

# MODEL GOVERNANCE

Presented by Godfrey Perrott



# Topics

Background

What is a model?

Model governance

Regulatory viewpoint

Actuarial standards

Summary



# Set the Stage



Courtesy Scott Adams



# Background

- Models have changed
- No longer a one man band
- Today's models require model governance
- Excellent resource for anyone building, using and validating models
  - Note on the Use of Internal Models for Risk and Capital Management Purposes by Insurers (IAA 2010)



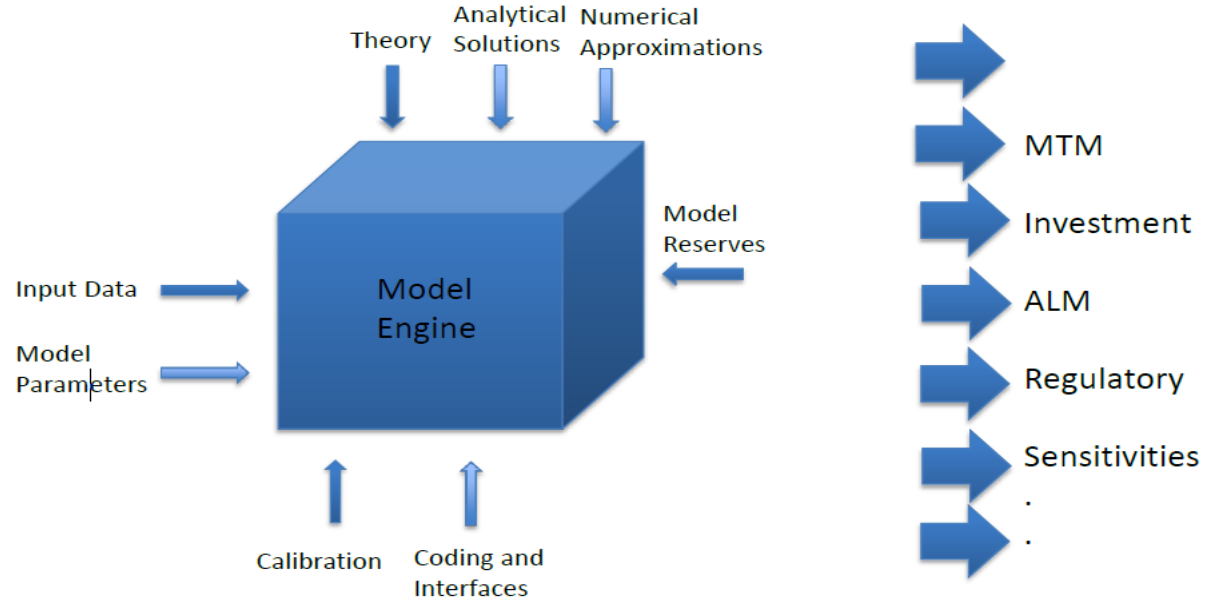
# Definition of Model

A model is a practical representation of relationships among entities or events using statistical, financial, economic, or mathematical concepts. A model uses assumptions, data and algorithms that simplify a more complex system and produces results that are intended to provide useful information on that system.

Financial models are the subset of models used to support a company's financial reporting, its internal financial management, and its risk management



# What is a Model?



Courtesy Michele Bourdeau PhD, TIAA/CREF





# Types of models

- Models range from simple calculators to global economic “what-if” models
- Migrated from spreadsheets created by a single actuary to complex systems providing entries directly into company financial statements.
- Internal models (e.g. price products, assess corporate strategies)
- External models (e.g. ORSA. Principle Based Reserves)
- The extent of model governance will be partly a function of the uses of the mod

# Reach of models

- Model outputs now reach into the C Suite
- It is vital that insurers have a clear understanding of
  - the role of each model
  - how they are built to achieve their goals
  - how their assumptions/methods are aligned (or not)
- Model building is a very expensive process. It is vital that
  - insurers adopt a cohesive approach to their development
  - avoid dysfunctional management decisions through model disharmony
- Boards and senior management have a duty to ensure their most important models are “fit for purpose”





# Using Models Wisely

- All models are wrong but some are useful
- Take advantage of as many measures of risk as possible
  - Stress testing,
  - EC models
  - Regulatory capital models
  - Etc.
- Understand how these different results can be reconciled

# Model Governance – Definition 1

- Model governance mitigates model risk, by :
  - Confirming fitness for purpose, (validation that the model does what it is intended to do)
  - Setting appropriate controls on input and changes to the model, and
  - Ensuring that all of this takes place properly

# Model Governance – Definition 2

- Model Governance oversees:
  - Model design and construction
  - Fitness for intended purpose
  - Validation of Implementation
  - Control of inputs
  - Control of changes
  - Reporting and disclosure
  - Documentation of purpose, methodology, inputs, validation and controls



# Model Governance – Definition 3

- Documentation of key model characteristics including:
  - Model’s purpose and use;
  - Modeling methods, structure and important assumptions or parameters;
  - Data and assumptions (sources, limitations on and any external reliances)
  - Shortcuts, gaps, and simplifications
  - Testing used to become comfortable with the model;
  - Assessment of key model risks and the mitigation techniques used to address them; and
  - Controls and governance including the need for constructive challenge.

# Model Governance – Proposal

- Model Governance is the process that assures users of the results that they can trust them.
- It isn't
  - Risk mitigation (although that may be a byproduct)
  - A Checklist (although that may be a useful tool)
  - Documentation (although that is probably a necessary support).



# It is Assurance

- Which means:
  - It must be user focussed
  - It must be transparent
  - It must be comprehensible to non actuaries.





# Questions raised by Regulators

- Data/assumption calibration
  - Where does the data come from?
  - What is the appropriate time horizon – 30 years, 50 years?
  - Are all insurers using the same approach?
- “Own” versus “Standardized” Should all insurers be given free rein to do as they see fit or is there some need for commonality in some aspects of model building? What might these be?
- How do insurers use all their models to form a view of target capital and how does that square with the supervisors view?

# Actuarial Standards

- Actuarial Standard Setters are not asleep at the switch
  - The US Actuarial Standards Board (ASB) has just finished (March 1, 2015) receiving comments on its second exposure draft for a proposed standard on modeling.
  - The Canadian ASB is developing a standard on modeling.
  - The Actuarial Standards Committee of the IAA has started work on a standard on model governance.
  - The Actuarial Association of Europe (AAE) is working on a standard on Solvency II (ESAP 2) which includes modeling.



# In Summary

- Models have become more sophisticated and more central to operations of financial institutions (especially banks and insurers). This reflects the increased complexity of the markets and services provided
- Model governance has assumed a much more prominent role and it is crucial to managing complex risks better
- Model governance must be user focused
- The situation continues to evolve rapidly

# Your Turn

- Please raise your hand (up high) if you are
  - actively involved in model governance and view it as working reasonably well
  - actively involved in model governance and do not view it as working reasonably well
  - Are not actively involved in model governance



# Your Turn (cont)

- Please vote for where model governance is using the analogy of auto safety:
  - First generation (mechanically reliable but no safety features)
  - Second generation (seat belts)
  - Third generation (air bags, back up cameras, blind spot detectors, adaptive cruise control)
  - Fourth generation (driverless cars)



Thank you



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