Mighty Mouse: An Open-Source Hero
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Agenda

• What is Mighty Mouse?

• Open-source model design

• New insights

• The future
What Is Mighty Mouse?

Mighty Mouse

Mighty MAUS

Mighty

MA

US

What Problem Does Mighty Mouse Solve?

Step 1: Stress Balance Sheet
Step 2: Stress MA Framework
Step 3: Match Cashflows (Rebalance in Stress)
Step 4: Calculate Portfolio MA
Step 5: Apply Matching Tests

Additional complexity in stress
What’s the Solution?

Which path to take?

Approx. Existing
- Destroys nuances
- Reduced insight
- Validation challenge (i.e. validating approximations)

Complex Something New
- Better representation of risks in the annuity fund
- Greater business insight
- Easier to setup & maintain

Open-source software

Where?

Why Open Source?

• Stranger danger?

• What can it do?

• What’s out there?

• How can we trust it?
Essential R Toolkit

- Maths & statistics
- Large datasets
- Parallel & cloud computing
- Visualisation & interfaces

Designing Large Projects in R

- Object-oriented programming in R: ‘R6’

Input File(s)

MAP

- Asset Portfolio
- Liability Portfolio

Yield Curve
- Credit Calibration
- FS Calibration

Scripts → Functions → Objects
Mousy Insight #1
Proportion of credit risk capital attributable to...

- Spread-based MAUS methodology
- Migration or transition risk

MAUS methodology based on 5-step process

Mousy Insight #2
MAUS rebalancing requirement created by...

- Credit Risk
- Longevity Risk

Term of Cashflow Rebalancing Requirement
What Does this Mean for the Business?

A model is only as good as the action it enables…

• Changing the approach to cashflow matching in the MA portfolio

• Better risk management through an understanding of risk dynamics

• Further insights into the optimum credit portfolio
Living With Mighty MAUS

• Integrated Internal Model
• Extending functionality:
  – Extending methods to the non-MAP, projection through time, stress/sensitivity testing
• Controlling change:
  – Git, GitHub Enterprise
• Production, analysis, calibration

The Future

• Integrated Capital & Liquidity model
• Risk Margin
• Proxy modelling of the SCR & Working Capital
• MAP investment strategy
Questions

Comments

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