

The Federal Reserve in the 21st Century

Measuring Bank Supervision

FEDERAL RESERVE BANK *of* NEW YORK

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Disclaimer

The views expressed in the presentation are those of the speaker and are not necessarily reflective of views at the Federal Reserve Bank of New York or the Federal Reserve System.



Overview

- Bank supervision versus bank regulation
 - Supervision is somewhat opaque; it relies on judgment and confidential information
- Institutional overview
 - What do supervisors do in practice?
- Economic model of bank supervision
- Measuring supervision in the data
 - Resource allocation and impact of supervision



- This presentation draws from:
 - Eisenbach, Haughwout, Hirtle, Kovner, Lucca, and Plosser (2017) “Supervising Large, Complex Financial Institutions: What Do Supervisors Do?”
 - Lucca, Eisenbach and Townsend (2017) “The Economics of Bank Supervision”



Bank Supervision versus Bank Regulation

Supervision and regulation

- Supervision is distinct from regulation, but the two activities are often conflated.
- **Regulation** involves defining the rules:
 - Who can own and control commercial banks
 - What bank holding companies (BHCs) and commercial banks can and cannot do (activities)
 - Minimum requirements to operate without additional regulatory constraints (e.g. capital and liquidity requirements)
- **Supervision** involves monitoring and oversight of the firm:
 - Compliance with law and regulation (overlap with regulation)
 - Are firms engaging in unsafe or unsound practices?
 - Remediation steps to make the firms correct any unsafe or unsound practices



Goals of Supervision: In the Fed's own words

- “Through its supervision, the Federal Reserve promotes a safe, sound, and stable banking system that supports the growth and stability of the U.S. economy.”

Board of Governors, “Dodd-Frank Act Stress Test 2015: Supervisory Stress Test Methodology and Results.” (March 2015)

- “The objectives of supervision are to evaluate, and to promote, the overall safety and soundness of supervised institutions (micro-prudential supervision), the stability of the financial system (macro-prudential supervision), and compliance with relevant laws and regulations.”

Federal Reserve Bank of New York website (accessed October 2014)

- “The Federal Reserve’s consolidated supervision activities closely complement its other central bank responsibilities, including the objectives of fostering financial stability and deterring or managing crises.”

Board of Governors, “Bank Holding Company Supervision Manual.” (January 2015)

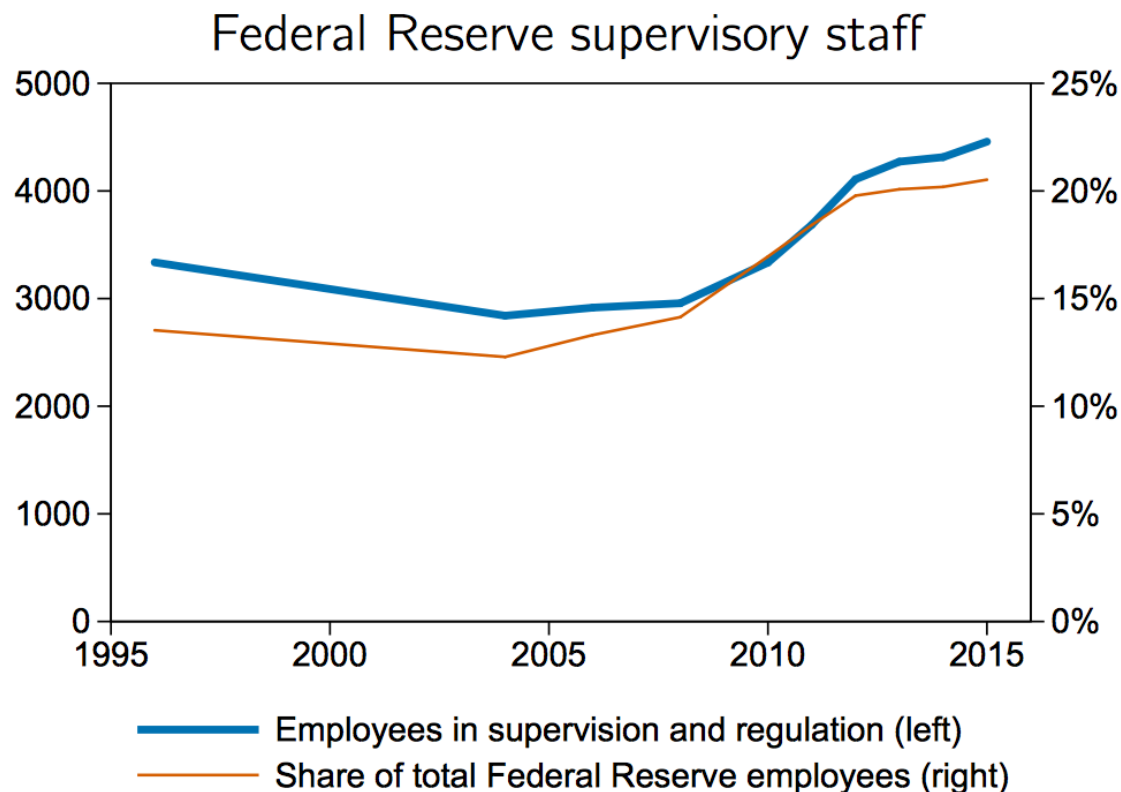


Safety and Soundness: A Critical Concept

- Not hard-coded though significant supervisory guidance exists:
 - Supervision and Regulation Letters (SR Letters)
 - Examination Manuals
 - Training
- Role for judgment
 - Use of soft information, not just data
 - Analytical though not always just based on numbers
 - Cross-firm comparisons (horizontal perspective)
 - Multidisciplinary
- Tradeoff between flexibility (to adjust to new practices and conditions) and predictability (so that firms understand the expectations)



Bank supervision is resource intensive



Source: Federal Reserve Annual reports

- About 20% of all Federal Reserve staff are involved in bank supervision
- Up from about 12% pre-financial crisis



What Do Supervisors Do?

Some definitions

- Commercial banks:
 - Nationally chartered: e.g. Citibank NA → OCC
 - State chartered: e.g. Goldman Sachs Bank → state banking depts. & Fed (member banks) or FDIC (non-member banks)
- Bank holding companies (BHCs): e.g. Citigroup → Fed
 - Focus of this talk
- Supervision at the Fed:
 - Federal Reserve Board (Washington DC) receives supervisory (and rulemaking) authority from Congress
 - Board delegates supervision to the twelve Fed Reserve Banks; each supervises BHCs in their own districts

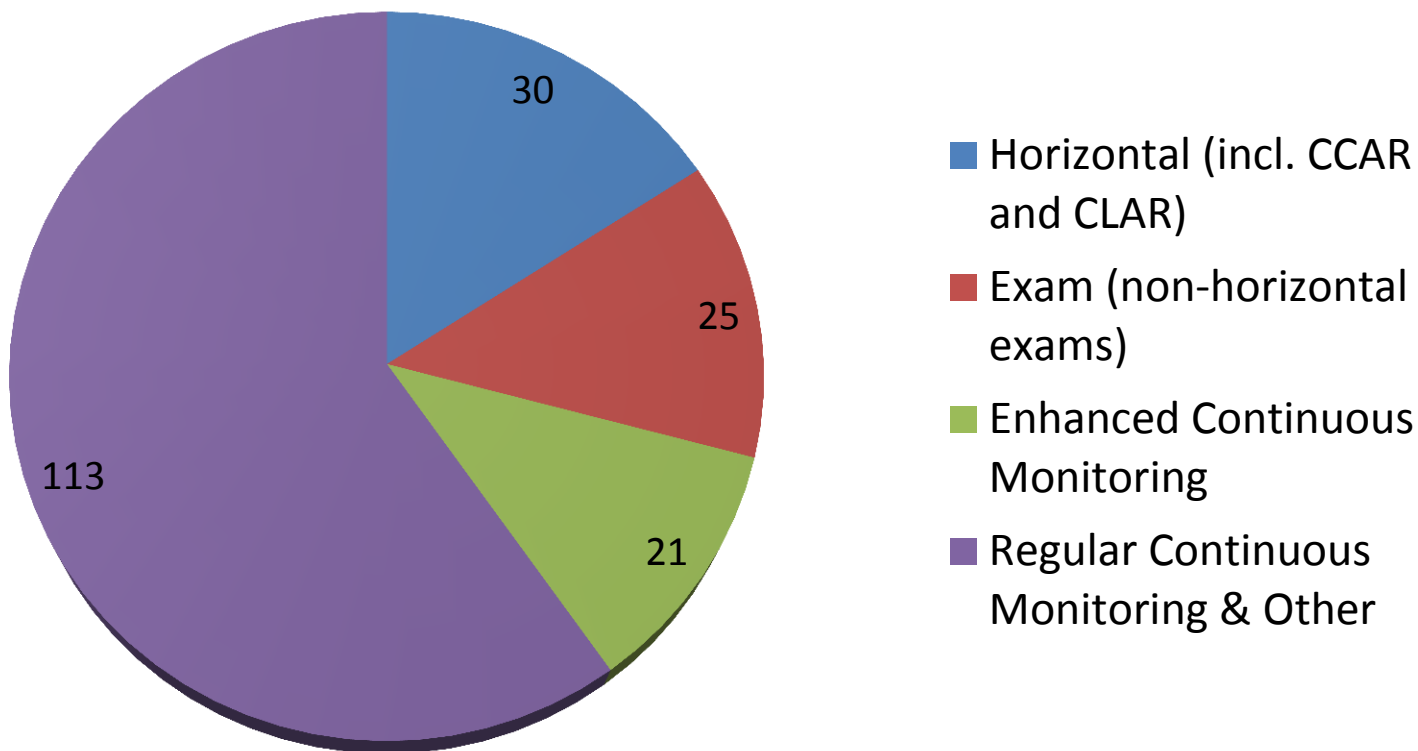


What do BHC supervisors do?

- “Continuous monitoring”:
 - Meet with senior management, business line management, risk and control departments, and board members
 - Review internal reports (risk, performance, budget, strategy)
 - Quantitative and qualitative
 - Regular and ad hoc reports
 - Independent analysis of confidential and public information
- Examinations and “enhanced continuous monitoring”:
 - Deeper dives focused on special topics, issues, concerns
 - Can be intended to fill a knowledge gap, to assess controls and processes, to identify weaknesses
 - Can involve individual firms or several firms (“horizontal”)
- On-going programs (for large, complex firms), including:
 - Comprehensive Capital/Liquidity Analysis and Review (CCAR/CLAR), Supervisory Assessment of Recovery and Resolution Preparedness (SRP)

How FRBNY LISCC supervisors spend their time

2014 Supervisory Staff Headcount by Activity



Source: FRBNY internal supervisory hours allocation data on 2nd District Large Institution Large Institution Supervision Coordinating Committee (LISCC) firms.

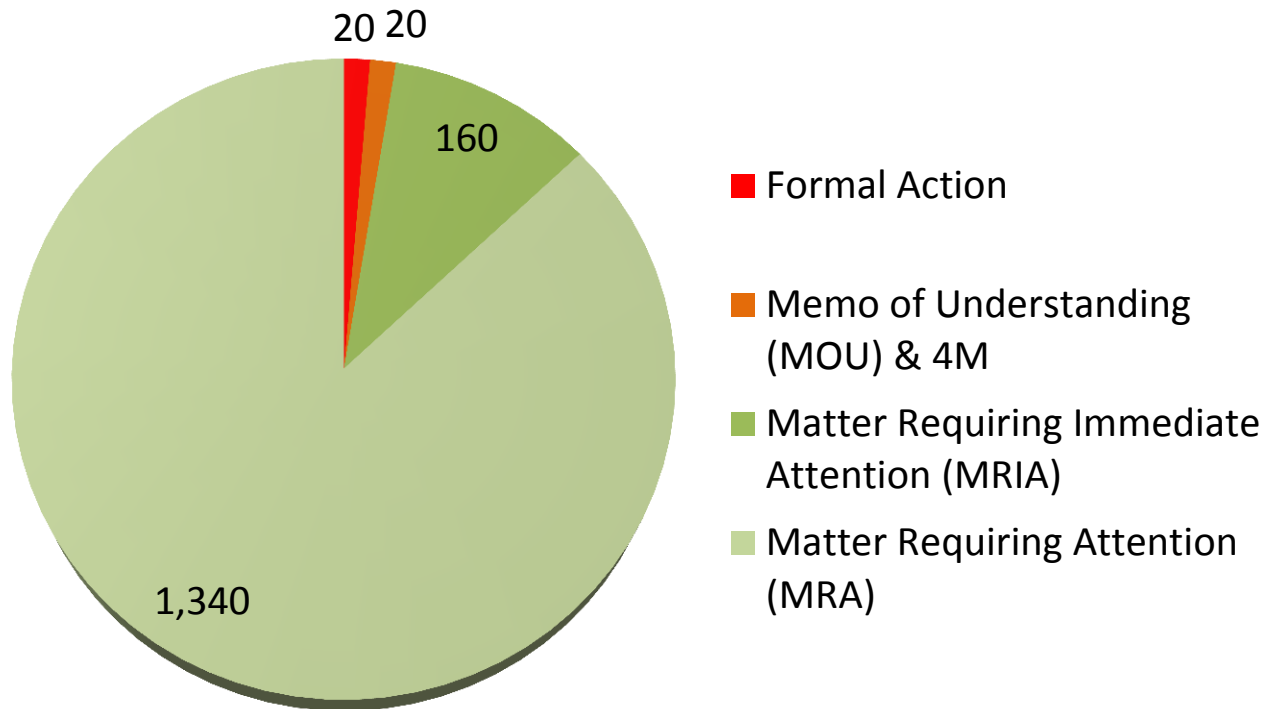
Supervisory results and follow-through

- Enforcement and other supervisory actions
 - Matters Requiring Attention (MRAs), Matters Requiring Immediate Attention (MRIAs), Memoranda of Understanding (MOUs), 4-M agreements, written agreements, consent orders, cease and desist orders
 - Require firms to address unsafe or unsound practices, violation of law
 - Timeline for remediation
 - Some actions public, some confidential
 - Some are joint agreements with BHC (e.g. consent orders), some are without consent/agreement



Supervisory Actions

Supervisory Actions Issued to LISCC Institutions In the 2nd Federal Reserve District (Jan 2011-Nov 2014)



Source: FRBNY internal data on enforcement activity. All counts are rounded to the nearest 10 and included irrespective of whether the action is ongoing (open) or resolved (closed).

Supervisory results and follow-through

- **Supervisory Ratings**
 - 1 to 5 rating (RFI/C for BHCs; CAMELS for commercial banks)
 - Confidential, not public
 - Bad rating can result in limits on actions (e.g., acquisitions, removal of management)

- **Outcomes of specific programs**
 - CCAR: can result in limits on dividends and repurchases



Economic Model of Bank Supervision

Model overview

- Bank supervision is:
 - Monitoring → making use of soft information
 - Intervention → imposing corrective actions to affect bank risk
- Resource allocation:
 - Attention to an individual bank: size & risk
 - (Re)allocation across multiple banks
 - Allocation of supervisory resources in the data



Rationale for bank supervision

- Why bank supervision and regulation?
- Different objectives of a bank versus society:
 - Limited liability
 - Externalities (default spillovers)
- On its own, a bank will take on too much risk

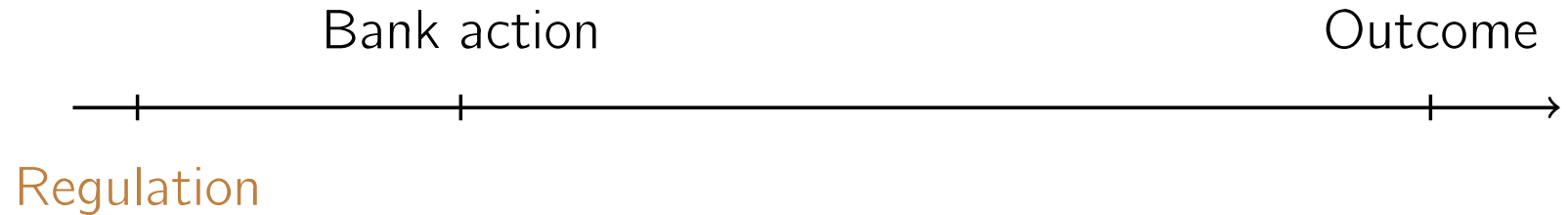


Model



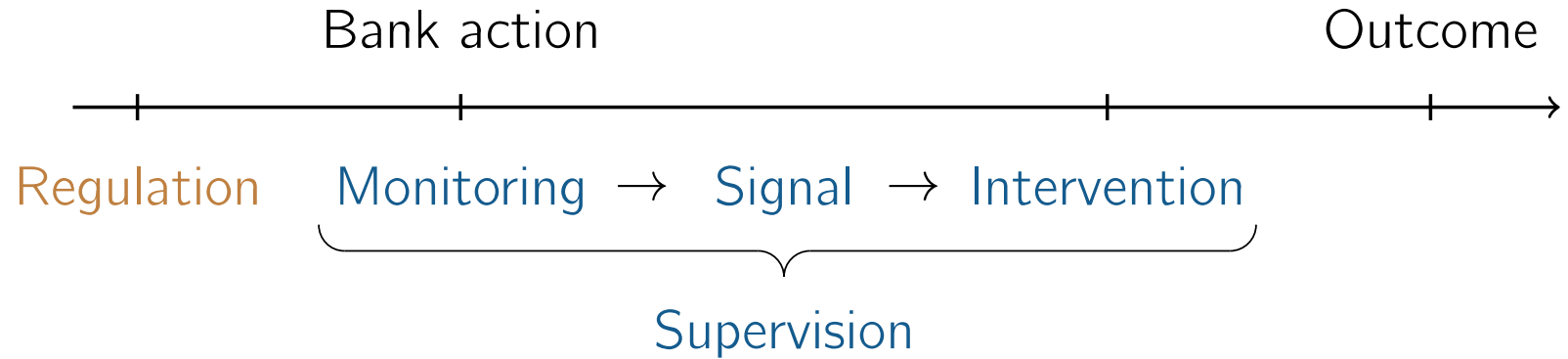
- **Bank:**
 - Takes action (for example, hold loans or securities)
 - Based on action, outcome (e.g. asset returns, capital level) is realized

Model



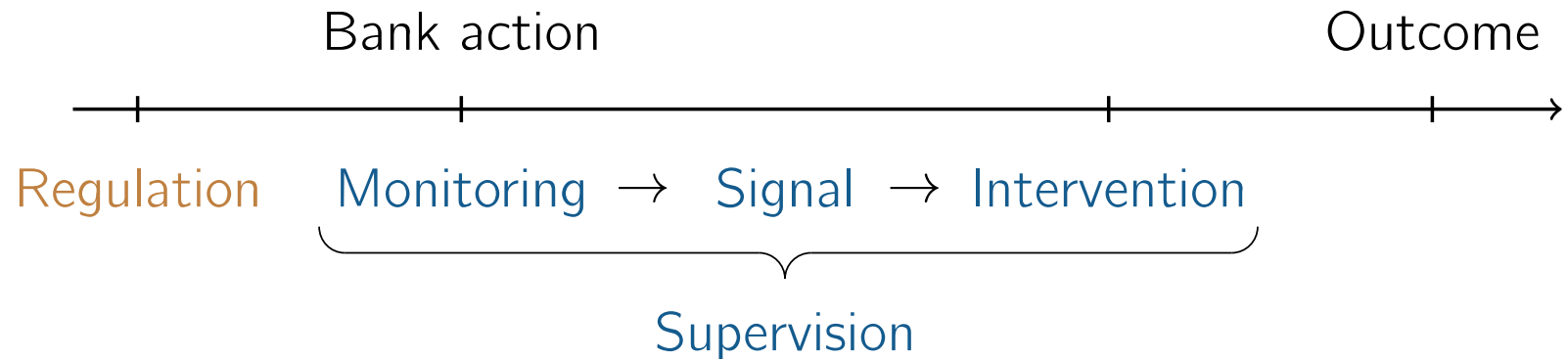
- **Regulation:**
 - Can impose limits ex ante, e.g. capital requirements
 - Can react to realized outcomes

Model



- **Supervision:**
 - Active in the interim

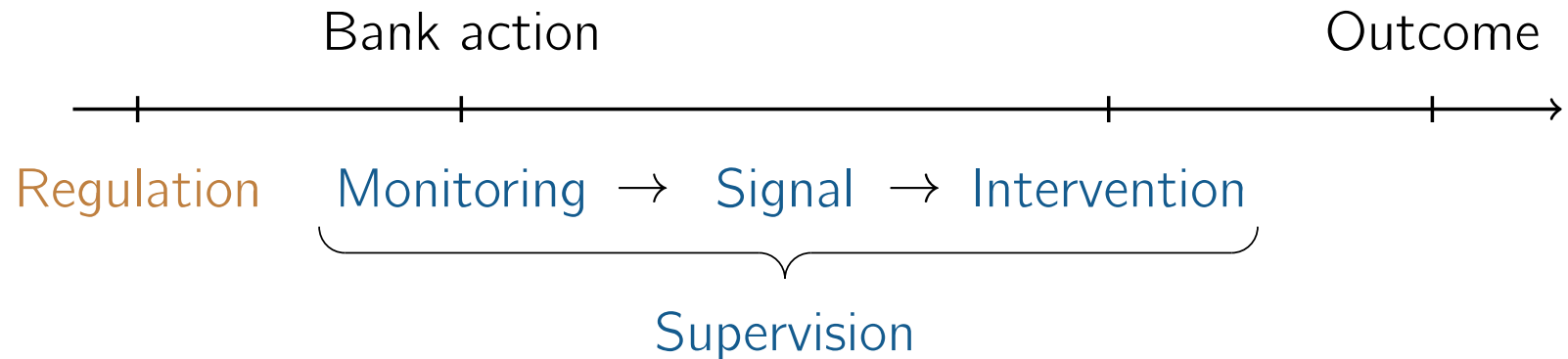
Model



- **Monitoring:**

- Improves quality of signal (did bank take a risky action?)
and incentives for bank action

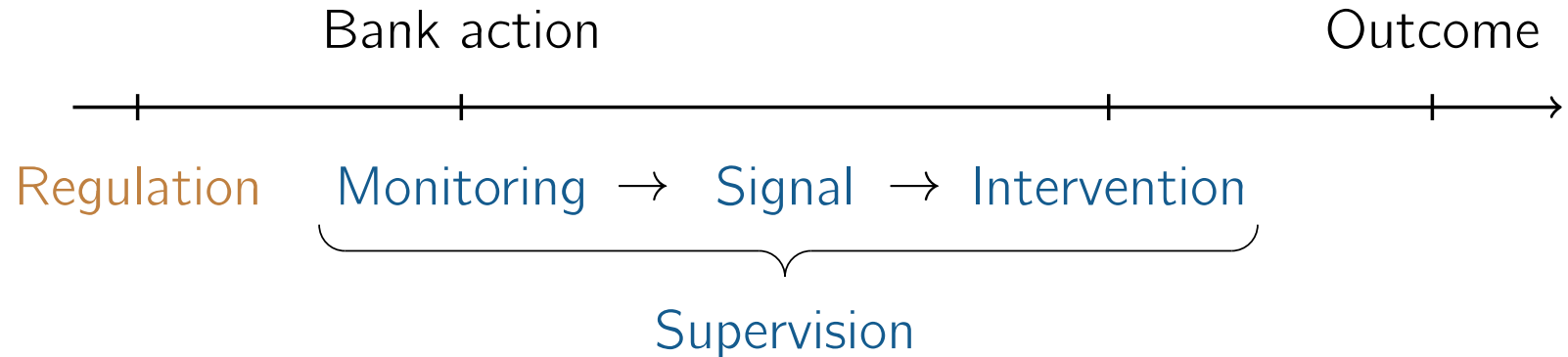
Model



■ Intervention:

- Chosen after observing signal
- Reduces risk before final outcome realized
- In practice, interventions are supervisory actions

Allocation of supervisory resources



- **How should supervision scale with bank size?**
 - Competing effects of scale economies (just like in bank's management) and differential default spillovers
- **Resource reallocation:**
 - Scarce resources should be allocated (and reallocated) by equalizing marginal benefits/costs across banks

Measuring Supervision in the Data

Allocation of resources in the data

- Three sets of empirical results:
 - Supervisory attention, bank size and risk
 - Reallocation of supervisory resources between banks
 - Effect of supervisory resource reallocation on bank
- Data sources (BHCs with assets \geq \$1bn)
 - Recorded hours spent by Fed supervisors
 - Ratings assigned by Fed supervisors: **1** (best), ..., **5** (worst)
 - Balance sheet information from regulatory filings (Y9Cs)



Supervisory hours, bank size and risk

$$\begin{aligned}\log(\text{hours}) &= \beta_1 \times \log(\text{assets}) \\ &+ \beta_2 \times \text{rated 2} \\ &+ \beta_3 \times \text{rated 3} \\ &+ \beta_4 \times \text{rated 4} \\ &+ \beta_5 \times \text{rated 5} \\ &+ \dots + \varepsilon\end{aligned}$$

- Regress $\log(\text{hours})$ on bank's assets, rating and other controls



Supervisory hours, bank size and risk

$$\begin{aligned}\log(\text{hours}) &= \beta_1 \times \log(\text{assets}) \quad \hat{\beta}_1 = 0.68^{***} \\ &+ \beta_2 \times \text{rated 2} \\ &+ \beta_3 \times \text{rated 3} \\ &+ \beta_4 \times \text{rated 4} \\ &+ \beta_5 \times \text{rated 5} \\ &+ \dots + \varepsilon\end{aligned}$$

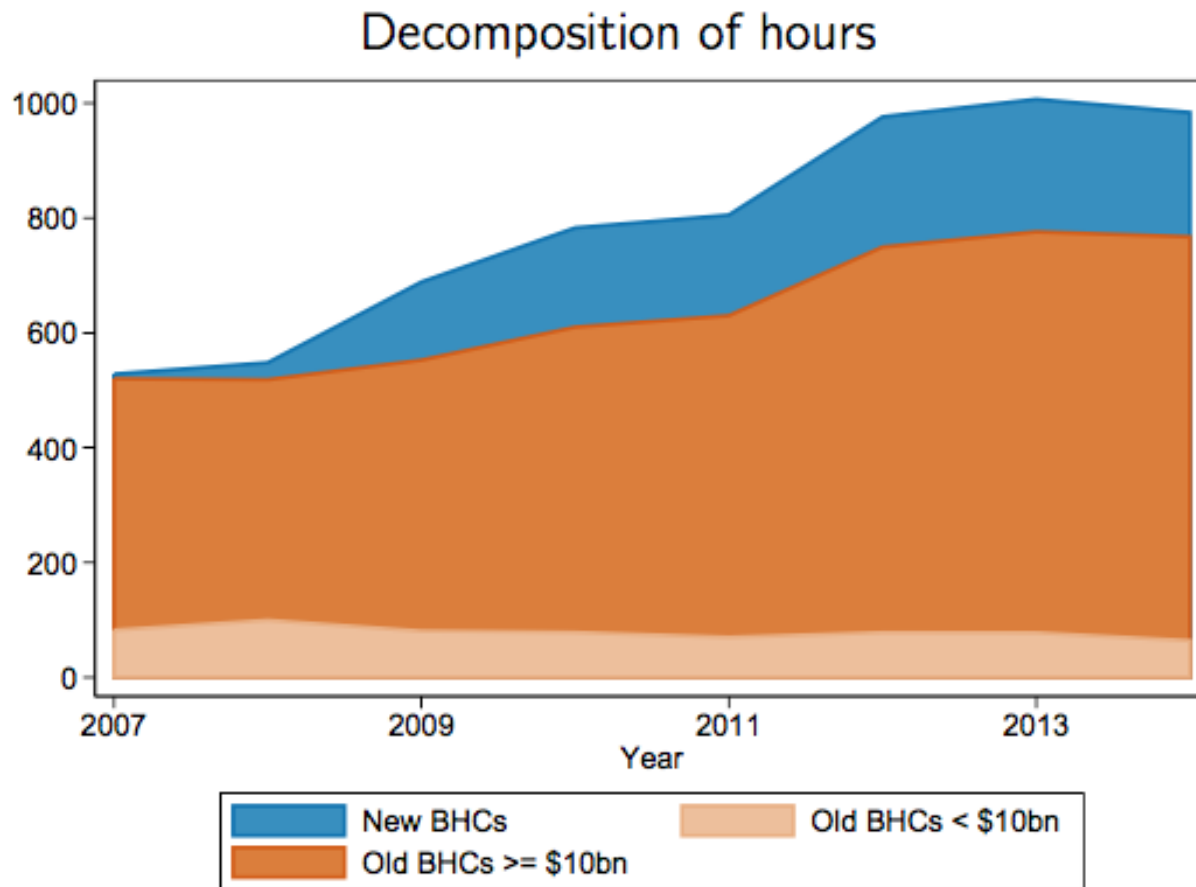
- Size elasticity less than one: .68
 - Suggests scale economies > higher scrutiny at large banks

Supervisory hours, bank size and risk

$$\begin{aligned}\log(\text{hours}) &= \beta_1 \times \log(\text{assets}) & \hat{\beta}_1 &= 0.68^{***} \\ &+ \beta_2 \times \text{rated 2} & \hat{\beta}_2 &= 0.15^{**} \\ &+ \beta_3 \times \text{rated 3} & \hat{\beta}_3 &= 0.70^{***} \\ &+ \beta_4 \times \text{rated 4} & \hat{\beta}_4 &= 1.08^{***} \\ &+ \beta_5 \times \text{rated 5} & \hat{\beta}_5 &= 1.36^{***} \\ &+ \dots + \varepsilon\end{aligned}$$

- Size elasticity less than one: .68
 - Suggests scale economies > higher scrutiny at large banks
- Monotonic response to higher risk (rating):
 - Going from rating of 1 to 3:
 - Hours increase about 70%, or equivalent to doubling the size of the bank

Reallocating across banks: Learning from crisis



- Supervisory expansion post-2008: both extensive (more banks) and intensive (more hours at same banks) margin

Reallocating across banks: Learning from crisis

Post-2008: indicator for post-2008 period

$$\begin{aligned}\log(\text{hours}) &= \dots \\ &+ \delta_1 \times \text{post-2008} \times \text{large-BHC} \\ &+ \delta_2 \times \text{post-2008} \times \text{small-BHC} \\ &+ \dots + \varepsilon\end{aligned}$$

- Augment model with additional terms

Reallocating across banks: Learning from crisis

Post-2008: indicator for post-2008 period

$$\begin{aligned}\log(\text{hours}) &= \dots \\ &+ \delta_1 \times \text{post-2008} \times \text{large-BHC} \quad \hat{\delta}_1 = 0.60^{***} \\ &+ \delta_2 \times \text{post-2008} \times \text{small-BHC} \quad \hat{\delta}_2 = -0.19^{***} \\ &+ \dots + \varepsilon\end{aligned}$$

- Large banks (assets $\geq \$10bn$) receive 60% more attention post 2008
 - Updated beliefs about spillovers from the largest banks
- Reallocation: small banks receive 20% fewer resources
 - Suggests binding resource constraints

Reallocating across banks: Stress at other BHCs

Share distress: % of other district bank assets with rating ≥ 3

$$\begin{aligned}\log(\text{hours}) &= \dots \\ &+ \gamma_1 \times \text{share-distress} \\ &+ \dots + \varepsilon\end{aligned}$$

- Reallocation of resources when other banks in district are under stress

Reallocating across banks: Stress at other BHCs

Share distress: % of other district bank assets with rating ≥ 3

$$\begin{aligned}\log(\text{hours}) &= \dots \\ &+ \gamma_1 \times \text{share-distress} \quad \hat{\gamma}_1 = -0.6^{***} \\ &+ \dots + \varepsilon\end{aligned}$$

- Given a bank's rating and size, attention drops when other banks are under stress

Does bank supervision have an effect?

- Does supervision in fact lower bank risk?
 - Identification problem: riskier banks get more attention, but supervision is presumably not making them riskier
- Impact of resource reallocation on future distress probability and volatility of return on assets (ROA)
 - Reallocation from small to large banks post 2008
 - Reallocation from safe to stressed banks in district
- Estimated impact:
 - Halving hours increases the probability of distress by 5 percentage points and the volatility of ROA by 11 basis points

Summary

Summary

- Supervision is distinct from regulation
- Economic model:
 - Unchecked, banks would take too much risk
 - Regulation and supervision aim at lowering risk taking
 - Supervision is monitoring and intervention; supervision is flexible and can incorporate soft information
- Data:
 - Large and riskier BHCs receive more attention
 - Size elasticity ≤ 1 and high sensitivity to bank risk
 - Resources are reallocated; reallocation matters for BHC outcomes

Questions?