The Economics of Bank Supervision
by
T. Eisenbach, D. Lucca and R. Townsend

Discussion by

Elena Carletti

Bocconi University and CEPR

Madrid, 24-25 May 2017

Motivation/1

- Significant increase in the Fed supervisory staff post crisis
- How is staff employed in terms of supervisory hours?
  - Many hours are employed in the large BHCs, but **not** in proportion of assets (except for very large BHC)
  - Over the years, large banks have received increasingly **more attention** relative to small banks, so the gap has reduced

	2002-2006		2007-2009		2010-2014	
	Small	Large	Small	Large	Small	Large
Total Assets ($ tn)	801	9980	1049	14419	1066	15802
Total Yearly Hours (thousands)	83	347	100	488	104	807
Total Yearly Hours / Total Assets ($ bn)	104	35	96	34	98	51
$\sigma(ROA)$ (%)	0.56	0.61	0.80	0.85	0.68	0.66
Probability of Failure (%)	0.00	0.00	0.66	0.31	0.25	0.06

Motivation/2

- Small and large banks have different risk profiles
  - Large banks are riskier before and during the crisis
  - But less risky after the crisis

	2002-2006		2007-2009		2010-2014	
	Small	Large	Small	Large	Small	Large
Total Assets ($ tn)	801	9980	1049	14419	1066	15802
Total Yearly Hours (thousands)	83	347	100	488	104	807
Total Yearly Hours / Total Assets ($ bn)	104	35	96	34	98	51
$\sigma(ROA)$ (%)	0.56	0.61	0.80	0.85	0.68	0.66
Probability of Failure (%)	0.00	0.00	0.66	0.31	0.25	0.06

- These observations suggest some relationship between size, risk and supervisory hours

The paper

- Novel data set containing supervisory hours at the FED
- Main questions
  - What determines supervisory hours?
  - What is the impact of supervision?
  - How are supervisory resources allocated?

Approach of the paper

- It needs a "model"/conceptual framework
- Resource allocation analyzed in different steps
  - One bank in isolation – bank risk and size as **determinants** of supervisory hours
  - Multiple banks – structural model, **two steps approach** to study impact of supervision on risk and aggregate resource allocation
- Note: in the model a default externality is introduced – large for banks with assets above $10bn after 2008

Main answers

- Hours spent supervising banks increase with size and risk
  - Size elasticity **less than one** - potential scale economies
  - "**Break**" at $10 bn assets – very large banks are special
  - **Riskier** banks receive more attention – percentage increase smaller for larger banks
- Large sensitivity of bank risk to supervisory effort
  - Supervision has a **significant impact** in reducing risk
- More attention on **very large** banks (>$10 bn) post crisis
  - Higher dispersion/scarcity across districts

General comments

- Very important (and different) research question
  - We know much too little about supervision
  - We ought to know, also because of post crisis staff increase and current "political climate"
- Novel data set on amounts of hours spent by supervisors doing their job
- Analysis and results can be pushed further
  - The research question
  - Some observations on model and results

The research question

- Two main questions
  - What is the impact of supervision?
  - How are resources allocated?
- Alternative/complementary questions
  - What is the optimal supervisory arrangement?
    - How large should α and σ be?
  - Is the observed supervisory arrangement optimal?
    - Are large/small banks supervised enough?
    - Is supervision effective enough?
- Can you find a "counterfactual" to use as benchmark?
  - Or even a way to calculate "optimal" supervision

Some observations on model and results/1

- Key parameters σ and α are constant across type of banks/districts
  - Is this the right assumption?
  - Can you test it?
    - E.g. $\alpha<1$ may suggest larger σ for larger banks
- Size elasticity less than 1 : economies of scale
  - Where do they come from (e.g., different information extraction problem in small and large banks)?
  - Can it be something else, such as intentional reduction of supervisory hours at large banks, maybe for political risk?
  - How do economies of scale square with the result that impact on risk smaller at larger banks?

Some observations on model and results/2

- First step – baseline specification for supervisory hours
  - Estimates elasticity of hours to bank size α

Log(Hours)	(1)		(2)		(3)		(4)	
Log(Assets)	0.96***	[0.02]	0.68***	[0.11]	0.68***	[0.11]	0.68***	[0.11]
Rating = 2	0.23***	[0.05]	0.15**	[0.06]	0.15**	[0.06]	0.15**	[0.06]

- Estimating model parameter

1. Treat μ as a fixed effect → obtain reduced form $\hat{\beta}$
   - Note that $\mu(\beta(\sigma, \alpha, n_i))$
2. Compute $\hat{\mu}$ from $\hat{\beta}$s → estimate $\hat{\beta}_\mu$ and $\hat{\sigma}$
3. From $\hat{\sigma}$ → $\hat{n}_i$ and $\hat{\alpha}$

- **α goes from 0. 68 to 0.55**
- **σ goes from 1 but 2 with IV**

How shall we interpret these (different) numbers?

Conclusions

- Very important topic
  - We know too little about it
  - Authors have to be praised for the idea and the effort
- Difficult paper to write – where to start from?
- Try and push questions and analysis further
  - Clarify research questions
  - Look for some "optimality" criteria/benchmarks
- Policy implications?

Addition slide: The model

- Probability of default of bank *I*

$$\mathrm{PD}(R_i, s_i) \propto \frac{r(R_i)}{s_i^{\sigma}}$$

Effectiveness of supervision

- Supervisory hours needed for intensity s_i

$$h(s_i, A_i) = s_i A_i^{\alpha},$$

Economies of supervision

- Optimal hours for bank *i* given total hours $\bar{H}$.

$$H_i = \frac{\left(r(R_i)\, n_i\right)^{\frac{1}{1+\sigma}} A_i^{\frac{\alpha\sigma+1}{1+\sigma}}}{\sum_k \left(r(R_k)\, n_k\right)^{\frac{1}{1+\sigma}} A_k^{\frac{\alpha\sigma+1}{1+\sigma}}} \bar{H}$$

Spillover effects

- Lagrange multiplier on budget constraint (μ)

Shadow value of $\bar{H}$.

$$\mu^{\frac{1}{1+\sigma}} = \frac{1}{\bar{H}} \sum_i \left(\sigma r(R_i)\, n_i\right)^{\frac{1}{1+\sigma}} A_i^{\frac{\alpha\sigma+1}{1+\sigma}}.$$