



Guidance paper on the use of internal models for risk and capital management purposes by insurers

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Agenda

- Introduction
 - Global need for guidance
 - Guidance activity
- Quick comparison of IAIS & IAA guidance
- Current IAA draft
- Issues
- Next steps



Introduction

Global need for guidance

- The use of internal models for insurer risk assessment and capital management is increasing due to:
 - emergence of comprehensive insurer risk management practices,
 - widespread use of economic capital for risk and capital management, and
 - development of increasingly sophisticated risk-based insurance regulatory capital requirements.

Introduction

Global need for guidance

- Company-specific internal models are also being used for other purposes within insurance companies, including:
 - valuation of insurance obligations,
 - financial condition analysis (known in some jurisdictions as Dynamic Solvency Testing, Dynamic Capital Adequacy Testing or Dynamic Financial Analysis),
 - analysis of asset/liability mismatch and the refinement of investment policy,
 - analysis of market risk in certain investment products with guaranteed values (known as segregated funds, variable annuities or maturity guarantees),
 - pricing of insurance products, and
 - pricing of reinsurance programs.



Introduction

Guidance activity

- IAIS – Standard & Guidance Paper March 2008 drafts “*The use of internal models for risk and capital management by insurers*”
- IAA – Solvency Sub-Committee has developed an April 2, 2008 draft and has been working in concert with IAIS for the last year to align the material in both IAA and IAIS guidance papers
- Groupe Consultatif has formed a working group to assist the CEIOPS Internal Models group
- Other country specific initiatives (US, Canada, Australia etc.)

Quick Comparison of IAIS & IAA Guidance

- Focus of guidance
 - IAIS – The use of internal models for *regulatory capital* by insurers
 - IAA – The use of internal models for *risk and capital management* by insurers
- Internal model definition
 - IAIS - *Risk measurement system* developed by an insurer to analyse its overall risk position, to quantify risks and determine EC to meet those risks
 - IAA - *Mathematical model* of an insurer's operations to analyse its overall risk position, to quantify risks and determine the capital to meet those risks

Quick Comparison of IAIS & IAA Guidance

■ Contents

- IAIS – 17 requirements covering general provisions, initial and on-going validation & supervisory approval, supervisory reporting and public disclosure
- IAA – 8 sections
 - ▶ Introduction
 - ▶ Model Fundamentals
 - ▶ Design Considerations
 - ▶ Model Construction
 - ▶ Controls
 - ▶ Governance
 - ▶ Communication
 - ▶ Supervisory Approvals

Quick Comparison of IAIS & IAA Guidance

■ Tests

– IAIS

- ▶ Statistical quality test (appropriateness; addresses risks)
- ▶ Calibration test (satisfies modelling criteria of supervisor)
- ▶ Use test and governance (embedded in RM; governance)
- ▶ On-going validation (on-going fit for purpose; change controls)

– IAA

- ▶ Validation test (conceptual, implementation, assumption etc)
- ▶ Calibration test (assumptions calibrated to experience)
- ▶ Use test (sufficient discipline; extensive use)
- ▶ Change test (reconcile and explain differences in results)

IAA Guidance Paper - Model Fundamentals

- Financial model
- Modelling process
- Proportionality
- Risk assessment framework
 - Time horizon
 - Risk Measure
 - Confidence level
 - Terminal provision
- Probability measures (real world & market consistency)
- Managing models
- Types of models



IAA Guidance Paper – Model Construction

- Time granularity
- Population of the model
- Product descriptions
- In-force data/assets
- Insurance experience assumptions for best estimates
- Insurance assumptions for projections
- Assumptions concerning the insurer
- Algorithms/random numbers/scenarios/extreme values
- Documentation

IAA Guidance Paper – Controls

- Validation test
 - Conceptual (model adequately provides for the risks)
 - Implementation (model actually works as expected)
 - Assumption (reasonableness of assumptions)
 - Data (confirm accuracy, continuity and completeness of data used by model)
- Calibration test (calibration of parameters to experience)
- Use test (sufficient discipline; extensive use in risk and capital management)
- Change test (reconcile and explain differences in results from one run to next)

Issues

- Need to directly address insurers whose circumstances allow them to use less sophisticated IM approaches
- Terminology (i.e., “Statistical quality”, “Validation”, “Calibration” etc)
- Ability to “rank order” insurer risks. Part of “use test”?
- Expand scope for management action to discuss “could do” versus “would do”.
- Backtesting requires more prominence for its ability to highlight where a model is not appropriate (i.e. not for confirming where it is appropriate)
- Need for monitoring standards to assure proper operation of IM

Next steps

- IAA June SSC meeting
 - Agree on all substantive elements of paper
 - Commission working groups as needed for additional internal model related topic
- Broad IAA distribution and comments summer 2008
- IAA November SSC meeting
 - IAA SSC approved guidance paper November 2008
 - Working groups present draft papers



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