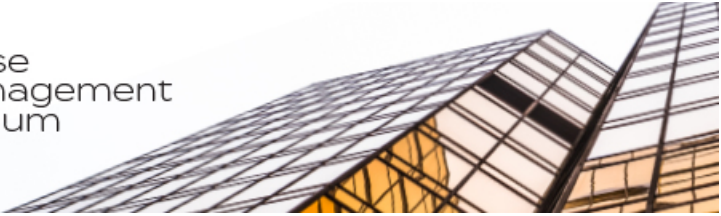




Enterprise
Risk Management
Symposium



Session 1A: Best Practices in Model Risk Management by the CRO Council

Moderator:

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Presenters:

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Sean Keenan

[SOA Antitrust Disclaimer](#)

[SOA Presentation Disclaimer](#)



Model Risk Management Practices & Principles; *a publication of the North American CRO Council*

Presenters: Alietia Caughron, CNA
 Sean Keenan, AIG

Moderator: Tyson Mohr, State Farm

Disclaimer



The paper *Model Risk Management Practices and Principles (August 2016)* was sponsored by the members of the North American CRO Council. The Council's membership is comprised of Chief Risk Officers of leading insurers based in North America, who as a group, aim to provide thought leadership and direction on the advancement of risk management, and risk-based solvency and liquidity assessments. The content of this paper reflects the views of the majority of the Council, and not necessarily the opinion of every member.

- **Survey I**
- **Part 1: CRO Council**
 - Introduction to the North American CRO Council
 - Genesis of the CRO Council's publication on Model Risk Management
 - Articles of the Paper
- **Part 2: Topics in Model Risk Management**
 - Model Definition
 - Definition of Model Risk Management
 - Model Inventory
 - Model Risk Assessment
 - Model Validation
- **Survey II (Time Permitting)**

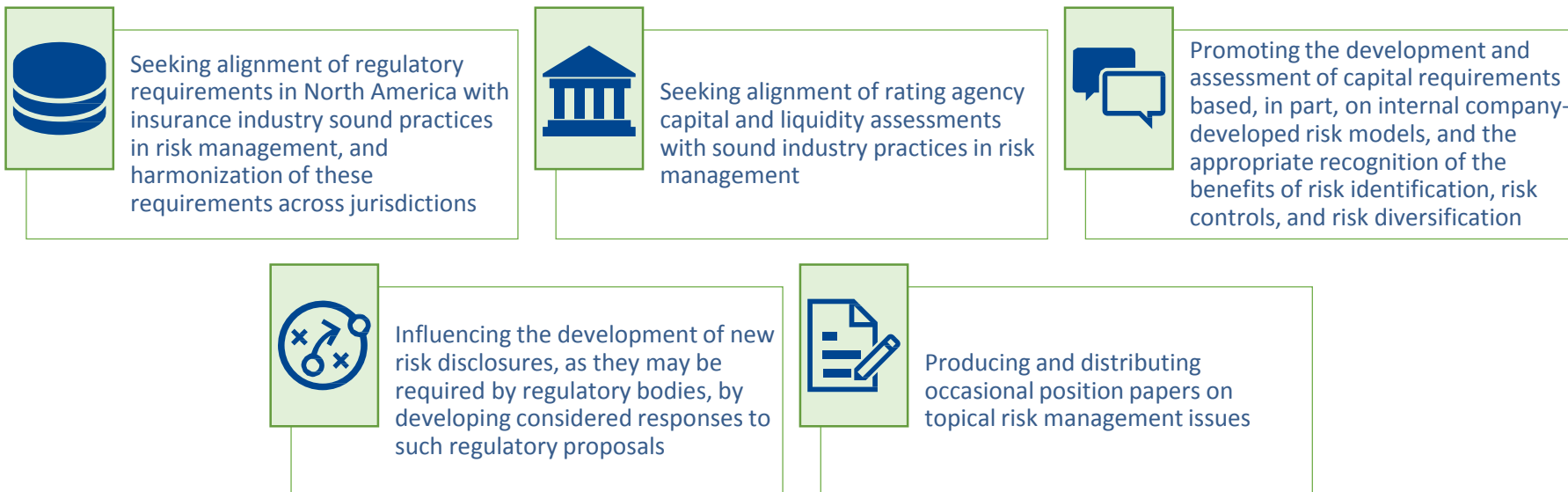
Part 1: CRO Council

Introduction to the North American CRO Council

The North American CRO Council is a professional risk management group that seeks to develop and promote sound practices in risk management throughout the insurance industry.

Council members represent Chief Risk Officers of leading insurers based in North America, who as a group, aim to provide thought leadership and direction on the advancement of risk management and risk-based solvency and liquidity assessments

Council Objectives



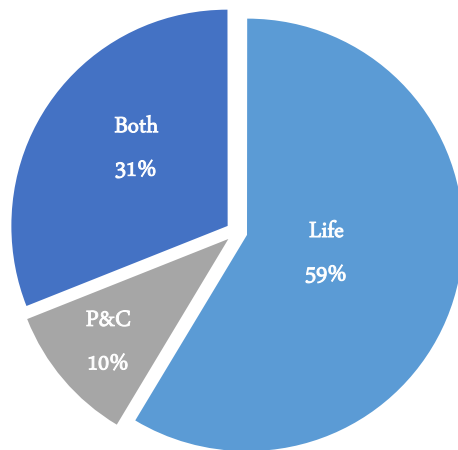
Introduction to the North American CRO Council



- Formed in 2010, the North American CRO Council is comprised of 30 members representing the Life & Health and Property & Casualty insurance industry
- Membership is diverse with companies located throughout the North American region



Business Mix of Council Members



In the North American market our members constitute:

- Seven of the top ten P&C companies;
- Nine of the top ten Life writers; and
- Hold approximately 45% of the North American insurance industry total assets

Source: SNL Financial

Surveyed members in Q4 2015

- 24 responses (super majority of members)

Key takeaways

- Wide range of results
- Membership in different stages of evolution
- Definition of model and model risk is not clear; more specifically, what falls under ‘model risk’ may differ significantly among the membership
- Lack of clarity around what is meant by validation

Round-tabled (in person) the topic to decide next steps

- Recommended short position paper to supplement existing papers and establish broad themes
- Paper published August 31, 2016: **Model Risk Management Practices and Principles**

http://cro council.org/images/CROC_Model_Risk_Management_-_Practices_and_Principles_August_2016.pdf

Introduction

Article I – Common Understanding of Models and MRM [Model Risk Management]

Article I, Section 1: Model Definition and Context

Article I, Section 2: Definition of Model Risk Management

Article II – Model Materiality Considerations

Article II, Section 1: Why Model Risk Matters

Article II, Section 2: Quantitative and Qualitative Dimensions of Model Risk Materiality

Article III – Model Risk Governance

Article III, Section 1: A Model is an Asset to Manage

Article III, Section 2: MRM Policies and Procedures

Article III, Section 3: Model Inventory

Article III, Section 4: Model Risk Assessment

Article III, Section 5: Model Validation

Article III, Section 6: MRM Reporting

Summary

Bibliography

Part 2: Topics in Model Risk Management

Disclaimer:

This material supplements the excerpts from the CRO Council paper with the experience and perspectives of the presenters.

Why Model Risk Matters

- Long history of model use in the insurance industry
- Increasing availability of data means model-building is more common than ever
- Analytical and predictive models are a key component of business models for the tech companies (new and old) such as Amazon and Uber
- Use of more complex models is now common in the insurance industry and for many is a key differentiator
- Many of these models are considered ‘black box’ and this leads to slower adoption and/or restricted use, thus limiting their potential impact
- Plus; the events of 2008 put models front and center (and not in a good way)

“The insurance industry has a long tradition of using models of varying complexity to drive decision making and manage risk. ... [T]he goal is to share a set of sound MRM practices and principles that the members of the North American Chief Risk Officer (CRO) Council have observed at different companies.” – Introduction

“Big Data, with the corresponding forecasting and predictive tools, along with the complex traditional tools for pricing, reserving and financial projections, collectively challenge the industry’s ability to effective management model risk.” – Article II, Section 1

- A model definition is necessary in order to define scope of program.
- The SR11-7 definition is the perspective of an important stakeholder, but not the only perspective. Should be adjusted for company.
- Recognize the diversity of models in the definition. However, it is still necessary to develop standards/guidelines and a body with authority to make a final decision.
- Beneficial to have clear examples of calculators and models in order to define boundaries and develop intuitions.
- Should multiple models with similar functions be combined into one model or kept separate?
- Core question: Model vs. Calculator? Some firms scope the program to include calculators because the same controls are valuable. Resource constraints must be considered.

“Although models employ calculators, a model is different from a calculator. A calculator processes data, taking inputs and producing outputs using a set algorithm; it is not designed to forecast outcomes or reduce uncertainty. In contrast, models involve judgment, and are a mathematical simplification and representation of more complex underlying processes.” – Article I, Section 1

Definition of Model Risk Management (MRM)

- **Necessary to define roles of the lines of defense**
 - First Line – Model Owners/Peer Reviewers
 - Second Line – Risk Management
 - Third Line – Internal Audit
 - Gaining buy-in from key stakeholders
- **Have flexibility to accommodate different needs when developing standards; gather the perspectives of modeling stakeholders. This also improves buy-in for a new oversight process.**
- **Adversarial or Cooperative relationship? Adversity could be necessary, but limits efficiency and effectiveness.**
- **Be attentive to proportionality: materiality should guide intensity of MRM practices**
- **Scope should include use and model-dependent decision-making process**

“The established standards and activities help drive more discipline and efficiency with respect to the management and control of model risk.” – Article I, Section 2

- **Important starting point to determine the universe of models in the program.**
- **Establish practices to ensure initial completeness and a periodic review.**
- **Considerations when selecting an inventory system**
 - In-house or vendor?
 - Flexibility to update as MRM framework develops
 - Ease of updating by multiple users (speed, accessibility, intuitive interface)
 - Link to a follow-up system for findings
 - Automatically generate alerts
 - Ability to produce statistics, including progress over time
 - Model interactions (groups of similar models, upstream and downstream)
- **Consider inventory requirements for models that are:**
 - 1-time use
 - No longer used
 - Not currently used, but could be activated in near future
 - Pending replacement

“We recommend that model inventories be as complete as possible.” – Article III, Section 3

- A formal process is vital for assessing proportionality and prioritization.
- Assess both the likelihood (complexity) and severity (impact of failure)
- Consider impacts both quantitative (financial impact, number of policies impacted) and qualitative (criticality, regulatory significance)
- Convenient to have linked to the model inventory
- Include assessment of controls to develop pre-control and post-control risk

“As part of the formalizing the structure of a model risk inventory, the relative importance of a model determines how the model is categorized, for example, as “Critical”, “High”, “Medium”, or “Low”.” – Article III, Section 4

- **Provides assessment by independent, qualified party**
- **Define responsibilities of the 3 lines of defense**
 - **First Line:** Peer review, quality control, documentation, output reviews, ongoing monitoring
 - **Second Line:** Assess fit for purpose, review assumption and limitations, evaluate ongoing monitoring
 - **Third Line:** Test first line and second line controls
- **Scale intensity and depth to model risk level**
- **Expect some hesitancy: Validation is likely to be the first experience a model owner has with a significant increase and/or enhancement in MRM framework.**
- **Method to organize validation include:**
 - **Development cycle:** design, development, implementation, monitoring
 - **Model characteristics:** assumptions, methodology, results, governance
- **Capture best practices to continually improve validation**

“Model validators should consider that large loss scenarios can result from the emergence of seemingly smaller risks that actualize at the same time.” – Article III, Section 5

Please go to www.crocouncil.org
and download the paper today!

THANK YOU!!!