Model Governance: Is YOUR Company There Yet?  
Past, Present and Future of Model Governance

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Opening Remarks
August 31, 2016

Ron Harasym
Vice President & Actuary
New York Life
Welcome & Seminar Overview

1. Past, Present & Future of Model Governance
2. Professional Interests & Stakeholder Perspectives

Networking Break

3. Intersection of Model Governance & Technology

Lunch & Speaker

4. Hurdles Implementing Model Governance
5. Intersection of Model Governance & Model Efficiency

Networking Break

6. Components of a Leading Practice Model Governance Program
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Dave Czernicki
Principal
Ernst & Young

Ron Harasym
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New York Life
A Brief History of Model Efficiency in the US Life & Annuity Industry

1980

- Mid-1980s: Regulators respond to high interest rates with introduction of NY Reg 120
- PCs on Every Desk

1990

- Introduction of "Master/Slave" arrangements now enable processing on more than 1 PC

2000

- The "Golden Age of Scenario reduction techniques"
- Effective for YE05 valuations: C3P2 requires stochastic valuation for determining the C3 component of risk-based capital for variable annuities
- Emergence of GPU hardware

2010

- 2008/09 financial crisis motivates wider use of hedging for VGLBs
- 2012: Emergence of proxy modeling for complex liabilities

- Proxy Modeling – LSMC, RBFs
- Cluster Modeling
- Cloud
- GPU

Courtesy of Tony Dardis, Milliman
2016 Life & Annuity Symposium
Session 57 – Model Efficiency – Part I
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David Sandberg
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Allianz Life Insurance Co of North America
What is Actuarial Work?

“actuarial practice involves the identification, measurement, and management of contingent future events in environments that rarely, if ever, emerge exactly as projected. “

From Introduction to Actuarial Standards of Practice

Models are the backbone of our Work:

Distributions

Projections
Past

• Insurance & Risk Management Begins with Greek Shipping
  – That’s why we still use Greek letters today in our hedging platforms 😊

• But what’s the “real story”? 
  – The Process of applying quantitative estimates to future unknowns that creates a sustainable pooling of risk for all stakeholders
If Needed, the Models will Be there

- Morality data collection 1700’s through 20th century
- Then, how to address volatile interest rates?
  - Unbundled UL PRODUCTS
  - Rise of ALM
  - Duration, option adjusted & convexity
- Rise of seeking value from equity risk
  - Return of the Greek gyros to the Geeks
More Models

• Earthquake & Other Cat models
• Managing Delta & Basis risk to a bounded level
• There is always a Gap - Mind the Gap
  – In 5 years model will be thrown away. They are disposable, but they taught us the next question to ask.
• Define unknown - Then scope it out
Value of Model Governance

• Models should be framed as an investigative process - a series of questions:
  – What are my risks?
  – How can I reliably estimate those risks in a sustainable manner?
  – If I can’t quantify them, how can I manage them? (Avoid, share or get better data)
  – Always keep central - What is missing? Or “Mind the Gap”
• All models are imperfect, even accounting ones
Paradigm Shift

• We often are “rewarded” for providing answers.
• But, good questions are what generate value. They allow a great answer to be found and applied!
• Questions arise because of opportunities (problems)!
• They become the tool for engaging management and the board into conversations about the core uncertainties.
The Challenge

• Shift from Providing Numbers to Manage a Process to Identify and Frame Problems i.e. What we don’t know.
• How do we Communicate Uncertainty?
What Are Current “Gaps”? 

• Modeling Dynamic Hedging in the Model
• Convexity of Liabilities
  – Dynamic Policyholder Behavior
  – Including all cash flows (Expenses, Dividends, Taxes)
  – Impact of Issuing Future Business in Future Path
  – Cross Greeks for 2\textsuperscript{nd} order Interest & Equity
• Connecting Real World & Risk Neutral Scenarios to hedge both reserves & capital
• Credit for Diversification
Where Are We Going?

• Actuarial Standard on Model Governance
  – Making the “black box” transparent as to key assumptions, limitations and sensitivities

• How to frame insurance models into the larger societal use of models?
  – Econometric models
  – Predictive models
  – Accounting models

• Is Model Risk mitigated by regulators, capital or processes?
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Model Governance
Future outlook

Regulatory
- Issues:
  - Procedures not compulsory for all; amount of rigor varies considerably
- Outlook:
  - From the Fed
  - From the States

Procedures
- Issues:
  - SR 11-7 viewed as a leading practice but exhaustive to some
- Outlook:
  - Continued trend towards "breadth" of review
  - Frequency / depth more pragmatic

Technology
- Issues:
  - Validation and change control procedures difficult to automate
- Outlook:
  - Continued adoption and evolution of enterprise modeling tools

Operations
- Issues:
  - Hard to staff for; wide range of disciplines required, and costly
- Outlook:
  - Non-traditional arrangements such as co-sourcing

Org Structure
- Issues:
  - Need to promote consistency, efficiency and independence
- Outlook:
  - Continued trends towards centralization
  - More use of dedicated resources