, decisions formally recognized and enforced by each association. Avoid the necessity for multiple hearings.
- In longer term, may be value in reviewing the scope for greater level of consistency/harmonization between specific tests/thresholds applied by associations in establishing necessity for disciplinary action.

(E) IAA Risk Book Ch. 2 – Actuarial Function (AF)

1. Executive Summary: Key Messages

- Insurance supervisors are focusing on the oversight role of the AF as part of the 2nd of the traditional “3 lines of defence” in effective risk management.
- Actuaries are not restricted to providing the oversight of risk, but are active in some or all of the 3 lines of defence within an insurer.
- Independent risk by the AF is important to boards, senior management, and supervisors because of unique actuarial perspective of the Insurer's risks. Effective AF oversight can facilitate less intrusive supervision.
- AF is frequently expected to make material contributions to the risk management of the insurer.
- AF must be organized and operate within an insurer and insurance group in a clear, effective and transparent manner. This benefit both internal management and interested external stakeholders, such as the insurance supervisor.

- Insurance supervisors develop and maintain confidence in the work of AF thru: 1) validation of important aspects of AF's work. 2) presence of strong professionalism as evidenced by codes of conduct, standards of practice, and a disciplinary process. 3) presence of effective feedback loops between the supervisor, profession, standard-setters, and the disciplinary process

2. Unique Role of Actuary in Risk Oversight

- Actuaries play unique role in managing risks and ensure long-term sustainability, thru skills & education.
- Actuaries functional capacities: marketing, product design, ERM, pricing, underwriting, investments, reserving/valuation and financial reporting. Work entails both operational and oversight functions. IAIS identify AF as 1 of 4 major control function (risk management, compliance, internal audit).
- 3 lines of defense: 1) own, manage and report on risks (e.g. operational management); 2) oversee risks (e.g. AF, risk management, compliance, risk committees and sign-off); 3) independent assurance (e.g. audit) – external/consulting actuaries.

3. Scope of the AF: 1) Valuation of insurance obligations (technical provisions); 2) Product design and marketing; 3) Product pricing; 4) ALM; 5) Participating (with profits) product management; 6) Risk mitigation (including reinsurance and hedging); 7) Risk and capital management (future FCR & ORSA).

- Effective actuarial function role: 1) coordinate/oversee calculation of technical provisions; 2) ensure appropriateness of methodologies/underlying model/assumptions; 3) assess sufficiency & quality of data; 4) compare best estimates against experience; 5) inform administrative, management or supervisory body of the reliability; 6) express opinion on overall underwriting policy & reinsurance arrangement; 7) contribute to effective implementation of risk-management system (risk modelling, ORSA)

4. Setting Expectations for the Competencies of AF

- *EU Solvency II Article 48:* knowledge of actuarial & financial mathematics, commensurate with the nature, scale and complexity of risks inherent with business of insurance/reinsurance undertaking, and able to demonstrate their relevant experience with applicable professional and other standards.
- *US:* certain functions (e.g.: asset adequacy testing or reserve adequacy attestations) must meet certain education and experience requirements. (example of jurisdiction specific)

5. Structural Considerations of the AF

- Based on nature, size and complexity of operations. Centralized (one in group for subsidiaries) or Decentralized (locally within individual company). Decentralized, significant actuarial oversight responsibilities assigned to staff local to business units.
- For strong contribution to risk management, AF work may align closely to CRO. Others, esp. larger insurer/group prefer separate AFH and CRO, challenge each other's ideas & perspective. Less effective if AFH and CRO do not have similar seniority in the organization.
- Many insurers, the actuary responsible for technical provisions (statutory role such as Appointed Actuary) most suitable for AFH. If lower down the organization structure, challenge to CRO not so effective.
- Smaller insurers, fully segregate CRO and AFH or maintain staff solely for AFH may not be economically viable. AF staff may also have operational responsibilities (may be conflict of interest). Hence, usually use external consulting actuary.

6. Reliance on the Competency of the AF

- Insurance supervisor validate AF's work, to have sufficient confidence in work product of AF. Effectiveness, including material contributions to risk management, streamlines and minimizes supervisory burden.
- Validation not thru work duplicate or checklist, but thru understanding AF work (key risks, assumptions and methods) and processes to have confidence that it is appropriate and transparent.
- To effectively assess AF effectiveness, supervisor must have formal/informal relationship with AF and have access to suitable actuarial resource of its own.

7. Provision of Effective Actuarial Oversight

- Effective internal control system – independence – appropriate distance between those accountable for process/policy or design/operate control with those who check process and control exists.
- Focus on functional independence over structure use, by addressing the following: 1) KPI on management of risk, not targets on profit, revenue or volume. 2) Incentive independent on results of business unit.

(E) IAA Risk Book Ch. 3 – Professional Standards

1. Executive Summary: provide framework within which standards and ethical behaviour are addressed.

2. Key Messages:

- Actuarial standards serve to assure public that actuaries are professionally accountable. This gives the users of actuarial work confidence that the work has been performed appropriately. At the same time, standards provide practicing actuaries with a basis for assuring their work will conform to appropriate practice.
- Actuarial standards (including those applicable to the assessment of risk and solvency of insolvency of insurance companies and pension plans) can be of significant value to regulators.
- Full Member associations (FMAs) of the International Actuarial Association (IAA) must have codes that contain a common core of general principles. One such principle is that their members comply with applicable actuarial standards.
- Actuarial standards and regulations complement each other. Actuarial standards guide actuarial work. They are usually principle-based, rather than prescriptive and permit departures from the standard's guidance if they can be justified. Regulations, on the other hand, are usually prescriptive and mandatory.
- Actuarial standards are adopted to apply to actuaries practicing in a particular jurisdiction by whatever authority(ies) in that jurisdiction is (are) entitled to enact standards.
- The scope of actuarial standards includes the process of setting assumptions, selecting methodologies and disclosing the purpose for which the calculations were made, who set the assumptions, the actuary's opinion on their suitability, and uncertainty associated with the actuary's estimates.

3. Background:

- Qualification standards are requirements that actuaries need to satisfy to be considered by the profession to be qualified to perform the work in question. Include: initial education, CPD, experience requirements.
- Actuarial standards of practice (ASOP) address how actuarial work should be performed (specific work).
- Both standards promulgated by local standard-setter (local association), regulator can require standards to be followed in that jurisdiction.
- Requirement to comply with codes and standards is supported by FMA by discipline process that can admonish, reprimand, suspend or even expel a member violated applicable codes or standards.
- IAA Principles of Professionalism: 1) Accountability of individual actuaries to their actuarial association. 2) Educational requirement to be qualified actuary and continuing education requirements to maintain. 3) Code of Conduct (disciplinary process)

4. Benefits of Actuarial Standard:

- Assure public that actuaries are professionally accountable and provide practicing actuaries with basis for assuring work conform to appropriate practices. Protect public by:
 - indicating for various areas of practice the appropriate procedures, techniques and approaches, enhancing public trust in credibility and completeness of the actuarial work product.
 - providing means which many elements of actuarial practice can be reviewed and updated on regular basis, so practice remains current.
 - Furnishing criteria for evaluating actuarial work products.
 - Providing basis for discipline where standards are not adhered to.
- Benefit to individual actuaries:

- Guidance on practice areas somewhat unfamiliar.
- Give strong evidence to any observer that the profession serves public effectively and responsibly.
- Offering evidence of appropriate professional performance, hence defense in civil/professional disciplinary action.
- Assure regulatory authorities that they can depend on actuarial profession to act effectively in public interest. Written SOP with written provisions on discipline, shows profession governs itself and takes active interest in protecting the public.
- Provide support for actuaries doing appropriate work who are challenged by their principal on work.

5. Standard-setters and Regulators:

- Many standard-setters maintain a feedback loop with relevant local regulators, periodic meetings allow regulators to bring issues or concerns observed in the review of practice to standard-setters.
- Periodic review by practitioners provide feedback loop for working actuaries to comment how standard may be improved if modified, supplemented, amended, or repealed.
- Standard of practice guide actuarial work, principle-based (“should”) rather than prescriptive (“must” – has to be followed in all circumstances). This accommodate unforeseen situations not contemplated in the standards, e.g.: if produce inappropriate result. Such departures should be identified and explained.
- Regulations are usually prescriptive and mandatory. If conflict, law/regulation would govern.

6. IAA Model Standards: 1) model standards 2) local standards (jurisdiction)

- An individual actuary may state compliance with one or more (ISAPs) in his/her report (either of actuary’s volition, or because the client requires it), in which case the actuary is bound by ISAPs.
- A local standard-setter may create a new local standard by adopting an ISAP, making only the changes specified in the drafting instruction within the ISAP.
- A local standard-setter may base a new local standard on an ISAP by making more extensive changes.
- A local standard-setter may revise its existing standards to be substantially consistent with an ISAP.
- A local standard-setter may conclude that one or more existing standard are substantially consistent w ISAP.
- IAA objectives to: “establish, maintain and promote common standards of actuarial education and common principles of professional conduct. Promote the development and issuance of actuarial standards in the jurisdictions of all Full Member Associations, and the global convergence of actuarial standards.”

7. Content of Standards

- Historically focused on calculations actuaries make or principles to be followed, standards are increasingly focused on processes (assumption, methodologies, disclosures – purpose of calculation, opinion on suitability, uncertainty with estimates) used by actuaries.
- E.g.: US ERM standards address appropriate processes and considerations needed to evaluate an ERM approach, rather than produce a number. (Focus on governance structures and processes)
- Standards that are binding within jurisdiction are different from educational or research material that may be published by an actuarial organization. E.g.: International Actuarial Notes (IAN), monograph, research.

8. Enforcement of Standards: Discipline process must satisfy:

- A complaint process is accessible to anyone affected by an actuary’s work and professional peers.
- Due process of defense is available to the actuary complained against, so that the actuary’s rights are fully respected.
- There is an objective formal appeal process independent of the body that has ruled at the prior level.
- There are available sanctions appropriate to the seriousness of the violations committed, including termination of membership in the association.
- Appropriate notice and information are given to the public of the results of the complaint process where any penalty is imposed.

- Regulator can verify standards are followed is to require review of an actuary's work by another qualified actuary. Can be and independent actuary who does not work for the company or group.

(E) IAA ISAP 1 – General Actuarial Practice

- **1.1 Purpose** – provides guidance to actuaries when performing actuarial services to give intended users confidence that: 1) actuarial services are carried out professionally and with due care; 2) results are relevant to their needs, presented clearly, understandably are complete; 3) assumptions and methodology (including models and modelling techniques) used are disclosed appropriately.
- **1.3 Compliance** – may fail to follow guidance of this ISAP, but still comply with it where the actuary: 1) complies with requirements of law that conflict with this ISAP; 2) complies with requirement of the actuarial code of professional conduct applicable to the work that conflict with this ISAP; 3) depart from the guidance and provides in report an appropriate statement on nature, rationale and effect of such departure.
- **1.5 Reasonable Judgment** – if take into account: 1) spirit and intent of the ISAPs; 2) type of assignment; 3) appropriate constraints on time and resources.

2. Appropriate Practices

- **2.1. Acceptance of Assignment** – confirm with the principal nature and scope actuarial services: a) role of principal; b) limitation or constraints on the actuary; c) requirements that the actuary is required to satisfy; d) identification of schedule and expected cost or resources needed (esp. if substantial); e) information needed to communicated to and by the actuary, esp. if it is sensitive or confidential.
- 2.1.2 of accepting an assignment: a) be qualified to perform services / become qualified before services are delivered, OR competent/appropriately experienced to perform the services; b) satisfied that the assignment can be performed under the applicable code of professional conduct; c) have reasonable assurance of time, resources, access to relevant employee, other parties, documentation and information, and the right of the actuary to communicate information, as may be necessary for the work.
- **2.2 Knowledge of Relevant Circumstances** – should have or obtain sufficient knowledge and understanding of the data and information available, including the relevant history, processes, nature of the business operations, law, and business environment of the entity, be appropriately prepared to perform the actuarial services required by the assignment.
- **2.3 Reliance on Others** – May use info (data, contracts, provisions, opinions, projections, supporting analyses – excl. assumptions/methodology) prepared by another party selected or given by the principal. May take responsibility or state that reliance upon source of info, and disclaim responsibility.
- 2.3.1 consider if select party relied upon: a) qualifications; b) competence, integrity and objectivity; c) awareness of how the info is expected to be used; d) discussions and correspondence, facts likely to have material effect on information used; e) need to review the other party's supporting documentation.
- 2.3.2 consider if using info from another without disclaiming responsibility: a) determine use of info conforms to accepted practice in jurisdiction; b) establish appropriate procedures for the management and review of the info that the actuary intends to use; c) does not need to disclose the source of the info.
- 2.3.3 consider if state reliance on other info and disclaims responsibility: a) disclose the fact (including identifying the other party) in any report or other appropriate communication; b) disclose the nature and extent of such reliance; c) examine the info on for evident shortcomings; d) when practicable, review the information for reasonableness and consistency; e) report the steps took to determine whether it was appropriate to rely on the info.
- 2.3.4. if info prepared by other party under different jurisdiction, consider differences in law or accepted under a different jurisdiction, how that might affect the use of information.
- **2.4 Materiality** – in case of omissions, understatements or overstatement, whether the effect is material. Assess materiality from intended user, can affect decision making. Consult principal if necessary.

- **2.5 Data Quality –**
 - 2.5.1 Sufficient and Reliable Data – sufficient if include appropriate info for work, reliable if materially accurate.
 - 2.5.2 Validation – review consistency, completeness and accuracy of data by: a) recon against audited financial statements, trial balances or other relevant records, if available; b) testing for reasonableness against external or independent data; c) testing the data for internal consistency; d) comparing the data to that for prior periods. Describe review in report.
 - 2.5.3 Sources of Data for Entity-Specific Assumptions – to extent possible and appropriate use data specific to entity. Where such data not available, relevant or credible, use industry, comparable sources, population data or other published data, adjusted as appropriate. Describe in report.
 - 2.5.4 Data Deficiencies (inadequacy, inconsistency, incompleteness, inaccuracy and unreasonableness) – Consider effect on result of work, if not material, need not be considered further. If cannot find a satisfactory way to resolve deficiencies, consider to : a) decline to undertake service; b) work with principal to modify actuarial services or obtain additional data; c) subject to compliance on code of professional conduct, perform services and disclose data deficiencies in report (including indication of potential impact)
- **2.6 Assumptions and Methodology** – if report is silent on who set, the author will be assumed to have taken responsibility.
- **2.7 Assumptions and Methodology set by Actuary –**
 - 2.7.1 Selection of Assumptions and Methodology – select appropriate for work, consider needs of intended users and purpose of service. Also consider the circumstances of entity and assignment, relevant industry and professional practices. Consider extent appropriate to adjust for known deficiencies in available data.
 - 2.7.2 Appropriateness of Assumptions – generally involve significant professional judgment. May be implicit or explicit and involve interpreting past data or projecting future trends. Consider extent appropriate to use assumptions with significant bias to underestimation/overestimation.
 - 2.7.3 Margin of Adverse Deviations – in cases where unbiased calculation not required, consider extent appropriate to adjust with margins for adverse deviations on order to allow for uncertainty in underlying data, assumptions or methodology. Disclose.
 - 2.7.4 Discontinuities – a) internal circumstances, such as changes in claims processing, mix of business; b) external circumstances, such as legal, economic, legislative, regulatory, supervisory, demographic, technological and social environments.
 - 2.7.5 Individual Assumptions and Aggregate Assumptions – whether assumptions is reasonable in aggregate, where prudence or optimism in multiple assumptions will result in aggregate assumption no longer valid. Make adjustment to achieve reasonable assumption set and final result.
 - 2.7.6 Internal Consistency of Assumptions – used for different components of work are materially consistent and any significant interdependencies are modelled appropriately.
 - 2.7.7 Alternative Assumptions and Sensitivity Testing – effect of variations in key assumptions. Take into account purpose of service, whether the results of sensitivity tests reflect a reasonable range of variation in key assumptions, consistent with that purpose.
- **2.8 Assumptions and Methodology Prescribed** – by principal or other party. If willing to support, disclose the party and the actuary’s support. If unwilling: a) if significantly conflict appropriateness for purpose of service, disclose in report the fact, party prescribed, and reason why this party set it; b) if unable to judge appropriateness without substantial amount of additional work or beyond the scope, disclose. If principal request additional calculation with not reasonable for service, may provide results based on this assumption. If communicated to other party, disclose the source and opinion on appropriateness.

- **2.9 Assumptions and Methodology Mandated by Law** – disclose in report, and report should not be used for other purposes where the assumptions and methodology used are not appropriate (unless appropriately adjusted).
- **2.10 Process Management** – 1) Process control: consider to what extent, the procedures used to carry out the work should be controlled; 2) Reasonableness Checks.
- **2.11 Peer Review** – should consider to what extent is it appropriate for the report to be independently reviewed, in totality or by component, before final report is delivered/distributed, to ensure quality of report, with the process tailored to the complexity and specific environment of the work. Appropriate, that reviewer is independent, knowledgeable and experienced, if actuary comply ISAP.
- **2.12 Treatment of Subsequent Events** – consider if has the potential of materially changing result if the event had been reflected in the work and disclose such an event in the communication.
- **2.13 Retention of Documentation** – for a reasonable period of time, for purpose of peer/regulatory review, audit, compliance with law, assumption of any recurring assignment by another actuary (enough detail to understand work and assess the judgments made).

3. Communication

- **3.1 General Principles** – appropriate to particular circumstances and take the skills, understanding, levels of relevant technical expertise and needs of intended user into consideration, to allow user to understand:
 - 3.1.1 Form and Content – form, structure, style, level of details, content appropriate to the particular circumstances, taking into account intended users.
 - 3.1.2 Clarity – word each communication to be clear and use language appropriate.
 - 3.1.3 Timing of Communication – issue within reasonable time period, reflect arrangements made with the principal. Consider needs of intended users in setting the timing
 - 3.1.4 Identification of the Actuary – when ≥ 2 individuals jointly issue a communication, at least some of which is actuarial in nature, the communication shall identify all responsible actuaries, unless inappropriate. Name of organization which actuary is affiliated may be included. Indicate to what extent and how supplementary information and explanation can be obtained from actuary.
- **3.2 Report** – complete a report unless any intended users will otherwise be adequately informed about the result of actuarial services (including access to supporting information). Present all information with sufficient detail that another actuary qualified in the same practice area could make an objective appraisal of the reasonableness of the actuary's work.
 - 3.2.1 Content – a) scope & intended use; b) results & potential variability; c) methodology, assumptions and data used; d) restrictions on distribution; e) date of report; f) authorship
 - 3.2.2 Disclosures – a) any material deviation from guidance in this ISAP (1.3); b) reliance on info from another party which actuary disclaims responsibility (2.3.3); c) any data modification, validation and deficiencies (2.5); d) actuary's assessment of uncertainty inherent in the information used (2.5.4.c); e) any material inconsistency in assumption used (2.7.6); f) if contain the results of additional calculation requested by principal that the actuary does not judge reasonable for assignment (2.8.3); g) assumption & methodology prescribed by another party (2.8); h) mandated by law (2.9); i) material subsequent event (2.12)
 - 3.2.3 Authorship – a) name; b) name of organization, position; c) capacity in which actuary serves; d) actuary's qualification; e) code of professional conduct and standards which the work was performed, if there is any possible ambiguity; f) attestations and reliances.
 - 3.2.4 Form – may comprise several documents in several different format. Communicate which document comprise the report, ensure that report components can be reliably reproduced for a reasonable period.

- 3.2.5 Constraints – contents may be constrained by legal, legislative, regulatory or supervisory proceedings. Include other standards (FRS, acct policy). Should follow the ISAP to the extent reasonably possible within such constraints.

(E) IAA ISAP 5 – Insurer Enterprise Risk Models

- **1.1 Purpose** – guidance when performing enterprise risk models for insurance, to help increase public confidence in ERM work: 1) services are carried out professionally and with due care; 2) results relevant to their needs, presented clearly and understandably, complete; 3) assumptions and methodology (models and modelling techniques) used are disclosed appropriately.
- **1.2 Scope** – involving the selection, modification, development and use of enterprise risk models including stress/scenario tests, assess solvency, assess capital adequacy, and produce risk metrics for ERM programs.

2. Appropriate Practices

- **2.1 Understanding of Risk and Uncertainty** – obtain sufficient understanding of the nature of risk and uncertainty to the subject of work. Consider, or may rely on other who have appropriately considered:
 - 2.1.1 Info about financial strength, risk profile, business management and risk environment of the insurer that is relevant to the assignment
 - 2.1.2 Info about insurer’s own risk management framework and approach, including its attitude to the assumption of risk as relevant to the assignment
 - 2.1.3 Relationship between insurer’s financial strength, risk profile, business management, and risk environment identified in 2.1.1, and insurer risk management approach identified in 2.1.2. If by professional judgment that significant inconsistency exists, reflect in risk assessment and disclosed.
- **2.2 Proportionality** – ISAP 1 1.5 Reasonable judgment. & 1.5.12, consider proportionality in respect of nature, scale, complexity of the underlying risks.
- **2.3 Assumption Setting**
 - 2.3.1 When choosing or advising on the choice of assumptions for inclusion in the insurer enterprise risk model, in addition to ISAP 1 2.7 & 2.8, consider following factors: a) Internal policies, likely management actions & experience with past history or management actions; b) contractual requirements, policy wording & past experience; c) factors outside of management control (e.g.: policyholder behaviour, taxation, regulatory & reserving requirements; d) risk mitigation techniques (reinsurance & hedging) – any limitations. Assumptions should normally reflect actual situation as of valuation date, modified for any known or expected future changes.
 - 2.3.2 When constructing or advising on the construction of insurer enterprise risk models, should be satisfied that the assumptions are reasonable by obtaining and reviewing info from appropriate sources: a) management of insurer being modelled; b) knowledgeable persons at the insurer; c) business plan & recent assessment of actions under severely adverse scenarios; d) external industry experts; e) requirements of law; f) other subject matter experts.
 - 2.3.3 When probability distribution are incorporated into a model, should be satisfied that the assumed distributions and correlations are appropriate relative to historical info and anticipated future changes, and possibility of plausible extreme value. For each risk factor, provide explanation of differences between incidence of actual extreme events included in historical data and potential incidence of extreme events in enterprise risk model. The various probability distributions and correlations should recognize the possibility of simultaneous extreme values from multiple risk factors.
- **2.4 Stress Testing and Scenario Testing** – disclose: a) significant assumptions used including actions assumed to be taken by management; b) any known limitation and include potential impact.
- **2.5 Assessing Consistency Among Models** – multiple models/stress/scenario tests often developed for different purpose for same insurer (accounting requirement, regulatory valuation, risk evaluation for capital needs). Assess reasons for and impact of using multiple models/stress/scenario tests and provide an explanation of any material differences in results.

3. Communication:

- **3.1 Disclosures** – In addition to complying with ISAP1 3, disclose:
 - 3.1.1 Any significant inconsistency between insurer’s financial strength, risk profile, business management and risk environment (2.1.1) and own risk management framework and approach (2.1.2) (2.1.3)
 - 3.1.2 Explanation of differences between experience data and potential extreme adverse values in the risk model (2.3.3)
 - 3.1.3 Explanation of differences between experience data and incidence of multiple extreme events in the enterprise risk model (2.3.3)
 - Significant assumptions used in stress/scenario test, including actions by management (2.4.1.a.)
 - Known limitations of stress/scenario and assessment of potential impact of limitation on results (2.4.1.b.)
 - Appropriate explanation of material differences in result if multiple models/stress/scenario tests are used (2.5)

(E) IAA ISAP 6 – ERM Programs and IAIS Insurance Core Principles

- **1.1 Purpose** – guidance when performing services involving ERM programs within scope of regulations consistent with ICP8 “Risk Management and Internal Controls” and ICP16 “Enterprise Risk Management for Solvency Purposes (ICP16). To help public confidence in ERM work, by giving intended users confidence that: 1) services are carried out professionally and with due care; 2) results relevant to their needs, presented clearly and understandably, complete; 3) assumptions and methodology used are disclosed appropriately.

2. Appropriate Practices

- **2.1 Understanding of Insurer’s Risk Management System and ERM Framework** – have or obtain sufficient understanding of risk management system and ERM framework of insurer, and consider risk management elements require by regulations consistent with ICP8&16 are in place, including risk management policies, risk tolerance statements, ORSA and insurer’s assessment of regulatory capital requirements.
- **2.2 Proportionality** – ISAP 1 1.5 Reasonable judgment. & 1.5.12, consider proportionality in respect of nature, scale, complexity of the underlying risks.
- **2.3 Identification, Assessment and Management of Insurer Risks for an ERM Program**
- 2.3.1 to identify insurer risks, consider factors:
 - a. strategic objectives of the enterprise.
 - b. processes for collecting info and whether the staff has adequate qualifications, training and experience to understand and identify the risks.
 - c. whether the risk identification process is sufficient to identify current and emerging risks that are reasonably foreseeable, relevant and material including risks that directly or indirectly impact the financial condition and other objectives of the insurer (e.g. reputational risk).
 - d. risks specifically referred to in regulations consistent with ICP 8 & 16.
 - e. time frame over which the risks may emerge and may impact the insurer.
 - f. risks that may arise from reasonably foreseeable changes in the business of insurer (operations, markets, products) and from business conduct.
 - g. whether underlying risks within financial structures that have limited transparency have been sufficiently identified (e.g. off-balance sheet exposures, complex asset or reinsurance structures)
 - h. whether the reasonably foreseeable causes of insurer risks and their consequences have been sufficiently identified.
 - i. risks arising or increasing as a consequence of risk management activities (e.g. credit risk arising from the transfer of risk).

- j. the impact that an insurer's culture, governance structure and remuneration systems may have on the ability and willingness of the management and staff to identify and manage risks, and whether culture, governance structure or remuneration generates, magnifies or mitigate risks.
- k. input regarding the identification of risks from management, other knowledgeable persons within the insurer, other subject matter experts and supervisor.
- 2.3.2 to assess probability and impact of insurer risks, consider factors:
 - a. qualitative assessment of risks in addition to quantitative assessment.
 - b. risk correlations/aggregation/tail risks (e.g. catastrophe, pandemic, complex outsourcing).
 - c. appropriateness of risk modelling/stress/reverse stress/scenario testing techniques.
 - d. extent to which the risk models that measure probability and impact of risks provide results that are consistent with info expressed by market prices for the risks concerned or related risks.
 - e. consistency among the various valuation methodologies underlying the ERM program.
 - f. operation and effectiveness of the processes and mechanisms used to address risk control & mitigation.
 - g. appropriateness of assumptions regarding future actions taken by management and by external parties, taking into account prior experiences in industry with similar actions.
 - h. input regarding probability and impact from management, knowledgeable persons, subject matter experts and supervisors.
 - i. consistency of risk assessments over time.
- 2.3.3 to implement and maintain risk controls, mitigation, monitoring, communication, reporting, consider:
 - a. insurer's risk management policies, risk appetite & tolerance statements.
 - b. relationship between insurer's financial strength, risk profile and risk management system.
 - c. any significant inconsistency in the evaluation of the insurer's risk tolerances/limits.
 - d. extent to which results of risk models used to measure the economic costs and benefits of risk mitigation are consistent with information expressed by market prices for the risks concerned or related risks.
 - e. operation and effectiveness of the processes and mechanisms of risk control/mitigation.
 - f. appropriateness of assumptions regarding future actions taken by management and external parties, taking into account prior experiences in industry with similar action.
 - g. culture within the insurer to commit to, and implement, risk mitigation actions when needed.
 - h. impact of reasonably foreseeable future adverse circumstances on the availability and effectiveness of future risk mitigation practices.
 - i. existence and effectiveness of feedback loops in the risk management process.
 - j. how the nature and relative importance of risks may change over time.
- **2.4 Enterprise Level Risk Management**
- 2.4.1 Performing aggregate risk assessment of insurer, consider factors:
 - a. financial strength, risk profile, business management, governance structure and risk environment of insurer.
 - b. whether risk management processes are suitably aligned with insurer objectives and strategy, regarding aggregate risk taking and regarding major risk category, reflected by risk appetite, tolerance, limits.
 - c. interdependence of risks relating to assets and liabilities, noting that correlation of risks between different asset classes, products and business lines may not be linear, may change under stress conditions.
 - d. off-balance sheet exposures that may revert to the insurer in times of difficulty.
 - e. diversification benefits that result from aggregation of risks.
- 2.4.2 Developing, implementing, maintaining reviewing ERM framework, consider factors:
 - a. engagement of Board in assessing, setting, monitoring and reviewing the insurer's risk appetite and risk profile, whether the interests of policyholders and other relevant stakeholders are considered appropriately within those processes.

- b. adequacy of the risk management resources and capabilities within insurer for the current and expected risk profile and risk management strategies.
- c. quality, extent and effectiveness of independence, challenge, monitoring reflected in framework.
- d. extent and results of recent reviews and audits of control effectiveness and management's response to the findings.
- e. the management of potential conflict of interest.
- f. extent to which risk management and risk assessments are used in decision making practices.
- g. effectiveness of risk communication channels within insurer (risk escalation), with supervisors.
- h. effectiveness and timeliness of reporting and response to incidence and breaches related to operation of ERM framework within insurer.
- i. operational quality and effectiveness of key ERM framework related policies, processes and mechanisms, including outsourcing management, business continuity management (incl. pandemic response management), whistle blowing policies, fraud and privacy risk management, model risk management and business conduct risk management.
- j. extent to which the ERM framework is adaptive to changes to the insurer and its environment.
- k. extent that the ERM framework complies with regulatory requirements and guidelines applicable
- l. adequacy of insurer's ORSA
- m. contingency plans to restore insurer's financial strength and viability in severe adverse circumstances.
- 2.4.3 if insurer is part of a group, should consider factors:
 - a. risk and benefits of belonging to a group structure, recognizing potential limit on fungibility of capital and on transfer of assets between separate legal entities.
 - b. reasonably foreseeable changes in the group structure which could impact capital and solvency of insurer and ability to continue business.
 - c. risk modelling, stress testing, reverse stress testing and scenario testing should include changes in the group structure and in the support that insurer receives from other members.
 - d. assumptions that may be suitable for a self-standing insurer may not be suitable when insurer is part of a larger group.
 - e. imposition of risk management controls and tolerance limits by group management.
 - f. differences in legal and regulatory requirements between jurisdictions.
 - g. contagion effect of adverse circumstances in other members which could impact capital and solvency of the insurer.
- 2.5 ORSA – developing, maintain or reviewing, should consider factors:
 - a. time horizon considered by ORSA.
 - b. whether qualitative & quantitative risk assessments and financial projections used in ORSA are appropriate for intended purpose.
 - c. any changes to the insurer's risk profile/appetite since the previous ORSA.
 - d. various accounting bases of the insurer.
 - e. reasonably foreseeable changes in the external environment.
 - f. allowance for new business, run-off for existing and new business
 - g. access to new capital in times of financial stress.
 - h. differences between insurer regulatory capital requirements and insurer's own assessment of its capital needs.
 - i. quality and adequacy of insurer capital resources in relation to quality and adequacy criteria establish by the supervisor.
 - j. degree of severity reflected in the risk modelling, stress testing, reverse stress testing and scenario testing.
 - k. circumstances that may trigger ORSA to be performed that during regular review schedule.
- 3.1 Disclosures:
 - 3.1.1 where risk management elements required by regulations consistent with ICP8 & 16 are not in place (2.1)

- 3.1.2 where risk exposures cannot be, or are not reliably or meaningfully identified or quantified (2.3.1, 2.3.2, 2.4.1, 2.4.2)
- 3.1.3 where the selected assumptions or risk scenarios adopted to give rise to ranges of outcomes or frequencies that are materially less severe or frequent than indicated by historic risk experience, known and expected future changes or reasonable foreseeable potential extreme adverse events (2.3.2, 2.4.1)
- 3.1.4 Any significant inconsistency that exists between the insurer's financial strength, risk profile and the insurer's risk management system (2.3.3)