Session III.A
Finding the Right Balance Between Modeling and Judgment in the Projection Process

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Fourth Annual Stress Test Modeling Symposium
Federal Reserve Bank of Boston
June 26, 2015

Disclaimer: The views expressed here are my own and not that of the Federal Reserve System or its staff.
• Today’s session:
  • When to use judgment, overlays etc. vs formal “model”
  • Right governance and controls around judgmental adjustments
  • Expectations for larger vs. smaller BHCs

• A few introductory points
  • Judgment is everywhere, even in equations
  • Why do we like formal models in stress testing?
  • A provocative thought on complex vs. simple models
Even judgment is a "model"

Q. What stress loss rate should we write down for this portfolio?
A. I don’t know – how about twice as much as we lost last time?

**Projected Loss Rate** = 2.0 \* **Maximum Observed Loss Rate**

- How volatile are loss rates?
- How sensitive are they to scenario variables?
- Do we have data for stressful episodes?
- Are portfolio characteristics roughly similar?
Models reflect deep judgment

\[ R(t) = a_0 + \rho_0 R(t-1) + b_0 X(t) + \dot{q}_t \]

\[ \Delta R(t) = a_1 + \rho_1 \Delta R(t-1) + b_1 \Delta X(t) + u(t) \]

World is mean-reverting

World is random walk
Benefits of using models in stress tests

• Represent *structural* forces driving objects of interest
  • Examples: borrower default decision, equilibrium asset price dynamics
  • Very powerful when thinking about big rare shocks
  • Not true if statistical model used to represent an *empirical* relationship

• Transparent and repeatable mapping from data, risk factors and scenario to losses
  • Disciplines “thumb on the scale” (but doesn’t eliminate it)

• Widely used criteria for judging model fit
  • Please: Use out-of-sample criteria
Pitfalls of statistical models in stress tests

- Limited data under forces at work in stress scenario
  - Dynamics observed during normal times may not apply
  - Overall structural break in data generating process

- Results sharply contradict intuition

- In general: fragile models are dangerous—worse than useless
Models: Complex or simple?

• BIS Joint Forum, June 2015
  • “Supervisors should be cautious against over-reliance on internal models for credit risk management and regulatory capital. Where appropriate, simple measures could be evaluated in conjunction with sophisticated modelling to provide a more complete picture.”

• Simpler models are harder to build:
  • “My model was complex when I started, too, but I just kept working on it till it got simple,” H. Varian

• Models that work in normal times—
  • Benefit from increasing fanciness
  • Fancy features may behave strangely in stress scenarios