

Session 4C: Model Governance: What Could Possibly Go Wrong? (Part I)

Moderator:

Dwayne Allen Husbands, FSA, MAAA

Presenters:

James Russell Collingwood, ASA, MAAA
David Paul, FCAS, MAAA
Chad R. Runchey, FSA, MAAA

Model governance What could possibly go wrong? Part I

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Today's presenters



Chad Runchey
Chad.Runchey@ey.com



David Paul
David.Paul1@ey.com



Dwayne Husbands
Dwayne.Husbands@ey.com



James Collingwood James.Collingwood@ey.com



Model Governance

What could possibly go wrong? Part I agenda

- Introduction
- Presentation Model Risk Management
- Exercise 1 Fleetville Insurance case study
 - What has gone wrong?
- Exercise 2 Fleetville Insurance case study continued
 - Bringing MRM to Fleetville
 - Remediation Plan
- Homework assignment



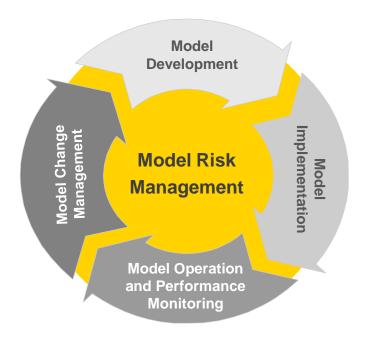
Model risk management





Background

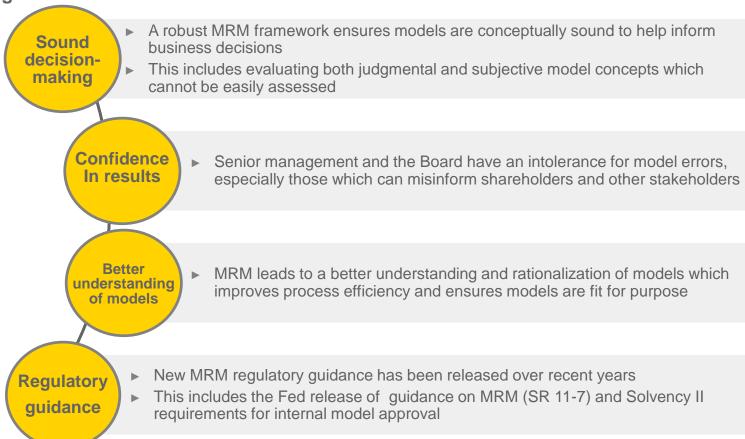
- Model risk management is not a new concept
 - Traditionally, insurers have performed tests and validations on their models to ensure calculation accuracy
 - The need now is for a more holistic and formal approach that considers and mitigates the risks that can arise throughout the life cycle of a model





Why is MRM important?

Insurers are becoming increasingly reliant on models across Finance, Risk and Actuarial. The demand and use of complex, principles-based models will continue to grow as expectations of stakeholders rise. As such, a robust MRM framework is important for a number of reasons, including:





What is model risk?

Model risk is the risk of adverse consequences from decisions based on the incorrect selection, implementation or usages of models.

- Occurs for several reasons:
 - Model may not be fit for purpose
 - Model may have fundamental errors and produce inaccurate outputs when viewed against its design objective and intended business uses
 - Model may be used incorrectly or inappropriately or there may be a misunderstanding about its limitations and assumptions
- Model risk increases with:
 - Greater model complexity
 - Higher uncertainty about inputs and assumptions
 - Broader extent of use
 - Larger potential impact



Adding value through MRM

MRM activities add value to the enterprise by enhancing:

Accuracy

- Systematic way of improving models and their accuracy, which reduces errors
- Model users and business managers are empowered to give recommendations for model development

Transparency

 Increased transparency in the source of information for reporting and decision making that depends on models

Alignment

- Ability to make better decisions by better aligning models with intended use
- Achieving cost synergies via alignment of actuarial models across business units

Value

Scalability

- Identifying options for areas to use models where they are not used
- Models can be readily applied to new or recently acquired business

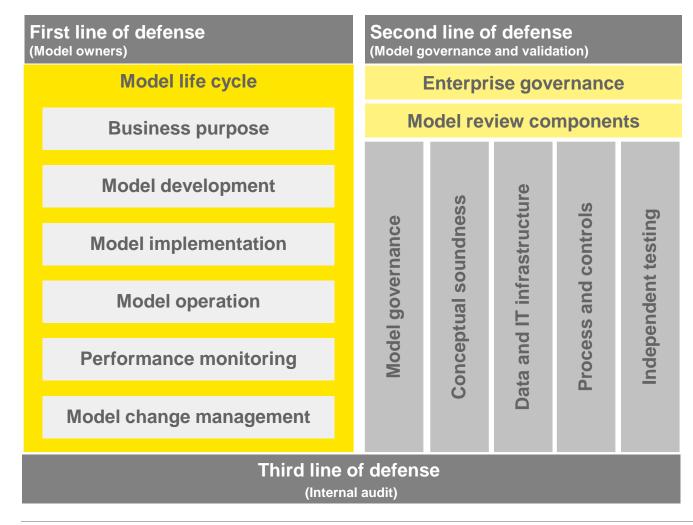
MRM should be proportional with:

- The size, complexity, level of sophistication and nature of activities of the institution
- The scope and materiality of a specific model









Roles and responsibilities

- First line owns model life cycle and related activities
- Second line establishes model risk management framework and standards, provides reviews and challenges, and can perform independent model testing
- Third line performs independent testing and verification of first and second line activities



Responsibilities – first line of defense (model owners)

Objective: Manage the model risk of the organization by ensuring that models are developed, used and maintained consistent with enterprise policies. Focus on thoughtful and transparent model development, well controlled and tested model implementation, rigorous change management procedures and ongoing performance monitoring.

Business purpose and model development

- Clear purpose for the model
- Well documented rationale for key modeling decisions, including alternatives considered
- Use of developmental evidence and supporting analysis for key decisions

Model operation and performance monitoring

- Operates model in a manner consistent with intended use
- Regular reviews of model performance to confirm fit for purpose
- Monitoring includes confirmation of key assumptions and modeling choices

Model implementation

- Clearly defined and comprehensive testing of calculations prior to use in production environment
- Appropriate reviews and sign-offs by senior management

Transparency Model change management

- Formal controls over changes to models, including adequate testing to maintain validation integrity
- Formal governance process prior to change implementation
- Robust assumption management and review process



Responsibilities – second line of defense (model governance and validation)

Objective: Manage the model risk of the organization by establishing and implementing a model risk management policy. Key roles include maintaining and monitoring model inventory, performing independent model validation and providing effecting challenge throughout the model development process.

Enterprise governance

- Establish model risk management policy and governance body
- Define models and maintain model inventory
- Determine prioritization approach and define requirements for model life cycle

Model validation

- Perform regular validation on models, depending on prioritization
- Procedures for second line usually focus on challenging judgment in model development process
- Detailed testing of calculations may be included

Set standards

- Determine documentation standards and templates to assist first line of defense implementation
- Determine standards for model validators, including expectations around specific tests and approaches

Understand model risk

- Develop a view of the key risk to the organization from models
- Determine potential impact for highest risk models and determine mitigation approaches



Effective challenge

Responsibilities – third line of defense (internal audit)

Objective: To ensure that the first and second lines of defense are complying with the MRM policies within the organization.

Confirmation

First line review components

- Confirm model documentation requirements are being followed throughout model development life cycle – including development, implementation and performance monitoring
- Ensure all models included in reviewed processes are included on model inventory
- Confirm testing performed during model development confirms with policy

Second line review components

- Review model validation reports and confirm compliance with policy and presence of effective challenge
- Confirm model governance committee charters, agendas and meeting minutes are compliant with firm expectations
- Confirm the execution of the model risk policy and validation schedules/calendar



Implementation

Key steps	First line	Second line	Third line
 Establish MRM policy and governance structure Defines what models and model risk are Clearly defines roles and responsibilities of all three lines of defense Creates a framework for model validation, including documentation standards and appropriate validation activities 		•	
 Create model inventory Identify models across the enterprise based on model definition Capture critical model information, such as intended and actual use 			
Perform model risk assessment Assess models, recognizing the different levels of inherent risk Prioritize models for validation			
 Model documentation and testing Typically requires significant investment, as documentation and testing procedures may not exist or be consistent with documentation standards 			
 Validate models Incorporates end-to-end view of process (inputs, processing, outputs) and controls across key validation components (e.g., conceptual soundness) ► Evidence of effective challenge is critical 	•		
Prioritize and remediate findings ► Process should be consistent with model change management framework		0	
Implement ongoing MRM procedures Applies to models in all parts of life cycle (i.e., includes new and existing models) Upkeep may be less onerous than initial effort, but still requires diligence		•	
Primary responsibility Secondary/potential responsibility	Review com	pliance	1







Fleetville Insurance case study

<u>Instructions</u>

- All teams are to review the Fleetville Insurance case study exhibits (10 minutes)
- Discuss the case study within each team (5 minutes) and answer the following questions:
 - What difficulties are Fleetville encountering from a MRM perspective?
 - What mistakes do you feel have been made by Fleetville?
- Each team will designate a spokesperson to present their responses







Fleetville Insurance case study

<u>Instructions</u>

- All teams are to prepare a MRM remediation plan outline for Fleetville (15 minutes), addressing the following questions:
 - What components of Model Risk Management have been missing from Fleetville?
 - Do the organizational structure and roles & responsibilities need to be changed?
 - What actions need to be taken to enhance the models?
 - How should the remediation plan be sequenced? How long will it take?
- Each team should be prepared to discuss their remediation plan with entire group (10 minutes)



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