

# Macro Financial Modeling Research Challenges Faced by Regulators



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# Preliminaries



Research challenges at regulatory agencies

Differences amongst regulators

Systemic risk or not

Safety and Soundness versus Enforcement

Idiosyncratic

Function of my experience and interests.

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# Preliminaries: My Experience



- Onsite supervision at banks
  - Writing referee reports
- Policy making, especially around capital rules
  - “Technician” rather than as an “Engineer”
  - Counterparty credit risk, credit risk, stress testing.
- Attempts at research satisfying two criteria
  - Interesting to me – Easy
  - Interesting to others – hard

# Preliminaries: My Experience-2



- Research interesting to others
  - ✦ Other regulators – internal as well as external
  - ✦ Broader research community
- Examiners – generalists with broad deep experience
- Very strong heuristics
- Sometimes skeptical of complex models

# Challenges



- **Data confidentiality**
  - Confidentiality of banks
  - Presence of PII
  - Restrictions because of confidential data
  
- **Perception of official imprimatur**
  - Risk of false attribution of authority

# Challenges-2



- Multiperiod optimization problem
  - Not clear what value function to optimize
  - Regulators closer to bondholders but not entirely
- Institutional features matter a lot
- Very significant agency problems
- Asymmetric information
- Macroprudential vs. microprudential

# Categories of research questions - 1



Research questions inspired by supervision activity.

- **Business As Usual Supervision:** The safety and soundness examinations.
- **Post Financial Crisis,** especially by activities such as stress testing.



# Categories of research questions - 2



## Research questions inspired by regulations

- **New Rules and changes in existing regulatory rules**
  - Liquidity Coverage Ratio
  - Net Stable Funding Ratio
  - Volcker Rule
  - Basel III to Basel IV
  - Margin rules
  - Central clearing mandates
  - Conventional wisdom?
- **Post Financial Crisis, especially by activities such as stress testing.**

# Categories of research questions - 3



Research questions inspired by regulatory data.

- The traditional call report data
- The very large data collected by the regulators post financial crisis

# Research questions around supervision



## Models and model validation

- Very substantial applied research
- Especially for the trading book

# Research questions around supervision



- Valuation models [trading book]
  - Great complexity
  - Calibrated models [models work and then stop working]
  - A view: sophisticated extrapolation
- Risk management models
  - Value at Risk Methodologies
- Significantly less work on validation.

# Modeling Challenges Around Stress Tests



- Appropriateness of conventional econometrics and time series models for stress testing
- For example, impact of autocorrelation when the impact of macroeconomic variables are of greater concern.

# Modeling Challenges Around Stress Tests

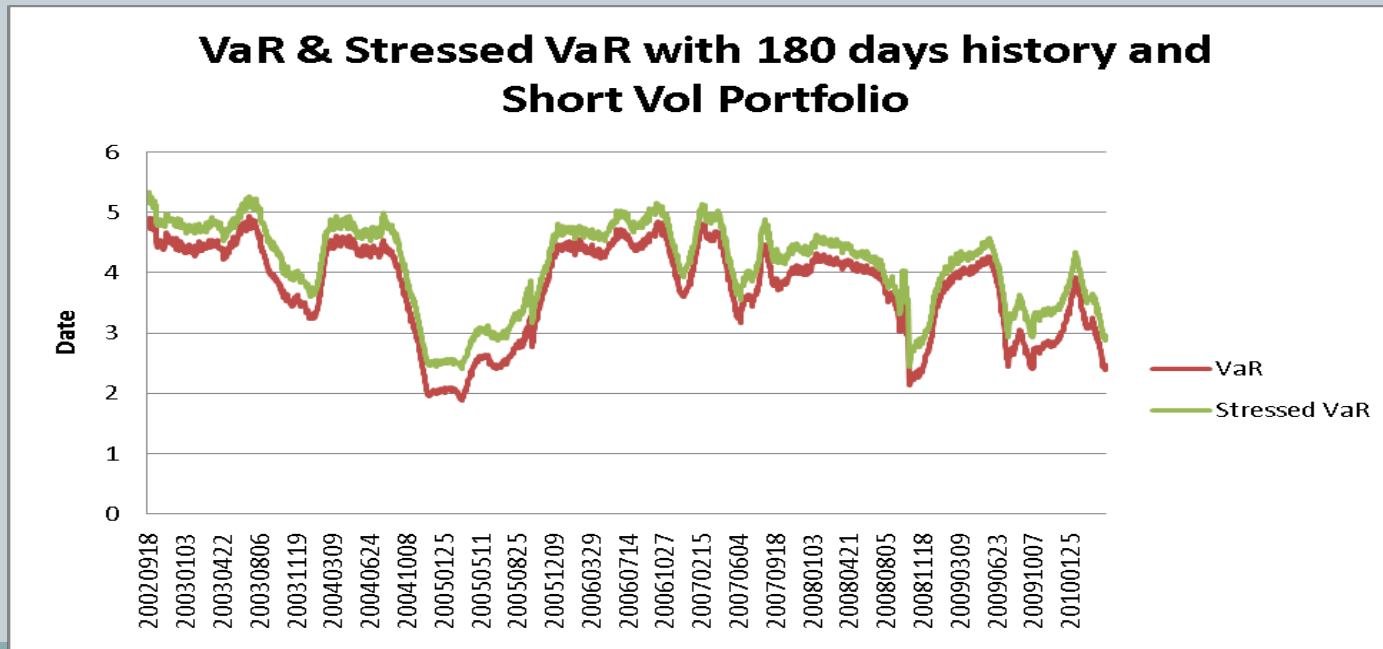


- Forecasting when the independent variables are significantly outside their usual values.
- Forecasting when very few scenarios are to be used.
- Assessing model outcomes with agency problems.

# Research Questions: Regulations



- An example
  - Stressed versus unstressed calibration of capital models
  - Basel III -> Stressed calibration



# Research Questions: Big Data



- Ability to link micro data to macro questions
- So far largely empirical
- Lacking much theory