International Actuarial Association
Association Actuarielle Internationale

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ISAP 5

International Standard of Actuarial Practice 5

Insurer Enterprise Risk Models

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Preface

This International Standard of Actuarial Practice (ISAP) is a model for actuarial standard-setting bodies to consider.

The International Actuarial Association (IAA) encourages relevant actuarial standard-setting bodies to maintain a standard or set of standards that is substantially consistent with this ISAP to the extent that the content of this ISAP is appropriate for actuaries in their jurisdiction. This can be achieved in many ways, including:

- Adopting this ISAP as a standard with only the modifications in the Drafting Notes;
- Customizing this ISAP by revising the text of the ISAP to the extent deemed appropriate by the standard-setting body while ensuring that the resulting standard or set of standards is substantially consistent with this ISAP;
- Endorsing this ISAP by declaring that this ISAP is appropriate for use in certain clearly defined circumstances;
- Modifying existing standards to obtain substantial consistency with this ISAP; or
- Confirming that existing standards are already substantially consistent with this ISAP.

A standard or set of standards that is promulgated by a standard-setting body may be considered to be substantially consistent with this ISAP if:

- There are no material gaps in the standard(s) in respect of the principles set out in this ISAP; and
- The standard or set of standards does not contradict this ISAP.

If an actuarial standard-setting body wishes to adopt or endorse this ISAP, it is essential to ensure that existing standards are substantially consistent with ISAP 1 as this ISAP relies upon ISAP 1 in many respects. Likewise, any customization of this ISAP, or modification of existing standards to obtain substantial consistency with this ISAP, should recognize the important fact that this ISAP relies upon ISAP 1 in many respects.

If this ISAP is translated for the purposes of adoption, the adopting body should select three verbs that embody the concepts of "must", "should", and "may", as described in paragraph 1.6. Language of ISAP 1, even if such verbs are not the literal translation of "must", "should", and "may".

ISAPs are model standards of actuarial practice and, as such, are not binding on any actuary.

ISAP 5 was adopted by the IAA Council in November 2016. This conforming version was adopted on 1 December2018.

[Drafting Notes: when an actuarial standard-setting organization adopts this standard it should:

1. *Replace "ISAP" throughout the document with the local standard name, if applicable;*
2. *Modify references to ISAP 1 in paragraphs 1.3., 2.3.52.2., 2.3.1., and 3.1. to point to the local standard(s) that are substantially consistent with ISAP 1, rather than referring to ISAP 1 directly, if appropriate;*
3. *Choose the appropriate phrase and date in paragraph 1.5.;*
4. *Review this standard for, and resolve, any conflicts with the local law and code of professional conduct; and*
5. *Delete this preface (including these drafting notes) and the footnote associated with paragraph 1.5]*

Introduction

This International Standard of Actuarial Practice (ISAP) provides guidance to actuaries when performing actuarial services involving the use of enterprise risk models for insurers.

Actuaries play a principal role in assuring financial soundness of insurers, and their approach often includes the use of enterprise risk models. Specifically, the central importance of enterprise risk models to insurance business management is clearly demonstrated in two of the Insurance Core Principles (ICP) published by the IAIS for assessment and supervision purposes: ICP 16 – Enterprise Risk Management for Solvency Purposes and ICP 17 – Capital Adequacy.

Increasingly, boards and senior managers of insurers rely on enterprise risk modelling for both regulatory and management decision-making purposes. As a result, insurers, their stakeholders, and other interested parties have a strong interest in the reliable operation and transparent governance of the use of enterprise risk models. As employees or advisors, actuaries play an important role in advising insurers and others on the development or selection of the appropriate models and the related testing, validation, and interpretation of the outcomes.

This ISAP is intended to:

- Facilitate convergence in standards of actuarial practice in connection with insurer enterprise risk models within and across jurisdictions;
- Increase public confidence in actuarial services for enterprise risk management (ERM) purposes; and
- Demonstrate the IAA's commitment to supporting the work of the IAIS in achieving effective insurer ERM practice internationally.

Section 1. General

1.1. Purpose – This ISAP provides guidance to actuaries when performing actuarial services involving enterprise risk models for insurers. It is expected to help increase public confidence in the ERM work provided by actuaries by giving intended users confidence that:

- Actuarial services are carried out professionally and with due care;
- The results are relevant to their needs, are presented clearly and understandably, and are complete; and
- The assumptions and methodology (including, but not limited to, models and modelling techniques) used are disclosed appropriately.

1.2. Scope – This standard applies to actuaries when performing actuarial services involving the selection, modification, development, and use of enterprise risk models, including stress tests and scenario tests, to assess solvency, assess capital adequacy, and produce risk metrics for ERM programs of insurers.

1.3. Relationship to ISAP 1 – Compliance with ISAP 1 is a prerequisite to compliance with this ISAP. References in ISAP 1 to "this ISAP" should be interpreted as applying equally to this ISAP 5, where appropriate.

1.4. Defined Terms – This ISAP uses various terms whose specific meanings are defined in the Glossary. These terms are highlighted in the text with a dashed underscore and in blue, which is a hyperlink to the definition (e.g., actuary).

1.5. Effective Date – This ISAP is effective for {actuarial services performed/actuarial services commenced/actuarial services performed for a valuation date}[1] on or after [Date].

[1] *[Phrase to be selected and date to be inserted by standard-setter adopting or endorsing this ISAP.]*.

Section 2. Appropriate Practices

2.1. Understanding of Risk and Uncertainty – The actuary should have, or obtain, sufficient understanding of the nature of risk and uncertainty in relation to the subject of the work. In performing services related to risk assessment, the actuary should consider, or may rely on others who have appropriately considered, the following:

2.1.1. Information about the financial strength, risk profile, business management, and risk environment of the insurer that is relevant to the assignment;

2.1.2. Information about the insurer's own risk management framework and approach, including its attitude to the assumption of risk as relevant to the assignment; and

2.1.3. The relationship between the insurer's financial strength, risk profile, business management, and risk environment as identified in 2.1.1. above, and the insurer's risk management framework and approach as identified in 2.1.2. above. If, in the actuary's professional judgment, a significant inconsistency exists, then that inconsistency should be reflected in the risk assessment and disclosed.

2.2. Proportionality – In applying ISAP 1 paragraph 1.5. Reasonable Judgment, and in particular paragraph 1.5.2., the actuary should also consider proportionality in respect of the nature, scale and 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 following ISAP 1 paragraphs 2.7. Assumptions and Methodology Set by Actuary and 2.8. Assumptions and Methodology Prescribed, the actuary should consider factors including, but not limited to, the following:

a. Internal policies, likely management actions, and experience with past history of management actions;

b. Contractual requirements, policy wording, and past experience;

c. Factors outside of management control, such as policyholder behaviour, taxation, regulatory requirements, and reserving requirements; and

d. Risk mitigation techniques, such as reinsurance and hedging, and any limitations to these techniques.

The actuary's assumptions should normally reflect the actual situation as of the 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, the actuary should be satisfied that the assumptions are reasonable by obtaining and reviewing information from appropriate sources, such as:

a. Management of the insurer being modelled;

b. Knowledgeable persons at the insurer;

c. The insurer's business plan and, if available, the most recent assessment of how the insurer will function under severely adverse scenarios;

d. External industry experts;

e. Requirements of law; and

f. Other subject matter experts.

2.3.3. When probability distributions are incorporated into a model, the actuary should be satisfied that the assumed distributions and correlations are appropriate relative to historical information and anticipated future changes, and should also consider the possibility of plausible extreme values. In this regard, for each risk factor, the actuary should provide an explanation of the differences between the incidence of actual extreme events included in the historical data and the potential incidence of extreme events in the 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

2.4.1. In relation to stress tests or scenario tests, the actuary should disclose:

a. The significant assumptions used in the stress test or the scenario test, including the actions assumed to be taken by management; and

b. Any known limitations of the stress test or the scenario test and include an assessment of the potential impact of these limitations on results.

2.5. Assessing Consistency Among Models – Multiple models and multiple stress tests or scenario tests are often developed for different purposes for the same insurer (e.g., accounting requirements, regulatory valuation, or risk evaluation to determine capital needs).

Where practical, the actuary should assess the reasons for and the impact of using multiple models and multiple stress tests or scenario tests and provide an explanation of any material differences in results.

Section 3. Communication

3.1. Disclosures – In addition to complying with ISAP 1 Section 3. Communication, the actuary should disclose:

3.1.1. Any significant inconsistency that exists between the insurer's financial strength, risk profile, business management, and risk environment as identified in 2.1.1. and the insurer's own risk management framework and approach as identified in 2.1.2. (2.1.3.);

3.1.2. An explanation of the differences between experience data and potential extreme adverse values in the risk model (2.3.3.);

3.1.3. An explanation of the differences between the experience data and the incidence of multiple extreme events in the enterprise risk model (2.3.3.);

3.1.4. The significant assumptions used in the stress test or scenario test, including the actions assumed to be taken by management (2.4.1.a.);

3.1.5. Any known limitations of the stress tests or scenario tests and an assessment of the potential impact of these limitations on results (2.4.1.b.); and

3.1.6. An appropriate explanation of any material differences in results if multiple models and multiple stress tests and scenario tests are used by the insurer (2.5.).