



IAIS

INTERNATIONAL ASSOCIATION OF
INSURANCE SUPERVISORS

Public

INSURANCE CORE PRINCIPLES, STANDARDS, GUIDANCE AND ASSESSMENT METHODOLOGY

**Revised ICP 16 and ComFrame material in
ICP 16 for public consultation
(clean version)**

ICP 16 Enterprise Risk Management for Solvency Purposes

The supervisor requires the insurer to establish within its risk management system an enterprise risk management (ERM) framework for solvency purposes to identify, measure, report and manage the insurer's risks in an ongoing and integrated manner.

Introductory Guidance

- 16.0.1 ERM for solvency purposes is the co-ordination of risk management, strategic planning, capital adequacy, and financial efficiency in order to enhance sound operation of the insurer and ensure the adequate protection of policyholders. Capital adequacy measures the insurer's assessment of residual risk of its business, after overlaying the mitigating financial effect of the insurer's established risk management system. Any decision affecting risk management, strategic planning or capital would likely necessitate a compensating change in one or both of the other two. Successful implementation of ERM for solvency purposes results in enhanced insight into an insurer's risk profile and solvency position that promotes an insurer's risk culture, earnings stability, sustained profitability, and long-term viability. Collectively practiced in the industry, ERM for solvency purposes supports the operation and financial health of the insurance market. These aspects of ERM should be encouraged from a prudential standpoint.
- 16.0.2 The ERM framework for solvency purposes (ERM framework) is an integrated set of processes and activities established by the insurer for an effective implementation of ERM for solvency purposes.
- 16.0.3 Components of the ERM framework that are covered in this ICP:
- Risk identification (including group risk and relationship between risks);
 - Quantitative techniques to measure risk;
 - Inter-relationship of risk appetite, risk limits and capital adequacy;
 - Risk appetite statement;
 - Asset-liability management, investment and underwriting policies; and
 - Own risk and solvency assessment (ORSA).

- 16.0.4 The ERM framework should be integrated within the insurer's risk management system (see ICP 8 Risk Management and Internal Controls).
- 16.0.5 The ERM framework should enhance an insurer's understanding of material risk types, their characteristics, interdependencies, and the sources of the risks, as well as their potential aggregated financial impact on the business for a holistic view of risk at enterprise level. Senior Management should exhibit an understanding of the insurer's enterprise risk issues and show a willingness and ability to address those issues. A fundamental aspect of ERM is the development and execution of a consistent, transparent, deliberate, and systematic approach to manage risks, both individually and in aggregate, on an ongoing basis to maintain solvency and operation within the risk appetite and risk limits.
- 16.0.6 The objective of ERM is not to eliminate risk. Rather, it is to manage risks within a framework that includes self-imposed limits. In setting limits for risk, the insurer should consider its solvency position and its risk appetite. Risk limits should be set after careful consideration of corporate objectives and circumstances and, where appropriate, should take into account the projected outcomes of scenarios run using a range of plausible future business assumptions which reflect sufficiently adverse scenarios. A risk limits structure is used to establish guardrails on an insurer's risk profile to optimise its returns without endangering the ability of the insurer to meet its commitments to policyholders.
- 16.0.7 ERM processes being developed by insurers may utilise internal models that generate sophisticated risk metrics to inform management actions and capital needs. Internal models can enhance risk management and to embed risk culture in the company. They may provide a common measurement basis across all risks (e.g. same methodology, time horizon, risk measure, level of confidence) and strengthened risk-based strategic decision-making across the organisation. Such an approach typically adopts a total balance sheet approach whereby the impact of the totality of material risks is fully recognised on an economic basis. A total balance sheet approach reflects the interdependence between assets, liabilities, capital requirements and capital resources, and identifies the capital allocation sufficient to protect the insurer and its policyholders, as well as to improve capital efficiency.
- 16.0.8 The insurer should have adequate governance and internal controls in place for models used in the ERM framework. The calculation of risk metrics should be transparent, supportable, and repeatable.

Enterprise risk management framework - risk identification**16.1 The supervisor requires the insurer's ERM framework to provide for the identification of all reasonably foreseeable and relevant material risks and risk interdependencies for risk and capital management.*****Risk identification***

- 16.1.1 The scope of risk identification and analysis of risk interdependencies should cover, at a minimum: insurance risk, market risk, credit risk, operational risk and liquidity risk. Other risks may be included, such as legal risk, reputational risk, and group risk.

Causes of risk and the relationship between risks

- 16.1.2 An insurer should consider the causes of different risks and their impacts and assess the relationship between risk exposures. By doing so, an insurer can better identify both strengths and weaknesses in governance, control functions and business units. The insurer should use and improve risk management policies, techniques and practices and change its organisational structure to make these improvements where necessary. The insurer should also assess external risk factors which, if they were to crystallise, could pose a significant threat to its business.
- 16.1.3 In assessing the relationship between risk exposures, consideration should be given to correlations between the tails of risk profiles. For example, risks that show no strong dependence under normal economic conditions (such as catastrophe risks and market risks) could be more correlated in a stress situation.
- 16.1.4 Trigger events (such as catastrophes, downgrades from rating agencies or other events) may have an adverse impact on the insurer's financials and reputation. Trigger events can result, for example, in an unexpected level of claims, collateral calls or policyholder terminations and may lead to serious liquidity issues. The ERM framework should adequately address the insurer's options for responding to such trigger events.

Group risk

- 16.1.5 Group risk arises for insurance legal entities that are members of groups. Group risk also arises for an insurance group in respect of the widest group of which it is part. Group risk includes the risk that an insurance legal entity may be adversely affected by an occurrence

(financial or non-financial) in another group entity. Group risk also includes the risk that the financial stability of a group or insurance legal entities within the group may be adversely affected by an event in a legal entity, a group-wide occurrence or an event external to the group. For example, the positive aspects of being a member of a group might be lessened due to restructuring.

- 16.1.6 Group risk may arise, for example, through contagion, leveraging, double or multiple gearing, concentrations, large exposures and complexity. Participations, loans, guarantees, risk transfers, liquidity, outsourcing arrangements and off-balance sheet exposures may all give rise to group risk. Many of these risks may be borne by stand-alone insurance legal entities and are not specific to membership of a group. However, the inter-relationships among group members including aspects of control, influence and interdependence alter the impact of risks on group members and should therefore be taken into account in managing the risks of an insurance legal entity that is a member of an insurance group and in managing the risks of that insurance group as a whole. To be effective, the management of insurance group risk should take into account risks arising from all parts of an insurance group, including non-insurance legal entities (regulated or unregulated) and partly-owned entities.

Group perspectives

- 16.1.7 The ERM of an insurance group should address the direct and indirect interrelationships between its members. The more clearly-defined and understood such relationships are, the more accurately they can be allowed for in the group-wide solvency assessment. For example, legally enforceable capital and risk transfer instruments between insurance group members may help with the effectiveness of its ERM framework for group-wide solvency assessment purposes.
- 16.1.8 Assumptions that are implicit in the solvency assessment of an insurance legal entity may not apply at an insurance group level because of the legal separation of insurance group members. For example, there may be few constraints on the fungibility of capital and the transferability of assets within an individual insurance legal entity. However, such constraints may feature much more prominently for an insurance group and may restrict the degree to which benefits of diversification of risks across the group can be shared among group members. Such constraints should be taken into account in both the insurance group's and the insurance legal entity's ERM frameworks.

CF 16.1a The group-wide supervisor requires the IAIG's ERM framework to be as consistent as possible across its legal entities. Any differences in

the ERM framework are required to be transparent and explicitly linked to the distinct nature, scale and complexity of the risks associated with business conducted locally.

CF 16.1b The group-wide supervisor requires the IAIG's ERM framework to cover at least the following risks and the management of these risks in a cross-border context:

- insurance risk;
- market risk;
- credit risk;
- liquidity risk;
- concentration risk;
- operational risk;
- group risk; and
- strategic risk.

CF 16.1c The group-wide supervisor requires the IAIG's ERM framework to consider explicitly group-wide intra-group transactions and exposures (IGT) including:

- the mechanisms to keep track of intra-group transactions that are of substantial importance to, and have a significant consequence for, the IAIG; and
- the risks arising from intra-group transactions and exposures and places appropriate qualitative and quantitative restrictions on them.

CF 16.1c.1 Intra-group transactions and exposures may include, but are not limited to:

- loans;
- guarantees;
- issuance of contingent capital;
- payment of dividends;
- cost sharing structures;
- service contracts;
- management arrangements and outsourcing;
- reinsurance;
- transactions among financial services entities of different sectors within the IAIG; and

- equity holdings.

CF 16.1c.2 On a consolidated or other aggregated basis, the risks to the IAIG arising from IGT may not be evident. The IAIG's risk assessment of its IGT should consider, amongst other factors:

- fungibility of capital and transferability of assets;
- correlation or concentration of risk;
- practical issues, including the time needed to reallocate risk and risk mitigants amongst entities; and
- pathways for contagion within the group.

CF 16.1c.3 The IAIG should be aware of, and take account of, the risk of support being withdrawn by one part of the IAIG due to adverse publicity, poor results or operational inefficiencies in another part of the IAIG.

CF 16.1c.4 The IAIG should address, in its ERM framework, any financial or other activities (e.g. maturity transformation, securities lending) being undertaken by individual entities that may change the risk profile of the group. For example, in securities lending transactions, the ERM framework may provide that high quality assets not be swapped with low quality assets, that appropriate arrangements for the provisioning of collateral are in place or that the maturity of the swapped assets do not significantly alter the risk profile of the IAIG.

Enterprise risk management framework – quantitative techniques to measure risk

16.2 The supervisor requires the insurer's ERM framework to provide for the quantification of risk and risk interdependencies under a sufficiently wide range of techniques for risk and capital management.

Measuring, analysing and modelling the level of risk

- 16.2.1 The level of risk is a combination of the impact that the risk will have on the insurer and the probability of that risk materialising. The insurer should assess regularly the level of risk it bears by using appropriate forward-looking quantitative techniques (such as risk modelling, stress testing, including reverse stress testing, and scenario analysis). An appropriate range of adverse circumstances and events should be considered, including those that pose a significant threat to the financial condition of the insurer, and management actions should be identified together with the appropriate timing of those actions. Risk measurement techniques should also be used in developing long-term business and contingency plans, where it is appropriate for the insurer to do so.
- 16.2.2 Different approaches to measuring risk may be appropriate depending on the nature, scale and complexity of a risk and the availability of reliable data on the behaviour of that risk. For example, a low frequency but high impact risk where there is limited data (such as catastrophe risk) may require a different approach from a high frequency, low impact risk for which there is substantial amounts of experience data available. Stochastic risk modelling may be appropriate to measure some risks (such as non-life catastrophe), whereas relative simple calculations may be appropriate in other circumstances.
- 16.2.3 The measurement of risks should be based on a consistent economic assessment of the total balance sheet as appropriate to ensure that appropriate risk management actions are taken. In principle, ERM should take into consideration the distribution of future cash flows to measure the level of risks. The insurer should be careful not to base ERM decisions purely on accounting or regulatory measures that involve non-economic considerations and conventions although the constraints on cash flows that they represent should be taken into account.

Use of models for ERM

- 16.2.4 Measurement of risks undertaken at different times should be produced on a broadly consistent basis overall, which may make variations in results easier to explain. Such analysis also aids the insurer in prioritising its risk management.
- 16.2.5 Regardless of how sophisticated they are, models cannot exactly replicate the real world. Risks associated with the use of models (modelling and parameter risk), if not explicitly quantified, should be acknowledged and understood as the insurer implements its ERM framework, including by the insurer's Board and Senior Management.
- 16.2.6 Models may be external or internal. External models may be used to assess catastrophes or market risks. Internal models may be developed by an insurer to assess specific material risks or to assess its risks overall.
- 16.2.7 Internal models can play an important role in facilitating the risk management process and the supervisor should encourage insurers to make use of such models for parts or all of their business, where it is appropriate.
- 16.2.8 An insurer may consider that the assessment of current financial resources and the calculation of regulatory capital requirements would be better achieved through the use of internal models.
- 16.2.9 If used, an internal model may provide an important strategic and operational decision-making tool and should be used to enable the insurer to integrate its risk and capital management processes. In particular, the internal model used for ORSA should be consistent with models for other processes within the ERM framework. These include: assessment of the risks faced within the insurer's business; construction of risk limits structure; and the determination of the economic capital needed, where appropriate, to meet those risks.
- 16.2.10 To be effective, an internal model should address all the identified risks within its scope, and their interdependencies, and assess their potential impact on the insurer's business given the possible situations that could occur. The methods by which this analysis could be conducted range from simple stress testing of events to more complex stochastic modelling, as appropriate.
- 16.2.11 The insurer's internal model should be calibrated on the basis of defined modelling criteria that the insurer believes will determine the level of capital appropriate and sufficient to meet its business plan and strategic objectives. These modelling criteria may include the basis for valuation of the assets and liabilities, the confidence level, risk measure and time horizon, as well as other business objectives (for example, aiming to achieve a certain minimum investment rating).

- 16.2.12 In constructing its internal model, an insurer should adopt risk modelling techniques and approaches that are appropriate to its risk strategy and business plans. An insurer may consider various inputs to the modelling process, such as economic scenarios, asset portfolios and liabilities from in-force or past business, and regulatory constraints on the transfer of assets. The modelling criteria and the various inputs to the modelling may be established in the context of the insurer continuing to operate on a going concern basis (unless the insurer is in financial difficulty).
- 16.2.13 An internal model used to determine economic capital may enable the insurer to allocate sufficient financial resources to ensure it continues to meet its policyholder liabilities as they fall due, at a confidence level appropriate to its business objectives. To fully assess policyholder liabilities in this way, all liabilities that should be met to avoid putting policyholder interests at risk need to be considered, including any liabilities for which a default in payment could trigger the winding up of the insurer.
- 16.2.14 If an insurer uses its own internal model as part of its risk and capital management processes, the insurer should validate it and review it on a regular basis. The insurer should also calibrate the model according to its own modelling criteria. Validation would be expected to be carried out by a different department or persons than those who created the internal model, in order to facilitate independence. The insurer may wish to consider an external review of its internal model by appropriate specialists; for example, if the internal review cannot be performed with sufficient independence, an external review may be warranted.
- 16.2.15 Where a risk is not readily quantifiable (for instance some operational risks or where there is an impact on the insurer's reputation), the insurer should make a qualitative assessment that is appropriate to that risk and sufficiently detailed to be useful for risk management. The insurer should analyse the controls needed to manage such risks to ensure that its risk assessments are reliable and consider events that may result in high operational costs or operational failure. Such analysis should inform the insurer's judgments in assessing the size of the risks and enhancing overall risk management.

Group perspectives

- 16.2.16 It may be appropriate for internal models to be used for the group even where the use of an internal model is not an approach appropriate to any of its members due to, for example, lack of sufficient data at legal entity level.

- 16.2.17 The risks identified and the techniques that are appropriate and adequate for measuring them (including stress testing, scenario analysis, risk modelling and reverse stress testing) may differ at insurance group and insurance legal entity level. Where an insurance legal entity's ERM framework is an integral part of the insurance group's ERM framework, the techniques used to measure risks at group level should include those that are appropriate and adequate at the insurance legal entity level.

CF 16.2a The group-wide supervisor requires the IAIG to measure all reasonably foreseeable and relevant material risks using an economic capital model and take account of the risks that the IAIG faces in different sectors, jurisdictions and economic environments.

CF 16.2a.1 The economic capital model should be based on techniques that estimate the amount of capital needed in adverse situations that the IAIG is or may be exposed to, to the extent it is reasonably foreseeable. The economic capital model is used to drive or validate major management decisions and focuses deeper attention on capital adequacy.

CF 16.2a.2 The IAIG should consider the output of its economic capital model and regulatory capital requirements as inputs to its capital planning, which covers at least the IAIG's business planning period.

CF 16.2a.3 The IAIG should prioritise its risks in a consistent, reliable and valid manner using appropriate means, including the use of an economic capital model.

CF 16.2b The supervisor requires the IAIG's ERM framework to be independently reviewed at least once every three years, in order to ascertain that the ERM framework itself remains fit for purpose.

CF 16.2b.1 The ERM framework review may be carried out by an internal or external body as long as the reviewer is independent and not responsible for, nor been actively involved in, the part of the ERM framework that it reviews.

Stress testing, scenario analysis and reverse stress testing

- 16.2.18 Stress testing measures the financial impact of stressing one or relatively few factors affecting the insurer. Scenario analysis considers the impact of a combination of circumstances to reflect extreme historical scenarios which are analysed in the light of current conditions. Scenario analysis may be conducted deterministically using a range of specified scenarios or stochastically, using models to simulate many possible scenarios, to derive statistical distributions of the results.

- 16.2.19 Stress testing and scenario analysis should be carried out by the insurer to validate and understand the limitations of its models. They may also be used to complement the use of models for risks that are difficult to model or where the use of a model may not be appropriate from a cost-benefit perspective. For example, these techniques can be used to investigate the effect of proposed management actions.
- 16.2.20 Scenario analysis may be particularly useful as an aid to communicate risk management issues to the Board, Senior Management, business units and control functions. As such, scenario analysis can facilitate the integration of the insurer's ERM framework within its business operations and establish a sound risk culture.
- 16.2.21 Reverse stress testing, which identifies scenarios that are most likely to cause an insurer to fail, may also be used to enhance risk management. While some risk of failure is always present, such an approach may help to ensure adequate focus on the management actions that are appropriate to avoid undue risk of business failure. The focus of such reverse stress testing is on appropriate risk management actions rather than the assessment of financial adequacy and so may be largely qualitative in nature although broad assessment of associated financial impacts may help in deciding the appropriate action to take.

CF 16.2c The group-wide supervisor requires the IAIG's risk measurement to include stress and reverse stress testing and scenario analysis that are deemed relevant to the IAIG's risk profile.

CF 16.2c.1 The IAIG should identify stresses pertinent to its risk profile. This should include (but may not be limited to) stresses in the risk transfer markets that may have an adverse effect on its business plan. For example, when developing its stresses, the IAIG should consider reinsurance capacity and related risk transfer costs in future periods after a catastrophic event.

Enterprise risk management framework - Inter-relationship of risk appetite, risk limits and capital adequacy

- 16.3 The supervisor requires the insurer's ERM framework to describe the relationship between the insurer's risk appetite, risk limits, regulatory capital requirements, economic capital and the processes and methods for monitoring risk.**
- 16.3.1 An insurer's ERM framework should describe how its risk management coordinates with strategic planning and its management of capital (regulatory capital requirement and economic capital).

- 16.3.2 As an integral part of its ERM framework, an insurer should also describe how its risk management links with corporate objectives, strategy and current circumstances to maintain capital adequacy and solvency and to operate within the risk appetite and risk limits described in the risk appetite statement.
- 16.3.3 An insurer's ERM framework should use reasonably long time horizon, consistent with the nature of the insurer's risks and the business planning horizon, so that it maintains relevance to the insurer's business going forward. This can be done by using methods (such as scenario models) that produce a range of outcomes based on plausible future business assumptions which reflect sufficiently adverse scenarios. The analysis of these outcomes may help the Board and Senior Management in strategic business planning.
- 16.3.4 Risks should be monitored and reported to the Board and Senior Management, in a regular and timely manner, so that they are fully aware of the insurer's risk profile and how it is evolving and make effective decisions on risk appetite and capital management.
- 16.3.5 Where models are used for business forecasting, the insurer should perform back-testing, to the extent practicable, to validate the accuracy of the model over time.
- 16.3.6 The insurer's ERM framework should note the insurer's reinsurance arrangements and how they:
- reflect the insurer's risk limits structure;
 - play a role in mitigating risk; and
 - impact the insurer's capital requirements.

The use of any non-traditional forms of reinsurance (e.g. finite reinsurance) should also be addressed.

Enterprise risk management framework - risk appetite statement

- 16.4 The supervisor requires the insurer to have a risk appetite statement that:**
- **articulates the aggregate level and types of risk the insurer is willing to assume within its risk capacity to achieve its financial and strategic objectives, and business plan;**
 - **takes into account all relevant and material categories of risk and their interdependencies of the insurer's current and target risk profiles; and**

- **is operationalised in its business strategy and day-to-day operations through a more granular risk limits structure.**

- 16.4.1 An insurer's risk appetite statement should include qualitative statements as well as quantitative measures expressed relative to earnings, capital, risk measures, liquidity and other relevant measures as appropriate.
- 16.4.2 Qualitative statements should:
- complement quantitative measures;
 - set the overall tone for the insurer's approach to risk taking; and
 - articulate clearly the motivations for taking on or avoiding certain types of risks, products, country/regional exposures, or other categories.
- 16.4.3 Risk appetite may not necessarily be expressed in a single document. However the way it is expressed should provide the insurer's Board with a coherent and holistic, yet concise and easily understood, view of the insurer's risk appetite.
- 16.4.4 The supervisor should require risk capacity of the insurer to include the consideration of regulatory capital requirements, economic capital, liquidity and operational environment.
- 16.4.5 The risk appetite statement should give clear guidance to operational management on the level of risk to which the insurer is prepared to be exposed and the limits of risk to which they are able to expose the insurer. It should also be communicated across and within the insurer to facilitate entrenching the risk appetite into the insurer's risk culture.
- 16.4.6 An insurer should consider how to embed these limits in its ongoing operations. This may be achieved by expressing limits in a way that can be measured and monitored as part of ongoing operations. Stress testing may provide an insurer with a tool to help ascertain whether the limits are suitable for its business.

Group perspectives

- 16.4.7 An insurance legal entity's risk appetite statement should define risk limits taking into account all of the group risks it faces as a result of membership of a group to the extent that they are relevant and material to the insurance legal entity.
- 16.4.8 Group limits should give the Board and Senior Management of an insurance legal entity clear guidance on the level of risk which the

insurance group is prepared to take and the limits to which the insurance legal entity is able to expose the insurance group during the course of its business.

CF16.4a The group-wide supervisor requires the IAIG's ERM framework to facilitate the communication of its risk appetite within the IAIG and externally.

Asset-liability management, investment and underwriting policies

16.5 The supervisor requires the insurer's ERM framework to include an explicit asset-liability management (ALM) policy that clearly specifies the nature, role and extent of ALM activities and their relationship with product development, pricing functions and investment management.

16.5.1 The insurer's ERM framework should include an explicit ALM policy that sets out how:

- the investment and liability strategies allow for the interaction between assets and liabilities;
- the liability cash flows will be met by the cash inflows; and
- the economic valuation of assets and liabilities will change under an appropriate range of different scenarios.

ALM does not imply that assets should be matched as closely as possible to liabilities, but rather that mismatches are effectively managed. Not all ALM needs to use complex techniques. For example, simple, low risk or short term business may call for less complex ALM techniques.

16.5.2 The insurer's ALM policy should recognise the interdependence between all of the insurer's assets and liabilities and take into account the correlation of risk between different asset classes as well as the correlations between different products and business lines, recognising that correlations may not be linear. The ALM policy should also take into account any off-balance sheet exposures that the insurer may have and the contingency that risks transferred may revert to the insurer.

16.5.3 Different strategies may be appropriate for different categories of assets and liabilities. One possible approach to ALM is to identify separate homogeneous segments of liabilities and obtain investments for each segment that would be appropriate if each liability segment was a stand-alone business. Another possible

approach is to manage the insurer's assets and liabilities together as a whole. The latter approach may provide greater opportunities for profit and management of risk than the former. If ALM is practised for each business segment separately, this is likely to mean that the insurer may not benefit as much from the benefits of scale, hedging, diversification and reinsurance.

- 16.5.4 However, for some types of insurance business it may not be appropriate to manage risks by combining liability segments. It may be necessary for the insurer to devise separate and self-contained ALM policies for particular portfolios of assets that are ring-fenced or otherwise not freely available to cover obligations in other parts of the company.
- 16.5.5 Assets and liabilities may be ring-fenced to protect policyholders. For example, non-life insurance business is normally ring-fenced from life insurance business, and likewise, participating business is separated from non-participating. Supervisory requirements or the insurer's ERM framework may require some liabilities to be closely matched with the supporting assets. For example, equity-linked or indexed-linked benefits may be closely matched with corresponding assets, and annuities' cash outflows may be closely matched with cash inflows from fixed income instruments.
- 16.5.6 Some liabilities may have particularly long durations, such as certain types of liability insurance and whole-life policies and annuities. In these cases, assets with sufficiently long duration may not be available to match the liabilities, introducing a significant reinvestment risk, such that the present value of future net liability cash flows is particularly sensitive to changes in interest rates. There may also be gaps in the asset durations available. An ALM policy should address the risks arising from duration or other mismatches (for example, by holding adequate capital or having appropriate risk mitigation in place). The ERM framework should reflect the insurer's capacity to bear ALM risk, according to the insurer's risk appetite and risk limits structure.

Group perspectives

- 16.5.7 The group-wide ALM policy should reflect any legal restrictions that may apply to the treatment of assets and liabilities within the jurisdictions in which the group operates.

16.6 The supervisor requires the insurer's ERM framework to include an explicit investment policy that:

- **addresses investment risk according to the insurer's risk appetite and risk limits structure;**
- **specifies the nature, role and extent of the insurer's investment activities and how the insurer complies with regulatory investment requirements; and**
- **establishes explicit risk management procedures with regard to more complex and less transparent classes of asset and investments in markets or instruments that are subject to less governance or regulation.**

- 16.6.1 An investment policy may set out the insurer's strategy for optimising investment returns and specify asset allocation strategies and authorities for investment activities and how these are related to the ALM policy.
- 16.6.2 The investment policy should outline how the insurer deals with inherently risky financial instruments such as derivatives, hybrid instruments that embed derivatives, private equity, hedge funds, insurance linked instruments and commitments transacted through special purpose entities. Complex or less transparent assets may present operational risks, especially in adverse conditions which are difficult to assess reliably.
- 16.6.3 Consideration of the associated counterparty credit risk should be included in the investment policy.
- 16.6.4 The investment policy should address the safe-keeping of assets including custodial arrangements and the conditions under which investments may be pledged or lent.
- 16.6.5 It is important for the insurer to understand the source, type and amount of investment risk. For example, it is important to understand who has the ultimate legal risk or basis risk in a complex chain of transactions. Similar questions arise where the investment is via external funds, especially when such funds are not transparent.
- 16.6.6 A number of factors may shape the insurer's investment strategy. For insurers in many jurisdictions concentration risk arising from the limited availability of suitable domestic investment vehicles may be an issue. By contrast, international insurers' investment strategies may be complex because of a need to manage and match assets and liabilities in a number of currencies and different markets. In addition, the need for liquidity resulting from potential large-scale payments may further complicate an insurer's investment strategy.
- 16.6.7 An effective investment policy and ERM framework should provide for robust models reflecting all relevant risks of complex investment

activities (including underwriting guarantees for such complex securities). There should be explicit procedures to evaluate hidden and non-standard risks associated with complex structured products, especially new forms of concentration risk that may not be obvious.

16.6.8 For complex investment strategies, the insurer's investment policy and ERM framework should incorporate the use of stress-testing and contingency planning to handle hard-to-model risks such as liquidity and sudden market movements. Trial operation of procedures for sufficiently long periods may also be appropriate in advance of 'live' operation.

16.6.9 The insurer's investment policy and ERM framework should be clear about the purpose of using derivatives and address whether it is appropriate for it to prohibit or restrict the use of some types of derivatives where, for example:

- the potential exposure cannot be reliably measured;
- closing out of a derivative is difficult considering the illiquidity of the market;
- the derivative is not readily marketable as may be the case with over-the-counter instruments;
- independent (i.e. external) verification of pricing is not available;
- collateral arrangements do not fully cover the exposure to the counterparty;
- the counterparty is not suitably creditworthy; and
- the exposure to any one counterparty exceeds a specified amount.

These factors are particularly important for unregulated over-the-counter derivatives. The effectiveness of clearing facilities available may be a relevant consideration in assessing the counterparty credit risk associated with some types of over-the-counter derivatives, such as credit default swaps.

16.7 The supervisor requires the insurer's ERM framework to include an underwriting policy that addresses the:

- **insurer's underwriting risk according to the insurer's risk appetite and risk limits structure;**
- **nature of risks to be underwritten; and**

- **interaction of the underwriting strategy with the insurer's reinsurance/risk transfer strategy and premium setting.**

16.7.1 The ERM framework should include explicit policies in relation to underwriting risk (i.e. the specific insurance risk arising from the underwriting of insurance contracts). An underwriting policy should cover the underwriting process, pricing, claims settlement (both in terms of timing and amount) and expense control. Such a policy may include:

- the terms on which contracts are written and any exclusions;
- the procedures and conditions that need to be satisfied for risks to be accepted;
- additional premiums for substandard risks; and
- procedures and conditions that need to be satisfied for claims to be paid.

16.7.2 Control of expenses associated with underwriting and payment of claims is an important part of managing risk especially in conditions of high general rates of inflation. Inflation of claim amounts also tends to be high in such conditions for some types of risk. Insurers should have systems in place to control their expenses. These expenses should be monitored by the insurer on an on-going basis.

16.7.3 The underwriting policy should take into account the effectiveness of risk transfer. This includes ensuring that:

- the insurer's reinsurance programme provides coverage appropriate to its level of capital, the profile of the risks it underwrites, its business strategy and risk appetite; and
- the risk will not revert to the insurer in adverse circumstances.

16.7.4 In addressing the nature and amount of risks to be underwritten the underwriting policy should cover, at a minimum:

- product classes the insurer is willing to write;
- relevant exposure limits (e.g. geographical, counterparty, economic sector); and
- a process for setting underwriting limits.

16.7.5 The underwriting policy should address:

- how an insurer analyses emerging risks in the underwritten portfolio; and

- how emerging risks are considered in modifying underwriting practices.

16.7.6 The underwriting policy should describe interactions with the reinsurance/risk transfer strategy and should include details of the reinsurance cover of certain product classes or particular risks.

CF 16.7a The group-wide supervisor requires the IAIG to implement its ERM framework by establishing procedures and monitoring practices for the use of sufficient, reliable and relevant data for its underwriting, pricing, reserving and reinsurance processes.

CF 16.7a.1 The IAIG should clarify whether the data used are based on consolidation or on another aggregation method of the IAIG's various entities. The IAIG should take into consideration the implications and inherent risks of the selected methodology when developing its ERM framework. For example, intra-group transactions may be eliminated in consolidation and may not be reflected in the consolidated financial statement of the IAIG at the top level. In using the consolidation basis for the ERM framework, the IAIG may be able to account, and take credit, for diversification of risk. Conversely, using another aggregation method may facilitate a more granular recognition of risk.

Group-wide claims management policy

CF 16.7b The group-wide supervisor requires the Head of the IAIG to maintain a group-wide claims management policy, as part of the ERM framework, that establishes procedures on:

- delegations of authority for claims settlement;
- criteria for accepting or rejecting claims;
- escalating claims;
- claims estimation and settlement;
- feedback into the group-wide underwriting policy and reinsurance/risk transfer strategy; and
- claims data reporting for group analysis.

CF 16.7b.1 The escalation procedure for claims data from an entity to the group-wide risk management should include information about sudden increases in claim amounts, slowness in settlement and rejections.

Group-wide reinsurance and risk transfer strategy

CF 16.7c The group-wide supervisor requires the Head of the IAIG to establish and maintain a group-wide reinsurance and risk transfer strategy that addresses the following issues:

- the interaction of the group-wide underwriting policy with the IAIG's reinsurance strategy;
- how the IAIG's risk appetite and risk tolerance levels are achieved, on both a gross limit and net retention basis;
- the IAIG's appetite for reinsurer credit risk, including approved security criteria for reinsurance transactions and aggregate exposure criteria to individual or related reinsurers;
- where individual insurance entities are authorised or required to enter into some reinsurance arrangements on their own account, the management of these exposures in the group-wide context;
- intra-group reinsurance strategy and practice; and
- effectiveness of risk transfer in adverse circumstances under reinsurance contracts are properly reflected in solvency assessment.

Group-wide actuarial policy

CF 16.7d The group-wide supervisor requires the Head of the IAIG to establish and maintain a group-wide actuarial policy, as part of the ERM framework, that consists a set of group-wide practice standards, covering at a minimum:

- the process to assess the appropriateness, at the group-wide level, of the data, methodologies and underlying models used, as well as the assumptions made in the calculation of technical provisions and the calculation of reinsurance recoverable assets;
- the process to calculate reinsurance recoverable assets taking into account the design of the reinsurance programme under the reinsurance strategy of the IAIG; and
- model risk management of internal models that generate actuarial and financial projections for solvency purposes.

CF 16.7d.1 The group-wide practice standards comprising the group-wide actuarial policy should:

- be compliant with applicable law and regulation, accounting regime, and professional actuarial standards in which the group operates in;
- formalise materiality thresholds to trigger higher levels of management interaction to ensure well-governed activities;
- provide for a data validation process that supports actuarial activities to ensure data quality, comprehensiveness, granularity and timeliness;
- provide a framework for determining assumptions used in valuations, including a process of incorporating the actual experience of the IAIG and its insurance legal entities, as well as a process of developing

assumptions if the IAIG does not have enough actual experience in a particular business line or market;

- articulate model validation and maintenance procedure to ensure that model usage and model modifications align with its risk appetite and risk limits structure; and
- create consistent management information requirements from in-depth reviews and quarterly monitoring of actuarial activities.

CF 16.7d.2 The group-wide actuarial policy should contain practice standards to raise awareness of any matter that has, or is likely to have, a materially adverse effect on the solvency, reserves or financial condition of one of the insurance legal entities or the IAIG as a whole that would prompt the IAIG's group-wide actuarial function to inform the relevant Board or Key Persons in Control Functions at the insurance legal entity level, as appropriate, for suitable action per ICP 8.

CF 16.7d.3 Differences may exist (for example, in reporting) at the insurance legal entity level to comply with jurisdictional requirements. The IAIG's group-wide actuarial policy should focus on group-wide reporting requirements both for internal management purposes and for reporting and disclosure purposes.

CF 16.7e The group-wide supervisor requires the group-wide actuarial function, as part of the ERM framework, to issue an annual group-wide actuarial opinion, report, advice or review (whether certified or not) to the IAIG Board that covers at least the following:

- **a prospective analysis of the financial situation of the IAIG which goes beyond the current balance sheet of the IAIG;**
- **the reliability and sufficiency of the technical provisions;**
- **the adequacy of reinsurance credit for technical provisions; and**
- **consideration of non-insurance entities and non-regulated entities.**

CF 16.7e.1 The group-wide actuarial function should provide the IAIG Board an analysis of the current and future financial condition of the IAIG given recent experience and the group-wide underwriting policy, group-wide claims management policy, reinsurance strategy and group-wide investment policy.

CF 16.7e.2 The IAIG may use the underlying actuarial reports submitted by the individual insurance legal entities as input to its annual group-wide actuarial opinion, report, advice or review to the IAIG Board. Further examples of issues that could be addressed in the annual group-wide actuarial opinion, report, advice or review include:

- the assumptions used by all of the insurance legal entities in the group and the consolidation/aggregation method applied at the group level;

- the methodologies used to determine current estimates by each insurance legal entity and the consolidation/ aggregation method applied at the group level;
- the methodologies used to determine the margin over current estimate (MOCE) by each insurance legal entity and the consolidation/aggregation method applied at the group level;
- the availability and appropriateness of data used in valuations;
- back-testing of assumptions and valuations;
- uncertainty in current estimates used by both insurance legal entities and the aggregated/consolidated group level;
- the adequacy of pricing, taking into account the underwriting policies, at the appropriate unit level and at the insurance legal entity level and the group level;
- the performance of the IAIG's insurance portfolios and analysis of any changes in business volumes, exposures, mix of business and pricing during the year;
- asset/liability management under the group-wide investment policy;
- suitability and adequacy of reinsurance/risk transfer arrangements taking into account the strategies for underwriting and claims management as well as the overall financial condition and risk appetite of the IAIG; and
- the extent to which the values provided by non-insurance entities are relied upon.

Own risk and solvency assessment (ORSA)

16.8 The supervisor requires the insurer to perform regularly its own risk and solvency assessment (ORSA) to assess the adequacy of its risk management and current, and likely future, solvency position.

- 16.8.1 The insurer should document the rationale, calculations and action plans arising from its ORSA.
- 16.8.2 ORSAs should be largely driven by how an insurer is structured and how it manages itself. The performance of an ORSA at the insurance entity level does not exempt the group from conducting a group-wide ORSA.

16.9 The supervisor requires the insurer's Board and Senior Management to be responsible for the ORSA.

- 16.9.1 Where appropriate, the effectiveness of the ORSA should be validated through internal or external independent overall review by a suitably experienced individual.

16.10 The supervisor requires the insurer's ORSA to:

- **encompass all reasonably foreseeable and relevant material risks including, at a minimum, insurance, credit, market, operational and liquidity risks and (if applicable) additional risks arising due to membership of a group; and**
- **identify the relationship between risk management and the level and quality of financial resources needed and available.**

16.10.1 The insurer should consider in its ORSA all material risks that may have an impact on its ability to meet its obligations to policyholders, including in that assessment a consideration of the impact of future changes in economic conditions or other external factors. The insurer should undertake an ORSA on a regular basis so that it continues to provide relevant information for its management and decision making processes. The insurer should regularly reassess the causes of risk and the extent to which particular risks are material. Significant changes in the risk profile of the insurer should prompt it to undertake a new ORSA. Risk assessment should be done in conjunction with consideration of the effectiveness of applicable controls to mitigate the risks.

16.10.2 The ORSA should explicitly state those risks that are quantifiable and those that are non-quantifiable.

Group perspectives

16.10.3 The insurance group's ORSA should:

- include all reasonably foreseeable and relevant material risks arising from every member of the insurance group and from the widest group of which the insurance group is part;
- take into account the fungibility of capital and the transferability of assets within the group; and
- ensure capital is not double counted.

16.10.4 Similarly, an insurance legal entity's ORSA should include all additional risks arising due to membership of the widest group of

which it is a part to the extent that they impact the insurance legal entity.

- 16.10.5 In the insurance legal entity's ORSA and the insurance group's ORSA, it may be appropriate to consider scenarios in which a group splits or changes its structure in other ways. Assessment of current capital adequacy and continuity analysis should include consideration of relevant possible changes in group structure and integrity in adverse circumstances and the implications this could have for group risks, the existence of the group and the support or demands from the group to or on its members.
- 16.10.6 Given the level of complexity at insurance group level compared with that at an insurance legal entity level, additional analysis and information is likely to be needed for the group's ORSA in order to address comprehensively the range of insurance group level risks. For example, it may be appropriate to apply a contagion test by using stress testing to assess the impact of difficulties in each legal entity which is a member of the insurance group on the other insurance group entities.
- 16.10.7 In conducting its group-wide ORSA, the group should be able to account for diversification in the group. Moreover, the group should be able to demonstrate how much of the diversification benefit would be maintained in a stress situation.

CF 16.10a The group-wide supervisor requires the Head of the IAIG to perform a group-wide ORSA, using both quantitative and qualitative approaches, which considers:

- the legal and management structures of the group;
- restrictions on capital movements;
- group-wide economic capital models;
- risk aggregation;
- the transferability of assets between jurisdictions and the fungibility of capital; and
- both the outputs of the economic capital model and the regulatory capital requirements.

CF 16.10a.1 In conducting its group-wide ORSA, the IAIG should consider risks arising from insurance legal entities and other entities, including non-regulated ones. Other risks that are important to consider as part of the group-wide ORSA are political risk and reputational risk.

ORSA - economic and regulatory capital

16.11 The supervisor requires the insurer to:

- **determine, as part of its ORSA, the overall financial resources it needs to manage its business given its risk appetite and business plans;**
- **base its risk management actions on consideration of its economic capital, regulatory capital requirements, financial resources, and its ORSA; and**
- **assess the quality and adequacy of its capital resources to meet regulatory capital requirements and any additional capital needs.**

16.11.1 It is important that an insurer has regard for how risk management and capital management relate to and interact with each other. Therefore, an insurer should determine the overall financial resources it needs, taking into account its risk appetite, risk limits structure and business plans, based on an assessment of its risks, the relationship between them and the risk mitigation in place. Determining economic capital may help an insurer to assess how best to optimise its capital base, whether to retain or transfer risk and how to allow for risks in its pricing. It also may help give the supervisor confidence that risks are being well managed.

16.11.2 Although the amounts of economic capital and regulatory capital requirements and the methods used to determine them may differ, an insurer should be aware of, and be able to analyse and explain, these differences. Such analysis helps to embed supervisory requirements into an insurer's ORSA and risk and capital management, so as to ensure that obligations to policyholders continue to be met as they fall due.

16.11.3 As part of the ORSA, the insurer should perform its own assessment of the quality and adequacy of capital resources both in the context of determining its economic capital and in demonstrating that regulatory capital requirements are met having regard to the quality criteria established by the supervisor and other factors which the insurer considers relevant.

Re-capitalisation

16.11.4 If an insurer suffers losses that are absorbed by its available capital resources, it may need to raise new capital to meet ongoing regulatory capital requirements and to maintain its business strategies. It cannot be assumed that capital will be readily available

at the time it is needed. Therefore, an insurer's own assessment of the quality of capital should also consider the issue of re-capitalisation, especially the ability of capital to absorb losses on a going-concern basis and the extent to which the capital instruments or structures that the insurer uses may facilitate or hinder future re-capitalisation. For example, if an insurer enters into a funding arrangement where future profits are cashed immediately, the reduced future earnings potential of the insurer may make it more difficult to raise capital resources in the future.

- 16.11.5 For an insurer to be able to recapitalise in times of financial stress, it is critical to maintain market confidence at all times, through its solvency and capital management, investor relationships, robust governance structure/practices and fair conduct of business practices. For example, where an insurer issues preferred stock without voting rights, this may affect the robustness of the governance structure and practice of that insurer. The voting rights attached to common stock can provide an important source of market discipline over an insurer's management. Other insurers may issue capital instruments with lower coupons and fees, sacrificing the economic value of the existing shareholders and bondholders.
- 16.11.6 When market conditions are good, many insurers should be readily able to issue sufficient volumes of high quality capital instruments at reasonable levels of cost. However, when market conditions are stressed, it is likely that only well capitalised insurers, in terms of both the quality and quantity of capital resources held, will be able to issue high quality capital instruments. Other insurers may only be able to issue limited amounts of lower quality capital and at higher cost. Therefore, the supervisor should make sure that insurers have regard for such variations in market conditions and manage the quality and quantity of their capital resources in a forward looking manner. In this regard, it is expected that high quality capital instruments (such as common shares) should form the substantial part of capital resources in normal market conditions as that would enable insurers to issue capital instruments even in stressed situations. Such capital management approaches also help to address the procyclicality issues that may arise, particularly in risk-based solvency requirements.

Group perspectives

- 16.11.7 An insurance group should determine, as part of its ORSA, the overall financial resources it needs to manage its business given its risk appetite and business plans and demonstrate that its supervisory requirements are met. The insurance group's risk management actions should be based on consideration of its economic capital,

regulatory capital requirements and financial resources. Economic capital should thus be determined by the insurance group as well as its insurance legal entities, and appropriate risk limits and management actions should be identified for both the insurance group and the insurance legal entities.

- 16.11.8 Key group-wide factors to be addressed in the insurer's assessment of group-wide capital resources include multiple gearing, intra-group creation of capital and reciprocal financing, leverage of the quality of capital and fungibility of capital and free transferability of assets across group entities.

ORSA - continuity analysis

16.12 The supervisor requires:

- **the insurer, as part of its ORSA, to analyse its ability to continue in business, and the risk management and financial resources required to do so over a longer time horizon than typically used to determine regulatory capital requirements; and**
- **the insurer's continuity analysis to address a combination of quantitative and qualitative elements in the medium and longer-term business strategy of the insurer and include projections of its future financial position and analysis of its ability to meet future regulatory capital requirements.**

Capital planning and forward-looking perspectives

- 16.12.1 An insurer should be able to demonstrate an ability to manage its risk over the longer term under a range of plausible adverse scenarios. An insurer's capital management plans and capital projections are therefore key to its overall risk management strategy. These should allow the insurer to determine how it could respond to unexpected changes in market and economic conditions, innovations in the industry and other factors such as demographic, legal and regulatory, medical and social developments.
- 16.12.2 Where appropriate, the supervisor should require an insurer to undertake periodic, forward-looking continuity analysis and modelling of its future financial position including its ability to continue to meet its regulatory capital requirements in future under various conditions. Insurers should ensure that the capital and cash flow projections (before and after stress) and the management actions included in their forecasts are approved at a sufficiently senior level.

- 16.12.3 In carrying out its continuity analysis, the insurer should also apply reverse stress testing to identify scenarios that would be the likely cause of business failure (e.g. where business would become unviable or the market would lose confidence in it) and the actions necessary to manage this risk.
- 16.12.4 As a result of continuity analysis, the supervisor should encourage insurers to maintain contingency plans and procedures for use in a going and gone concern situation. Such plans should identify relevant countervailing measures and off-setting actions they could realistically take to restore/improve the insurer's capital adequacy or cash flow position after some future stress event and assess whether actions should be taken by the insurer in advance as precautionary measures.

Projections

- 16.12.5 A clear distinction should be made between the assessment of the current financial position and the projections, stress testing and scenario analyses used to assess an insurer's financial condition for the purposes of strategic risk management, including maintaining solvency. The insurer's continuity analysis should help to ensure sound, effective and complete risk management processes, strategies and systems. It should also help to assess and maintain on an ongoing basis the amounts, types and distribution of financial resources needed to cover the nature and level of the risks to which the insurer is or might be exposed and to enable the insurer to identify and manage all reasonably foreseeable and relevant material risks. In doing so, the insurer assesses the impact of possible changes in business or risk strategy on the level of economic capital needed as well as the level of regulatory capital requirements.
- 16.12.6 Such continuity analysis should have a time horizon needed for effective business planning (for example, 3 to 5 years), which is longer than typically used to determine regulatory capital requirements. It should also place greater emphasis than may be considered in regulatory requirements on new business plans and product design and pricing, including embedded guarantees and options, and the assumptions appropriate given the way in which products are sold. The insurer's current premium levels and strategy for future premium levels are a key element in its continuity analysis. In order for continuity analysis to remain meaningful, the insurer should also consider changes in external factors such as possible future events including changes in the political or economic situation.

Link with business strategy

- 16.12.7 Through the use of continuity analysis an insurer should be better able to link its current financial position with future business plan projections and ensure its ability to maintain its financial position in the future. This may help the insurer to further embed its ERM framework into its ongoing and future operations.
- 16.12.8 An internal model may also be used for the continuity analysis, allowing the insurer to assess the capital consequences of strategic business decisions in respect of its risk profile. For example, the insurer may decide to reduce its capital requirement through diversification by writing different types of business in order to reduce the capital that is needed to be held against such risks, potentially freeing up resources for use elsewhere. This process of capital management may enable the insurer to change its capital exposure as part of its long-term strategic decision making.
- 16.12.9 As a result of such strategic changes, the risk profile of an insurer may alter, so that different risks should be assessed and quantified within its internal model. In this way, an internal model may sit within a cycle of strategic risk and capital management and provide the link between these two processes.

Group perspectives

- 16.12.10 An insurance group should analyse its ability to continue in business and the risk management and financial resources it requires to do so. The insurance group's analysis should consider its ability to continue to exist as an insurance group, potential changes in group structure and the ability of its members to continue in business.
- 16.12.11 An insurance legal entity's continuity analysis should assess the ongoing support from the group including the availability of financial support in adverse circumstances as well as the risks that may flow from the group to the insurance legal entity. Both the insurance legal entity and the insurance group of which it is a member should thus take into account the business risks they face including the potential impact of changes in the economic, political and regulatory environment.
- 16.12.12 In their continuity analysis, insurance groups should pay particular attention to whether the insurance group will have available cash flows (e.g. from surpluses released from long-term funds or dividends from other subsidiaries) and whether they will be transferable among group member entities to cover any payments of interest or capital on loans, to finance new business and to meet any other anticipated liabilities as they fall due. Insurance groups should outline what management actions they would take to manage the potential cash

flow implications of a stress scenario (e.g. reducing new business or cutting dividends).

- 16.12.13 The insurance group's continuity analysis should also consider the distribution of capital in the insurance group after stress and the possibility that subsidiaries within the insurance group may require recapitalisation (either due to breaches of local regulatory requirements, a shortfall in economic capital, or for other business reasons). The assessment should consider whether sufficient sources of surplus and transferable capital would exist elsewhere in the insurance group and identify what management actions might need to be taken (e.g. intra-group movements of resources, other intra-group transactions or group restructuring).
- 16.12.14 The insurance group should also apply reverse stress testing to identify scenarios that are likely to cause business failure within the insurance group and the actions necessary to manage this risk.

CF 16.12a The group-wide supervisor requires the IAIG to identify and considers the risks arising from its strategy as part of its ORSA.

CF 16.12a.1 These risks should include, but not be limited to:

- the ability of the IAIG and entities to handle significant or unusual growth or shifts in business volumes
- expertise and resources required to manage proposed new lines of business or operations in new jurisdictions.

Role of supervision in ERM for solvency purposes

- 16.13 The supervisor undertakes reviews of the insurer's ERM framework, including the ORSA. Where necessary, the supervisor requires strengthening of the insurer's ERM framework, solvency assessment and capital management processes.**
- 16.13.1 The output of an insurer's ORSA should serve as an important tool in the supervisory review process by helping the supervisor to understand the risk exposure and solvency position of the insurer.
- 16.13.2 The insurer's ERM framework and risk management processes (including internal controls) are critical to solvency assessment. The supervisor should therefore assess the adequacy and soundness of the insurer's framework and processes by receiving the appropriate information, including the ORSA regularly.

16.13.3 In assessing the soundness, appropriateness and strengths and weaknesses of the insurer's ERM framework, the supervisor should consider questions such as:

- What are the roles and responsibilities within the ERM framework?
- What governance has been established for the oversight of outsourced elements of the ERM framework?
- What modelling and stress testing (including reverse stress testing) is done?
- Has the model risk management been applied in the ERM framework?

16.13.4 The supervisor should review an insurer's internal controls and monitor its capital adequacy, requiring strengthening where necessary. Where internal models are used to calculate the regulatory capital requirements, particularly close interaction between the supervisor and insurer is important. In these circumstances, the supervisor may consider the insurer's internal model, its inputs and outputs and the validation processes, as a source of insight into the risk exposure and solvency position of the insurer.

16.13.5 The supervisor should monitor the techniques employed by the insurer for risk management and capital adequacy assessment and take supervisory measures where weaknesses are identified. The supervisor should not take a one-size-fits-all approach to insurers' risk management but rather base their expectations on the nature, scale and complexity of its business and risks. In order to do this, the supervisor should have sufficient and appropriate resources and capabilities. For example, the supervisor may have a risk assessment model or programme with which it can assess insurers' overall condition (e.g. risk management, capital adequacy and solvency position) and ascertain the likelihood of insurers breaching supervisory requirements. The supervisor may also prescribe minimum aspects that an ERM framework should address.

16.13.6 The supervisor should require the insurer to provide appropriate information on the ERM framework and risk and solvency assessments. This should provide the supervisor with a long-term assessment of capital adequacy to aid in the assessment of insurers, as well as encourage insurers to have an effective ERM framework. This may be achieved also by, the supervisor requiring or encouraging insurers to provide a solvency and financial condition report. Such a report may include information such as:

- a description of the relevant material categories of risk that the insurer faces;

- the insurer's risk appetite and risk limits structure;
- the insurer's overall financial resource needs, including its economic capital and regulatory capital requirements, as well as the capital available to meet these requirements; and
- projections of how such factors will develop in future.

16.13.7 The supervisor should be flexible and apply their skills, experience and knowledge of the insurer in assessing the adequacy of the risk appetite statement. The supervisor may be able to assess the quality of a particular risk appetite statement by discussing with the Board and Senior Management how the insurer's business strategy is related to the risk appetite statement, as well as how the risk appetite had an impact on the insurer's decisions. This includes reviewing other material, such as strategy and planning documents and Board reports in the context of how the Board determines, implements, and monitors its risk appetite so as to ensure that risk-taking is aligned with the Board-approved risk appetite statement.

16.13.8 The supervisor should require the results of the material stress testing, scenario analysis and risk modelling and their key underlying assumptions to be reported to them and have access to other results, if requested. Where the supervisor considers that the calculations conducted by an insurer should be supplemented with additional calculations, it should be able to require the insurer to carry out those additional calculations. Where the supervisor considers that the insurer's response to the results of its risk modelling, stress testing and scenario testing are insufficient it should be able to direct the insurer to develop a more appropriate response. The supervisor should also consider available reverse stress tests performed by insurers where they wish to assess whether appropriate action is being taken to manage the risk of business failure.

16.13.9 While insurers should carry out stress testing, scenario analysis and risk modelling that are appropriate for their businesses, the supervisor may also develop prescribed or standard tests and require insurers to perform them when warranted. One purpose of such testing may be to improve consistency of testing among a group of similar insurers. Another purpose may be to assess the financial stability of the insurance sector to economic, market or other stresses that apply to a number of insurers simultaneously (such as pandemics or major catastrophes). Such tests may be directed to be performed by selected insurers or all insurers. The criteria the supervisor uses for scenarios for standard tests should reflect the jurisdiction's risk environment.

- 16.13.10 Forward-looking stress testing, scenario analysis and risk modelling of future capital positions and cash flows whether provided by the insurer's own continuity analysis or in response to supervisory requirements is a valuable tool for the supervisor in assessing the financial condition of insurers. Such testing informs the discussion between the supervisor and insurers on appropriate planning, comparing risk assessments against stress test outcomes, risk management and management actions. The supervisor should consider the dynamic position of insurers and form a high-level assessment of whether the insurer is adequately capitalised to withstand a range of standardised and bespoke stresses.
- 16.13.11 By reviewing the insurer's ORSA continuity analysis, the supervisor may be able to learn about the robustness of an insurer's future financial position and the information on which the insurer bases decisions and its contingency planning. Such information should enable the supervisor to assess whether an insurer should improve its ERM framework by taking additional countervailing measures and off-setting actions, either immediately, as a preventive measure, or including them in future plans. Objectives of such supervisory measures may be to reduce any projected financial inadequacies, improve cash flows and/or increase an insurer's ability to restore its capital adequacy after stress events.
- 16.13.12 Publicly disclosing information on risk management may improve the transparency and comparability of existing solvency requirements. There should be an appropriate balance regarding the level of information to disclose about an insurer's risk management against the level of sufficient information for external and internal stakeholders which is useful and meaningful. Therefore, the requirements for public disclosure of information on risk management, including possible disclosure of elements of a solvency and financial condition report, should be carefully considered by the supervisor taking into account the proprietary nature of the information, whether it is commercially sensitive and the potential adverse effect that its publication may have on insurers.
- 16.13.13 Where an insurer's risk management and solvency assessment are not considered adequate by the supervisor, the supervisor should take appropriate measures. This could be in the form of further supervisory reporting or additional qualitative and quantitative requirements arising from the supervisor's assessment. Additional quantitative requirements should only be applied in appropriate circumstances and be subject to a transparent supervisory framework. Otherwise, if routinely applied, such measures may undermine a consistent application of standardised approaches to regulatory capital requirements.

- 16.13.14 In assessing the soundness, appropriateness and strengths and weaknesses of the group's ERM framework, the group-wide supervisor should consider questions such as:
- How well is the group's ERM framework tailored to the group?
 - Are decisions influenced appropriately by the group's ERM framework outputs?
 - How responsive is the group's ERM framework to changes in individual businesses and to the group structure?
 - How does the framework bring into account intra-group transactions; risk mitigation; and constraints on fungibility of capital, transferability of assets, and liquidity?
- 16.13.15 The group-wide supervisor should review the risk management and financial condition of the insurance group. Where necessary, the group-wide supervisor should require strengthening of the insurance group's risk management, solvency assessment and capital management processes, as appropriate to the nature, scale and complexity of risks at group level. The group-wide supervisor should inform the other involved supervisors of any action required.
- 16.13.16 The group-wide supervisory review and assessment of the insurance group's ERM framework should consider the framework's suitability as a basis for group-wide solvency assessment. The arrangements for managing conflicts of interest across an insurance group should be a particular focus in the supervisory review and assessment of an insurance group's ERM framework.
- 16.13.17 The supervisory assessment of the group's ERM framework may affect the level of capital that the insurance group is required to hold for regulatory purposes and any regulatory restrictions that are applied. For example, the group-wide supervisor may require changes to the recognition of diversification across the insurance group, the allowances made for operational risk and the allocation of capital within the insurance group.
- 16.13.18 Although it is not a requirement in general for an insurance legal entity or an insurance group to use internal models to carry out its ORSA, the supervisor may consider it appropriate in particular cases that the ORSA should use internal models in order to achieve a sound ERM framework. The quality of an insurance group's ORSA is dependent on how well integrated its internal capital models, the extent to which it takes into account constraints on fungibility of capital and its ability to model changes in its structure, the transfer of risks around the insurance group and insurance group risk mitigation. These factors should be taken into account by the group-wide supervisor in its review of the insurance group's ORSA.

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- 16.13.19 The supervisor may wish to specify criteria or analyses as part of the supervisory risk assessments to achieve effective supervision and consistency across insurance groups. This may, for example, include prescribed stress tests that apply to insurance groups that are regarded as particularly important in terms of meeting supervisory objectives.